

PROJECT
MANUAL
VOLUME 1

OCTOBER 20, 2020



VLK | ARCHITECTS

OWNER:



**Eagle Mountain-Saginaw
Independent School District**
1200 Old Decatur Rd
Fort Worth, TX 76179

New Central Administration Building

EAGLE MOUNTAIN-SAGINAW ISD

FORT WORTH, TEXAS

VLK Project No.

1847.00

OWNER

**Eagle Mountain-Saginaw
Independent School District**

1200 Old Decatur Road
Fort Worth, Texas 76179

ARCHITECT

VLK Architects, Inc.

Josh Wilson, AIA
2821 West 7th Street, Suite 300
Fort Worth, Texas 76107
Phone: 817.633.1600
www.vlkarchitects.com

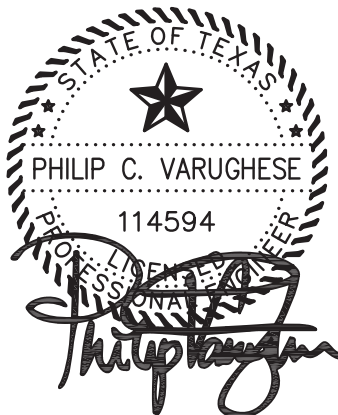


10/20/2020

CIVIL ENGINEER

Teague, Nall and Perkins, Inc.

Firm Registration Number: F-230
Philip C. Varughese, P.E.
5237 N. Riverside Drive, Suite 100
Fort Worth, Texas 76137
Phone: 817.336.5773
www.tnpinc.com



10/20/2020

LANDSCAPE/IRRIGATION

Teague, Nall and Perkins, Inc.

Firm Registration Number: F-230
William H. Smith, RLA
Joe L. Madrid, RLA, LI
5237 N. Riverside Drive, Suite 100
Fort Worth, Texas 76137
Phone: 817.336.5773
www.tnpinc.com



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**New Central Administration Building
EAGLE MOUNTAIN-SAGINAW ISD
FORT WORTH, TEXAS**

VLK Project No.

1847.00

STRUCTURAL ENGINEER

L.A. Fuess Partners, Inc.

Firm Registration Number: F-000537

Lance W. Munger, P.E.

3333 Lee Parkway Suite 300

Dallas, Texas 75219

Main Phone: 214.871.7010

www.lafp.com



PROJECT MANUAL VOLUME 1

OCTOBER 20, 2020

FOODSERVICE

Foodservice Design Professionals

Lance Brooks

2655 Villa Creek Drive, Suite 233

Farmers Branch, Texas 75234

Phone: 972.245.5300

www.foodservicedesignprofessionals.com

MEP ENGINEER

RWB Consulting Engineers

Firm Registration Number: F-2176

Nathan P. Hart, P.E.

David Boon, P.E.

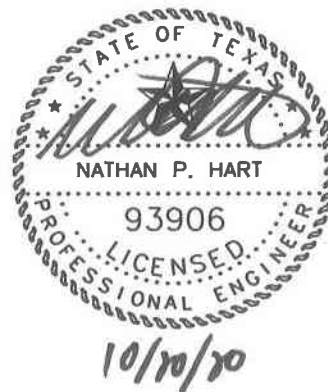
CBS Tower, Suite 1100

12001 N. Central Expressway

Dallas, Texas 75243

Phone: 972.788.4222

www.rwb.net



New Central Administration Building EAGLE MOUNTAIN-SAGINAW ISD FORT WORTH, TEXAS

VLK Project No.

1847.00

TECHNOLOGY

Moye Consulting

Amber Smith, RCDD
1255 Corporate Dr. #100
Irving, Texas 75038
Phone: 972.887.5555
www.moyeconsulting.com



Amber Smith 10/20/2020

PROJECT MANUAL VOLUME 1

OCTOBER 20, 2020

New Central Administration Building
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NONE IN THIS PROJECT

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**Eagle Mountain-Saginaw Independent School District
REQUEST FOR COMPETITIVE SEALED PROPOSALS (RFCSP)**

<p>RFCSP Number: 2021-005-0</p> <p>RFCSP Title: New Central Administration Building</p> <p>Due Dates:</p> <p>Part “A” Proposal Form - Base Proposal - November 17, 2020 Prior to: 2:00pm CST</p> <p>Part “B” Proposal Form - Qualifications - November 18, 2020 Prior to: 2:00pm CST</p>

Sealed CSP will be received in accordance with the attached specifications. The sealed envelope containing your CSP should be plainly marked with the CSP title, number, and opening date and time. CSPs are publicly opened. You are invited to attend. **PLEASE NOTE: Late CSPs WILL NOT be accepted.**

Mail or deliver 1 original and 3 copies of the complete CSP package, plus one digital copy to:

Eagle Mountain-Saginaw Independent School District
Attn: Lucia Cieszlak
Director of Purchasing
1200 Old Decatur Rd., **Business Building #6**
Fort Worth, Texas 76179

All questions must be submitted in writing (email preferred) and received on or before seven (7) calendar days prior to the opening date. **No verbal responses will be provided.** Please note that CSP Rankings are available on our website (www.emsisd.com/Departments/Purchasing/Bid Awards). Address questions to:

Lucia Cieszlak
Email: lcieszlak@ems-isd.net

PROPOSER IDENTIFICATION: (Please print information clearly.)

Firm Name: _____ Address: _____ City/St/Zip: _____ : _____	Date: _____ Phone: _____ Fax: _____ Email: _____
<p>You <u>MUST</u> sign the CSP Response Form (FORM A) in order for your CSP to be accepted.</p>	

BID DAY (DUE TO COVID 19)

PROPOSAL SUBMISSION PROTOCOL

- Mail proposal OR
- Deliver Part “A” Proposal to EMS Admin Building #6 Entrance Vestibule prior to 2:00pm on November 17, 2020
- Deliver Part “B” Proposal to EMS Admin Building #6 Entrance Vestibule prior to 2:00pm on November 18, 2020
- Contractors will drop off their proposals but will not be allowed to stay in the building
- Virtual bid opening via TEAMS (links below)

The entrance to the Business Office is the glass door located on the NW side of Building #6.

PROPOSAL OPENING PROTOCOL

Due to COVID-19 social distancing protocols, we will conduct a virtual opening on November 17, 2020, 2:00 pm CST and November 18, 2020, 2:00 pm CST. We will utilize Microsoft TEAMS Meeting for the virtual opening. You are invited to join the virtual meeting using the following link:

November 17, 2020 link:

[RFCSP 2021-005-0 New Central Administration Bldg. – Part A](#)

https://teams.microsoft.com/l/meetup-join/19%3ameeting_ZjBlODg5NzctNmRlZS00MmRiLTg3NjUtNTM0NjlmMTZjMDdl%40thread.v2/0?context=%7b%22Tid%22%3a%22cc1eb768-7f46-4736-ad44-58a5da966760%22%2c%22Oid%22%3a%2211982269-ffec-4668-9e4b-3febf6a380ea%22%2c%22IsBroadcastMeeting%22%3atrue%7d

November 18, 2020 link:

[RFCSP 2021-005-0 New Central Administration Bldg. – Part B](#)

https://teams.microsoft.com/l/meetup-join/19%3ameeting_ZjZmMjFhNjMtNmFkMy00YzUzLTgyYzktMTZjMjBjMmE1OWUx%40thread.v2/0?context=%7b%22Tid%22%3a%22cc1eb768-7f46-4736-ad44-58a5da966760%22%2c%22Oid%22%3a%2211982269-ffec-4668-9e4b-3febf6a380ea%22%2c%22IsBroadcastMeeting%22%3atrue%7d

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ADVERTISEMENT FOR PROPOSALS

Competitive Sealed Proposals for the construction of “**NEW CENTRAL ADMINISTRATION BUILDING**”, Eagle Mountain-Saginaw I.S.D., Fort Worth, Texas, will be received by Lucia Cieszlak, Director of Purchasing, in the Purchasing Department of the Eagle Mountain-Saginaw Independent School District, located at 1200 Old Decatur Road, **Building #6**, Fort Worth, Texas 76179.

The Proposals shall be submitted in two parts as follows:

PART “A” PROPOSAL FORM - BASE PROPOSAL prior to **2:00 p.m. CST, Tuesday, November 17, 2020**

PART “B” PROPOSAL FORM-QUALIFICATIONS prior to **2:00 p.m. CST, Wednesday, November 18, 2020**

Proposals received after this time will not be accepted.

The Project Manual, Drawings and Addenda are available on the Eagle Mountain-Saginaw ISD website ([www.emsisd.com/Departments/Purchasing/Bid Opportunities](http://www.emsisd.com/Departments/Purchasing/Bid%20Opportunities)). Addenda will only be published on the website. No addenda will be mailed, e-mailed, or faxed to any document holder

Any proposer may withdraw his proposal, either personally or by written request, at any time prior to the scheduled time for opening proposals. No proposer may withdraw his proposal for a period of 60 days after the date set for opening thereof, and any proposal shall be subject to acceptance by the Owner during this period.

Proposal Security in the amount of five percent (5%) of the proposal sum must accompany each proposal.

The Owner reserves the right to reject any or all proposals and to waive any formality in connection therewith.

Within 45 days after the opening of the sealed proposals, the District will evaluate and rank each proposal submitted in relation to the selection criteria set forth. The District will select the proposal that offers the best value to the District based on the selection criteria and on the ranking evaluation; price alone will not be determinative.

PRE-PROPOSAL CONFERENCE

A pre-proposal conference is scheduled for 3:00 pm, local time, Thursday, November 5, 2020 with representatives of the Owner, Architect, and Engineer available to address proposal document issues with potential proposers. The pre-proposal conference will occur via Zoom at the address listed here: <https://vlkarchitects.zoom.us/j/93061611042?pwd=YkFwaUNSYmlqazYyem1qbm5SYVFIZz09>

DOCUMENT 00 21 16

INSTRUCTIONS TO PROPOSERS

PART 1 - GENERAL

1.1 DEFINITIONS

- A. All definitions set forth in the General Conditions of the Contract for Construction, AIA Document A201, 2007 Edition and Section 01 42 16 - Definitions, are applicable to these Instructions to Proposers.
- B. Proposal documents include the Request for Competitive Sealed Proposals, Instructions to Proposers, the Proposal Forms and the proposed Contract Documents, including Addenda issued prior to receipt of proposals.
- C. Addenda are written or graphic instruments issued prior to the execution of the Contract which modify or interpret the proposal documents, including Drawings and Specifications, by additions, deletions, clarifications or corrections. Addenda will become part of the Contract Documents when the Construction Contract is executed.
- D. “VLK Architects, Inc.” will be hereafter referred to in this Project Manual as “Architect” and correspondence shall be addressed to: 2821 West 7th Street, Suite 300, Fort Worth, TX 76107.

1.2 EXAMINATION OF DOCUMENTS AND SITE

- A. Each proposer, by making his Proposal, represents that he has read and understands the Proposal Documents.
- B. Each proposer, by making his Proposal, represents that he has visited the site, performed investigations and verifications as necessary and familiarized himself with the local conditions under which the Work is to be performed and will be responsible for errors in his proposal resulting from his failure to do so.
- C. Each proposer by making his proposal represents that his proposal is based upon the materials, systems and equipment required by the Proposal Documents without exception.

1.3 QUESTIONS

- A. Proposers shall submit questions about the Proposal Documents to Lucia Cieszlak, lcieszlak@ems-isd.net in writing not later than seven days prior to the date of receipt of the proposals. Replies will be issued to proposers as an addendum to the Proposal Documents and shall become a part of the Contract. The Architect and Owner will not be responsible for oral clarification.

1.4 SUBSTITUTIONS

- A. Each proposer represents by submitting his proposal that his proposal is based upon the materials and equipment described in the proposal documents.

1.5 PROPOSAL SECURITY

- A. A certified check; cashier's check; signed, dated and embossed proposal bond in an amount equal to 5% of the largest possible total proposal and made payable to the Owner must accompany each proposal. This shall be considered as the amount of liquidated damages which the Owner will sustain by failure or refusal of the proposer to execute and deliver the contract and the statutory performance and payment bonds should the Contract be awarded to him.
- B. If the proposer defaults in executing and delivering the Contract and the statutory performance and payment bonds within ten days after written notification from the Owner of the award of Contract to him, then the check or proposal bond shall become the property of the Owner, not as a penalty, but as liquidated damages, as payment for damages due to excess costs, delay and other inconveniences.
- C. Proposals shall remain in effect for a period of 60 days after the time established for receipt thereof, and during this time the Owner may accept or reject the proposals as he so elects. If the proposal is not accepted within 60 days after the time set for submission of proposals, or if the successful proposer executes and delivers said contract and the performance and payment bonds, then the check or proposal bond will be returned.
- D. Proposal Bond shall be executed by a Surety Company that is:
 - 1. Approved by the school district, and duly authorized and admitted to do business in the State of Texas as determined by the State Board of Insurance.
 - 2. Listed by the United States Department of the Treasury in that issue of the "Federal Register" covering the date on which the bond was executed and the date that Surety Company has obtained reinsurance, if applicable, from a reinsurer that is authorized and admitted as a reinsurer in this state and is the holder of a certificate of authority from the United States secretary of the treasury.
- E. Facsimiles or copies of Proposal Bond will not be acceptable. Submit fully executed originals of required documents.

1.6 STATUTORY PERFORMANCE BOND AND STATUTORY LABOR AND MATERIAL PAYMENT BOND

- A. A Statutory Performance Bond and a Statutory Labor and Material Payment Bond will be required of the successful proposer and shall be executed by a surety company acceptable to the Owner and authorized to do business in the State of Texas. Each bond shall be in an amount equal to one hundred percent (100%) of the contract price. The Performance Bond and the Labor and Material Payment Bond may be in one or separate instruments in accord with local law and are to be delivered to the Owner no later than ten days after written notification from the Owner of the award of Contract to him. Failure or neglecting to deliver said bonds, as specified, shall be considered as having abandoned the contract and the proposal security will be retained as liquidated damages.
- B. Bonds shall be executed by a Surety Company that is:
 - 1. Approved by the school district, and duly authorized and admitted to do business in the State of Texas as determined by the State Board of Insurance.

2. Listed by the United States Department of the Treasury in that issue of the “Federal Register” covering the date on which the bond was executed and the date that Surety Company has obtained reinsurance, if applicable, from a reinsurer that is authorized and admitted as a reinsurer in this state and is the holder of a certificate of authority from the United States secretary of the treasury.

1.7 SUBMITTAL

- A. Submit proposals in accordance with the Request for Competitive Sealed Proposals. Enclose proposal in an opaque, sealed envelope. Each CSP shall be properly identified with the CSP Number, CSP Title, Name of Company submitting CSP, and the established time and date to be opened.
- B. Preparation of Proposals: Proposals shall be submitted on unaltered proposal forms furnished by Eagle Mountain-Saginaw ISD. Fill in all blank spaces. If there are entries (blank spaces) on the proposal form which do not apply to a particular proposer, these entries shall be marked “N.A.” (Not Applicable) by the proposer. No proposals will be considered that are amended or are qualified with conditional clauses, alterations, items not called for in the proposal, or irregularities of any kind which, in the Owner’s opinion, may disqualify the proposer.
- C. Reference DOCUMENT 00 43 93 - PROPOSAL SUBMITTAL CHECKLIST for Proposal document submittal requirements.
 1. Part “A” - November 17, 2020, prior to 2:00pm CST
 - a. SECTION 00 42 00 - PART “A” PROPOSAL FORM - BASE PROPOSAL
 - b. Cashier's Check, Certified Check, or Bid Bond for no less than 5% of the largest possible total for the proposal submitted.
 - c. Required Forms (A through J), duly filled out and signed.
 2. Part “B” - November 18, 2020, prior to 2:00pm CST
 - a. SECTION 00 43 00 - PART “B” PROPOSAL FORM - QUALIFICATIONS
 - b. Contractor’s Qualification Statement AIA Document 305
 - c. Contractor may include any other information that responds to the Selection Criteria listed.

1.8 COMPETITIVE SEALED PROPOSAL EVALUATION AND RANKING PROCEDURES

- A. The following procedures shall be used to evaluate and recommend a construction contractor for selection by the School District through the use of Competitive Sealed Proposals, as authorized in Texas Government Code 2269.
- B. Proposal Evaluation Committee
 1. For each construction project utilizing the Competitive Sealed Proposal method of procurement, the School Board shall convene a Proposal Evaluation Committee (Committee) that may be comprised from of the following individuals:
 - a. School Board Members
 - b. School Administration
 - c. District’s Financial Officer or Consultant
 - d. Staff

- e. Project Architect
- f. Project Engineer
- g. Program Manager

C. Proposal Evaluation Committee Function

1. The Committee shall perform an evaluation of all submitted Proposals and shall recommend an order of selection ranking of all Proposers to the School Board. The following procedures shall be used by the Committee in the evaluation process:
 - a. As soon as possible following the public opening of Proposals, the Committee shall meet to conduct a preliminary examination of each Proposal for compliance with the published requirements.
 - b. The Committee shall conduct thorough discussions and evaluations of all Proposals.
 - c. Within forty-five (45) days after publicly opening the Proposals, the Committee shall produce a ranking of Proposers in the order of the best value to the School District.
 - d. The recommended ranking shall be based on the data furnished by the Proposers in response to the request for Competitive Sealed Proposals. The following is a list of rating categories and values for each category. To provide the best value to the School District, these categories and values may be revised by the Committee based on the project type and conditions at the time Proposals are requested. Unless modified by addendum prior to opening of the Proposals, the following listing of categories and values shall be utilized by the Committee:

RATING CATEGORY VALUE	
Proposed Construction Contract Amount	40.00
Proposed Construction Contract Time	5.00
TAB 2 – Schedule	10.00
TAB 3 – Key Project Personnel	10.00
TAB 4 - Subcontractors	10.00
TAB 5 – Project Experience	10.00
TAB 6 - Financial Background	5.00
TAB 7 - Claims and Suits	2.00
TAB 8 - Quality Control Program	2.00
TAB 9 - Project Approach	6.00
TOTAL OF WEIGHTED VALUE	100.00

D. General Evaluation Procedures

1. Proposed Construction Contract Amount and Proposed Construction Contract Time will be rated using mathematical processes described below. Each of the other listed rating categories shall be evaluated on a scale of zero to ten. Each rating category response will be evaluated and the Committee shall produce a single evaluation determination in each category for each Proposal received.

E. Proposed Construction Contract Amount Evaluation

1. This evaluation ranking shall be based on a value of ten (10) assigned to the lowest proposed amount. Each successive Proposer’s contract amount shall be scored as follows; Low Proposer amount divided by the next low Proposer amount, and multiply that figure by 10 equals the score for that Proposer.
2. These resulting ratings are then multiplied by the value of this rating category, producing the construction contract amount score for each Proposer.

F. Proposed Construction Contract Time Evaluation

1. The evaluation ranking of Proposed Construction Contract Time shall be accomplished by the same mathematical process as the Contract Amount Evaluation. The value of ten (10) is assigned to the shortest Proposed Construction Contract Time.
2. These resulting ratings are then multiplied by the value of this rating category, producing the construction contract amount score for each Proposer.

G. Scoring

1. Proposers may receive equal rating in the Proposed Construction Contract Amount or the Proposed Construction Contract Time category if their proposed amounts in these categories are identical.
2. With the exception of the Proposed Construction Contract Amount and Proposed Construction Contract Time ratings, all other category rating determinations among Proposers may receive identical values if, in the opinion of the Committee, the qualification data provided by Proposers are determined to be equal for a selected category.
3. Upon determining a rating for each category, a categorical score for each Proposer shall be calculated by multiplying the category value by the Committee determined rating.
4. The total score for a Proposer shall be determined by adding the scores received for each category. The maximum score attainable for all categories shall be one thousand (1,000).
5. The Committee shall produce a tabulation of scores, which identifies the Proposers their Proposed Construction Contract Amounts, their Proposed Construction Contract Times, and their individual total scores.

1.9 ESTIMATED BUDGET

- A. The estimated budget for this project is \$34 million

1.10 WAGE RATES

- A. Reference DOCUMENT 00 73 46 - PREVAILING WAGE RATES.

1.11 SELECTION CRITERIA

- A. Reference DOCUMENT 00 22 16 - EAGLE MOUNTAIN-SAGINAW ISD SUPPLEMENTARY INSTRUCTIONS TO PROPOSERS, SECTION 4 – CSP EVALUATION CRITERIA.

1.12 MODIFICATION AND WITHDRAWAL

- A. No proposal may be changed, amended or modified after submittal. Proposers may withdraw proposals prior to proposal opening.

1.13 EXECUTION OF CONTRACT

- A. The Owner reserves the right to accept any proposal, to reject any and all proposals, or to negotiate contract terms with the various proposers, when such is deemed by the Owner to be in his best interest.

- B. Notwithstanding delays in the preparation and execution of the formal contract agreement, each proposer shall be prepared, upon written notice of proposal acceptance, to commence work on or before a date stipulated in an official written order of the Owner to proceed.
- C. The accepted proposer shall assist and cooperate with the Owner in preparing the formal contract agreement, and within 5 days following its presentation shall execute same and return it to the Owner.
- D. Form for the contract agreement will be AIA Document A101, Standard Form of Agreement Between Owner and Contractor, Stipulated Sum, 2007 Edition.

1.14 TIME OF COMPLETION AND LIQUIDATED DAMAGES

- A. The “Notice-to-Proceed” issued by the Owner shall be approximately Wednesday, January 6, 2020.
- B. Substantial Completion date shall be established as the number of consecutive calendar days as set out on the proposal form from the “Notice-to-proceed” date issued by the Owner.
- C. Failure of the Contractor to complete the Work by the contract date will result in damages being sustained by the Owner. Such damages are, and will continue to be, impracticable and extremely difficult to determine. Due consideration will be given to delays falling within 8.3 of the General Conditions.
- D. The Contractor will pay the Owner the amount indicated on the Proposal Form and in the General Conditions for each calendar day of delay in finishing the Work in excess of time specified for Substantial Completion and for Final Completion, plus authorized time extensions. Execution of the Contract under these specifications shall constitute agreement by the Owner and Contractor that the amount indicated is the minimum value of the costs and actual damage caused by failure of the Contractor to reach Substantial Completion and Final Completion of the Work within the allotted time, that such sum is Liquidated Damages and shall not be construed as a penalty, and that such sum may be deducted from payments due the Contractor if such delay occurs.

1.15 SALES TAX EXEMPTION

- A. The Owner qualifies for exemption from State and Local Sales Taxes as set forth in the modified General Conditions.

DOCUMENT 00 22 16

EAGLE MOUNTAIN-SAGINAW ISD
SUPPLEMENTARY INSTRUCTIONS TO PROPOSERS

In submitting a CSP, Proposer understands and agrees to be bound by the following terms and conditions which shall be incorporated into any future contracts, agreements, or purchase orders relating to this CSP between the vendor and the Eagle Mountain-Saginaw Independent School District. By submitting a CSP, each proposer agrees to waive any claim it has or may have against the Eagle Mountain-Saginaw Independent School District arising out of or in connection with the administration, evaluation, or recommendation of any CSP; waiver of any requirements under the CSP documents; acceptance or rejection of any CSPs; and award of Contracts, if any.

SECTION 1 - GENERAL INSTRUCTIONS

- 1.1 To be considered a responsive CSP, all pages requiring signature, the Cover Page, and any/all attachments (Reference Proposal Submittal Checklist), must be completed with all requested information, **signed** and returned **sealed** in an envelope or other appropriate package adequate to conceal and contain the contents prior to the CSP date and time. Each CSP shall be properly identified with the CSP Number, CSP Title, Name of Company submitting CSP, and the established time and date to be opened.
- 1.2 The Proposer is strongly encouraged to read the entire CSP document prior to submitting response. Failure to provide the information requested in its entirety may be grounds for disqualification of CSP.
- 1.3 If any exceptions are taken to any portion of this CSP, the Proposer must clearly indicate the exception taken and include a full explanation on the Deviation/Compliance Form or as a separate attachment to the CSP. The failure to identify exceptions or proposed changes will constitute acceptance by the Supplier of the CSP as proposed by the District. The District reserves the right to reject a CSP containing exceptions, additions, qualifications, or conditions.
- 1.4 The CSP response **must be signed** by an individual authorized to contractually bind the company submitting the CSP. Failure to sign the CSP will cause it to be rejected as non-responsive. CSPs must give full firm name and address of proposer. Person signing CSP should show title or authority to bind his/her firm in a contract.
- 1.5 CSPs **must be received** in the Purchasing Department office **prior to** the hour and date specified in this document or any subsequent Addenda. No other published dates will be binding. **Late CSPs will not be accepted.** No oral, telegraphic, telephonic, electronic mail, or facsimile transmitted CSPs will be considered. The clock located in the EMSISD Purchasing Department is considered the official time for receiving and opening CSPs.
- 1.6 Sealed CSPs shall be mailed or otherwise delivered to the following address:
Eagle Mountain-Saginaw Independent School District
Attention: Lucia Cieszlak
Director of Purchasing
1200 Old Decatur Rd., Business Building #6
Fort Worth, Texas 76179

- 1.7 All questions regarding this invitation **must be submitted in writing** (email preferred) to Lucia Cieszlak (lcieszlak@ems-isd.net). Requests for information and/or interpretation must be received on or before seven (7) calendar days prior to the opening date. Only questions answered by formal written addenda will be binding.
- 1.8 Addenda will be posted on the Eagle Mountain-Saginaw ISD website ([www.emsisd.com/Departments/Purchasing/Bid Opportunities](http://www.emsisd.com/Departments/Purchasing/Bid%20Opportunities)). It is the responsibility of each proposer to obtain all addenda that pertain to this CSP. **Proposers who submit a CSP without acknowledging receipt of all addenda issued may be deemed to have submitted a CSP not responsive to this solicitation.** Failure to receive such addenda does not relieve proposer from any obligation under the CSP submitted. All formal written addenda become a part of the CSP documents. Proposers shall acknowledge receipt of all addenda on the Proposal Form and in the CSP Response Form.
- 1.9 CSPs must remain open for acceptance for a period of **sixty (60) days** subsequent to the opening of CSPs, unless otherwise indicated, to allow time for the offer(s) to be evaluated and Board of Trustees action, if required.
- 1.10 All Proposers must execute the forms enclosed (or otherwise requested herein) for the CSP to be considered responsive. The name of the company representative on these forms should be the same. All supplemental information required by the CSP Form must be included with the CSP. Failure to provide complete and accurate information may disqualify the proposer.
- 1.11 On August 7, 2015, the Texas Ethics Commission adopted updated Forms CIS and CIQ as required by H.B. 23, 84TH Leg., Regular Session, which becomes effective September 1, 2015. Failure to abide by these new statutory requirements can result in possible criminal penalties. Vendors that do business with a school district are required to file a questionnaire to identify any potential conflicts of interest. The CONFLICT OF INTEREST QUESTIONNAIRE can be downloaded from the District internet/web address at <http://www.emsisd.com/Page/344> or the Texas Ethics Commission web address at https://www.ethics.state.tx.us/filinginfo/conflict_forms.htm.
Note: The Eagle Mountain-Saginaw Independent School District will not provide any further interpretation or information regarding these new requirements under House Bill No. 23.
- 1.12 In 2015, the Texas Legislature adopted House Bill 1295 – Certificate of Interested Parties. EM-S ISD may not enter into certain contracts with a business entity unless the business entity submits a disclosure of interested parties to EM-S ISD at the time the business entity submits the signed contract. Additional information is available on the Texas Ethics Commission website at https://www.ethics.state.tx.us/whatsnew/elf_info_form1295.htm. Use the CSP number as the “Contract ID number” and the title of the CSP for the “Description of Goods and Services.”

- 1.13 Pursuant to Texas Government Code, Chapter 2270, as amended, if Contractor is a for-profit organization, association, corporation, partnership, joint venture, limited partnership, limited liability partnership, or limited liability company, including a wholly owned subsidiary, majority-owned subsidiary, parent company, or affiliate of those entities or business associations (specifically excluding sole proprietorships) that exists to make a profit which has ten (10) or more full-time employees and the value of the contract with Owner is \$100,000 or more, the Contractor represents and warrants to the Owner that the Contractor does not boycott Israel and will not boycott Israel during the term of this Agreement. Note: On April 25, 2019, the U.S. District Court for the Western District of Texas entered a preliminary injunction enjoining the enforcement of the above clause in any state contract. Texas Government Code, Chapter 2270 has been amended since the date of the injunction and the requirement of the statute is included above in its amended form. As the statute may not cure the entire breadth of issues addressed by injunction, the Owner does not intend to seek enforcement of this this statute until further order of this or higher court having jurisdiction over the issue.
- 1.14 The Proposer verifies that neither the company, nor any subsidiaries, nor entities under common control, are included in or identified on a list maintained by the Texas Comptroller's Office as a "terrorist organization".
- 1.15 Pursuant to Texas Government Code Chapter 2272, the District is prohibited from contracting with any abortion provider or an affiliate of an abortion provider whereby the provider or affiliate receives something of value derived from state or local tax revenue. Any contract entered into by the District is void if the prospective vendor has such a prohibited affiliation or contractual relationship. By submitting a proposal in response to the request for proposal, you are certifying to the District that you do not have such an affiliation or contractual relationship.
- 1.16 Contractor is required to make any information created or exchanged with the state pursuant to this contract, and not otherwise excepted from disclosure under the Texas Public Information Act, available in a format that is accessible by the public at no additional charge to the state.
- 1.17 The requirements of Subchapter J, Chapter 552, Government Code, may apply to this CSP and the proposer agrees that the CSP can be terminated if the proposer knowingly or intentionally fails to comply with the requirements of that subchapter.
- 1.18 It is the intent of the Eagle Mountain-Saginaw Independent School District to foster utilization of historically underutilized businesses (HUBS) including Disadvantaged/Minority/Women-Owned Business Enterprises in its procurement activities. The District is particularly interested in receiving CSPs directly from HUBS or from joint ventures involving HUB representation.
- 1.19 It is the policy of the Eagle Mountain-Saginaw Independent School District not to discriminate on the basis of sex, disability, race, color, or national origin in its educational programs and/or activities, nor in its employment practices.
- 1.20 In order to ensure the integrity of the selection process, Proposer's employees, officers, agents, or other representatives shall not lobby or attempt to influence a vote or recommendation related to the Proposer's response, directly or indirectly, through any contact with school board members or other district officials from the date this CSP is released until the award.

- 1.21 This CSP is subject to cancellation by the District if any person significantly involved in initiating, negotiating, securing, drafting, or creating the offer on behalf of Eagle Mountain-Saginaw Independent School District, is at any time while the CSP is in effect, an employee of any other party to the CSP in any capacity or a consultant to any other party of the CSP with respect to the subject matter of the CSP.
- 1.22 Any board member who has any substantial interest, either direct or indirect, in any business entity seeking to contract with the District, shall, before any vote or decision on any matter involving the business entity, file an affidavit stating the nature and extent of interest and shall abstain from any participation in the matter. This is not required if the vote or decision will not have any special effect on the entity other than its effect on the public. However, if a majority of the governing body are also required to file, and do file similar affidavits, then the member is not required to abstain from further participation. Vernon's Texas Codes Annotated, Local Government Code, Ch. 171.
- 1.23 Contractors (owners, officers, employees, volunteers, etc.) may not work on district property where students may or may not be present when they have charges pending, have been convicted, received probation or deferred adjudication for the following:
- A. Any offense against a child
 - B. Any sex offense
 - C. Any crimes against persons involving weapons or violence
 - D. Any felony offense involving controlled substances
 - E. Any felony offense against property
 - F. Any other offense the District believes might compromise the safety of students, staff, or property
- 1.24 It is the responsibility of the Contractors, subcontractors and their employees to comply with Senate Bill 9 – Fingerprinting-based criminal background checks. Upon request, all contractors, subcontractors and their employees must submit to the Eagle Mountain-Saginaw ISD, proof of a satisfactory criminal record history of all individuals working on District property through background checks conducted as required by Senate Bill 9. The criminal record history must be obtained by the successful proposer before any work is performed. The information regarding the requirements for conducting a criminal records check is posted on The Texas Department of Public Safety's website, www.txdps.state.tx.us by clicking open Crime Records.
- 1.25 Use or possession of weapons, fire arms, tobacco, alcohol beverages, controlled substances, and/or drugs, even in vehicles, is strictly prohibited on school district property. Any harassment of employees, students, or volunteers is also strictly prohibited.

1.26 Contractors, subcontractors and their employees who perform work inside the EMSISD facilities are hereby notified that our buildings may contain asbestos containing materials. This notification is required by both the State of Texas Department of State Health Services and the Federal EPA Asbestos regulations. These guidelines cover both EMSISD's responsibilities and the Employer's responsibility to their employees. As a Contractor, subcontractor or their employee it is your responsibility to check each building prior to performing any work in that facility. These building materials may include but are not limited to: ceiling tile, floor tile and mastic, sheetrock, tape and bed compound, thermal pipe insulation, spray-on ceiling material, calks, and roofing products. As there have been numerous asbestos containing products manufactured over the years, you must check each building's Asbestos Management Plan. This plan is normally kept in the main office. Check with the school secretary and she will allow you to look at it. It is the vendor's responsibility to notify all employees working for them that EMSISD facilities may contain asbestos and where their employees may find the facility's Asbestos Management Plan. Again, it is the Contractor's, subcontractor's, and their employee's responsibility to check the Asbestos Management Plan for each facility prior to working in the facility and then to notify their employees performing the actual work. The information is found in section eight (8) for all asbestos that are remaining in the building. If after looking in the Asbestos Management Plan you are uncertain about whether the area you will be working in contains asbestos or not, please contact Clete Welch, Chief Operating Officer, at 817-306-0864 for further assistance.

SECTION 2 - CSP REQUIREMENTS AND CONDITIONS

2.1 WITHDRAWING CSP

- 2.1.1 CSPs deposited with the Eagle Mountain-Saginaw Independent School District (hereinafter called "EMSISD" or "District") can be withdrawn, upon written request, prior to the time set for opening CSPs. A CSP may not be withdrawn after the CSPs have been opened, and the Proposer, by submitting a CSP, warrants and guarantees that the CSP has been carefully reviewed and checked and that it is in all things true and accurate and free of mistakes.
- 2.1.2 CSPs cannot be altered or amended after opening time. Any alterations made before opening time must be initialed by proposer or his/her authorized agent.

2.2 CONSIDERATION OF CSP

- 2.2.1 **CSPs must be signed, sealed and delivered to the Eagle Mountain-Saginaw Independent School District Purchasing Department office PRIOR TO the CSP due date and time. Unsigned, unsealed or late CSPs will not be considered.** After CSPs are opened and publicly read aloud, the CSPs will be tabulated for comparison on the basis of the CSP prices and quantities shown in the CSP.
- 2.2.2 The Eagle Mountain-Saginaw Independent School District Board of Trustees reserves the right to reject any or all CSPs, to waive technicalities, and to re-advertise for new CSPs, or proceed to do the work otherwise in the best interests of the District.

- 2.2.3 CSPs received after the date and time specified **will not** be considered. The Purchasing Department will notify those firms submitting late CSPs and will hold documents for pick-up for five (5) business days following late CSP notification. **All late CSPs which are not picked up by the Proposer within five business days will be discarded.**
- 2.2.4 Any and all protests regarding EMS ISD proposal procedures will be governed by the Eagle Mountain-Saginaw Independent School District Procedure for Protests.

2.3 IRREGULAR CSP

- 2.3.1 CSPs will be considered irregular if they show any omissions, alterations of form, additions, or conditions not called for, unauthorized alternate CSPs, failure to return all forms and copies, or irregularities of any kind. However, the District reserves the right to waive any irregularities and to make the award in the best interests of the District.

2.4 REJECTION OF CSP

- 2.4.1 The District reserves the right to reject any or all CSPs, and all CSPs submitted are subject to this reservation. CSPs may be rejected, among other reasons, for any of the following specific reasons:
- A. CSP received after the time limit for receiving proposals as stated in the advertisement.
 - B. CSP containing any irregularities.
 - C. Unbalanced value of any items.
 - D. Improper or insufficient CSP guaranty, if required.
 - E. Where the Proposer, any Sub-contractor or Supplier, or the surety on any bond given, or to be given, is in litigation with the District or where such litigation is contemplated or imminent, in the sole opinion of the District.

2.5 DISQUALIFICATION OF PROPOSERS

- 2.5.1 Proposers may be disqualified and their CSPs not considered, among other reasons, for any of the following specific reasons:
- A. Reason for believing collusion exists among the Proposers.
 - B. Reasonable grounds for believing that any Proposer is interested in more than one CSP for the work contemplated.
 - C. Where the Proposer, any Sub-contractor or Supplier, or the surety on any bond given, or to be given, is in litigation with the District or where such litigation is contemplated or imminent, in the sole opinion of the District.
 - D. The Proposer being in arrears on any existing Contract or having defaulted on a previous Contract.

- E. Lack of competency as revealed by pertinent factors, including but not necessarily limited to, experience and equipment, financial statement and questionnaires.
- F. Uncompleted work that in the judgment of the District will prevent or hinder the prompt completion of additional work if awarded.
- G. Where the Proposer has failed to perform in a satisfactory manner on a previous Contract.

2.6 CONFIDENTIAL OR PROPRIETARY MARKINGS

- 2.6.1 Any portion of the CSP that Proposer considers confidential or proprietary information, or to contain trade secrets of Proposer, must be marked accordingly. This marking must be explicit as to the designated information. This designation may not necessarily guarantee the non-release of the information under the Public Information Act or as otherwise required by law, but does provide the District with a means to review the issues thoroughly and, if justified, request an opinion by the Attorney General's office prior to releasing any information requested under the Public Information Act.

SECTION 3 - GENERAL TERMS AND CONDITIONS

3.2 TAX EXEMPT STATUS

- 3.2.1 The Eagle Mountain-Saginaw Independent School District is exempt from Federal Excise Tax. **DO NOT INCLUDE TAX IN CSP PRICES.** Excise Tax Exemption Certificate will be furnished upon request. EMSISD Federal ID Number is 75-6004855.

3.3 RIGHTS TO INSPECT AND AUDIT

- 3.3.1 The Contractor (and Contractor's suppliers, vendors, sub-contractors, insurance agents, and other agents) shall maintain and the District shall have the right to examine records, documents, books, accounting procedures and practices and any other supporting evidence deemed necessary by the District to substantiate compliance with the terms of this agreement. Such right of examination shall include reasonable access to and cooperation by all Contractor personnel who have worked on or have knowledge related to the performance of this CSP. Proprietary/Trade Secret information pertaining to this CSP may not be withheld from the District or its Authorized Representative.

3.4 CONTRACTOR RESPONSIBILITIES

- 3.4.1 The Contractor shall be fully responsible for the quality and accuracy of any and all Work performed in conjunction with this CSP. Neither acceptance of such Work by the District, nor payment therefore, shall relieve the Contractor of this responsibility. If and when applicable, the Contractor shall complete all services in conformity with professional standards, and shall provide qualified personnel to meet agreed upon schedules.

3.5 GRATUITIES

3.5.1 The District may, by written notice to the Contractor, cancel this CSP without liability to Contractor if it is determined by the District that gratuities, in the form of entertainment, compensation, gifts, or otherwise, were offered or given by the Contractor, or any agent or representative of the Contractor, to any Board Member, officer, or employee of the Eagle Mountain-Saginaw Independent School District with a view toward securing a CSP or securing favorable treatment with respect to the awarding or amending, or the making of any determinations with respect to the performing of such an agreement.

3.6 JURISDICTION

3.6.1 The Contract resulting from this CSP shall be enforceable in Tarrant County, Texas, and if legal action is necessary by either party with respect to the enforcement of any and all of its terms and conditions, exclusive venue for same shall lie in state courts in Tarrant County, Texas.

3.7 INDEMNIFICATION AND HOLD HARMLESS

3.7.1 The Contractor shall defend, indemnify, and hold harmless the Eagle Mountain-Saginaw Independent School District, all of its officers, agents and employees from and against all claims, actions, suits, demands, proceedings, costs, damages, and liabilities, arising out of, connected with, or resulting from any acts or omissions of Contractor or any agent, employee, sub-contractor, or supplier of Contractor in the execution or performance of this CSP

SECTION 4 - CSP EVALUATION CRITERIA

- 4.1 In evaluating CSPs submitted and per Government Code 2269.055, the following considerations may be taken into account in determining the award.
- 4.2 In determining the Selected Offeror, the Owner will evaluate the information derived from the Offeror's (Contractor's) Qualification Statement (AIA Document A305) required herein, the information submitted on the Proposal Form, and other selection criteria including the following Evaluation Criteria:

RATING CATEGORY VALUE	
Proposed Construction Contract Amount	40.00
Proposed Construction Contract Time	5.00
TAB 2 – Schedule	10.00
TAB 3 – Key Project Personnel	10.00
TAB 4 - Subcontractors	10.00
TAB 5 – Project Experience	10.00
TAB 6 - Financial Background	5.00
TAB 7 - Claims and Suits	2.00
TAB 8 - Quality Control Program	2.00
<u>TAB 9 - Project Approach</u>	<u>6.00</u>
TOTAL OF WEIGHTED VALUE	100.00

DOCUMENT 00 42 00

PART “A” PROPOSAL FORM - BASE PROPOSAL

NEW CENTRAL ADMINISTRATION BUILDING
EAGLE MOUNTAIN-SAGINAW ISD
FORT WORTH, TEXAS

PROPOSAL OF: _____
(Name) (Date)

TO: Lucia Cieszlak
Director of Purchasing
Eagle Mountain-Saginaw Independent School District
1200 Old Decatur Rd., **Business Building #6**
Fort Worth, Texas 76179

Dear Madam:

Having examined the drawings, project manual, and related documents and having inspected the site of proposed Work, I (we) agree to furnish all labor, materials, and to perform all work described in the specifications and shown on the drawings for the sum of:

BASE PROPOSAL: For complete construction, including General, Mechanical, Plumbing, and Electrical Work, for the sum of:

_____ DOLLARS
(\$_____).

LINE ITEM COST: Provide a separate line Item cost for the Centralized Battery System, inclusive of all exit signs and emergency fixtures in high volume spaces, as defined in Specification Section 26 52 00 Emergency Lighting. Pricing shall be separate from the remainder of the interior lighting fixture and fixture control package pricing. This amount is NOT INCLUDED in the Base Proposal Amount.

_____ DOLLARS
(\$_____).

ALLOWANCES: The above base proposal includes all allowances listed in Section 01 21 00 - Allowances.

NOTE: Amounts shall be shown in both words and figures. In case of discrepancy, the amount shown in words shall govern.

UNIT PRICES: For changing quantities of work items from those indicated by the drawings, the following unit prices shall prevail:

PIERS	SIZE	EXTRA	CREDIT
Drilled piers, per linear foot including drilling, reinforcing, and concrete.	_____ dia.	\$ _____	\$ _____
	_____ dia.	\$ _____	\$ _____
	_____ dia.	\$ _____	\$ _____
	_____ dia.	\$ _____	\$ _____
	_____ dia.	\$ _____	\$ _____

PIER CASING	SIZE	EXTRA	CREDIT
Casing for drilled piers, per linear foot.	_____ dia.	\$ _____	\$ _____
	_____ dia.	\$ _____	\$ _____
	_____ dia.	\$ _____	\$ _____
	_____ dia.	\$ _____	\$ _____
	_____ dia.	\$ _____	\$ _____

SOIL STABILIZATION	UNIT	EXTRA	CREDIT
Lime based soil stabilization	Sq.Yd.	\$ _____	\$ _____

Note: Each unit price for CREDIT shall be at least 66% of the corresponding unit price for EXTRA.

The undersigned agrees, if this proposal is accepted, to commence work on or before a date to be established in the written "Notice-to-Proceed" of the Owner and to attain substantial completion of all Work within _____ consecutive calendar days, subject to extensions of time as described in Article 8.3 of the General Conditions.

The undersigned further agrees that, from the compensation otherwise to be paid, the Owner may retain the sum of \$1,500.00 for each calendar day after the Substantial Completion date that the Work remains incomplete and the sum of \$1,500.00 for each calendar day after the Final Completion date that the Work remains incomplete, which sum is agreed upon as the proper measure of liquidated damages which the Owner will sustain per diem by the failure of the undersigned to complete the Work at the time stipulated in the contract. Damages for failure to achieve Substantial Completion and failure to achieve Final Completion may run concurrently. These sums are not to be construed in any sense a penalty.

I (we) acknowledge receipt of the following addenda:

Addendum No. 1 Dated _____ Addendum No. 4 Dated _____

Addendum No. 2 Dated _____ Addendum No. 5 Dated _____

Addendum No. 3 Dated _____ Addendum No. 6 Dated _____

Upon receipt of notice of acceptance of this proposal within 60 days after the opening of proposals, I (we) agree to execute formal contract forms, acceptable surety bonds, and required insurance certificates within 10 days of the Notice of Award of the Contract.

Should I (we) fail to execute and deliver the Contract, along with the satisfactory surety bonds and insurance certification within the time set forth, the proposal security, attached hereto without endorsement, in the sum of:

_____ DOLLARS (\$_____).

shall become the property of Eagle Mountain-Saginaw Independent School District as liquidated damages for the delay caused and the additional work required.

Respectfully submitted, (Signature)

By (Please Print or Type)

Title

Contractor

Business Address

Telephone Number FAX Number

Indicate whether - Individual
Partnership
Corporation

ATTEST:

Secretary

FORM A

CSP RESPONSE FORM

The undersigned, in submitting this CSP and endorsement of same, represents that he/she is authorized to obligate his/her firm, that he/she is an equal opportunity employer and will not discriminate with regard to race, color, religion, sex, national origin, age or disability unrelated to job performance of this CSP; that he/she will abide by all the policies and procedures of EM-S ISD; and that he/she has read this entire CSP package, is aware of the covenants contained herein and will abide by and adhere to the expressed requirements in **ALL** sections of this CSP.

Failure to manually sign this CSP Response Form will be reason for the CSP to be rejected.

SUBMITTED BY:

Firm: _____
(OFFICIAL Firm Name)

***MUST BE SIGNED IN INK TO BE
CONSIDERED RESPONSIVE***

By:  _____
(Original Signature)

Name
: _____
(Typed or Printed Name)

Title: _____
(Type or Printed Title)

(Date)

Contact
Representativ _____

Address: _____

City/ST/Zip: _____

Phone #: _____ Fax #: _____

Email: _____

***NOTE: Submit copy of Bidder's/
Proposer's current W-9 Form***

Taxpayer Identification #: _____

FORM B

DEVIATION/COMPLIANCE SIGNATURE FORM

If the undersigned Firm intends to deviate from the Specifications listed in this CSP document, all such deviations must be listed on this page, with complete and detailed conditions and information included or attached. The District will consider any deviations in its CSP award decisions, and the District reserves the right to accept or reject any CSP based upon any deviations indicated below or in any attachments or inclusions.

In the absence of any deviation entry on this form, the Firm assures the District of his/her full compliance with the Terms and Conditions, Specifications, and all other information contained in this CSP document.

No Deviation

Yes Deviations

Firm's Name: _____

Authorized Company Official's Name: _____
(Typed or printed)

Title of Authorized Representative: _____
(Typed or printed)

Signature of Authorized Company Official: _____

Date Signed: _____

If yes is checked, please list below. Attach additional sheet(s) if needed.

NON-COLLUSION STATEMENT

“The undersigned affirms that he/she is duly authorized to execute this CSP, that this company, corporation, firm, partnership or individual has not prepared this CSP in collusion with any other proposer, and that the contents of this CSP as to prices, terms or conditions of said CSP have not been communicated by the undersigned nor by any employee or agent to any other person engaged in this type of business prior to the official opening of this CSP.”

Firm’s Name: _____

Authorized Company Official’s Name: _____
(Typed or printed)

Title of Authorized Representative: _____
(Typed or printed)

Signature of Authorized Company Official: _____

Date Signed: _____

Firm hereby assigns to purchaser any and all claims for overcharges associated with this CSP which arise under the antitrust laws of the United States, 15 USCA Section 1 and which arise under the antitrust laws of the State of Texas, Business and Commerce Code, Section 15.01.

CRIMINAL BACKGROUND CHECK AND FELONY CONVICTION NOTIFICATION

(a) CRIMINAL BACKGROUND CHECK

Firm will obtain history record information that relates to an employee, applicant for employment, or agent of the Firm if the employee, applicant, or agent has or will have continuing duties related to the contracted services; and the duties are or will be performed on school property or at another location where students are regularly present. The Firm certifies to the EMSISD before beginning work and at no less than an annual basis thereafter that criminal history record information has been obtained. Firm shall assume all expenses associated with the background checks, and shall immediately remove any employee or agent who was convicted of a felony, or misdemeanor involving moral turpitude, as defined by Texas law, from EMSISD’s property or other location where students are regularly present. EMSISD shall be the final decider of what constitutes a “location where students are regularly present.” Firm’s violation of this section shall constitute a material breach and default.

(b) FELONY CONVICTION NOTIFICATION

Texas Education Code, Section 44.034, Notification of Criminal History, Subsection (a), states, “a person or business entity that enters into a contract with a school district must give advance notice to the District if the person or owner or operator of the business entity has been convicted of a felony.” The notice must include a general description of the conduct resulting in the conviction of a felony.

Subsection (b) states, “a school district may terminate a contract with a person or business entity if the district determines that the person or business entity failed to give notice as required by Subsection (a) or misrepresented the conduct resulting in the conviction.” The district must compensate the person or business entity for services performed before the termination of the contract.

THE FELONY CONVICTION NOTICE IS NOT REQUIRED OF A PUBLICLY-HELD CORPORATION.

I, the undersigned agent for the firm named below, certify that the information concerning criminal background check and notification of felony convictions has been reviewed by me, the following information furnished is true to the best of my knowledge, and I acknowledge compliance with this section.

Firm’s Name: _____

Authorized Company Official’s Name: _____
(please print clearly or type)

A. My firm is a publicly-held corporation; therefore, this reporting requirement is not applicable:

Signature of Company Official: _____ Date: _____

B. My firm is not owned nor operated by anyone who has been convicted of a felony.

Signature of Company Official: _____ Date: _____

C. My firm is owned or operated by the following individual(s) who has/have been convicted of a felony:

Name of Felon(s): _____

Details of Conviction(s): _____

Signature of Company Official: _____ Date: _____

FORM D – CONTINUED

PAGE 2/2

Contractor is responsible for the performance of the persons, employees and/or sub-contractors Contractor assigns to provide services for the Eagle Mountain-Saginaw ISD pursuant to this CSP on any and all Eagle Mountain-Saginaw ISD campuses or facilities. Contractor will not assign individuals to provide services at an Eagle Mountain-Saginaw ISD campus or facility who have a history of violent, unacceptable, or grossly negligent behavior or who have a felony conviction, without the prior written consent of the Eagle Mountain-Saginaw ISD Purchasing Department.

FORM E

NONRESIDENT BIDDER’S CERTIFICATION

Texas Government Code Chapter 2252 relates to bids by nonresident contractors. The pertinent portions of the Act are as follows:

Section 2252.001(3)

“Nonresident bidder” means a bidder who is not a resident.

Section 2252.001(4)

“Resident bidder” means a bidder whose principal place of business is in this state, including a contractor whose ultimate parent company or majority owner has its principal place of business in this state.

Section 2252.002

A governmental entity may not award a governmental contract to a nonresident bidder unless the nonresident underbids the lowest bid submitted by a responsible resident bidder by an amount that is not less than the amount by which a resident bidder would be required to underbid the nonresident bidder to obtain a comparable contract in the state in which the nonresident’s principal place of business is located.

I certify that _____ is a

Resident Bidder of Texas as defined in Texas Government Code Section 2252.001(4)

Signature of Authorized Company Official: _____

Authorized Company Official’s Name: _____



I certify that _____ is a

Nonresident Bidder of Texas as defined in Texas Government Code Section 2252.001(3) and our principal place of business is:

City and State: _____

Signature of Authorized Company Official: _____

Authorized Company Official’s Name: _____

FORM F

DEBARMENT OR SUSPENSION CERTIFICATION FORM

Non-Federal entities are prohibited from contracting with or making sub-awards under covered transaction to parties that are suspended or debarred or whose principals are suspended or debarred. Covered transactions include procurement of goods or services equal to or in excess of \$100,000. Contractors receiving individual awards of \$100,000 or more and all sub-recipients must certify that the organizations and its principals are not suspended or debarred.

By submitting this offer and signing this certificate, this Firm:

- (1) Certifies that no suspension or debarment is in place, which would preclude receiving a federally funded contract under the Federal OMB, A-102, common rule.

Firm's Name: _____

Authorized Company Official's Name: _____
(Typed or printed)

Title of Authorized Representative: _____
(Typed or printed)

Signature of Authorized Company Official: _____

Date Signed: _____

FORM G

COMPLIANCE WITH HOUSE BILL 1295

CERTIFICATE OF INTERESTED PARTIES

In 2015, the Texas Legislature adopted House Bill 1295, which added section 2252.908 of the Government Code. The law states that a governmental entity or state agency may not enter into certain contracts with a business entity unless the business entity submits a disclosure of interested parties to the governmental entity or state agency at the time the business entity submits the signed contract to the governmental entity or state agency.

The law applies only to a contract of a governmental entity or state agency that either (1) requires an action or vote by the governing body of the entity or agency before the contract may be signed or (2) has a value of at least \$1 million. The disclosure requirement applies to a contract entered into on or after January 1, 2016.

A business entity must use the application available on the website of the Texas Ethics Commission (https://www.ethics.state.tx.us/whatsnew/elf_info_form1295.htm) to enter the required information on Form 1295 and print a copy of the completed form, which will include a certification of filing that will contain a unique certification number. An authorized agent of the business entity must sign the printed copy of the form and have the form notarized. The completed Form 1295 with the certification of filing must be filed with the governmental body or state agency with which the business entity is entering into the contract. The governmental entity or state agency must notify the commission, using the commission’s filing application, of the receipt of the filed Form 1295 with the certification of filing not later than the 30th day after the date the contract binds all parties to the contract. The commission will post the completed Form 1295 to its website within seven business days after receiving notice from the governmental entity or state agency.

The undersigned acknowledges that if awarded this contract they will comply with the requirements on House Bill 1295.

Firm’s Name: _____

Name of Authorized Company Official: _____
(Typed or printed)

Title of Authorized Company Official: _____
(Typed or printed)

Signature of Authorized Company Official: _____

Date Signed: _____

FORM H

CONFLICT OF INTEREST QUESTIONNAIRE -FORM CIQ

<p>CONFLICT OF INTEREST QUESTIONNAIRE</p> <p>For vendor doing business with local governmental entity</p>	<p>FORM CIQ</p>
<p>This questionnaire reflects changes made to the law by H.B. 23, 84th Leg., Regular Session.</p> <p>This questionnaire is being filed in accordance with Chapter 176, Local Government Code, by a vendor who has a business relationship as defined by Section 176.001(1-a) with a local governmental entity and the vendor meets requirements under Section 176.006(a).</p> <p>By law this questionnaire must be filed with the records administrator of the local governmental entity not later than the 7th business day after the date the vendor becomes aware of facts that require the statement to be filed. See Section 176.006(a-1), Local Government Code.</p> <p>A vendor commits an offense if the vendor knowingly violates Section 176.006, Local Government Code. An offense under this section is a misdemeanor.</p>	<p>OFFICE USE ONLY</p>
<p>1 Name of vendor who has a business relationship with local governmental entity.</p>	<p>Date Received</p>
<p>2 <input type="checkbox"/> Check this box if you are filing an update to a previously filed questionnaire. (The law requires that you file an updated completed questionnaire with the appropriate filing authority not later than the 7th business day after the date on which you became aware that the originally filed questionnaire was incomplete or inaccurate.)</p>	
<p>3 Name of local government officer about whom the information is being disclosed.</p> <p style="text-align: center;">_____</p> <p style="text-align: center;">Name of Officer</p>	
<p>4 Describe each employment or other business relationship with the local government officer, or a family member of the officer, as described by Section 176.003(a)(2)(A). Also describe any family relationship with the local government officer. Complete subparts A and B for each employment or business relationship described. Attach additional pages to this Form CIQ as necessary.</p> <p style="margin-left: 40px;">A. Is the local government officer or a family member of the officer receiving or likely to receive taxable income, other than investment income, from the vendor?</p> <p style="margin-left: 80px;"><input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p style="margin-left: 40px;">B. Is the vendor receiving or likely to receive taxable income, other than investment income, from or at the direction of the local government officer or a family member of the officer AND the taxable income is not received from the local governmental entity?</p> <p style="margin-left: 80px;"><input type="checkbox"/> Yes <input type="checkbox"/> No</p>	
<p>5 Describe each employment or business relationship that the vendor named in Section 1 maintains with a corporation or other business entity with respect to which the local government officer serves as an officer or director, or holds an ownership interest of one percent or more.</p>	
<p>6 <input type="checkbox"/> Check this box if the vendor has given the local government officer or a family member of the officer one or more gifts as described in Section 176.003(a)(2)(B), excluding gifts described in Section 176.003(a-1).</p>	
<p>7</p> <p style="text-align: center;">_____</p> <p style="text-align: center;">Signature of vendor doing business with the governmental entity</p> <p style="text-align: right; margin-right: 100px;">_____</p> <p style="text-align: right; margin-right: 100px;">Date</p>	

FORM I

NOTIFICATION OF HAZARDOUS MATERIALS AFFIDAVIT

STATE OF TEXAS

_____ COUNTY

Before me, undersigned authority on this day personally appeared _____, _____ known to me to be the person whose name is subscribed below, who, on oath stated:

"As the appropriate official of the company, contractor, or subcontractor submitting this affidavit in conjunction with a CSP submitted to the Eagle Mountain-Saginaw ISD, I acknowledge that this company, contractor, or subcontractor has been notified that copies of the Asbestos Hazard Emergency Response Act (AHERA) for the school(s) where such company, contractor or subcontractor has been contracted to perform work are available at the Eagle Mountain-Saginaw ISD, Fort Worth, Texas. I understand that it is our responsibility to familiarize ourselves with such plans and that it is our responsibility to inform every worker that we use on this project as to the availability of these plans.

We also acknowledge that we will be required to obtain clearance from the Eagle Mountain-Saginaw ISD, prior to executing any work on this project."

Name of Company: _____

By: _____

Title: _____

STATE OF TEXAS

COUNTY OF _____

Sworn to and subscribed before my hand at _____, Texas this the _____ day of _____, 20____, A.D.

Notary Public in and for _____ County, Texas

FORM J

COMPLIANCE WITH HOUSE BILL 89, SENATE BILL 252, AND SENATE BILL 22

PROHIBITION ON CONTRACTS WITH COMPANIES BOYCOTTING ISRAEL (HB 89)

Pursuant to Texas Government Code, Chapter 2270, as amended, if Contractor is a for-profit organization, association, corporation, partnership, joint venture, limited partnership, limited liability partnership, or limited liability company, including a wholly owned subsidiary, majority-owned subsidiary, parent company, or affiliate of those entities or business associations (specifically excluding sole proprietorships) that exists to make a profit which has ten (10) or more full-time employees and the value of the contract with Owner is \$100,000 or more, the Contractor represents and warrants to the Owner that the Contractor does not boycott Israel and will not boycott Israel during the term of this Agreement. **Note:** On April 25, 2019, the U.S. District Court for the Western District of Texas entered a preliminary injunction enjoining the enforcement of the above clause in any state contract. Texas Government Code, Chapter 2270 has been amended since the date of the injunction and the requirement of the statute is included above in its amended form. As the statute may not cure the entire breadth of issues addressed by injunction, the Owner does not intend to seek enforcement of this this statute until further order of this or higher court having jurisdiction over the issue.

PROHIBITION ON CONTRACTS WITH CERTAIN COMPANIES (SB 252)

The Proposer verifies that neither the company, nor any subsidiaries, nor entities under common control, are included in or identified on a list maintained by the Texas Comptroller’s Office as a “terrorist organization”.

PROHIBITION ON CONTRACTS WITH ABORTION PROVIDERS (SB 22)

Pursuant to Texas Government Code Chapter 2272, the District is prohibited from contracting with any abortion provider or an affiliate of an abortion provider whereby the provider or affiliate receives something of value derived from state or local tax revenue. Any contract entered into by the District is void if the prospective vendor has such a prohibited affiliation or contractual relationship. By submitting a proposal in response to the request for proposals, you are certifying to the District that you do not have such an affiliation or contractual relationship.

The undersigned acknowledges that if awarded this contract they will comply with the requirements on House Bill 89 and Senate Bill 252 above stated.

Firm’s Name: _____

Name of Authorized Company Official: _____
(Typed or printed)

Title of Authorized Company Official: _____
(Typed or printed)

Signature of Authorized Company Official: _____

Date Signed: _____

FORM K

CONTRACTOR DATA FORM

How long has the company been in business? _____

1. For Purchase Orders: ORDERING ADDRESS INFORMATION

Company Name: _____

Address: _____

Business Phone: _____

Fax: _____

Contact Person: _____

Email: _____

Does your company accept orders via email? Yes

No

If yes, what is the ordering email address? _____

2. For Payments: REMITTANCE ADDRESS INFORMATION

Company Name: _____

Address: _____

Business Phone: _____

Fax: _____

Contact Person: _____

Email: _____

3. For Bid Notifications: BID NOTICES ADDRESS INFORMATION

Company Name: _____

Address: _____

Business Phone: _____

Fax: _____

Contact Person: _____

Email: _____

SECTION 00 43 00

PART “B” PROPOSAL FORM - QUALIFICATIONS

NEW CENTRAL ADMINISTRATION BUILDING
EAGLE MOUNTAIN-SAGINAW ISD
FORT WORTH, TEXAS

PROPOSAL OF: _____
(Name) (Date)

TO: Lucia Cieszlak
Director of Purchasing
Eagle Mountain-Saginaw Independent School District
1200 Old Decatur Rd., Business Building #6
Fort Worth, Texas 76179

THE CONTRACTOR SHALL PROVIDE THE FOLLOWING INFORMATION IN THE SEQUENCE AND FORMAT PRESCRIBED HEREIN AND AS OUTLINED IN SECTION 00 21 16 - INSTRUCTIONS TO PROPOSERS, PROVIDING ADDITIONAL INFORMATION MAY BE ATTACHED, BUT THE INFORMATION REQUESTED BELOW IS TO BE PROVIDED IN THIS FORMAT AND TABBED AS NOTED.

TAB 1: FIRM INFORMATION

Name of Firm: _____
Address of Principal Office: _____
Phone Number: _____
Fax Number: _____
Email Address and/or Web Address: _____
Form of Business Organization (Corporation, Partnership, Limited Liability Partnership, Individual, Joint Venture, other): _____
Year Founded: _____ Primary individual to contact: _____

TAB 2: SCHEDULE:

The Proposer shall submit a schedule for this project.
State your organization's project plan or proposed approach to this project.
If selected, this proposed schedule shall become part of the Owner - Contractor Agreement, AIA Document A101-2007 under Article 9.1.7.

TAB 3: KEY PROJECT PERSONNEL:

Given the scope and schedule of the project, identify all proposed personnel for this project including but not limited to the Project Manager, Estimator, and Superintendent who would work on the project. Provide a resume and references for each individual. Note current projects on which individual is working including the project name, location, contract amount, percent complete, and the completion date of those projects. Also note the length of tenure with your company (hire date) for each proposed individual. Provide an organizational chart for this project noting whether the individual is On Site or Off Site. This organizational chart shall become part of the Owner-Contractor Agreement, AIA Document A101-2007 under Article 9.1.7. Members of the proposed team, once approved, shall not be changed without prior written approval of the Owner.

TAB 4: SUBCONTRACTORS:

Provide a list of all the major Subcontractors and Suppliers for each category listed below for this project.

- Earthwork
- Concrete
- Steel Fabrication
- Millwork/Casework
- Roofing
- Drywall
- Wood and Metal Ceilings
- Terrazzo Flooring
- Furniture
- Sprinkler System
- Mechanical (HVAC)
- Electrical
- Public Address
- Landscape and Irrigation
- Site Utilities
- Concrete Unit Masonry
- Stone Masonry
- Waterproofing
- Glass and Glazing
- Ceramic Tile/Quarry Tile
- Resilient Floor Covering/Carpet
- Painting
- Plumbing
- HVAC Controls
- Technology
- Fire Alarm
- Security
- Fiber Cement Siding

You may provide a maximum of three (3) proposed Sub-contractors for each category. However, no additional Sub-contractors will be considered after submission of this list.

Provide a resume and references for each firm and previous experience with the General Contractor. Only two (2) copies of the resumes are required. Provide resumes in a separate binder.

TAB 5: PROJECT EXPERIENCE:

List all educational projects and all other major projects constructed by your firm within the last five (5) years in similar scope and size to the project herein. For each project provide the name of the project; nature of the project/function of the building; size (square feet); locations; cost; completion date; name and contact person, address and phone number of both the Owner and Architect; and the manner in which your organization was selected (Bid, RFP, CM or other method).

TAB 6: FINANCIAL BACKGROUND:

Attach a financial statement, preferably audited, including your organization’s latest balance sheet and income statement showing the following items:

- Current assets (e.g., cash, joint venture accounts, accounts receivable, notes receivable, accrued income, deposits, materials inventory, and prepaid expenses).
- Non-current assets (e.g., net fixed assets, other assets).
- Current liabilities (e.g., accounts payable, notes payable (current), accrued expenses, provision for income taxes, advances, accrued salaries and accrued payroll taxes).
- Non-current liabilities (e.g., notes payable).
- Capital accounts and retained earnings (e.g., capital, capital stock, authorized and outstanding shares par value, earned surplus and retained earnings).

Name and address of firm preparing attached financial statement and date thereof.

Is the attached financial statement for the identical organization named under item 1 above? If not, explain the relationship and financial responsibility of the organization whose financial statement is provided (e.g., parent, and subsidiary).

Provide name, address, phone for bank reference.

Surety: Name of bonding company, name and address of agent. State total bonding capacity and total current bonding obligations with and without this project.

Please note that this information will be reviewed by the Owners Financial Officer or Consultant acting in that capacity.

TAB 7: CLAIMS AND SUITS:

List all lawsuits, requested arbitration and mediation with regard to construction contracts in the last ten (10) years.

List all judgments, claims, arbitration proceedings, mediation or suits pending or anticipated against your organization.

If your company has been in business less than ten (10) years then include any former company information if applicable.

TAB 8: QUALITY PROGRAM:

State your organization's overall approach to quality control for this project.

TAB 9: PROJECT APPROACH:

Preservation of the native vegetation is of high importance to Eagle Mountain-Saginaw ISD. Describe your plan for protecting and limiting disturbance of native vegetation and restoring the habitat. Describe the anticipated location of the lay-down yard and construction parking.

SECTION 00 43 93**PROPOSAL SUBMITTAL CHECKLIST**

To be considered a responsive CSP, all pages requiring signature, the Cover Page, and any/all attachments or documents requested, must be completed with all requested information, **SIGNED** and **RETURNED** sealed in an envelope or other appropriate package adequate to conceal and contain the contents prior to the CSP date and time.

Please verify that the documents listed below have been completed, signed, and included in your CSP prior to submittal. **FAILURE TO RETURN THESE DOCUMENTS MAY CAUSE YOUR CSP TO BE REJECTED.**

The following items are to be submitted to Eagle Mountain-Saginaw ISD on Tuesday, November 17, 2020 prior to 2:00 pm CST.

- Completed – EM-S ISD - Request for Competitive Sealed Proposals (RFCSP)
Cover Page (page 1 of 39)
- Completed - Document 00 42 00 - Part “A” Proposal Form - Base Proposal Form
- Completed - Bid Bond or Bid Security (Include Base Bid and all Alternates)
- Completed – CSP Response Form – Form A
- Completed – Deviation/Compliance – Form B
- Completed – Non-Collusion Statement – Form C
- Completed – Criminal Background Check and Felony Conviction Notification –
Form D
- Completed – Nonresident Bidder’s Certification – Form E
- Completed – Debarment or Suspension Certification – Form F
- Completed – Compliance with House Bill 1295 – Form G
- Completed – CIQ – Form H
- Completed – Notification of Hazardous Materials Affidavit – Form I
- Completed - Compliance with House Bill 89, Senate Bill 252, and Senate Bill 22
– Form J
- Completed – Contractor Data Form - Form K
- Any and all attachments as required in the CSP document
- W-9

PROPOSAL SUBMITTAL CHECKLIST (CONTINUED)

The following items are to be submitted to Eagle Mountain-Saginaw ISD on Wednesday, November 18, 2020 prior to 2:00 pm CST.

- Completed - Document 00 43 00 - Part “B” Proposal Form - Qualifications
- Completed – Contractor’s Qualification Statement - AIA Document A305

DOCUMENT 00 31 32

GEOTECHNICAL DATA

PART 1 - GENERAL

1.1 LOG OF BORINGS/CONTRACTOR RESPONSIBILITY

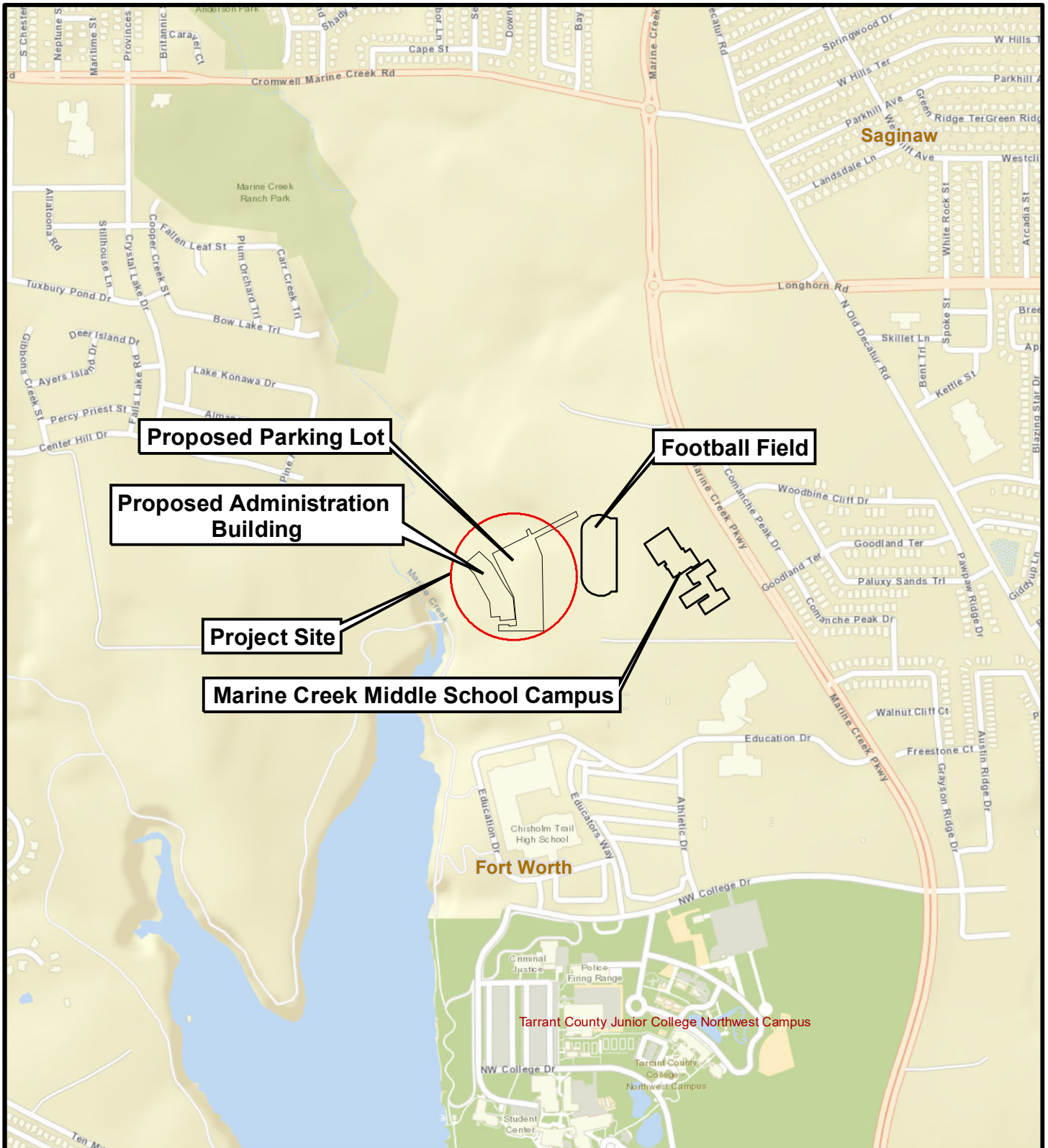
- A. A copy of the locations and log of borings is bound herein. Subsurface soil data derived from test borings are given only for the convenience of the Contractor, and neither the Owner nor the Architect assumes responsibility for the accuracy of or for the Contractor's interpretation of the data. Contractor is responsible for any conclusions drawn from the boring data and is responsible for the work without extra compensation irrespective of whether or not the subsurface conditions encountered agree with the boring data.

1.2 REPORT

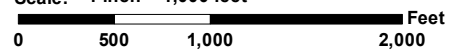
- A. The full geotechnical report prepared by the Owner's independent geotechnical and testing laboratory is available in the Architect's office for inspection by the Contractor.
- B. This geotechnical report is not a part of the Contract Documents.

END OF DOCUMENT

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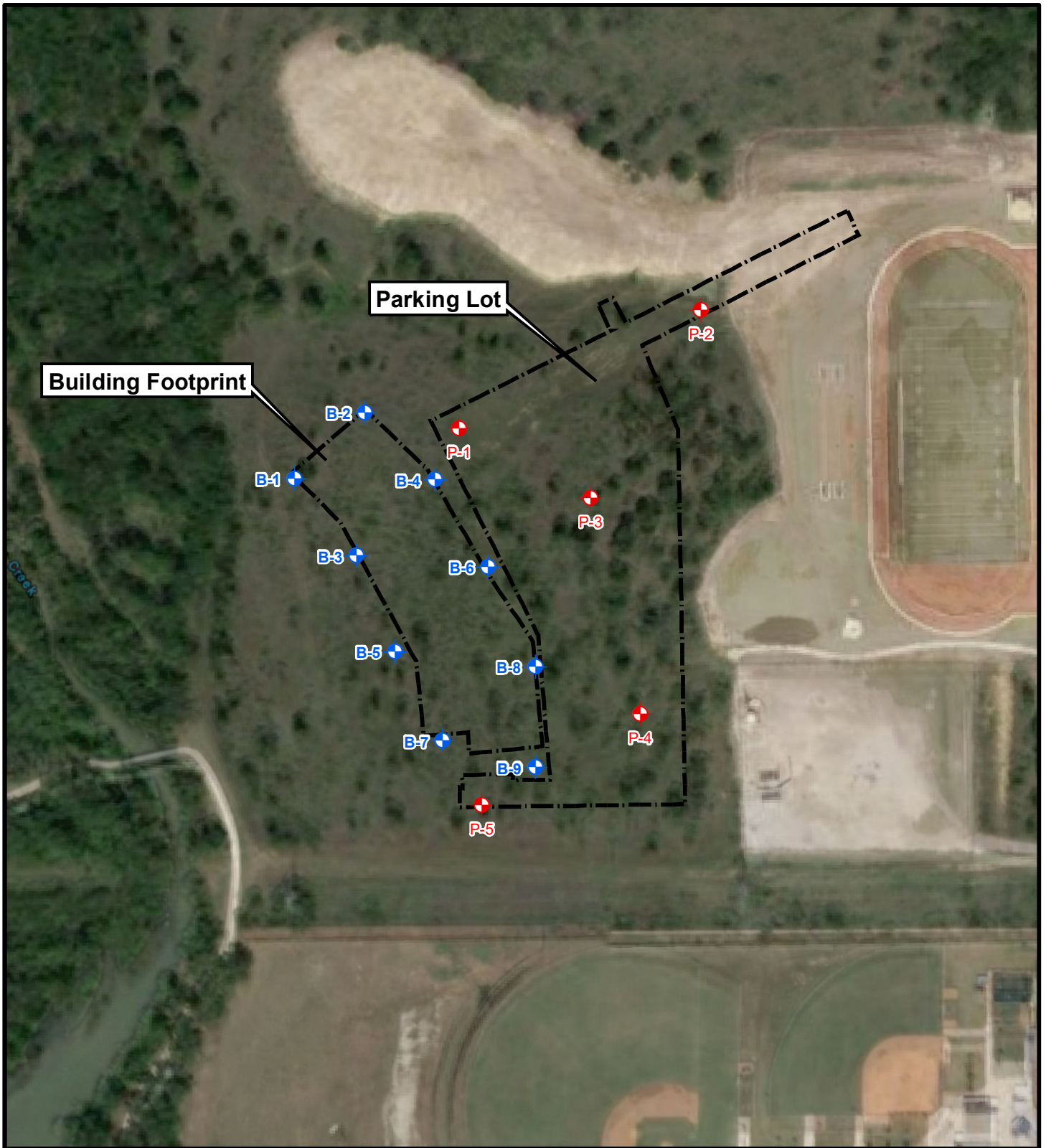
Scale: 1 inch = 1,000 feet





Coordinate System: State Plane Texas North Central FIPS 4202 Ft
Datum: D North American 1983



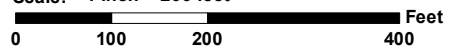
FUGRO	EMSISD Central Administration Building		VICINITY MAP	
	5825 Marine Creek Parkway		Fort Worth, Texas	
Source: Street map: ESRI ArcGIS Online, 2019	Drawn By: SG	Date: April 29, 2020	Project No.: 04.40201014	PLATE 1



Legend


-  Approximate Boring Locations (Pavement)
-  Approximate Boring Locations (Building)

Scale: 1 inch = 200 feet



Coordinate System: State Plane Texas North Central FIPS 4202 Ft
Datum: D North American 1983



	EMSISD Central Administration Building		SITE AND BORING PLAN	
	5825 Marine Creek Parkway		Fort Worth, Texas	
Source:	Drawn By:	Date:	Project No.:	PLATE 2
Orthophotography: Google Earth Pro, 2019	SG	April 29, 2020	04.40201014	

Appendix B – Field Exploration

Field exploration for the project was accomplished by advancing 14 borings to depths of 5 to 30 feet below the existing grades. The latitude and longitude of the boring locations were measured using a handheld GPS unit. The approximate locations of the borings are shown on Plate 2, Site and Boring Plan.

The borings were advanced using truck-mounted drilling rigs. Cohesive soil samples were obtained using 3-inch diameter tube samplers that were pushed into the soil. The consistency of cohesive soils was estimated in the field using a calibrated pocket penetrometer.

Hard material and granular soil samples were obtained with a 2-inch O.D. split-spoon sampler. The sampler is typically driven in three 6-inch intervals. The number of blows required for the last 12 inches of penetration or the penetration obtained from 50 blows of the hammer, whichever occurs first, is reported as the "N-value" on the boring logs.

Bedrock was evaluated in situ using TxDOT cone penetration tests (Tex-E-132).

Samples were extruded from the samplers in the field, visually classified, and sealed in plastic bags to prevent the loss of moisture or disturbance during their transfer to the laboratory. Upon completion of the field investigation, the borings were backfilled with soil cuttings. Logs of the borings drilled for this study with descriptions of the subsurface materials encountered are presented on Plates 3 through 16. A key to the terms and symbols used on the boring logs is presented on Plates 17 and 18.

FUGRO LOG UC SOIL & ROCK FUGRO DATA TEMPLATE 100610.GDT FUGRO LIBRARY 091119 - COPY.GLB I:\PROJECT FILES\PROJECTS-2020\20-1014 EMSISD CENTRAL ADMINISTRATION BUILDING\7. DRAFTING\GINT\0440201014.GPJ s.gautam 5/1

LOG OF BORING NO. B-1
EMSISD Central Administration Building
5825 Marine Creek Parkway
Fort Worth, Texas
PROJECT NO. 04.40201014

LATITUDE: 32.84251
 LONGITUDE: -97.39515

DEPTH, FT	SYMBOL	SAMPLES	POCKET PEN Blows/ft. REC./ROD, %	STRATUM DESCRIPTION	LAYER ELEV./ DEPTH	WATER CONTENT, %	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX (PI), %	PASSING NO. 200 SIEVE, %	UNIT DRY WEIGHT, PCF	COMPRESSIVE	
												SOIL (TSF)	ROCK (PSI)
				SURF. ELEVATION: Unknown									
			P = 2.5	LEAN CLAY (CL) , brown, moist, very stiff, with limestone fragments and trace of silt	1.5	23							
				WEATHERED LIMESTONE , tan, with clay seams									
5			N = 36										
			N = 50/4"			15							
10			100/4"										
				LIMESTONE , gray	11.5								
15			100/1.5"										
20			100/1.25"										
			100/1.25"		25.0								



COMPLETION DEPTH: 25.0
DATE DRILLED: 4-14-20
WATER LEVEL / SEEPAGE: DRY
WATER LEVEL (UPON COMPLETION): DRY

KEY:
 P = Pocket Penetrometer
 Note: All depths are measured in feet.
 N = Standard Penetration Resistance

PLATE 3

FUGRO LOG UC SOIL & ROCK FUGRO DATA TEMPLATE 100610.GDT FUGRO LIBRARY 091119 - COPY.GLB | PROJECT FILES\PROJECTS\2020\20-1014 EMSISD CENTRAL ADMINISTRATION BUILDING\7 - DRAFTING\GINT\0440201014.GPJ s.gautam 5/1

LOG OF BORING NO. B-2
 EMSISD Central Administration Building
 5825 Marine Creek Parkway
 Fort Worth, Texas
 PROJECT NO. 04.40201014

LATITUDE: 32.84277
 LONGITUDE: -97.39481

DEPTH, FT	SYMBOL SAMPLES	POCKET PEN Blows/ft. REC./RQD, %	STRATUM DESCRIPTION	LAYER ELEV./ DEPTH	WATER CONTENT, %	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX (PI), %	PASSING NO. 200 SIEVE, %	UNIT DRY WEIGHT, PCF	COMPRESSIVE STRENGTH	
											SOIL (TSF)	ROCK (PSI)
	SURF. ELEVATION: Unknown											
			FAT CLAY (CH) , brown, moist, with limestone fragments	2.0	17	53	28	25				
5		N = 11	WEATHERED LIMESTONE , tan, with clay seams									
		N = 23										
		P = 1.0										
10		N = 50/6"			11							
					9							
15		100/1.5"	LIMESTONE , gray	11.5								
20		100/1.25"										
		100/1.25"										
		100/1.25"		25.0								



COMPLETION DEPTH: 25.0
DATE DRILLED: 4-15-20
WATER LEVEL / SEEPAGE: DRY
WATER LEVEL (UPON COMPLETION): DRY

KEY:
 P = Pocket Penetrometer
 Note: All depths are measured in feet.
 N = Standard Penetration Resistance

LOG OF BORING NO. B-3
 EMSISD Central Administration Building
 5825 Marine Creek Parkway
 Fort Worth, Texas
 PROJECT NO. 04.40201014

LATITUDE: 32.84220
 LONGITUDE: -97.39486

DEPTH, FT	SYMBOL	SAMPLES	POCKET PEN Blows/ft. REC./ROD, %	STRATUM DESCRIPTION	LAYER ELEV./ DEPTH	WATER CONTENT, %	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX (PI), %	PASSING NO. 200 SIEVE, %	UNIT DRY WEIGHT, PCF	COMPRESSION	
												SOIL (TSF)	ROCK (PSI)
				SURF. ELEVATION: Unknown									
5			N = 50/3" N = 34 N = 64 N = 50/3" N = 50/3"	WEATHERED LIMESTONE , tan, moist, with clay seams		7							
10				LIMESTONE , gray	10.0	5							
15			100/1.5"			10							
20			100/1.25"										
			100/1.25"		25.0								



COMPLETION DEPTH: 25.0
DATE DRILLED: 4-15-20
WATER LEVEL / SEEPAGE: DRY
WATER LEVEL (UPON COMPLETION): DRY

KEY:
P = Pocket Penetrometer
Note: All depths are measured in feet.
N = Standard Penetration Resistance



PLATE 5

FUGRO LOG UC SOIL & ROCK FUGRO DATA TEMPLATE 100610.GDT FUGRO LIBRARY 091119 - COPY.GLB I:\PROJECT FILES\PROJECTS-2020\20-1014 EMSISD CENTRAL ADMINISTRATION BUILDING\7. DRAFTING\GINT\0440201014.GPJ s.gautam 5/1

LOG OF BORING NO. B-4
EMSISD Central Administration Building
5825 Marine Creek Parkway
Fort Worth, Texas
PROJECT NO. 04.40201014

LATITUDE: 32.84250
 LONGITUDE: -97.39448

DEPTH, FT	SYMBOL	SAMPLES	POCKET PEN Blows/ft. REC./ROD, %	STRATUM DESCRIPTION	LAYER ELEV./ DEPTH	WATER CONTENT, %	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX (PI), %	PASSING NO. 200 SIEVE, %	UNIT DRY WEIGHT, PCF	COMPRESSIVE		
												SOIL (TSF)	ROCK (PSI)	
				SURF. ELEVATION: Unknown										
			P = 2.0	LEAN CLAY (CL) , brown, moist, stiff to very stiff, with trace of limestone fragments and silt	4.0	20	39	18	21					
			P = 4.0			14	26	16	10					
5			N = 50/5"	WEATHERED LIMESTONE , tan	11.5									
			N = 50/3"			8								
10			100/3.5"	LIMESTONE , gray	25.0									
15			100/2"											
20			100/1.5"											
			100/1.25"											

COMPLETION DEPTH: 25.0
DATE DRILLED: 4-14-20
 **WATER LEVEL / SEEPAGE:** DRY
 **WATER LEVEL (UPON COMPLETION):** DRY

KEY:
 P = Pocket Penetrometer
 Note: All depths are measured in feet.
 N = Standard Penetration Resistance

PLATE 6



FUGRO LOG UC SOIL & ROCK FUGRO DATA TEMPLATE 100610.GDT FUGRO LIBRARY 091119 - COPY.GLB I:\PROJECT FILES\PROJECTS-2020\20-1014 EMSISD CENTRAL ADMINISTRATION BUILDING\7. DRAFTING\GINT\0440201014.GPJ s.gautam 5/1

LOG OF BORING NO. B-5
EMSISD Central Administration Building
5825 Marine Creek Parkway
Fort Worth, Texas
PROJECT NO. 04.40201014

LATITUDE: 32.84181
 LONGITUDE: -97.39468

DEPTH, FT	SYMBOL	SAMPLES	POCKET PEN Blows/ft. REC./ROD, %	STRATUM DESCRIPTION	LAYER ELEV./ DEPTH	WATER CONTENT, %	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX (PI), %	PASSING NO. 200 SIEVE, %	UNIT DRY WEIGHT, PCF	COMPRESSIVE	
												SOIL (TSF)	ROCK (PSI)
				SURF. ELEVATION: Unknown									
			P = 4.5	LEAN CLAY (CL) , dark brown, moist, hard, with limestone fragments and trace of silt	2.0	13	39	19	20				
				WEATHERED LIMESTONE , tan, moist, with clay seams									
5			N = 29										
			N = 16										
			N = 50/4"										
10					11.0	6							
				LIMESTONE , gray									
15			100/1.25"										
20			100/1.5"										
			100/1.25"		25.0								



COMPLETION DEPTH: 25.0
DATE DRILLED: 4-14-20
WATER LEVEL / SEEPAGE: DRY
WATER LEVEL (UPON COMPLETION): DRY

KEY:
 P = Pocket Penetrometer
 Note: All depths are measured in feet.
 N = Standard Penetration Resistance

PLATE 7

FUGRO LOG UC SOIL & ROCK FUGRO DATA TEMPLATE 100610.GDT FUGRO LIBRARY 091119 - COPY.GLB I:\PROJECT FILES\PROJECTS-2020\20-1014 EMSISD CENTRAL ADMINISTRATION BUILDING\7 - DRAFTING\GINT\0440201014.GPJ s.gautam 5/1

LOG OF BORING NO. B-6
EMSISD Central Administration Building
5825 Marine Creek Parkway
Fort Worth, Texas
PROJECT NO. 04.40201014

LATITUDE: 32.84215
 LONGITUDE: -97.39423

DEPTH, FT	SYMBOL	SAMPLES	POCKET PEN Blows/ft. REC./ROD, %	STRATUM DESCRIPTION	LAYER ELEV./ DEPTH	WATER CONTENT, %	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX (PI), %	PASSING NO. 200 SIEVE, %	UNIT DRY WEIGHT, PCF	COMPRESSIVE STRENGTH	
												SOIL (TSF)	ROCK (PSI)
				SURF. ELEVATION: Unknown									
			P = 1.5	LEAN CLAY (CL) , dark brown, moist, stiff, with trace of silt and limestone fragments	3.0	25	43	20	23				
			P = 4.5	WEATHERED LIMESTONE , tan, with clay seams		16						111	0.8
5			P = 4.5			17					112	1.9	
			N = 50/4"										
			N = 50/3"										
10													
				LIMESTONE , gray	13.5								
15			100/1.5"										
20			100/1.5"										
			100/1.25"		25.0								



COMPLETION DEPTH: 25.0
DATE DRILLED: 4-15-20
WATER LEVEL / SEEPAGE: DRY
WATER LEVEL (UPON COMPLETION): DRY

KEY:
 P = Pocket Penetrometer
 Note: All depths are measured in feet.
 N = Standard Penetration Resistance

PLATE 8

FUGRO LOG UC SOIL & ROCK FUGRO DATA TEMPLATE 100610.GDT FUGRO LIBRARY 091119 - COPY.GLB I:\PROJECT FILES\PROJECTS-2020\20-1014 EMSISD CENTRAL ADMINISTRATION BUILDING\7. DRAFTING\GINT\0440201014.GPJ s.gautam 5/1

LOG OF BORING NO. B-7
EMSISD Central Administration Building
5825 Marine Creek Parkway
Fort Worth, Texas
PROJECT NO. 04.40201014

LATITUDE: 32.84146
 LONGITUDE: -97.39446

DEPTH, FT	SYMBOL	SAMPLES	POCKET PEN Blows/ft. REC./ROD, %	STRATUM DESCRIPTION	LAYER ELEV./ DEPTH	WATER CONTENT, %	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX (PI), %	PASSING NO. 200 SIEVE, %	UNIT DRY WEIGHT, PCF	COMPRESSIVE	
												SOIL (TSF)	ROCK (PSI)
				SURF. ELEVATION: Unknown									
			P = 1.5	FAT CLAY (CL) , brown, moist, stiff, with weathered limestone fragments	2.0	17	50	25	25				
			N = 43	WEATHERED LIMESTONE , tan, with trace of clay									
5			N = 24										
			N = 16										
			N = 50/5"										
10													
15			100/1.25"	LIMESTONE , gray	15.0								
20			100/1"										
			100/1.25"		25.0								
COMPLETION DEPTH: 25.0 DATE DRILLED: 4-15-20 WATER LEVEL / SEEPAGE: DRY WATER LEVEL (UPON COMPLETION): DRY						KEY: P = Pocket Penetrometer Note: All depths are measured in feet. N = Standard Penetration Resistance							
						PLATE 9							

FUGRO LOG UC SOIL & ROCK FUGRO DATA TEMPLATE 100610.GDT FUGRO LIBRARY 091119 - COPY.GLB I:\PROJECT FILES\PROJECTS-2020\20-1014 EMSISD CENTRAL ADMINISTRATION BUILDING\7. DRAFTING\GINT\0440201014.GPJ s.gautam 5/1

LOG OF BORING NO. B-8
EMSISD Central Administration Building
5825 Marine Creek Parkway
Fort Worth, Texas
PROJECT NO. 04.40201014

LATITUDE: 32.84175
 LONGITUDE: -97.39402

DEPTH, FT	SYMBOL	SAMPLES	POCKET PEN Blows/ft. REC./ROD, %	STRATUM DESCRIPTION	LAYER ELEV./ DEPTH	WATER CONTENT, %	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX (PI), %	PASSING NO. 200 SIEVE, %	UNIT DRY WEIGHT, PCF	COMPRESSIVE	
												SOIL (TSF)	ROCK (PSI)
				SURF. ELEVATION: Unknown									
			P = 4.5	FAT CLAY (CH) , dark brown, moist, hard, with trace of gravels and silt	2.0	25	56	20	36				
			P = 4.5	LEAN CLAY (CL) , brown, moist, hard, with trace of weathered limestone, silt, gravel and calcareous nodules	4.0	21	41	19	22				
5			N = 19	WEATHERED LIMESTONE , tan, moist, with clay seams and calcareous deposits									
			N = 42										
			N = 50/6"										
10				WEATHERED LIMESTONE , tan	10.0								
15			100/2"	LIMESTONE , gray	16.0								
20			100/1.25"										



COMPLETION DEPTH: 30.0
DATE DRILLED: 4-14-20
WATER LEVEL / SEEPAGE: DRY
WATER LEVEL (UPON COMPLETION): DRY

KEY:
 P = Pocket Penetrometer
 Note: All depths are measured in feet.
 N = Standard Penetration Resistance

PLATE 10a

LOG OF BORING NO. B-8
 EMSISD Central Administration Building
 5825 Marine Creek Parkway
 Fort Worth, Texas
 PROJECT NO. 04.40201014

LATITUDE: 32.84175
 LONGITUDE: -97.39402

DEPTH, FT	SYMBOL	SAMPLES	POCKET PEN Blows/ft. REC./ROD, %	STRATUM DESCRIPTION	LAYER ELEV./ DEPTH	WATER CONTENT, %	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX (PI), %	PASSING NO. 200 SIEVE, %	UNIT DRY WEIGHT, PCF	COMPRESSION	
												SOIL (TSF)	ROCK (PSI)
			100/1.5"	SURF. ELEVATION: Unknown LIMESTONE, gray (continued)									
30			100/1"		30.0								
35													
40													
45													



COMPLETION DEPTH: 30.0
DATE DRILLED: 4-14-20
WATER LEVEL / SEEPAGE: DRY
WATER LEVEL (UPON COMPLETION): DRY

KEY:
 P = Pocket Penetrometer
 Note: All depths are measured in feet.
 N = Standard Penetration Resistance

PLATE 10b

FUGRO LOG UC SOIL & ROCK FUGRO DATA TEMPLATE 100610.GDT FUGRO LIBRARY 091119 - COPY.GLB I:\PROJECT FILES\PROJECTS-2020\20-1014 EMSISD CENTRAL ADMINISTRATION BUILDING\7. DRAFTING\GINT\0440201014.GPJ s.gautam 5/1

LOG OF BORING NO. B-9
EMSISD Central Administration Building
5825 Marine Creek Parkway
Fort Worth, Texas
PROJECT NO. 04.40201014

LATITUDE: 32.84134
 LONGITUDE: -97.39402

DEPTH, FT	SYMBOL	SAMPLES	POCKET PEN Blows/ft. REC./ROD, %	STRATUM DESCRIPTION	LAYER ELEV./ DEPTH	WATER CONTENT, %	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX (PI), %	PASSING NO. 200 SIEVE, %	UNIT DRY WEIGHT, PCF	COMPRESSIVE		
												SOIL (TSF)	ROCK (PSI)	
				SURF. ELEVATION: Unknown										
			P = 2.0	LEAN CLAY (CL) , dark brown, moist, stiff, with trace silt and limestone fragments	4.0	18	33	18	15					
			P = 1.25											
5			N = 34	WEATHERED LIMESTONE , tan, moist, with clay seams	4.0	7								
			N = 50/1"											
			N = 50/1"											
10				LIMESTONE , gray	11.0	7								
15			100/1.5"											
20			100/1.25"											



COMPLETION DEPTH: 30.0
DATE DRILLED: 4-14-20
WATER LEVEL / SEEPAGE: DRY
WATER LEVEL (UPON COMPLETION): DRY

KEY:
 P = Pocket Penetrometer
 Note: All depths are measured in feet.
 N = Standard Penetration Resistance

PLATE 11a

FUGRO LOG UC SOIL & ROCK FUGRO DATA TEMPLATE 100610.GDT FUGRO LIBRARY 091119 - COPY.GLB I:\PROJECT FILES\PROJECTS-2020\20-1014 EMSISD CENTRAL ADMINISTRATION BUILDING\7. DRAFTING\GINT\0440201014.GPJ s.gautam 5/1

LOG OF BORING NO. B-9
EMSISD Central Administration Building
5825 Marine Creek Parkway
Fort Worth, Texas
PROJECT NO. 04.40201014

LATITUDE: 32.84134
 LONGITUDE: -97.39402

DEPTH, FT	SYMBOL	SAMPLES	POCKET PEN Blows/ft. REC./ROD, %	STRATUM DESCRIPTION	LAYER ELEV./ DEPTH	WATER CONTENT, %	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX (PI), %	PASSING NO. 200 SIEVE, %	UNIT DRY WEIGHT, PCF	COMPRESSIVE	
												SOIL (TSF)	ROCK (PSI)
			100/1.5"	SURF. ELEVATION: Unknown LIMESTONE, gray (continued)									
30			100/1.25"		30.0								
35													
40													
45													



COMPLETION DEPTH: 30.0
DATE DRILLED: 4-14-20
 ▽ **WATER LEVEL / SEEPAGE: DRY**
 ▽ **WATER LEVEL (UPON COMPLETION): DRY**

KEY:
 P = Pocket Penetrometer
 Note: All depths are measured in feet.
 N = Standard Penetration Resistance

PLATE 11b

FUGRO LOG UC SOIL & ROCK FUGRO DATA TEMPLATE 100610.GDT FUGRO LIBRARY 091119 - COPY.GLB I:\PROJECT FILES\PROJECTS-2020\20-1014 EMSISD CENTRAL ADMINISTRATION BUILDING\7. DRAFTING\GINT\0440201014.GPJ s.gautam 5/1

LOG OF BORING NO. P-1
EMSISD Central Administration Building
5825 Marine Creek Parkway
Fort Worth, Texas
PROJECT NO. 04.40201014

LATITUDE: 32.84270
 LONGITUDE: -97.39437

DEPTH, FT	SYMBOL	SAMPLES	POCKET PEN Blows/ft. REC./ROD, %	STRATUM DESCRIPTION	LAYER ELEV./ DEPTH	WATER CONTENT, %	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX (PI), %	PASSING NO. 200 SIEVE, %	UNIT DRY WEIGHT, PCF	COMPRESSIVE	
												SOIL (TSF)	ROCK (PSI)
				SURF. ELEVATION: Unknown									
			P = 4.5	LEAN CLAY (CL), brown, moist, hard, with limestone fragments	2.0	17	40	19	21				
				WEATHERED LIMESTONE, tan									
5			N = 50/5"		5.0								
10													
15													
20													



COMPLETION DEPTH: 5.0
DATE DRILLED: 4-15-20
WATER LEVEL / SEEPAGE: DRY
WATER LEVEL (UPON COMPLETION): DRY

KEY:
 P = Pocket Penetrometer
 Note: All depths are measured in feet.
 N = Standard Penetration Resistance

PLATE 12

FUGRO LOG UC SOIL & ROCK FUGRO DATA TEMPLATE 100610.GDT FUGRO LIBRARY 091119 - COPY.GLB |PROJECT FILES\PROJECTS-2020\20-1014 EMSISD CENTRAL ADMINISTRATION BUILDING\7. DRAFTING\GINT\0440201014.GPJ s.gautam 5/1

LOG OF BORING NO. P-2
EMSISD Central Administration Building
5825 Marine Creek Parkway
Fort Worth, Texas
PROJECT NO. 04.40201014

LATITUDE: 32.84316
 LONGITUDE: -97.39322

DEPTH, FT	SYMBOL	SAMPLES	POCKET PEN Blows/ft. REC./ROD, %	STRATUM DESCRIPTION	LAYER ELEV./ DEPTH	WATER CONTENT, %	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX (PI), %	PASSING NO. 200 SIEVE, %	UNIT DRY WEIGHT, PCF	COMPRESSIVE	
												SOIL (TSF)	ROCK (PSI)
				SURF. ELEVATION: Unknown									
			P = 1.0	LEAN CLAY (CL) , brown, moist, soft to stiff, with trace of silt and limestone fragments									
			P = 2.0										
			N = 50/1"	WEATHERED LIMESTONE , tan	4.0	19	38	16	22				
5					5.0								
10													
15													
20													



COMPLETION DEPTH: 5.0
DATE DRILLED: 4-15-20
WATER LEVEL / SEEPAGE: DRY
WATER LEVEL (UPON COMPLETION): DRY

KEY:
 P = Pocket Penetrometer
 Note: All depths are measured in feet.
 N = Standard Penetration Resistance

PLATE 13

FUGRO LOG UC SOIL & ROCK FUGRO DATA TEMPLATE 100610.GDT FUGRO LIBRARY 091119 - COPY.GLB I:\PROJECT FILES\PROJECTS-2020\20-1014 EMSISD CENTRAL ADMINISTRATION BUILDING\7. DRAFTING\GINT\0440201014.GPJ s.gautam 5/1

LOG OF BORING NO. P-3
EMSISD Central Administration Building
5825 Marine Creek Parkway
Fort Worth, Texas
PROJECT NO. 04.40201014

LATITUDE: 32.84242
 LONGITUDE: -97.39375

DEPTH, FT	SYMBOL	SAMPLES	POCKET PEN Blows/ft. REC./ROD, %	STRATUM DESCRIPTION	LAYER ELEV./ DEPTH	WATER CONTENT, %	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX (PI), %	PASSING NO. 200 SIEVE, %	UNIT DRY WEIGHT, PCF	COMPRESSIVE	
												SOIL (TSF)	ROCK (PSI)
				SURF. ELEVATION: Unknown									
			P = 2.0	LEAN CLAY (CL), brown, moist, stiff to soft, with trace of silt and limestone fragments		25	48	22	26				
			P = 1.0										
			N = 50/1"	WEATHERED LIMESTONE, tan	4.0								
5					5.0								
10													
15													
20													



COMPLETION DEPTH: 5.0
DATE DRILLED: 4-15-20
WATER LEVEL / SEEPAGE: DRY
WATER LEVEL (UPON COMPLETION): DRY

KEY:
 P = Pocket Penetrometer
 Note: All depths are measured in feet.
 N = Standard Penetration Resistance

PLATE 14

FUGRO LOG UC SOIL & ROCK FUGRO DATA TEMPLATE 100610.GDT FUGRO LIBRARY 091119 - COPY.GLB I:\PROJECT FILES\PROJECTS-2020\20-1014 EMSISD CENTRAL ADMINISTRATION BUILDING\7. DRAFTING\GINT\0440201014.GPJ s.gautam 5/1

LOG OF BORING NO. P-4
EMSISD Central Administration Building
5825 Marine Creek Parkway
Fort Worth, Texas
PROJECT NO. 04.40201014

LATITUDE: 32.84155
 LONGITUDE: -97.39352

DEPTH, FT	SYMBOL	SAMPLES	POCKET PEN Blows/ft. REC./ROD, %	STRATUM DESCRIPTION	LAYER ELEV./ DEPTH	WATER CONTENT, %	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX (PI), %	PASSING NO. 200 SIEVE, %	UNIT DRY WEIGHT, PCF	COMPRESSIVE	
												SOIL (TSF)	ROCK (PSI)
				SURF. ELEVATION: Unknown									
			P = 2.0	LEAN CLAY (CL), dark brown, stiff	2.0	20							
			P = 2.25	LEAN CLAY (CL), light brown, stiff to very stiff, with limestone fragments									
5			P = 2.0		5.0	11	31	16	15				
10													
15													
20													



COMPLETION DEPTH: 5.0
DATE DRILLED: 4-15-20
WATER LEVEL / SEEPAGE: DRY
WATER LEVEL (UPON COMPLETION): DRY

KEY:
 P = Pocket Penetrometer
 Note: All depths are measured in feet.
 N = Standard Penetration Resistance

PLATE 15

FUGRO LOG UC SOIL & ROCK FUGRO DATA TEMPLATE 100610.GDT FUGRO LIBRARY 091119 - COPY.GLB I:\PROJECT FILES\PROJECTS-2020\20-1014 EMSISD CENTRAL ADMINISTRATION BUILDING\7 - DRAFTING\GINT\0440201014.GPJ s.gautam 5/1

LOG OF BORING NO. P-5
EMSISD Central Administration Building
5825 Marine Creek Parkway
Fort Worth, Texas
PROJECT NO. 04.40201014

LATITUDE: 32.84120
 LONGITUDE: -97.39428

DEPTH, FT	SYMBOL	SAMPLES	POCKET PEN Blows/ft. REC./RQD, %	STRATUM DESCRIPTION	LAYER ELEV./ DEPTH	WATER CONTENT, %	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX (PI), %	PASSING NO. 200 SIEVE, %	UNIT DRY WEIGHT, PCF	COMPRESSIVE	
												SOIL (TSF)	ROCK (PSI)
				SURF. ELEVATION: Unknown									
			P = 2.25	LEAN CLAY (CL) , brown, moist, very stiff, with trace of silt and limestone fragments	2.5	10	42	21	21				
			N = 35										
			N = 17	WEATHERED LIMESTONE , tan, with clay seams and limestone fragments									
5					5.5								
10													
15													
20													



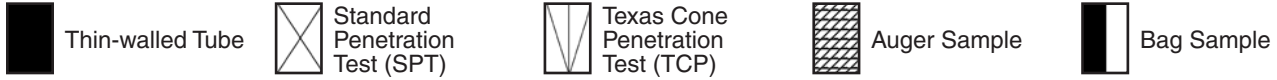
COMPLETION DEPTH: 5.5
DATE DRILLED: 4-14-20
WATER LEVEL / SEEPAGE: DRY
WATER LEVEL (UPON COMPLETION): DRY

KEY:
 P = Pocket Penetrometer
 Note: All depths are measured in feet.
 N = Standard Penetration Resistance

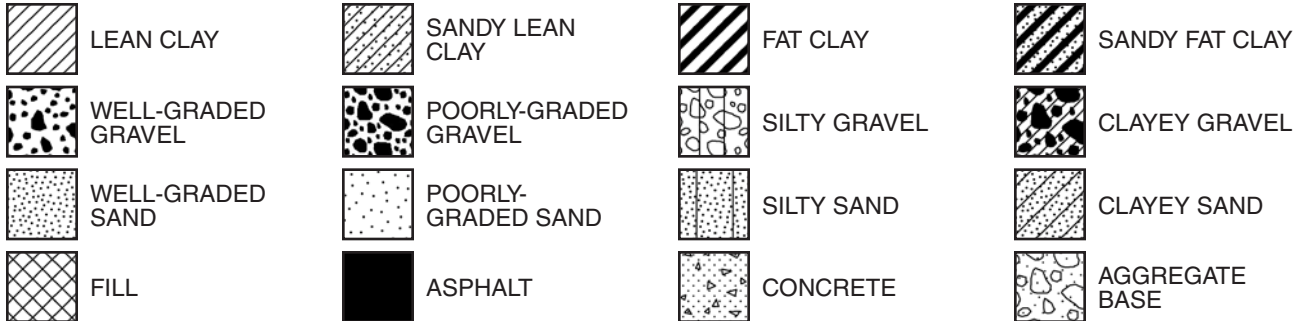
PLATE 16

TERMS AND SYMBOLS USED ON BORING LOGS FOR SOIL

Sampler Types



Material Types



Consistency

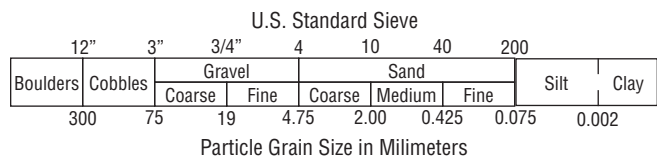
Strength of Fine Grained Soils		
Consistency	SPT (# blows/ft) ⁽¹⁾	UCS (TSF) ⁽¹⁾
Very Soft	< 2	< 0.25
Soft	2 - 4	0.25 - 0.5
Medium Stiff	4 - 8	0.5 - 1.0
Stiff	8 - 15	1.0 - 2.0
Very Stiff	15 - 30	2.0 - 4.0
Hard	> 30	> 4.0

Density of Coarse Grained Soils		
Apparent Density	SPT (# blows/ft)	TCP (# blows/ft) ⁽²⁾
Very Loose	0 - 4	< 8
Loose	4 - 10	8 - 20
Medium Dense	10 - 30	20 - 60
Dense	30 - 50	60 - 100
Very Dense	> 50	> 100

Moisture

Moisture Content <small>adapted from (3)</small>	
Dry	No water evident in sample
Moist	Sample feels damp
Very Moist	Water visible on sample
Wet	Sample bears free water

Grain Size⁽³⁾



Structure⁽³⁾

Criteria for Describing Structure	
Description	Criteria
Stratified	Alternating layers of varying material or color with layers at least 6 mm thick; note thickness
Laminated	Alternating layers of varying material or color with the layers less than 6 mm thick; note thickness
Fissured	Breaks along definite planes of fracture with little resistance to fracturing
Slickensided	Fracture planes appear polished or glossy, sometimes striated
Blocky	Cohesive soil that can be broken down into small angular lumps which resist further breakdown
Lensed	Inclusion of small pockets of different soils, such as small lenses of sand scattered through a mass of clay; note thickness
Homogeneous	Same color and appearance throughout

Secondary Components

Criteria for Describing Structure <small>adapted from (3)</small>	
Trace	< 5% of sample
Few	5% to 10% of sample
Little	10% to 25% of sample
Some	25% to 50% of sample

Size Modifiers for Inclusions

Pocket	Inclusion of different material that is smaller than the diameter of the sample
Fragment	Pieces of a whole item - often used with shell and wood
Nodule	A concretion, a small, more or less rounded body that is usually harder than the surrounding soil (as in carbonate nodule) and was formed in the soil by a weathering process
Streak	A line or mark of contrasting color or texture. The mark or line should be paper thin, and it should be natural - not a smear caused by extruding or trimming the sample



Note: Information on each boring log is a compilation of subsurface conditions and soil and rock classifications obtained from the field as well as from laboratory testing of samples. Strata have been interpreted by commonly accepted procedures. The stratum lines on the logs may be transitional and approximate in nature. Water level measurements refer only to those observed at the times and places indicated, and may vary with time, geologic condition or construction activity.

References: ⁽¹⁾ Peck, Hanson and Thornburn, (1974), *Foundation Engineering*.

⁽²⁾ TxDOT, (1999), *Tex-142-E, Laboratory Classification of Soils for Engineering Purposes*.

⁽³⁾ ASTM International, ASTM D 2488 Standard Practice for Description and Identification of Soils.

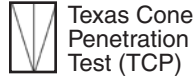
PLATE

TERMS AND SYMBOLS USED ON BORING LOGS FOR ROCK

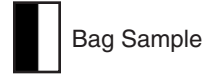
Sampler Types



Rock Core



Texas Cone Penetration Test (TCP)



Bag Sample

Notation for Rock Core Samples	
RC_	Rock Core sample + depth interval
Rec	Rock Core Sample Recovery (ASTM D2113)
RQD	Rock Quality Designation (ASTM D6032)

Material Types



LIMESTONE



SHALE



SANDSTONE



MARL



WEATHERED LIMESTONE



WEATHERED SHALE



WEATHERED SANDSTONE



WEATHERED MARL

Weathering⁽⁴⁾

Weathering Grades of Rock Mass	
Slightly	Discoloration indicates weathering of rock material and discontinuity surfaces
Moderately	Less than half of the rock material is decomposed or disintegrated to a soil
Highly	More than half of the rock material is decomposed or disintegrated to a soil
Completely	All rock material is decomposed and/or disintegrated to a soil. The original mass structure is still largely intact
Residual Soil	All rock material is converted to soil. The mass structure and material fabric are destroyed

Hardness

Criteria for Field Hardness	
Very Soft	Can be carved with a knife. Can be excavated readily with point of pick. Pieces 1" or more in thickness can be broken by finger pressure. Readily scratched with fingernail
Soft	Can be gouged or grooved readily with knife or pick point. Can be excavated in chips to pieces several inches in size by moderate blows with the pick point. Small, thin pieces can be broken by finger pressure
Medium	Can be grooved or gouged 1/4" deep by firm pressure on knife or pick point. Can be excavated in small chips to pieces about 1" maximum size by hard blows with the point of a pick
Hard	Can be scratched with knife or pick only with difficulty. Hard blow of hammer required to detach a hand specimen
Very Hard	Cannot be scratched with knife or sharp pick. Breaking of hand specimens requires several hard blows from a hammer or pick

Grain Size⁽³⁾

U.S. Standard Sieve					
3"	3/4"	4	10	40	200
Gravel			Sand		
Coarse	Fine	Coarse	Medium	Fine	
75	19	4.75	2.00	0.425	0.075
Particle Grain Size in Millimeters					

Secondary Components⁽³⁾

Criteria for Describing Structure	
Trace	< 5% of sample
Few	5% to 10% of sample
Little	10% to 25% of sample
Some	25% to 50% of sample

Structure

Bedding Thickness and Spacing of Planar Features			
Type	Spacing	Thickness	Fracture Spacing
Parting	< 1/8 in.	Laminar	NA
Seam	1/8 to 3/4 in.	Extremely thin	Extremely close (< 3/4 in.)
	3/4 to 2 1/2 in.	Very thin	Very close
Layer	2 1/2 to 6 in.	Thin	Close
	6 to 24 in.	Medium	Moderate
Bed	2 to 7 ft.	Thick	Wide
	7 ft. to 20 ft.	Very thick	Very wide
	> 20 ft.	Extremely thick	Extremely wide
	Massive	No stratification observed	NA
Occasional	Occurring once or less per foot		
Frequently	Occurring more than once per foot		

Discontinuities

Joint	A natural fracture along which no displacement has occurred. May occur in parallel groups called sets.
Fracture/Shear	A natural fracture along which differential movement has occurred. May be slickensided or striated.
Fault	A natural fracture along which displacement has occurred. Usually lined with gouge and slickensides.

Surface Planarity

Curved	A moderately undulating surface, with no sharp breaks or steps.
Planar	A flat surface
Stepped	A surface with asperities or steps. The height of the asperity should be estimated or measured.

Roughness

Very Rough	Near vertical steps and ridges occur on the discontinuity
Rough	Some ridges and side-angle steps are evident; asperities are clearly visible, surface feels very abrasive.
Slightly Rough	Asperities on the discontinuity surfaces can be seen and felt.
Smooth	Surface appears smooth and feels smooth.
Slickensided	Evidence of polishing and movement are visible.

Aperture

Tight	Core pieces on either side of fracture can be fitted together so that no visible void spaces remain.
Open	Core pieces on either side of fracture cannot be fitted tightly together and voids are visible.
Healed	A completely healed fracture or vein is not considered a discontinuity and should not be included when describing rock core fracturing or calculating RQD. This feature should be described including a record of dip, spacing, thickness, type of filling and any observed alteration.



Note: Information on each boring log is a compilation of subsurface conditions and soil and rock classifications obtained from the field as well as from laboratory testing of samples. Strata have been interpreted by commonly accepted procedures. The stratum lines on the logs may be transitional and approximate in nature. Water level measurements refer only to those observed at the times and places indicated, and may vary with time, geologic condition or construction activity.

References: ⁽¹⁾ Peck, Hanson and Thornburn, (1974), *Foundation Engineering*.
⁽²⁾ ASTM International, ASTM D 2488 Standard Practice for Description and Identification of Soils.
⁽⁴⁾ British Standard (1981), *Code of Practice for Site Investigation* BS 5930.

PLATE

Appendix C – Laboratory Testing

Laboratory tests were performed to help evaluate the engineering properties of the soils. The tests were performed in general accordance with applicable ASTM test procedures. The testing program included:

1. moisture content,
2. dry unit weight,
3. Atterberg limits,
4. overburden swell,
5. unconfined compressive strength of soil, and
6. soluble sulfate.

The soils were classified according to the Unified Soil Classification System based on visual observation of the samples and laboratory test results. The results of index and strength tests are presented on the boring logs. The results of swell tests and soluble sulfate content are presented on Tables 11 and 12, respectively.

Table 11: Swell Test Results

Boring Number	Sample Depth (ft.)	Liquid Limit	Plasticity Index	Initial Moisture Content	Final Moisture Content	Surcharge Pressure (psf)	Vertical Swell (%)
B-4	0-2	39	21	20.2	21.4	125	0.7
B-8	0-2	56	36	24.8	26.2	125	1.2
B-8	2-4	41	22	20.7	21.4	250	0.1
B-9	0-2	33	15	17.5	18.7	125	0.6

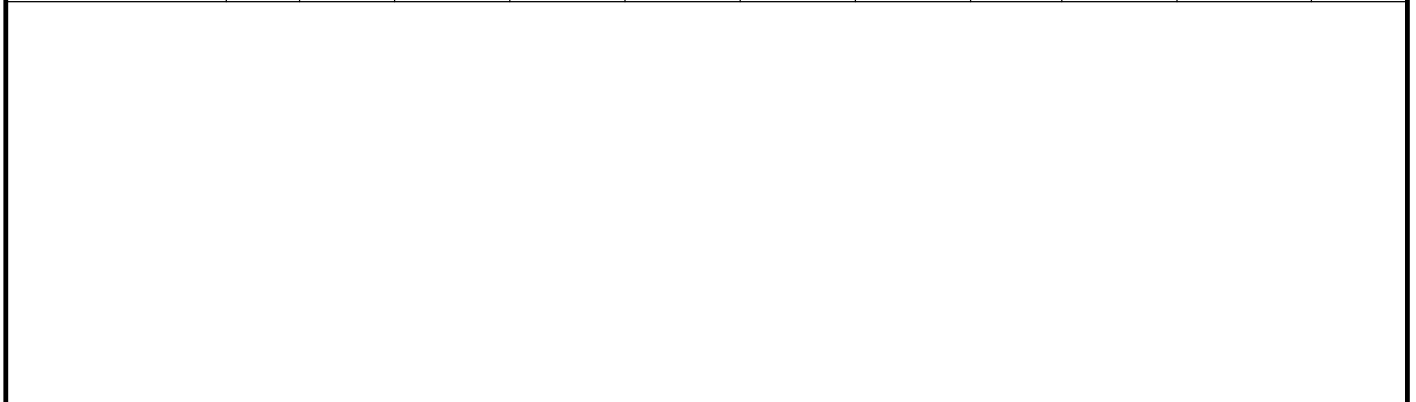
Table 12: Soluble Sulfate Result


Boring Number	Sample Depth (ft.)	Soluble Sulfate Content (ppm)
B-4	2-4	320
B-5	4-5.5	320
B-9	0-2	340

A summary of the laboratory test results is presented on Plate 19.

FUGRO LAB SUMMARY FUGRO DATA TEMPLATE 100610.GDT FUGRO LIBRARY 091119 - COPY.GLB I:\PROJECT FILES\PROJECTS-2020\20-1014 EMSISD CENTRAL ADMINISTRATION BUILDING.7.DRAFTING\GINT\040201014.GPJ s.gautam 5/1/20

Borehole	Depth (ft.)	Water Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Maximum Size (mm)	%<#200 Sieve	Classification	Dry Density (pcf)	Compressive Strength, (tsf)	Strain at Failure (%)
B-1	0.5	22.6									
B-1	5.0	15.1									
B-2	1.0	17.3	53	28	25						
B-2	5.0	11.2									
B-2	8.0	9.5									
B-3	0.5	7.1									
B-3	5.0	5.2									
B-3	8.0	10.3									
B-4	1.0	20.2	39	18	21						
B-4	3.0	13.8	26	16	10						
B-4	6.0	8.2									
B-5	1.0	12.6	39	19	20						
B-5	5.0	6.3									
B-5	8.0	6.0									
B-6	1.0	25.1	43	20	23						
B-6	3.0	16.0						110.5	0.8	4.6	
B-6	5.0	16.7						112.1	1.9	7.8	
B-7	1.0	16.5	50	25	25						
B-7	5.0	17.8									
B-7	8.0	13.3									
B-8	1.0	24.8	56	20	36						
B-8	3.0	20.7	41	19	22						
B-8	7.0	11.1									
B-9	1.0	17.5	33	18	15						
B-9	5.0	6.9									
B-9	9.0	6.9									
P-1	1.0	16.6	40	19	21						
P-2	3.0	19.3	38	16	22						
P-3	1.0	25.4	48	22	26						
P-4	1.0	20.2									
P-4	4.5	10.6	31	16	15						
P-5	1.0	10.0	42	21	21						



	EMSISD Central Administration Building LABORATORY TEST RESULTS SUMMARY	
	Fort Worth, Texas	
	Project No. 04.40201014	PLATE 19

DRAFT AIA® Document A101™ – 2017

Standard Form of Agreement Between Owner and Contractor where the basis of payment is a Stipulated Sum

AGREEMENT made as of the day of in the year
(In words, indicate day, month and year.)

BETWEEN the Owner:
(Name, legal status, address and other information)

and the Contractor:
(Name, legal status, address and other information)

for the following Project:
(Name, location and detailed description)

The Architect:
(Name, legal status, address and other information)

The Owner and Contractor agree as follows.

ADDITIONS AND DELETIONS:
The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

The parties should complete A101™-2017, Exhibit A, Insurance and Bonds, contemporaneously with this Agreement. AIA Document A201™-2017, General Conditions of the Contract for Construction, is adopted in this document by reference. Do not use with other general conditions unless this document is modified.



ELECTRONIC COPYING of any portion of this AIA® Document to another electronic file is prohibited and constitutes a violation of copyright laws as set forth in the footer of this document.

TABLE OF ARTICLES

- 1 THE CONTRACT DOCUMENTS
- 2 THE WORK OF THIS CONTRACT
- 3 DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION
- 4 CONTRACT SUM
- 5 PAYMENTS
- 6 DISPUTE RESOLUTION
- 7 TERMINATION OR SUSPENSION
- 8 MISCELLANEOUS PROVISIONS
- 9 ENUMERATION OF CONTRACT DOCUMENTS

EXHIBIT A INSURANCE AND BONDS

ARTICLE 1 THE CONTRACT DOCUMENTS

1.1 The Contract Documents consist of this Agreement, Conditions of the Contract (General, Supplementary, and other Conditions), all sections of the Project Manual and Construction Documents, Drawings, Specifications, Addenda issued prior to execution of this Agreement, other documents listed in this Agreement, and Modifications issued after execution of this Agreement, all of which form the Contract, and are as fully a part of the Contract as if attached to this Agreement or repeated herein. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations, or agreements, either written or oral. An enumeration of the Contract Documents, other than a Modification, appears in Article 9. Any reference to Contract Documents or any documents included in the Contract Documents and/or supplemented for this Project, shall refer to the Contract Documents as amended for this Project. (Warning: Make sure that any Supplementary Conditions do not contradict the provisions of the A201.)

“Construction Documents” means: all Drawings, specifications, submittals, transmittals, deliverables, instructions to Contractors, and other documents, including those in electronic form, prepared by the Architect and the Architect’s consultants and which set forth in detail the requirements for construction of the Project.

1.2 This Agreement represents the entire and integrated agreement between the Owner and the Contractor and supersedes all prior negotiations, representations or agreements, either written or oral. Any revision, amendment, or modification to the Standard Form of this Agreement shall be valid, binding, and enforceable only if said revision, amendment, or modification is made conspicuous by being underlined, lined-through or highlighted in this Agreement signed by Contractor and the authorized representative of Owner’s Board of Trustees. In the event of conflict, terms and conditions contained in the Agreement shall take precedence over terms and conditions contained in the General Conditions and the terms and conditions in the General Conditions shall take precedence over all other terms and conditions contained in the other Contract Documents. If the Request for Proposals and the Proposal are included in the Contract Documents, then the Request for Proposals shall take precedence over the Proposal, unless specifically agreed to otherwise herein.

1.3 The Board of Trustees, by majority vote, is the only representative of the Owner, an independent school district, having the power to enter into or amend a contract, to approve changes in the scope of the Work, to approve and execute a Change Order or construction Change Directive modifying the Contract Sum, or to agree to an extension to the date of Substantial or Final Completion or to terminate a contract. The Owner designates the following as the individual authorities to sign documents on behalf of the Board of Trustees, following appropriate Board action: (insert name and title of designee) _____, or other Board designee.

1.4 The Board designates the authorized representatives identified in Paragraph 8.3 to act on its behalf in other respects.

ARTICLE 2 THE WORK OF THIS CONTRACT

The Contractor shall fully execute the Work described in the Contract Documents, except as specifically indicated in the Contract Documents to be the responsibility of others.

ARTICLE 3 DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION

§ 3.1 The date of commencement of the Work shall be:

(Check one of the following boxes.)

- [] The date of this Agreement.
- [] A date set forth in a notice to proceed issued by the Owner.
- [] Established as follows:
(Insert a date or a means to determine the date of commencement of the Work.)

«The commencement date will be the first business day after the Contractor's receipt of the written notice to proceed. The notice to proceed shall not be issued by Architect until the Agreement has been signed by the Contractor, approved by the Owner's Board of Trustees, signed by the Owner's authorized representative, and Owner and Architect have received all required payment and performance bonds and insurance, in compliance with Article 11 of the AIA document A201-2017.»

~~If a date of commencement of the Work is not selected, then the date of commencement shall be the date of this Agreement.~~

§ 3.2 The Contract Time shall be measured from the date of commencement of the Work.

§ 3.3 Substantial Completion

§ 3.3.1 Subject to adjustments of the Contract Time as provided in the Contract Documents, the Contractor shall diligently prosecute and achieve Substantial Completion of the entire Work:
(Check one of the following boxes and complete the necessary information.)

- [] Not later than () calendar days from the date of commencement of the Work.
- [] By the following date:

Final Completion shall be 30 calendar days after the date of Substantial Completion, subject to adjustments of the Contract Time as provided in the Contract Documents.

§ 3.3.2 Subject to adjustments of the Contract Time as provided in the Contract Documents, if portions of the Work are to be completed prior to Substantial Completion of the entire Work, the Contractor shall achieve Substantial Completion of such portions by the following dates:

Portion of Work	Substantial Completion Date
<input type="text"/>	<input type="text"/>

§ 3.3.3 If the Contractor fails to achieve Substantial Completion as provided in this Section 3.3, liquidated damages, if any, shall be assessed as set forth in Section 4.5.

ARTICLE 4 CONTRACT SUM

§ 4.1 The Owner shall pay the Contractor the Contract Sum in current funds for the Contractor's performance of the Contract. The Contract Sum shall be (\$), subject to additions and deductions as provided in the Contract Documents.

Note: Optional Paragraph:

4.1.1 The Contract Sum contains an Owner's Contingency in the amount of \$. This contingency is for the sole use of the Owner to be used for changes in the scope of the Work and for the betterment of the Project.

Owner's authorized representative may approve any expenditure from Owner's Contingency without further Board of Trustees approval. If the Owner's Contingency is not expended or not fully expended, then any unused portion shall belong to the Owner and shall be credited to the Owner in calculating final payment.

§ 4.2 Alternates

§ 4.2.1 Alternates, if any, included in the Contract Sum:

Item	Price

§ 4.2.2 Subject to the conditions noted below, the following alternates may be accepted by the Owner following execution of this Agreement. Upon acceptance, the Owner shall issue a Modification to this Agreement.

(DO NOT USE Insert below each alternate and the conditions that must be met for the Owner to accept the alternate.)

Item	Price	Conditions for Acceptance
N/A		

§ 4.3 Allowances, if any, included in the Contract Sum:

(Identify each allowance.)

Item	Price

§ 4.4 Unit prices, if any:

(Identify the item and state the unit price and quantity limitations, if any, to which the unit price will be applicable.)

Item	Units and Limitations	Price per Unit (\$0.00)

§ 4.5 Liquidated damages, if any:

(Insert terms and conditions for liquidated damages, if any.)

<< >>

4.5.1 Substantial Completion. Time is of the essence in all phases of the Work. It is specifically understood and agreed by and between Owner and Contractor that time is of the essence in the Substantial Completion of the Project and Owner shall sustain damages as a result of Contractor's failure, neglect, or refusal to achieve said deadlines. Such damages are, and will continue to be, impracticable and extremely difficult to determine. Executing of this Agreement under these specifications shall constitute agreement by Owner and Contractor that the amounts stated below are the minimum value of the costs and damages caused by failure of Contractor to complete the Work within the allotted or agreed extended times of Substantial Completion, that such sums are liquidated damages and shall not be construed as a penalty, and that such sums may be deducted from payments due Contractor if such delays occur. It is expressly understood that the said sum per day is agreed upon as a fair estimate of the pecuniary damages which will be sustained by the Owner in the event that the Work is not completed within the agreed time, or within the agreed extended time, if any, otherwise provided for herein. Said sum shall be considered as liquidated damages only and in no sense shall be considered a penalty, said damages being caused by, but not limited to, additional compensation for personnel, attorneys fees, architectural fees, engineering fees, program management fees, inspection fees, storage costs, food service costs, transportation costs, utilities costs, costs of temporary facilities, loss of interest on money, and other increased costs, all of which are difficult to exactly ascertain. Failure to complete the Work within the designated or agreed extended dates of Substantial Completion, shall be construed as a breach of this Agreement. It is expressly agreed as a part of the consideration inducing the Owner to execute this Agreement that the Owner may deduct from any Payment made to the Contractor a sum equal to \$ per day for each and every additional calendar day beyond the agreed date of Substantial Completion.

4.5.2 Final Completion. In addition, timely Final Completion is an essential condition of this Agreement. Contractor agrees to achieve Final Completion of the Agreement within thirty (30) calendar days of the designated or agreed

extended date of Substantial Completion. It is specifically understood and agreed by and between Owner and Contractor that time is of the essence in the Final Completion of the Project and Owner shall sustain additional damages as a result of Contractor's failure, neglect or refusal to achieve said deadline. Such damages are, and will continue to be, impracticable and extremely difficult to determine. Execution of this Agreement under these specifications shall constitute agreement by Owner and Contractor that the amounts stated below are the minimum value of the costs and damages caused by failure of Contractor to complete the Work within the allotted or agreed extended times for Final Completion, that such sums are liquidated damages and shall not be construed as a penalty. It is expressly understood that the said sum per day is agreed upon as a fair estimate of the pecuniary damages which will be sustained by the Owner in the event that the Work is not finally completed within the agreed time, or within the agreed extended time, if any, otherwise provided for herein. Said sum shall be considered as liquidated damages only and in no sense shall be considered a penalty, said damages being caused by, but not limited to, additional compensation for the following categories of damages to the Owner: potential hazards to students, staff and visitors, additional architectural, engineering, program management fees (and fees of any other consultants); increased administrative or operational expenses; additional attorney's fees; increased maintenance and custodial costs, and additional utilities, security, and clean-up costs, and other increased costs. Failure to complete the Work within the designated or agreed extended dates of Final Completion, shall be construed as a breach of this Agreement. Owner and Contractor agree that should Contractor fail to achieve Final Completion of the Agreement by the deadline, Owner shall continue to be damaged to a greater degree by such delay. Contractor and Owner agree that the amount of liquidated damages for each calendar day Final Completion is delayed beyond the date set or Final Completion shall be the sum of \$ _____ per day. Owner may deduct such liquidated damages from any Payment made to Contractor before or at Final Payment; so, if sufficient funds are not available, then Contractor shall pay Owner, the amounts specified per day for each and every calendar day the breach continues after the deadline for Final Completions of the Work.

4.5.3 Such damages shall be in addition to, and not in lieu of, any other rights or remedies Owner may have against Contractor for failure to timely achieve Final Completion, and damages for failure to achieve Substantial Completion and failure to achieve Final Completion may run concurrently. If the Work is not finally completed by the time stated in the Agreement, or as extended, no payments for Work completed beyond that time shall be made until the Project reaches Final Completion.

§ 4.6 Other:

(Insert provisions for bonus or other incentives, if any, that might result in a change to the Contract Sum.)

« »

ARTICLE 5 PAYMENTS

§ 5.1 Progress Payments

§ 5.1.1 Based upon Applications for Payment submitted to the Architect by the Contractor and Certificates for Payment issued by the Architect, the Owner shall make progress payments on account of the Contract Sum to the Contractor as provided below and elsewhere in the Contract Documents.

§ 5.1.2 The period covered by each Application for Payment shall be one calendar month ending on the last day of the month, or as follows:

« »

§ 5.1.3 ~~Provided that an Application for Payment is received by the Architect not later than the « » day of a month, the Owner shall make payment of the amount certified to the Contractor not later than the « » day of the « » month. If an Application for Payment is received by the Architect after the application date fixed above, payment of the amount certified shall be made by the Owner not later than « » (« ») days after the Architect receives the Application for Payment. The Contractor shall submit monthly Applications for Payment to the Architect on AIA Form G702 for approval. Continuation sheets shall be submitted on AIA Form G703. If the Architect approves the application, then they shall submit a Certificate for Payment to the Owner. The Architect may require any additional information deemed necessary and appropriate to substantiate the Application for Payment. Materials that are verified to be on the jobsite or other approved location for use in the Project may also be incorporated into the Application for Payment. The Architect shall have seven (7) days from date of receipt from the Contractor of an Application for Payment to approve or reject all or any part of the Application for Payment. The Owner shall pay the undisputed amounts certified by the Architect to the Contractor within () days of receipt of the~~

Certificate for Payment from the Architect unless otherwise provided in the Contract Documents. Undisputed amounts unpaid after the date on which payment is due shall bear interest pursuant to Texas Government Code Section 2251.025. (Note: In Texas, the blanks should be filled in with “30” if the Board meets twice a month, and “45” if the Board meets once a month.)

(Federal, state or local laws may require payment within a certain period of time.)

§ 5.1.4 Each Application for Payment shall be based on the most recent schedule of values submitted by the Contractor in accordance with the Contract Documents. The schedule of values shall allocate the entire Contract Sum, less any Owner’s contingency, among the various portions of the Work. The schedule of values shall be prepared in such form, and supported by such data to substantiate its accuracy, as the Architect may require. This schedule of values shall be used as a basis for reviewing the Contractor’s Applications for Payment.

§ 5.1.5 Applications for Payment shall show the percentage of completion of each portion of the Work as of the end of the period covered by the Application for Payment.

§ 5.1.6 In accordance with AIA Document A201™–2017, General Conditions of the Contract for Construction, and subject to other provisions of the Contract Documents, the amount of each progress payment shall be computed as follows:

§ 5.1.6.1 The amount of each progress payment shall first include:

- .1 That portion of the Contract Sum properly allocable to completed Work, as determined by multiplying the percentage completion of each portion of the Work by the share of the Contract Sum allocated to that portion of the Work in the schedule of values;
- .2 That portion of the Contract Sum properly allocable to materials and equipment delivered and suitably stored at the site for subsequent incorporation in the completed construction, or, if approved in advance by the Owner, suitably stored off the site at a location agreed upon in writing; and
- .3 That portion of Construction Change Directives that the Architect determines, in the Architect’s professional judgment, to be reasonably justified to the extent approved by the Owner in writing, as provided in Article 7.3.9 of AIA Document A201™–2017, General Conditions of the Contract for Construction.

§ 5.1.6.2 The amount of each progress payment shall then be reduced by:

- .1 The aggregate of any amounts previously paid by the Owner;
- .2 The amount, if any, for Work that remains uncorrected and for which the Architect has previously withheld a Certificate for Payment as provided in Article 9 of AIA Document A201–2017;
- .3 Any amount for which the Contractor does not intend to pay a Subcontractor or material supplier, unless the Work has been performed by others the Contractor intends to pay;
- .4 For Work performed or defects discovered since the last payment application, any amount for which the Architect may withhold payment, or nullify a Certificate of Payment in whole or in part, as provided in Article 9 of AIA Document A201–2017, or amounts certified by the Architect and disputed by the Owner; and
- .5 Retainage withheld pursuant to Section 5.1.7.

§ 5.1.7 Retainage

§ 5.1.7.1 For each progress payment made prior to Substantial Completion of the Work, the Owner may withhold the following amount, as retainage, from the payment otherwise due:

(Insert a percentage or amount to be withheld as retainage from each Application for Payment. The amount of retainage may be limited by governing law.)

« Percent (%) [If the retainage is over 5%, then the retainage shall be deposited in an interest-bearing account and the interest earned on the retainage shall be paid to the Contractor upon completion of the Project, pursuant to Texas Government Code Section 2252.032] »

§ 5.1.7.1.1 ~~The following items are not subject to retainage:~~

***(DO NOT USE)** Insert any items not subject to the withholding of retainage, such as general conditions, insurance, etc.)*

<< >>

§ 5.1.7.2 Reduction or limitation of retainage, if any, shall be as follows:

(If the retainage established in Section 5.1.7.1 is to be modified prior to Substantial Completion of the entire Work, including modifications for Substantial Completion of portions of the Work as provided in Section 3.3.2, insert provisions for such modifications.)

<<None >>

§ 5.1.7.3 Except as set forth in this Section 5.1.7.3, upon ~~Substantial-Final~~ Completion of the Work, the Contractor may submit an Application for Payment that includes the retainage withheld from prior Applications for Payment pursuant to this Section 5.1.7. ~~The Application for Payment submitted at Substantial Completion shall not include retainage as follows:~~

(~~DO NOT USE~~ Insert any other conditions for release of retainage upon Substantial Completion.)

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~~§ 5.1.8 If final completion of the Work is materially delayed through no fault of the Contractor, the Owner shall pay the Contractor any additional amounts in accordance with Article 9 of AIA Document A201-2017.~~

§ 5.1.9 Except with the Owner's prior written approval, or as otherwise provided in Section 9.3.2 of the AIA Document A201-2017, the Contractor shall not make advance payments to suppliers for materials or equipment which have not been delivered and stored at the site.

5.1.10 If Owner is entitled to deduct liquidated damages, or any other damages or amounts provided in the Contract Documents, including clean-up fees, then Owner shall be entitled to deduct such liquidated damages, amounts and fees at any time.

5.1.11 If Contractor fails or refuses to complete the Work, or has unsettled claims with Owner, any payment to Contractor shall be subject to deduction for such amounts as the Architect, if applicable, shall determine as the cost for completing incomplete Work and the value of unsettled claims.

§ 5.2 Final Payment

§ 5.2.1 Final payment, constituting the entire unpaid balance of the Contract Sum, minus disputed sums, authorized deductions and liquidated damages, shall be made by the Owner to the Contractor ~~when~~after

- .1 the Contractor has fully performed the Contract except for the Contractor's responsibility to correct nonconforming Work as provided in Article 12 of AIA Document A201-2017, and to satisfy other requirements, if any, which extend beyond final payment; and
- .2 the Contractor has provided all documents required by Section 3.5 et seq. and 9.10.2 et seq. of AIA Document A201-2017;
- .3 a final Certificate for Payment has been issued by the Architect; and
- .4 Owner's Board of Trustees has voted to accept the Work and approve the Final Payment.

§ 5.2.2 The Owner's final payment of undisputed sums to the Contractor shall be made no later than 30 days after Owner's Board of Trustees' vote approving Final Payment~~the issuance of the Architect's final Certificate for Payment, or as follows:~~

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§ 5.3 Interest

Payments due and unpaid under the Contract shall bear interest pursuant to Texas Government Code Section 2251.025~~from the date payment is due at the rate stated below, or in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located.~~

(~~DO NOT USE~~ Insert rate of interest agreed upon, if any.)

<<N/A >> % << >>

ARTICLE 6 DISPUTE RESOLUTION

§ 6.1 Initial Decision Maker

~~All disputes relating to this Agreement shall be resolved pursuant to the terms of Article 15 of the AIA Document A201-2017, as amended. The Architect will serve as the Initial Decision Maker pursuant to Article 15 of AIA Document A201-2017, unless the parties appoint below another individual, not a party to this Agreement, to serve as the Initial Decision Maker.~~

(DO NOT USE If the parties mutually agree, insert the name, address and other contact information of the Initial Decision Maker, if other than the Architect.)

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§ 6.2 Binding Dispute Resolution

For any Claim subject to, but not resolved by, mediation pursuant to Article 15 of AIA Document A201-2017, the method of binding dispute resolution shall be as follows:
(Check the appropriate box.)

Arbitration pursuant to Section 15.4 of AIA Document A201-2017

Litigation in a court of competent jurisdiction

Other (Specify)

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If the Owner and Contractor do not select a method of binding dispute resolution, or do not subsequently agree in writing to a binding dispute resolution method other than litigation, Claims will be resolved by litigation in a court of competent jurisdiction.

6.3 When Owner has an applicable claim for construction defects, Owner shall comply with the provisions of Texas Government Code Chapter 2272 related to the provision of notice of defects and the Contractor's or Architect's opportunity to cure.

ARTICLE 7 TERMINATION OR SUSPENSION

§ 7.1 The Contract may be terminated by the Owner or the Contractor as provided in Article 14 of AIA Document A201-2017.

~~§ 7.1.1 If the Contract is terminated for the Owner's convenience in accordance with Article 14 of AIA Document A201-2017, then the Owner shall pay the Contractor a termination fee as follows:~~

(DO NOT USE Insert the amount of, or method for determining, the fee, if any, payable to the Contractor following a termination for the Owner's convenience.)

<<N/A >>

§ 7.2 The Work may be suspended by the Owner as provided in Article 14 of AIA Document A201-2017.

ARTICLE 8 MISCELLANEOUS PROVISIONS

§ 8.1 Where reference is made in this Agreement to a provision of AIA Document A201-2017 or another Contract Document, the reference refers to that provision as amended or supplemented by other provisions of the Contract Documents.

§ 8.2 The Owner's representative:

(Name, address, email address, and other information)

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§ 8.3 The Contractor's representative:
(Name, address, email address, and other information)

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§ 8.4 Neither the Owner's nor the Contractor's representative shall be changed without ten days' prior written notice to the other party.

§ 8.5 Insurance and Bonds

§ 8.5.1 The Owner and the Contractor shall purchase and maintain insurance as set forth in AIA Document A101™–2017, Standard Form of Agreement Between Owner and Contractor where the basis of payment is a Stipulated Sum, Exhibit A, Insurance and Bonds, and elsewhere in the Contract Documents.

§ 8.5.2 The Contractor shall provide bonds as set forth in AIA Document A101™–2017 Exhibit A, and elsewhere in the Contract Documents.

§ 8.6 Notice in electronic format, pursuant to Article 1 of AIA Document A201–2017, may be given in accordance with AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, if completed, or as otherwise set forth below:

(If other than in accordance with AIA Document E203–2013, insert requirements for delivering notice in electronic format such as name, title, and email address of the recipient and whether and how the system will be required to generate a read receipt for the transmission.)

<< >>

§ 8.7 Other provisions:

8.7.1 The Agreement shall be governed by the laws of the State of Texas, and any litigation shall be conducted in state district court. Mandatory and exclusive venue shall be in _____ County, Texas, or, if no county is specified, then in the county in which the Owner's main administrative office is located.

8.7.2 As a material consideration of the making of this Agreement, the modifications to this Agreement shall not be construed against the maker of said modifications.

8.7.3 Notwithstanding anything to the contrary in this Agreement, or in any document forming a part hereof, there shall be no mandatory arbitration for any dispute arising hereunder.

8.7.4 Section 1.5 of AIA Document A201-2017 shall govern Contractor's use of the Construction Document.

8.7.5 The Contractor shall be responsible to the Owner for actions and omissions of the Contractor's employees, Subcontractors and their agents and employees, and other persons or entities performing portions of the Work for, or on behalf of, the Contractor or any of its Subcontractors. As part of that responsibility, Contractor shall enforce the Owner's alcohol-free, drug-free, tobacco-free, harassment-free and weapons-free policies and zones, which will require compliance with those policies and zones by Contractor's employees, subcontractors, and all other persons carrying out the Contract.

8.7.6 Contractor shall require all construction workers, whether Contractor's own forces, or the forces of Contractor's subcontractors, to wear identification tags on the front of their persons during all times that they are on Owner's property. Such identification tags shall contain a current photograph and the worker's full name in a typeface large enough to be seen from a reasonable distance.

8.7.7 Contractor shall require all construction workers, whether Contractor's own forces or the forces of Contractor's subcontractors, who park their personal motor vehicles on Owner's property to only park their vehicles in the parking places designated by the Owner's campus principal. Any vehicles not parked in the appropriate locations shall be towed at the vehicle owner's sole expense.

8.7.8 Contractor shall follow, and shall require all employees, agents or subcontractors, to follow applicable ordinances of the municipality in which the Project is located. In addition, if not covered by the municipality's tree ordinance, Contractor shall barricade and protect all trees on the Project.

8.7.9 Contractor shall institute a theft deterrence program designed to restrict construction worker access to properties of Owner that are currently in use, to maintain supervision of Contractor's and Contractor's subcontractor's forces, and to reimburse the Owner or those persons suffering a theft loss which results from Contractor's forces or Contractor's subcontractor's forces' actions, omissions, or failure to secure the Work or connecting or adjacent property of Owner.

8.7.10 The Contractor may not assign its responsibilities, duties, obligations, and rights under this Agreement, without the express written consent of the Owner. This does not prevent Contractor from engaging subcontractors to perform various phases of the Project, but Contractor shall be fully responsible to Owner for the Work, actions, and omissions of all such subcontractors.

8.7.11 This Agreement, in its entirety, shall be binding upon all the parties hereto, their respective successor, heirs, executors, administrators, or assigns.

8.7.12 Execution of this Agreement shall constitute approval and acceptance of all terms, covenants, and conditions as modified and contained in the Contract Documents.

8.7.13 This Agreement is subject to all applicable federal and state laws, rules, and regulations. Invalidity of any portion of this Agreement under the law of the State of Texas or of the United States shall not affect the validity of the remainder of this Agreement.

8.7.14 By signing this Agreement, the undersigned certifies as follows: Under Section 231.006, Texas Family Code, the vendor or applicant certifies that the individual or business entity named in the contract, bid, or application, is not ineligible to receive the specified grant, loan, or payment and acknowledges that this contract may be terminated, and payment may be withheld if this certification is inaccurate.

8.7.15 Unless otherwise noted, terms in this Agreement shall have the same meaning as those in the edition of AIA document A201-2017, General Conditions of the Contract for Construction, as amended for the Project.

8.7.16 To the extent that any portion of the Work requires a trench excavation exceeding five (5) feet in depth, in accordance with Texas Health and Safety Code Section 756.023(a), Contractor shall fully comply, and shall require any applicable subcontractor to comply, with:

.1 The Occupational Safety and Health Administration standards for trench safety in effect for the construction of the Work

.2 The special shoring requirements, if any, of the Owner; and

.3 Any geotechnical information obtained by Owner for use by the Contractor in the design of the trench safety system

.4 Trench excavation safety protection shall be a separate pay item, and shall be based on linear feet of trench excavated. Special shoring requirements shall also be a separate pay item, and shall be based on the square feet of shoring use. Said cost shall be included within the Contract Sum.

8.7.17 No delay or omission by Owner in exercising any right or power accruing upon the noncompliance or failure of performance by Contractor of any of the provisions of this Agreement shall impair any such right or power or be construed to be a waiver thereof. A waiver by Owner of any other covenants, conditions, or agreements hereof to be performed by Contractor shall not be construed to be a waiver of any subsequent breach thereof or of any other covenant, condition, or agreement herein contained.

8.7.18 Contractor stipulates that Owner is a political subdivision of the State of Texas, and, as such, enjoys immunities from suit and liability as provided by the constitution and laws of the State of Texas. By entering into this Agreement, Owner does not waive any of its immunities from suit and/or liability, except as otherwise specifically provided herein, and as specifically authorized by law.

8.7.19 By executing this Agreement, Contractor verifies that it does not boycott Israel, and it will not boycott Israel during the terms of this Contract. Pursuant to Texas Government Code, Chapter 22710, as amended, if Contractor is a for-profit organization, association, corporation, partnership, joint venture, limited partnership, limited liability partnership, or limited liability company, including a wholly owned subsidiary, majority-owned subsidiary, parent company, or affiliate of those entities or business associations (specifically excluding sole proprietorships) that exists to make a profit which has ten (10) or more full-time employees and the value of the contract with Owner is \$100,000 or more, the Contractor represents and warrants to the Owner that the Contractor does not boycott Israel and will not boycott Israel during the term of this Agreement.

~~Note: On April 25, 2019, the U.S. District Court for the Western District of Texas entered a preliminary injunction enjoining the enforcement of the above clause in any state contract. Texas Government Code, Chapter 2270 has been amended since the date of the injunction and the requirement of the statute is included above in its amended form. As the statute may not cure the entire breadth of issues addressed by injunction, the Owner does not intend to seek enforcement of this this statute until further order of this or higher court having jurisdiction over the issue.~~

8.7.20 Contractor verifies and affirms that it is not a foreign terrorist organization as identified on the list prepared and maintained by the Texas Comptroller of Public Accounts. If Contractor has misrepresented its inclusion on the Comptroller's list, such omission or misrepresentation will void this Contract.

8.7.21 The Contractor verifies by its signature below that it is not an abortion provider or an affiliate of abortion providers.

8.7.22

.1 By entering into this Contract, pursuant to Texas Government Code 552, Subchapter J, the Contractor agrees to be bound by the following terms if the Contract has a stated expenditure of at least \$1,000,000 for the purchase of goods or services by the District or if the Contract results in the expenditure of at least \$1,000,000 in public funds for the purchase of goods or services by the District in a fiscal year of the District. If the District receives a written request for public information related to this Contract that is in the possession or custody of the Contractor and not in the possession or custody of the District, the District shall send, not later than the third business day after the date the District receives the written request, a written request to the Contractor that Contractor provide that information to the District.

.2 The Contractor must:

.1 Preserve all contracting information related to the Contract as provided by the records retention requirements applicable to the District for the duration of the Contract;

.2 Promptly, within four business days, provide to the District any requested contracting information that is in the custody or possession of the Contractor upon request of the District; and,

.3 On completion of the Contract, either:

.1 Provide to the District at no cost all contracting information related to the Contract that is in the custody or possession of the Contractor; or

.2 Preserve the contracting information related to the Contract as provided by the records retention requirements applicable to the District.

.3 The requirements of Subchapter J, Chapter 552, Government Code, may apply to this Contract and the Contractor agrees that the contract can be terminated if the Contractor knowingly or intentionally fails to comply with the requirements of that subchapter.

.4 Further, under Texas Government Code Chapter 552.372(c), the District may not accept a bid for or awarding of a contract to an entity that the District has determined has knowingly or intentionally failed in a previous bid or contract to comply with Subchapter J, unless the District determines and documents that the entity has taken adequate steps to ensure future compliance.

.5 If a Contractor fails to provide to the District the requested information, Texas Government Code Chapter 552.373 requires the District to notify the Contractor in writing of the failure and allow 10 business days to cure the violation. District may terminate the Contract if Contractor fails to remedy the failure, District determines the failure was knowing and intentional, and steps have not been taken to ensure future compliance.

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ARTICLE 9 ENUMERATION OF CONTRACT DOCUMENTS

§ 9.1 This Agreement is comprised of the following documents:

- .1 AIA Document A101™–2017, Standard Form of Agreement Between Owner and Contractor
- .2 AIA Document A101™–2017, Exhibit A, Insurance and Bonds
- .3 AIA Document A201™–2017, General Conditions of the Contract for Construction
- .4 ~~AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, dated as indicated below:~~

*(**DO NOT USE** Insert the date of the E203-2013 incorporated into this Agreement.)*

<< >>

.5 Drawings

Number	Title	Date

.6 Specifications

Section	Title	Date	Pages

.7 Addenda, if any:

Number	Date	Pages

Portions of Addenda relating to bidding or proposal requirements are not part of the Contract Documents unless the bidding or proposal requirements are also enumerated in this Article 9.

.8 Other Exhibits:

(Check all boxes that apply and include appropriate information identifying the exhibit where required.)

[] AIA Document E204™–2017, Sustainable Projects Exhibit, dated as indicated below:
(Insert the date of the E204-2017 incorporated into this Agreement.)

<< >>

[« »] The Sustainability Plan:

Title	Date	Pages

[« »] Supplementary and other Conditions of the Contract:

Document	Title	Date	Pages

.9 Other documents, if any, listed below:

(List here any additional documents that are intended to form part of the Contract Documents. AIA Document A201™-2017 provides that the advertisement or invitation to bid, Instructions to Bidders, sample forms, the Contractor's bid or proposal, portions of Addenda relating to bidding or proposal requirements, and other information furnished by the Owner in anticipation of receiving bids or proposals, are not part of the Contract Documents unless enumerated in this Agreement. Any such documents should be listed here only if intended to be part of the Contract Documents.)

« RFP / CONTRACTOR PROPOSAL »

This Agreement entered into as of the day and year first written above.

OWNER (Signature)

« »« »

(Printed name and title)

Independent School District

CONTRACTOR (Signature)

« »« »

(Printed name and title)

ATTEST:

By: _____

Title: _____

Independent School District

DRAFT AIA® Document A101™ – 2017

Exhibit A

Insurance and Bonds

This Insurance and Bonds Exhibit is part of the Agreement, between the Owner and the Contractor, dated the « » day of « » in the year « »
(In words, indicate day, month and year.)

for the following **PROJECT**:
(Name and location or address)

« »
« »

THE OWNER:
(Name, legal status and address)

« »
« »

THE CONTRACTOR:
(Name, legal status and address)

« »
« »

TABLE OF ARTICLES

- A.1 GENERAL
- A.2 OWNER'S INSURANCE
- A.3 CONTRACTOR'S INSURANCE AND BONDS
- A.4 SPECIAL TERMS AND CONDITIONS

ARTICLE A.1 GENERAL

The Owner and Contractor shall purchase and maintain insurance, and provide bonds, as set forth in this Exhibit. As used in this Exhibit, the term General Conditions refers to AIA Document A201™–2017, General Conditions of the Contract for Construction.

ARTICLE A.2 OWNER'S INSURANCE

§ A.2.1 General

Prior to commencement of the Work, the Owner shall secure the insurance, and provide evidence of the coverage, required under this Article A.2 ~~and, upon the Contractor's request, provide a copy of the property insurance policy or policies required by Section A.2.3.~~ The copy of the policy or policies provided shall contain all applicable conditions, definitions, exclusions, and endorsements.

§ A.2.2 Liability Insurance

The Owner shall be responsible for purchasing and maintaining the Owner's usual general liability insurance.

ADDITIONS AND DELETIONS:

The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

This document is intended to be used in conjunction with AIA Document A201™–2017, General Conditions of the Contract for Construction. Article 11 of A201™–2017 contains additional insurance provisions.

ELECTRONIC COPYING of any portion of this AIA® Document to another electronic file is prohibited and constitutes a violation of copyright laws as set forth in the footer of this document.

§ A.2.3 Required Property Insurance

~~§ A.2.3.1 Unless this obligation is placed on the Contractor pursuant to Section A.3.3.2.1, the Owner shall purchase and maintain, from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located, property insurance written on a builder's risk "all risks" completed value or equivalent policy form and sufficient to cover the total value of the entire Project on a replacement cost basis. The Owner's property insurance coverage shall be no less than the amount of the initial Contract Sum, plus the value of subsequent Modifications and labor performed and materials or equipment supplied by others. The property insurance shall be maintained until Substantial Completion and thereafter as provided in Section A.2.3.1.3, unless otherwise provided in the Contract Documents or otherwise agreed in writing by the parties to this Agreement. This insurance shall include the interests of the Owner, Contractor, Subcontractors, and Sub-subcontractors in the Project as insureds. This insurance shall include the interests of mortgagees as loss payees. Contractor shall provide builder's risk insurance as required in A.3.3.2.1.~~

~~§ A.2.3.1.1 Causes of Loss. The insurance required by this Section A.2.3.1 shall provide coverage for direct physical loss or damage, and shall not exclude the risks of fire, explosion, theft, vandalism, malicious mischief, collapse, earthquake, flood, or windstorm. The insurance shall also provide coverage for ensuing loss or resulting damage from error, omission, or deficiency in construction methods, design, specifications, workmanship, or materials. Sub-limits, if any, are as follows:~~

~~(**NOT USED** Indicate below the cause of loss and any applicable sub-limit.)~~

Causes of Loss	Sub-Limit
«N/A »	

~~§ A.2.3.1.2 Specific Required Coverages. The insurance required by this Section A.2.3.1 shall provide coverage for loss or damage to falsework and other temporary structures, and to building systems from testing and startup. The insurance shall also cover debris removal, including demolition occasioned by enforcement of any applicable legal requirements, and reasonable compensation for the Architect's and Contractor's services and expenses required as a result of such insured loss, including claim preparation expenses. Sub-limits, if any, are as follows:~~

~~(**NOT USED** Indicate below type of coverage and any applicable sub-limit for specific required coverages.)~~

Coverage	Sub-Limit
«N/A »	

~~§ A.2.3.1.3 Unless the parties agree otherwise, upon Substantial Completion, the Owner shall continue the insurance required by Section A.2.3.1 or, if necessary, replace the insurance policy required under Section A.2.3.1 with property insurance written for the total value of the Project that shall remain in effect until expiration of the period for correction of the Work set forth in Section 12.2.2 of the General Conditions.~~

~~§ A.2.3.1.4 Deductibles and Self-Insured Retentions. If the insurance required by this Section A.2.3.1.3 is subject to deductibles or self-insured retentions, the Owner shall be responsible for all loss not covered because of such deductibles or retentions.~~

~~§ A.2.3.2 Occupancy or Use Prior to Substantial Completion. The Owner's occupancy or use of any completed or partially completed portion of the Work prior to Substantial Completion shall not commence until the insurance company or companies providing the insurance under Section A.3.3.2.1.3 have consented in writing to the continuance or replacement of coverage. The Owner and the Contractor shall take no action with respect to partial occupancy or use that would cause cancellation, lapse, or reduction of insurance, unless they agree otherwise in writing.~~

§ A.2.3.3 Insurance for Existing Structures

If the Work involves remodeling an existing structure or constructing an addition to an existing structure, the Owner ~~shall~~ may purchase and maintain, until the expiration of the period for correction of Work as set forth in Section 12.2.2 of the General Conditions, "all risks" property insurance, on a replacement cost basis, protecting the existing structure against direct physical loss or damage from the causes of loss identified in Section A.3.3.2.3.1, notwithstanding the undertaking of the Work. The Owner shall be responsible for all co-insurance penalties.

(Note: Although this paragraph has been revised to make the District's purchase of property insurance optional, Districts are strongly advised to purchase such insurance if the District does not already have such insurance.)

§ A.2.4 Optional Extended Property Insurance.

The Owner shall purchase and maintain the insurance selected and described below.

(NOT USED) Select the types of insurance the Owner is required to purchase and maintain by placing an X in the box(es) next to the description(s) of selected insurance. For each type of insurance selected, indicate applicable limits of coverage or other conditions in the fill point below the selected item.)

[] **§ A.2.4.1 Loss of Use, Business Interruption, and Delay in Completion Insurance**, to reimburse the Owner for loss of use of the Owner's property, or the inability to conduct normal operations due to a covered cause of loss.

[] **§ A.2.4.2 Ordinance or Law Insurance**, for the reasonable and necessary costs to satisfy the minimum requirements of the enforcement of any law or ordinance regulating the demolition, construction, repair, replacement or use of the Project.

[] **§ A.2.4.3 Expediting Cost Insurance**, for the reasonable and necessary costs for the temporary repair of damage to insured property, and to expedite the permanent repair or replacement of the damaged property.

[] **§ A.2.4.4 Extra Expense Insurance**, to provide reimbursement of the reasonable and necessary excess costs incurred during the period of restoration or repair of the damaged property that are over and above the total costs that would normally have been incurred during the same period of time had no loss or damage occurred.

[] **§ A.2.4.5 Civil Authority Insurance**, for losses or costs arising from an order of a civil authority prohibiting access to the Project, provided such order is the direct result of physical damage covered under the required property insurance.

[] **§ A.2.4.6 Ingress/Egress Insurance**, for loss due to the necessary interruption of the insured's business due to physical prevention of ingress to, or egress from, the Project as a direct result of physical damage.

[] **§ A.2.4.7 Soft Costs Insurance**, to reimburse the Owner for costs due to the delay of completion of the Work, arising out of physical loss or damage covered by the required property insurance: including construction loan fees; leasing and marketing expenses; additional fees, including those of architects, engineers, consultants, attorneys and accountants, needed for the completion of the construction, repairs, or reconstruction; and carrying costs such as property taxes, building permits, additional interest on loans, realty taxes, and insurance premiums over and above normal expenses.

§ A.2.5 Other Optional Insurance.

The Owner shall ~~shall~~ may purchase and maintain the insurance selected below.

(Select the types of insurance the Owner is required to purchase and maintain by placing an X in the box(es) next to

the description(s) of selected insurance.)

[<>] § A.2.5.1 **Cyber Security Insurance** for loss to the Owner due to data security and privacy breach, including costs of investigating a potential or actual breach of confidential or private information. (Indicate applicable limits of coverage or other conditions in the fill point below.)

<>

[<>] § A.2.5.2 **Other Insurance**
(List below any other insurance coverage to be provided by the Owner and any applicable limits.)

Coverage

Limits

<>

ARTICLE A.3 CONTRACTOR'S INSURANCE AND BONDS

§ A.3.1 General

§ A.3.1.1 Certificates of Insurance. The Contractor shall provide certificates of insurance acceptable to the Owner evidencing compliance with the requirements in this Article A.3 at the following times: (1) at least five business days after execution of the Contract documents and prior to commencement of the Work; (2) upon renewal or replacement of each required policy of insurance; and (3) upon the Owner's written request. An additional certificate evidencing continuation of commercial liability coverage, including coverage for completed operations, shall be submitted with the final Application for Payment and thereafter upon renewal or replacement of such coverage until the expiration of the periods required by Section A.3.2.1 and Section A.3.3.1. The certificates will show the Owner as an additional insured on all of the Contractor's insurance policies, except Contractor's workers compensation insurance ~~Commercial General Liability and excess or umbrella liability policy or policies.~~ These certificates and the insurance policies required by this Article shall contain a provision that coverages afforded under the policies will not be canceled, reduced, or restricted for any reason, other than nonpayment of premium, until at least 30 days' prior written notice of such cancellation, reduction, or restriction has been given to the Owner and Contractor. An additional certificate, policy, and endorsement evidencing continuation of liability coverage, including coverage for completed operations, shall be submitted with the final Application for Payment as required by Section 9.10.2 of the AIA A201-0217 General Conditions as amended for the Project, and thereafter upon renewal or replacement of such coverage. Information concerning reduction or restriction of coverage on account of revised limits or claims paid under the General Aggregate, or cancellation or expiration of the insurance shall be furnished by written notice to the Owner from the Contractor within three business days of the date Contractor knew or should have known of the cancellation, reduction, or restriction. At least 30 calendar days prior to the date of expiration of any required insurance policy. Contractor shall provide Owner written notice of the impending expiration. In addition, Contractor shall also provide copies of all policies, declarations, and endorsements for such insurance to Owner as required by Section 11.0.2 of the 2017 AIA A201 General Conditions as amended for this Project.

§ A.3.1.2 Deductibles and Self-Insured Retentions. The Contractor shall disclose to the Owner any deductible or self-insured retentions applicable to any insurance required to be provided by the Contractor. If the insurance required by this Section A.3.1 is subject to deductibles or self-insured retentions, the Contractor shall be responsible for all loss not covered because of such deductibles or retentions. For any claim made against the Contractor's policies of insurance, the deductible shall not exceed \$2,500 for Contract Sum (or Guaranteed Maximum Price, if the Project is a Construction Manager at Risk project) of less than \$4 million. For a Contract Sum (or Guaranteed Maximum Price, if the Project is a Construction Manager at Risk project), of \$4 million or more, the deductible shall not exceed \$5,000.

§ A.3.1.3 Additional Insured Obligations. To the fullest extent permitted by law, the Contractor shall cause the commercial general liability coverage and any other insurance required by the Agreement, with the exception of Workers' Compensation insurance, to be endorsed to include (1) the Owner, the Architect, and the Architect's consultants as additional insureds for claims caused in whole or in part by the Contractor's negligent acts or omissions during the Contractor's operations; and (2) the Owner as an additional insured for claims caused in whole or in part by the Contractor's negligent acts or omissions for which loss occurs during completed operations. The additional insured coverage shall be primary and non-contributory to any of the Owner's general liability insurance policies and shall apply to both ongoing and completed operations. To the extent commercially available, the additional insured coverage shall be no less than that provided by Insurance Services Office, Inc. (ISO) forms CG 20 10 07 04, CG 20 37 07 04, and, with respect to the Architect and the Architect's consultants, CG 20 32 07 04.

§ A.3.2 Contractor's Required Insurance Coverage

§ A.3.2.1 The Contractor and the Contractor's subcontractors shall purchase and maintain such insurance as will protect them and the Owner from claims which may arise out of, or result from, the Contractor's operations under the Contract whether such operations be by Contractor or by any Subcontractor, or by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them maybe liable, in the following types and limits of insurance from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located. (See also the insurance requirements included in Article 11 of the AIA A201-2017 General Conditions as amended for this Project). The Contractor shall maintain the required insurance until the expiration of the period for correction of Work as set forth in Section 12.2.2 of the General Conditions; unless a different duration is stated below:

(DO NOT USE If the Contractor is required to maintain insurance for a duration other than the expiration of the period for correction of Work, state the duration.)

The insurance required by this Section shall be written for not less than the limits of liability specified in the Contract Documents or required by law, whichever coverage is greater. Coverages, whether written on an occurrence or claims-made basis, shall be maintained without interruption from the date of commencement of the Work until the date of final payment and termination of any coverage required to be maintained after final payment, and, with respect to the Contractor's completed operations coverage, until the expiration of the period for correction of Work or for such other period for maintenance of completed operations coverage as specified in the Contract Documents. The limits of liability for such insurance shall be in at least the following amounts as specified below.

(NOTE: Amounts of insurance coverage have been left blank so that Districts can enter the appropriate amounts for their Projects. DO NOT LEAVE ANY BLANK UNFILLED IF THAT COVERAGE IS REQUIRED OR CHOSEN FOR THE PROJECT. If a particular coverage will not be used for the Project, delete the unused section. If the District has questions on the appropriate amounts or types of coverage, it is strongly suggested that the District contact its legal counsel and insurance agent.)

<< >>

§ A.3.2.2 Commercial General Liability

§ A.3.2.2.1 Commercial General Liability insurance for the Project written on an occurrence form with policy limits of not less than << >> (\$ << >>) each occurrence, << >> (\$ << >>) general aggregate, and << >> (\$ << >>) aggregate for products-completed operations hazard, providing coverage for claims including

- .1 damages because of bodily injury, sickness or disease, including occupational sickness or disease, and death of any person, with a sublimit not less than _____ for medical expenses per person for bodily injury, included within the limits noted above;
- .2 personal injury and advertising injury with a limit not less than _____;
- .3 damages because of physical damage to or destruction of tangible property, including the loss of use of such property;
- .4 bodily injury or property damage arising out of the Work and out of completed operations, said coverage to be maintained for two years after Final Completion (to be maintained for a period of two years after Final Payment; Contractor shall continue to provide evidence of such coverage to Owner on an annual basis during this period and Owner shall be named by endorsement as an Additional Insured for such coverage) and must include Completed Operations coverage for Contractor, its sub-contractors, and Owner; and
- .5 the Contractor's contractual liability, including but not limited to, indemnity obligations under Section 3.18 of the General Conditions; and
- .6 General Aggregate per Project endorsement.

§ A.3.2.2.2 The Contractor's Commercial General Liability policy under this Section A.3.2.2 shall not contain an exclusion or restriction of coverage for the following:

- .1 Claims by one insured against another insured, if the exclusion or restriction is based solely on the fact that the claimant is an insured, and there would otherwise be coverage for the claim.
- .2 Claims for property damage to the Contractor's Work arising out of the products-completed operations hazard where the damaged Work or the Work out of which the damage arises was performed by a Subcontractor.

- .3 Claims for bodily injury other than to employees of the insured.
- .4 Claims for indemnity under Section 3.18 of the General Conditions arising out of injury to employees of the insured.
- .5 Claims or loss excluded under a prior work endorsement or other similar exclusionary language.
- .6 Claims or loss due to physical damage under a prior injury endorsement or similar exclusionary language.
- .7 Claims related to residential, multi-family, or other habitational projects, if the Work is to be performed on such a project.
- .8 Claims related to roofing, if the Work involves roofing.
- .9 Claims related to exterior insulation finish systems (EIFS), synthetic stucco or similar exterior coatings or surfaces, if the Work involves such coatings or surfaces.
- .10 Claims related to earth subsidence or movement, where the Work involves such hazards.
- .11 Claims related to explosion, collapse and underground hazards, where the Work involves such hazards.

§ A.3.2.3 Automobile Liability covering vehicles owned, and non-owned, hired, or any other vehicles used, by the Contractor, with policy limits of not less than « » (\$ « ») than those stated below per accident, for bodily injury, death of any person, and property damage arising out of the ownership, maintenance and use of those motor vehicles along with any other statutorily required automobile coverage. *(Note: Texas statutory minimum for school districts is \$100,000 per person, \$300,000 per occurrence, and \$100,000 property damage.) Such minimum limits shall be stated as follows, or in a combined single limit policy in the amount of at least \$1,000,000.*

.1	Bodily Injury (per person)	\$
.2	Bodily Injury (per accident)	\$
.3	Property Damage	\$

§ A.3.2.4 The Contractor may not achieve the required limits and coverage for Commercial General Liability and Automobile Liability through a combination of primary and excess or umbrella liability insurance, ~~provided such primary and excess or umbrella insurance policies result in the same or greater coverage as the coverages required under Section A.3.2.2 and A.3.2.3, and i~~n no event shall any excess or umbrella liability insurance provide narrower coverage than the primary policy. The excess policy shall not require the exhaustion of the underlying limits only through the actual payment by the underlying insurers.

A.3.2.4.1 Umbrella Excess Liability coverages shall be in at least the following amounts:

.1	\$	each occurrence
.2	\$	aggregate
.3		Aggregate Per Project Endorsement

§ A.3.2.5 Workers' Compensation at statutory limits.

.1	State:	Statutory Benefits
.2	Employer's Liability	\$ per accident
		\$ disease, policy limit
		\$ disease, each employee

A.3.2.5.1 Texas Workers' Compensation Insurance. A copy of a certificate of insurance, a certificate of authority to self-insure issued by the Texas Department of Insurance (TDI), or a coverage agreement (DWC-81, DWC-82, DWC-83, or DWC-84), showing statutory worker's compensation insurance coverage for the Contractor's employees providing services on a Project is required for the duration of the Project.

A.3.2.5.1.1 Duration of the Project include the time from the beginning of the Work on the project until the Contractor's Work on the Project has been completed and accepted by the Owner.

A.3.2.5.1.2 Persons providing services on the Project ("subcontractor" in Texas Labor Code Section 406.096) include all persons or entities performing all or part of the services the Contractor has undertaken to perform on the Project, regardless of whether that person has employees. This includes, without limitation, independent contractors,

subcontractors, leasing companies, motor carriers, owner-operations, employees of any such entity, or employees of any entity that furnishes persons to provide services on the Project.

A.3.2.5.1.3 Services include, without limitation, providing, hauling or delivering equipment or materials, or providing labor, transportation, or other services related to the Project. Services do not include activities unrelated to the Project, such as food/beverage vendors, office supply deliveries, and delivery of portable toilets.

A.3.2.5.1.4 The Contractor shall provide coverage, based on proper reporting of classification codes and payroll amounts and filing of any coverage agreements, which meets the statutory requirements of Texas Labor Code 401.011(44) for all employees of the Contractor providing services on the Project for the duration of the Project.

A.3.2.5.1.5 The Contractor must provide a certificate of coverage to the Owner prior to being awarded the Contract.

A.3.2.5.1.6 If the coverage period shown on the Contractor's current certificate of coverage ends during the duration of the Project, the Contractor must, prior to the end of the coverage period, file a new certificate of coverage with the Owner showing that coverage has been extended.

A.3.2.5.1.7 The Contractor shall obtain from each person providing services on the Project, and provide to the Owner:

.1 A certificate of coverage, prior to that person beginning work on the Project, so the Owner will have, on file, certificates of coverage showing coverage for all persons providing services on the Project; and

.2 No later than seven days after receipt by the Contractor, a new certificate of coverage showing extension of coverage, if the coverage period shown on the current certificate of coverage ends during the duration of the Project.

A.3.2.5.1.8 The Contractor shall retain all required certificates of coverage for the duration of the Project and for one year thereafter.

A.3.2.5.1.9 The Contractor shall notify the Owner, in writing by certified mail or personal delivery, within ten (10) days after Contractor knew or should have known, of any change that materially affects the provision of coverage of any person providing services on the Project.

A.3.2.5.1.10 The Contractor shall post on each Project site a notice, in the text form and manner prescribed by the TDI, informing all persons providing services on the Project that they are required to be covered, and stating how a person may verify coverage and report lack of coverage.

A.3.2.5.1.11 The Contractor shall contractually require each person with whom it contracts to provide services on the Project to:

.1 Provide coverage, based on proper reporting of classification codes and payroll amounts and filing of any coverage agreements, which meets the statutory requirements of Texas Labor Code 401.011(44) for all of its employees providing services on the Project for the duration of the Project;

.2 Provide to the Contractor, prior to that person beginning work on the Project, a certificate of coverage showing that coverage is being provided for all employees of the person providing services on the project for the duration of the Project;

.3 Provide the Contractor, prior to the end of the coverage period, a new certificate of coverage showing extension of coverage, if the coverage period shown on the current certificate of coverage ends during the duration of the Project;

.4 Obtain from each other person with who it contracts, and provide to the Contractor:

.1 A certificate of coverage, prior to the other person beginning work on the Project; and

.2 A new certificate of coverage showing extension of coverage, prior to the end of the coverage period, if the coverage period shown on the current certificate of coverage ends during the duration of the Project.

.5 Retain all required certificates of coverage on file for the duration of the Project and for one year thereafter;

.6 Notify the Owner in writing by certified mail or persona delivery, within ten (10) days after the person knew or should have known, of any change that materially affects the provision of coverage of any person providing services on the Project; and

.7 Contractually require each person with whom it contracts to perform as required by items 1 - 6, with the certificates of coverage to be provided to the person for whom they are providing services.

A.3.2.5.1.12 By signing this Contract or providing or causing to be provided a certificate of coverage, the Contractor is representing to the Owner that all employees of the Contractor who will provide services on the Project will be covered by worker's compensation coverage for the duration of the Project, that the coverage will be based on proper reporting of classification codes and payroll amounts, and that all coverage agreements will be filed with the appropriate insurance carrier, or, in the case of a self-insured, with the TDI's Division of Self-Insurance Regulation. Providing false or misleading information may subject the Contractor to administrative penalties, criminal penalties, civil penalties, or other civil actions.

A.3.2.5.1.13 The Contractor's failure to comply with any of these provisions is a breach of contract by the Contractor that entitles the Owner to declare the Contract void if the Contractor does not remedy the breach within ten (10) days after receipt of notice of breach from the Owner.

A.3.2.5.1.14 The coverage requirement recited above does not apply to sole proprietors, partners, and corporate officers who are excluded from coverage in an insurance policy or certificate of authority to self-insure that is delivered, issued or delivery, or renewed on or after January 1, 1996.

28 TAC § 110.110(i).

~~§ A.3.2.6 Employers' Liability with policy limits not less than « » (\$ « ») each accident, « » (\$ « ») each employee, and « » (\$ « ») policy limit.~~

~~§ A.3.2.7 Jones Act, and the Longshore & Harbor Workers' Compensation Act, as required, if the Work involves hazards arising from work on or near navigable waterways, including vessels and docks~~

~~§ A.3.2.8 If the Contractor is required to furnish professional services as part of the Work, the Contractor shall procure Professional Liability insurance covering performance of the professional services, with policy limits of not less than « » (\$ « ») per claim and « » (\$ « ») in the aggregate.~~

~~§ A.3.2.9 If the Work involves the transport, dissemination, use, or release of pollutants, the Contractor shall procure Pollution Liability insurance, with policy limits of not less than « » (\$ « ») per claim and « » (\$ « ») in the aggregate.~~

~~§ A.3.2.10 Coverage under Sections A.3.2.8 and A.3.2.9 may be procured through a Combined Professional Liability and Pollution Liability insurance policy, with combined policy limits of not less than « » (\$ « ») per claim and « » (\$ « ») in the aggregate.~~

~~§ A.3.2.11 Insurance for maritime liability risks associated with the operation of a vessel, if the Work requires such activities, with policy limits of not less than « » (\$ « ») per claim and « » (\$ « ») in the aggregate.~~

~~§ A.3.2.12 Insurance for the use or operation of manned or unmanned aircraft, if the Work requires such activities, with policy limits of not less than « » (\$ « ») per claim and « » (\$ « ») in the aggregate.~~

§ A.3.3 Contractor's Other Insurance Coverage

§ A.3.3.1 Insurance selected and described in this Section A.3.3 shall be purchased from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located.

Contractor's insurance shall apply separately to each insured against whom claim is made or suit is brought, except with respect to the limits of the insurer's liability. The Contractor shall maintain the required insurance until the expiration of the period for correction of Work as set forth in Section 12.2.2 of the General Conditions, unless a different duration is stated below:

(If the Contractor is required to maintain any of the types of insurance selected below for a duration other than the expiration of the period for correction of Work, state the duration.)

<< >>

§ A.3.3.2 The Contractor shall purchase and maintain the following types and limits of insurance in accordance with Section A.3.3.1.

(Select the types of insurance the Contractor is required to purchase and maintain by placing an X in the box(es) next to the description(s) of selected insurance. Where policy limits are provided, include the policy limit in the appropriate fill point.)

- [] § A.3.3.2.1 ~~Property-Builder's Risk Property~~ insurance ~~of the same type and scope satisfying the requirements identified in Section A.2.3,~~ which, if selected in this section A.3.3.2.1, relieves the Owner of the responsibility to purchase and maintain such insurance except insurance required by Section A.2.3.1.3 and Section A.2.3.3. ~~The Contractor shall comply with all obligations of the Owner under Section A.2.3 except to the extent provided below.~~ The Contractor shall disclose to the Owner the amount of any deductible, and the ~~Owner~~Contractor shall be responsible for losses within the deductible. ~~Upon request,~~ The Contractor shall provide the Owner with a copy of the property insurance policy or policies required. The Owner shall adjust and settle the loss with the insurer and be the trustee of the proceeds of the property insurance in accordance with Article 11 of the General Conditions unless otherwise set forth below:

(DO NOT USE) Where the Contractor's obligation to provide property insurance differs from the Owner's obligations as described under Section A.2.3, indicate such differences in the space below. Additionally, if a party other than the Owner will be responsible for adjusting and settling a loss with the insurer and acting as the trustee of the proceeds of property insurance in accordance with Article 11 of the General Conditions, indicate the responsible party below.)

.1 Builder's Risk. Unless otherwise provided, Contractor shall purchase and maintain, from an insurance company or insurance companies lawfully authorized to issue insurance in the state of Texas, a property insurance written on builder's risk "all-risks" completed value or equivalent policy form and sufficient to cover the total value of the entire Project on a replacement cost basis, including boiler and machinery insurance. Coverage, if not included in the base coverage, shall include coverage against the perils of fire, (with extended coverage) and physical loss or damage including, without limitation or duplication of coverage, lightning, collapse, earthquake, flood, wind storm, hurricane, hail, explosion, riot, civil commotion, smoke, aircraft, land vehicles, theft, vandalism, malicious mischief, falsework, testing and start-up, temporary buildings, debris removal including demolition occasioned by enforcement of any applicable legal requirements, and all other perils, and shall include materials stored on-site, off-site, and in transit. The Contractor's property insurance coverage shall be no less than the amount of the initial Contract Sum, plus the value of subsequent Modifications and labor performed and materials or equipment supplied by others. The property insurance shall be maintained until Final Completion; and thereafter, as provided in Section A.2.3.1.3, unless otherwise provided in the Contract Documents or otherwise agreed in writing by the parties to this Agreement. This insurance shall include the interests of the Owner, Contractor, Subcontractors, and Sub-subcontractors in the Project as insureds. This insurance shall include the interests of mortgagees as loss payees. Such coverage shall be primary coverage.

.2 Causes of Loss. The insurance required by this Section A.3.3.2.1 shall provide coverage for direct physical loss or damage, and shall not exclude the risks of fire, explosion, theft, vandalism, malicious mischief, collapse, earthquake, flood, or windstorm. The insurance shall also provide coverage for ensuing loss or resulting damage from error, omission, or deficiency in construction

methods, design, specifications, workmanship, or materials. Sub-limits, if any, are as follows:

(Indicate below the cause of loss and any applicable sub-limit.)

.3 Causes of Loss Sub-Limit. Specific Required Coverages. The insurance required by this Section A.3.3.2.1 shall provide coverage for loss or damage to falsework and other temporary structures, and to building systems from testing and startup. The insurance shall also cover debris removal, including demolition, occasioned by enforcement of any applicable legal requirements, and reasonable compensation for the Architect's and Contractor's services and expenses required as a result of such insured loss, including claim preparation expenses. Sub-limits, if any, are as follows: (Indicate below type of coverage and any applicable sub-limit for specific required coverages.)

.4 Coverage Sub-Limit. Unless the parties agree otherwise, upon Substantial Completion, the Contractor shall continue the insurance required by Section A.3.3.2.1 or, if necessary, replace the insurance policy required under Section A.3.3.2.1 with property insurance written for the total value of the Project that shall remain in effect until expiration of the period for correction of the Work set forth in Section 12.2.2. of the General Conditions.

.5 Adjustment of Loss. The Owner, as a fiduciary, shall have power to adjust and settle any loss arising out of the Work, with insured, regardless of the purchaser of the insurance policy. The Contractor, upon receipt of proceeds, shall as fiduciary, pay all subcontractors their just shares of insurance proceeds received by the Contractor, and, by appropriate agreements, shall require subcontractors to make payment to their sub-subcontractors in similar manner. The Owner shall deposit, in a separate account, proceeds so received, which the Owner shall distribute in accordance with such agreement as the parties in interest may reach. If after such loss no other special agreement is made and unless the Owner terminates the Contract for convenience, then replacement of damaged property shall be performed by the Contractor with the insurance proceeds upon issuance of a Notice to Proceeds from the Owner.

.6 Occupancy or Use Prior to Substantial Completion. The Owner's occupancy or use of any completed or partially completed portion of the Work prior to Substantial Completion shall not commence until the insurance company or companies providing the insurance under Section A.3.3.2.1 have consented, in writing, to the continuance of coverage. The Owner and the Contractor shall take no action with respect to partial occupancy or use that would cause cancellation, lapse, or reduction of insurance, unless they agree otherwise in writing.

.7 Insurance for Existing Structures. If the Work involves remodeling an existing structure or constructing an addition to an existing structure,] the Contractor shall purchase and maintain, until the expiration of the period for correction of Work as set forth in Section 12.2.2 of the General Condition, "all-risks" property insurance, on a replacement cost basis, protecting the existing structure against direct physical loss or damage from the causes of loss identified in Section A.3.3.2.1, notwithstanding the undertaking of the Work. The Contractor shall be responsible for all co-insurance penalties.

.8 Employee Theft or Dishonesty. If this Builder's Risk policy excludes Employee Theft or Dishonesty coverage, including Third Parties, Contractor shall obtain separate coverage sufficient to protect Owner's interest and in an amount agreeable to Owner.

.9 Cancellation. The insurance policies required by this Section A.3.3.2 shall contain a provision that coverages afforded under the policies will not be canceled for any reason, other than nonpayment of premium, or reduced or restricted due to a material change in coverage until at least 30 days prior written notice of such cancellation or material change has been given to the Owner. Contractor shall provide Owner 30 days prior written notice of the expiration of any policy required by Section A.3.1.1.

.10 Construction Manager at Risk. If Contractor is a Construction Manager at Risk. Then, as specified in each AIA A133 Exhibit A Amendment, the amount of Builder's Risk insurance coverage shall be an amount equal to the Guaranteed Maximum Price; otherwise, in the total amount of the

Contract Sum.

.11 Deductibles. For any claim made against the builder’s risk insurance, the deductible shall not exceed \$2,500 for a Contract Sum (or Guaranteed Maximum Price, if the Project is a Construction Manager at Risk project), of less than \$4 million. For a Contract Sum (or Guaranteed Maximum Price, if the project is a Construction Manager at Risk project), of \$4 million or more, the deductible shall not exceed \$5,000. Contractor shall be responsible for losses within such deductible amounts.

« »

[« »] ~~§ A.3.3.2.2 Railroad Protective Liability Insurance, with policy limits of not less than « » (\$ « ») per claim and « » (\$ « ») in the aggregate, for Work within fifty (50) feet of railroad property.~~

[« »] ~~§ A.3.3.2.3 Asbestos Abatement Liability Insurance, with policy limits of not less than « » (\$ « ») per claim and « » (\$ « ») in the aggregate, for liability arising from the encapsulation, removal, handling, storage, transportation, and disposal of asbestos containing materials.~~

[« »] § A.3.3.2.4 Insurance for physical damage to property while it is in storage and in transit to the construction site on an “all-risks” completed value form.

[« »] ~~§ A.3.3.2.5 Property insurance on an “all risks” completed value form, covering property owned by the Contractor and used on the Project, including scaffolding and other equipment.~~

[« »] § A.3.3.2.6 Other Insurance
(List below any other insurance coverage to be provided by the Contractor and any applicable limits.)

Coverage
« »

Limits

§ A.3.4 Performance Bond and Payment Bond

The Contractor shall provide surety bonds, from a company or companies lawfully authorized to issue surety bonds in the jurisdiction where the Project is located, subject to the requirements of A201-2017, Article 11.1.2.1, as follows:

(Specify type and penal sum of bonds.)

Type

Payment Bond

Performance Bond

Penal Sum (\$0.00)

« \$ _____ or 100% of the Contract Sum as amended

\$ _____ or 100% of the Contract Sum as amended»

The form of Payment and Performance Bonds shall be subject to the requirements of Texas law AIA Document A312™, Payment Bond and Performance Bond, or contain provisions identical to AIA Document A312™, current as of the date of this Agreement.

ARTICLE A.4 SPECIAL TERMS AND CONDITIONS

Special terms and conditions that modify this Insurance and Bonds Exhibit, if any, are as follows:

« See A201-2017, Article 11 »

This Agreement entered into as of the day and year first written above.

OWNER

CONTRACTOR

Name and Title

Independent School District

Name and Title

ATTEST:

By: _____

Title: _____

Independent School District



DOCUMENT 00 61 13.13

PERFORMANCE BOND FORM

Bond No.: _____

(Penalty of this bond must be 100% of contract amount)

KNOW ALL MEN BY THESE PRESENTS, that: _____
(hereinafter called the Principal), as principal, and
a corporation organized and existing under the laws of the State of _____ authorized and admitted to
do business in the State of Texas and licensed by the State of Texas to execute bonds as Surety (hereinafter called the Surety), as
Surety, are held and firmly bound unto

(hereinafter called the Obligee) in the amount of _____

Dollars(\$ _____) for the payment whereof, the said Principal and Surety bind themselves, and their heirs,
administrators, executors, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has entered into a certain written contract with the Obligee, dated this _____ day of
_____, _____.

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EAGLE MOUNTAIN-SAGINAW ISD
FORT WORTH, TEXAS**

which contract is hereby referred to and made a part hereof as fully and the same extent as if copied at length herein.

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION IS SUCH, that if the said Principal shall faithfully perform
the work in accordance with the plans, specifications and contract documents, then this obligation shall be void; otherwise to
remain in full force and effect.

PROVIDED, HOWEVER, that this bond is executed pursuant to the provisions of Chapter 22.53 of the Texas Government Code
and all liabilities on this bond shall be determined in accordance with the provisions of said Chapter to the same extent as if it
were copied at length herein.

IN WITNESS WHEREOF, the said Principal and Surety have signed and sealed this Instrument this _____ day of
_____, _____.

Principal (Seal)

Surety Address By: _____

Surety (Seal)

Surety Telephone Number By: _____
Attorney-in-Fact

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DOCUMENT 00 61 13.16

PAYMENT BOND FORM

Bond No.: _____

(Penalty of this bond must be 100% of contract amount)

KNOW ALL MEN BY THESE PRESENTS, that: _____
(hereinafter called the Principal), as principal,
a corporation organized and existing under the laws of the State of _____ authorized and admitted to
do business in the State of Texas and licensed by the State of Texas to execute bonds as Surety (hereinafter called the Surety), as
Surety, are held and firmly bound unto

_____ (hereinafter called the Obligee) in the amount of _____

Dollars(\$ _____) for the payment whereof, the said Principal and Surety bind themselves, and their heirs,
administrators, executors, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has entered into a certain written contract with the Obligee, dated this _____ day of _____,

**NEW CENTRAL ADMINISTRATION BUILDING
EAGLE MOUNTAIN-SAGINAW ISD
FORT WORTH, TEXAS**

which contract is hereby referred to and made a part hereof as fully and the same extent as if copied at length herein.

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION IS SUCH, that if the said Principal shall pay all claimants
supplying labor and material to him or a Subcontractor in the prosecution of the work provided for in said contract, then this
obligation shall be void; otherwise to remain in full force and effect.

PROVIDED, HOWEVER, that this bond is executed pursuant to the provisions of Chapter 22.53 of the Texas Government Code
and all liabilities on this bond to all such claimants shall be determined in accordance with the provisions of said Chapter to the
same extent as if it were copied at length herein.

IN WITNESS WHEREOF, the said Principal and Surety have signed and sealed this Instrument this _____ day of _____,

Witness: _____ (Seal)
Principal

_____ By: _____

Witness: _____ (Seal)
Surety

_____ By: _____
Attorney-in-Fact

_____ Surety Address _____ Surety Telephone Number

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DOCUMENT 00 65 00
RELEASE OF LIEN DOCUMENTS

APPENDIX INDEX:

1. **CONDITIONAL WAIVER FOR PROGRESS PAYMENTS**
2. **UNCONDITIONAL WAIVER FOR PROGRESS PAYMENTS**
3. **CONDITIONAL WAIVER FOR FINAL PAYMENT**
4. **UNCONDITIONAL WAIVER FOR FINAL PAYMENT**

[Note: the attached forms are duplicated *verbatim* (without editing) from HB 1456.]

FORM 1: CONDITIONAL WAIVER FOR PROGRESS PAYMENTS

* * * * *

CONDITIONAL WAIVER AND RELEASE ON PROGRESS PAYMENT

Project:

Job No.:

On receipt by the signer of this document of a check from _____

(maker of check) in the sum of \$ _____
payable to _____

(payee or payees of check) and when the check has been properly endorsed and has been paid by the bank on which it is drawn, this document becomes effective to release any mechanic's lien right, any right arising from a payment bond that complies with a state or federal statute, any common law payment bond right, any claim for payment, and any rights under any similar ordinance, rule, or statute related to claim or payment rights for persons in the signer's position that the signer has on the property of _____

(owner) located at (location) to the following extent: _____

_____ (job description).

This release covers a progress payment for all labor, services, equipment, or materials furnished to the property or to _____
(person with whom signer contracted) as indicated in the attached statement(s) or progress payment request(s), except for unpaid retention, pending modifications and changes, or other items furnished.

Before any recipient of this document relies on this document, the recipient should verify evidence of payment to the signer.

The signer warrants that the signer has already paid or will use the funds received from this progress payment to promptly pay in full all of the signer's laborers, subcontractors, materialmen, and suppliers for all work, materials, equipment, or services provided for or to the above referenced project in regard to the attached statement(s) or progress payment request(s).

Date: _____

_____ (Company name)

By _____ (Signature)

_____ (Title)

FORM 2: UNCONDITIONAL WAIVER FOR PROGRESS PAYMENTS

* * * * *

NOTICE: THIS DOCUMENT WAIVES RIGHTS UNCONDITIONALLY AND STATES THAT YOU HAVE BEEN PAID FOR GIVING UP THOSE RIGHTS. IT IS PROHIBITED FOR A PERSON TO REQUIRE YOU TO SIGN THIS DOCUMENT IF YOU HAVE NOT BEEN PAID THE PAYMENT AMOUNT SET FORTH BELOW. IF YOU HAVE NOT BEEN PAID, USE A CONDITIONAL RELEASE FORM.

UNCONDITIONAL WAIVER AND RELEASE ON PROGRESS PAYMENT

Project:

Job No.:

The signer of this document has been paid and has received a progress payment in the sum of \$ _____ for all labor, services, equipment, or materials furnished to the property or to _____ (person with whom signer contracted) on the property of _____ (owner) located at _____ (location) to the following extent: _____

_____ (job description). The signer therefore waives and releases any mechanic's lien right, any right arising from a payment bond that complies with a state or federal statute, any common law payment bond right, any claim for payment, and any rights under any similar ordinance, rule, or statute related to claim or payment rights for persons in the signer's position that the signer has on the above referenced project to the following extent: _____

This release covers a progress payment for all labor, services, equipment, or materials furnished to the property or to _____ (person with whom signer contracted) as indicated in the attached statement(s) or progress payment request(s), except for unpaid retention, pending modifications and changes, or other items furnished.

The signer warrants that the signer has already paid or will use the funds received from this progress payment to promptly pay in **full** all of the signer's laborers, subcontractors, materialmen, and suppliers for all work, materials, equipment, or services provided for or to the above referenced project in regard to the attached statement(s) or progress payment request(s).

Date: _____

_____ (Company name)

By _____ (Signature)

_____ (Title)

FORM 3: CONDITIONAL WAIVER FOR FINAL PAYMENT

* * * * *

CONDITIONAL WAIVER AND RELEASE ON FINAL PAYMENT

Project:

Job No.:

On receipt by the signer of this document of a check from _____

_____ (maker of check) in the sum of
\$ _____ payable to

_____ (payee or payees of check) and when the check has been properly
endorsed and has been paid by the bank on which it is drawn, this document becomes effective to
release any mechanic's lien right, any right arising from a payment bond that complies with a state or
federal statute, any common law payment bond right, any claim for payment, and any rights under any
similar ordinance, rule, or statute related to claim or payment rights for persons in the signer's
position that the signer has on the property of _____

(owner) located at _____

(location) to the following extent: _____

_____ (job description).

This release covers the final payment to the signer for all labor, services, equipment, or materials
furnished to the property or to _____
(person with whom signer contracted).

Before any recipient of this document relies on this document, the recipient should verify evidence of
payment to the signer.

The signer warrants that the signer has already paid or will use the funds received from this final
payment to promptly pay in full all of the signer's laborers, subcontractors, materialmen, and suppliers
for all work, materials, equipment, or services provided for or to the above referenced project up to
the date of this waiver and release.

Date: _____

_____ (Company name)

By _____ (Signature)

_____ (Title)

FORM 4: UNCONDITIONAL WAIVER FOR FINAL PAYMENT

* * * * *

NOTICE: THIS DOCUMENT WAIVES RIGHTS UNCONDITIONALLY AND STATES THAT YOU HAVE BEEN PAID FOR GIVING UP THOSE RIGHTS. IT IS PROHIBITED FOR A PERSON TO REQUIRE YOU TO SIGN THIS DOCUMENT IF YOU HAVE NOT BEEN PAID THE PAYMENT AMOUNT SET FORTH BELOW. IF YOU HAVE NOT BEEN PAID, USE A CONDITIONAL RELEASE FORM.

UNCONDITIONAL WAIVER AND RELEASE ON FINAL PAYMENT

Project: _____

Job No.: _____

The signer of this document has been paid in full for all labor, services, equipment, or materials furnished to the property or to _____

_____ (person with whom signer contracted) on the property of _____

_____ (owner) located at _____

_____ (location) to the following extent _____

: _____ (job description). The signer therefore waives and releases any mechanic's lien right, any right arising from a payment bond that complies with a state or federal statute, any common law payment bond right, any claim for payment, and any rights under any similar ordinance, rule, or statute related to claim or payment rights for persons in the signer's position.

The signer warrants that the signer has already paid or will use the funds received from this final payment to promptly pay in full all of the signer's laborers, subcontractors, materialmen, and suppliers for all work, materials, equipment, or services provided for or to the above referenced project up to the date of this waiver and release.

Date: _____

_____ (Company name)

By _____ (Signature)

_____ (Title)

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DRAFT AIA® Document A201™ – 2017

General Conditions of the Contract for Construction

for the following PROJECT:

(Name and location or address)

<< >>
<< >>

THE OWNER:

(Name, legal status and address)

<< >>< >>
<< >>

THE CONTRACTOR:

(Name, legal status and address)

<< >>< >>
<< >>

THE ARCHITECT:

(Name, legal status and address)

<< >>< >>
<< >>

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ADDITIONS AND DELETIONS:
The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

For guidance in modifying this document to include supplementary conditions, see AIA Document A503™, Guide for Supplementary Conditions.



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ARTICLE 1 GENERAL PROVISIONS

§ 1.1 Basic Definitions

§ 1.1.1 The Contract Documents

The Contract Documents are enumerated in the Agreement between the Owner and Contractor (hereinafter the Agreement) and consist of the Agreement, Conditions of the Contract (General, Supplementary and other Conditions), all sections of the Project Manual and Construction Documents (as defined in Section 1.1.3 below) including Drawings, Specifications, and Addenda issued prior to execution of the Contract, other documents listed in the Agreement, and Modifications issued after execution of the Contract. A Modification is (1) a written amendment to the Contract signed by both parties, (2) a Change Order, (3) a Construction Change Directive, or (4) a written order for a minor change in the Work issued by the Architect. ~~Unless specifically enumerated in the Agreement, the Any reference to Contract Documents herein shall do not include the Construction Documents, and any other documents included advertisement or invitation to bid, Instructions to Bidders, sample forms, other information furnished by the Owner in the Contract Documents, as amended and/or supplemented for this Project anticipation of receiving bids or proposals, the Contractor's bid or proposal, or portions of Addenda relating to bidding or proposal requirements.~~

1.1.1.1 The Agreement, represents the entire and integrated agreement between the Owner and the Contractor and supersedes all prior negotiations, representations, or agreements, either written or oral. Any revision, amendment, or modification to the Standard Form of the Agreement shall be valid, binding, and enforceable only if said revision, amendment, or modification is made conspicuous by being underlined, lined-through, or highlighted in this Agreement signed by Contractor and the authorized representative of Owner's Board of Trustees. In the event of conflict, terms and conditions contained in the Agreement, shall take precedence over terms and conditions contained in the General Conditions, and the terms and conditions in the General Conditions, shall take precedence over all other terms and conditions contained in the other Contract Documents. If the Request for Proposals and the Proposal are included in the Contract Documents, then the Request for Proposals shall take precedence over the Proposal, unless specifically agreed otherwise herein.

§ 1.1.2 The Contract

The Contract Documents form the Contract for Construction. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations, or agreements, either written or oral. The Contract may be amended or modified only by a written Modification signed by the Contractor, approved by Owner's Board of Trustees, and signed by the representative of the Owner's Board of Trustees who is authorized to sign contracts. As a material consideration for the making of the Contract, modifications to the Contract shall not be constructed against the maker of said modifications. The Contract Documents shall not be construed to create a contractual relationship of any kind (1) between the Contractor and the Architect or the Architect's consultants, (2) between the Owner and a Subcontractor or a Sub-subcontractor, (3) between the Owner and the Architect or the Architect's consultants, or (4) between any persons or entities other than the Owner and the Contractor. ~~The Architect shall, however, be entitled to performance and enforcement of obligations under the Contract intended to facilitate performance of the Architect's duties.~~

1.1.2.1 To be effective, all Contract Documents requiring signatures must be signed first by the Contractor and then by the Owner's authorized representative, after approval by Owner's Board of Trustees. If an approved Contract Document requiring Contractor's signature has not been signed, then the missing signature shall be provided within a reasonable period of time. Failure of Contractor to sign an approved Contract Document after notice and a reasonable opportunity to sign, shall be considered a material breach of the Contract by Contractor.

§ 1.1.3 The Work; Construction Documents

The term "Work" means the construction and services required by the Contract Documents, whether completed or partially completed, and includes all other labor, materials, equipment, and services provided or to be provided by the Contractor to fulfill the Contractor's obligations. The Work may constitute the whole or a part of the Project. The Work includes all of Contractor's responsibilities as to all labor, parts, supplies, skill, supervision, transportation services, storage requirements, and other facilities and things necessary, proper or incidental to the carrying out and completion of the terms of the Contract Documents and the Construction Documents, and all other items of cost or value needed to produce, construct, and fully complete the public Work identified by the Contract Documents and the Construction Documents. "Construction Documents" means: all Drawings, Specifications, geotechnical reports, Addenda, submittals, transmittals, deliverables, instructions to Contractors, and other documents, including those in electronic form, prepared by the Architect and the Architect's consultants and which set forth in detail the requirements for construction of the Project. The Construction Documents shall include

Drawings and Specifications that establish, in detail, the quality levels of materials and systems required for the Project. The Construction Documents shall reflect all agreements between Owner and Architect concerning Owner's budgetary constraints, programmatic needs and expectations as to quality, functionality of systems, maintenance costs, and usable life of equipment and facilities. Said Construction Documents shall reflect the Owner's educational program and educational specifications, the State educational adequacy standards in 19 TAC § 61.1036, and the standards set forth in Section 3.1.4 of AIA document B101-2017. The Architect shall provide Construction Documents which are sufficient for Owner to complete construction of the Project, are free from material defects or omissions, and which shall comply with all applicable laws, ordinances, codes, rules, and regulations, as of the date of issuance of Construction Documents.

§ 1.1.4 The Project

The Project is the total construction of which the Work performed under the Contract Documents may be the whole or a part and which may include construction by the Owner and by Separate Contractors.

§ 1.1.5 The Drawings

The Drawings are the graphic and pictorial portions of the Contract Documents showing the design, location and dimensions of the Work, generally including plans, elevations, sections, details, schedules, and diagrams.

§ 1.1.6 The Specifications

The Specifications are that portion of the Contract Documents consisting of the written requirements for materials, equipment, systems, standards and workmanship for the Work, and performance of related services.

§ 1.1.7 ~~Construction Instru~~Documents of Service

~~Construction Instru~~Documents of Service are include representations, in any medium of expression now known or later developed, of the tangible and intangible creative work performed by the Architect and the Architect's consultants under their respective professional services agreements. ~~Construction Instru~~Documents of Service may include, without limitation, studies, surveys, models, sketches, drawings, specifications, and other similar materials.

§ 1.1.8 ~~Initial Decision Maker~~

~~The Initial Decision Maker is the person identified in the Agreement to render initial decisions on Claims in accordance with Section 15.2. The Initial Decision Maker shall not show partiality to the Owner or Contractor and shall not be liable for results of interpretations or decisions rendered in good faith.~~

1.1.9 Addenda

Addenda are written or graphic instrument issued prior to the execution of the Contract, which modify or interpret the bidding or proposal documents, including Drawings and Specifications, by additions, deletions, clarifications, or corrections. Addenda will become part of the Contract Documents and Construction Documents when the Agreement is executed. The Contractor and subcontractors shall include all addenda items on their copies of the Drawings and Specifications.

1.1.10 All references to "Contractor" shall include "Construction Manager at Risk" as appropriate.

1.1.11 The Owner may retain Program Manager(s) to carry out some of the functions of the administration of the Owner's construction program. The Contractor, Architect, and Program Manager(s) (when applicable) shall cooperate with each other in the performance of their respective functions. The management and reporting systems used by the Owner and/or Program Manager(s) including the assignment of the Program Manager, may be changed by Owner during the Project.

1.1.12 Approved, Approved Equal, Approved Equivalents, Or Equal

The terms "Approved" and "Approved Equal" relate to the substitution of materials, equipment, or procedure in writing by the Architect prior to receipt of bids.

1.1.13 Abbreviations

AIA: American Institute of Architects. (All references to AIA documents refer to AIA's trademarked documents. Each reference to a specific document shall refer to the documents as amended for this Project.)

AIEE: American Institute of Electrical Engineers

ACI: American Concrete Institute

<u>AHERA:</u>	<u>Asbestos Hazardous Emergency Response Act</u>
<u>AISI:</u>	<u>American Iron and Steel Institute</u>
<u>AISC:</u>	<u>American Institute of Steel Construction</u>
<u>ANSI:</u>	<u>American National Standards Institute</u>
<u>ASA:</u>	<u>American Standards Association</u>
<u>ASTM:</u>	<u>American Society of Testing Materials</u>
<u>AWSC:</u>	<u>American Welding Society Code</u>
<u>CERCLA:</u>	<u>Comprehensive Environmental Response, Compensation, and Liability Act</u>
<u>EPA:</u>	<u>Environmental Protection Agency</u>
<u>FS:</u>	<u>Federal Specification</u>
<u>NEC:</u>	<u>National Electrical Code</u>
<u>OSHA:</u>	<u>Occupational Safety and Health Administration</u>
<u>SPR:</u>	<u>Simplified Practice Recommendation</u>
<u>TAS:</u>	<u>Texas Accessibility Standards</u>
<u>UL:</u>	<u>Underwriters Laboratories, Inc.</u>

1.1.14 Bids or Bidding The term “Bids” or “Bidding” shall include any kind of competitive purchasing under Texas Government Code Chapter 2269.

1.1.15 Miscellaneous Other Words

1.1.15.1 Business Day

The term “business day” is a day that Owner’s Administration Building is scheduled to be open for normal business purposes, unless closed by the Owner’s Superintendent of Schools for inclement weather or other reason. Days on which the Administration Building is normally closed are: Thanksgiving Break, Winter Break, Spring Break, and Summer Break, as well as other federal, state, or local days specified in the calendar approved by the Owner’s Board of Trustees on an annual basis. A business day does not include a day on which the Owner’s Administration Building is open only for the purposes of conducting candidate filing, early voting, elections, or other special events.

1.1.15.2 Calendar Day

A calendar day is a day on the Gregorian Calendar. The Contract Time is established in calendar days. Extensions of time granted, if any, will be converted to calendar days.

1.1.15.3 Holidays

Owner-approved holidays for Contractor’s Work are limited to: New Year’s Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, and Christmas Day.

1.1.15.4 Work Day

Work days are all calendar days except Holidays.

1.1.15.5 Anticipated Weather Days

An allowance of regular Work Days, established as anticipated Work Days lost due to weather delays; said allowance shall be included in Contractor’s proposed completion time. Only lost weather days in excess of Anticipated Weather Days shall be considered by Owner for time extensions based upon weather. Section 15.1.5.3 lists required Anticipated Weather Days.

1.1.16 Contract Sum

“Contract Sum” shall have the same meaning as in Section 5.1 of the Agreement (A133-2009), for the Project when the Project is a Construction Manager at Risk Project, and the same meaning as in Article 4 of the Agreement (A101-2017) for the Project.

§ 1.2 Correlation and Intent of the Contract Documents

§ 1.2.1 The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work by the Contractor. The Contract Documents are complementary, and what is required by one shall be as binding as if required by all; performance by the Contractor shall be required only to the extent consistent with the Contract Documents and reasonably inferable from them as being necessary to produce the indicated results.

§ 1.2.1.1 The invalidity of any provision of the Contract Documents shall not invalidate the Contract or its remaining provisions. If it is determined that any provision of the Contract Documents violates any law, or is otherwise invalid or unenforceable, then that provision shall be revised to the extent necessary to make that provision legal and enforceable. In such case the Contract Documents shall be construed, to the fullest extent permitted by law, to give effect to the parties' intentions and purposes in executing the Contract.

1.2.1.2 During the course of the Work, should any conflict be found in or between the Contract Documents, the Contractor shall be deemed to have estimated the Work on the basis of the greater quantity or better quality, or the most stringent requirement, unless he shall have obtained an interpretation in writing from the Architect as to what shall govern before the submission of his Proposal. The Architect, in case of such conflict, may interpret or construe the documents so as to obtain the most substantial and complete performance of the Work consistent with the Contract Documents and reasonably inferable therefrom, in the best interest of Owner, and the Architect's interpretation shall be final. The terms and conditions of this clause shall not relieve any part of any other obligation under the Contract Documents.

§ 1.2.2 Organization of the Specifications into divisions, sections and articles, and arrangement of Drawings shall not control the Contractor in dividing the Work among Subcontractors or in establishing the extent of Work to be performed by any trade.

§ 1.2.3 Unless otherwise stated in the Contract Documents, words that have well-known technical or construction industry meanings are used in the Contract Documents in accordance with such recognized meanings.

1.2.4 Relation of Specifications And Drawings

General Requirements in the Specifications govern the execution of all Specifications. Summary paragraphs present a brief indication of the Work, but do not limit the Work as later detailed. The Drawings and Specifications are correlative and have equal authority and priority. Should the Drawings and Specifications have internal inconsistencies, then the Contractor shall base the bids and construction on the more expensive combination of quality and quantity of work indicated. For purposes of construction, the Architect shall determine the appropriate Work, after the Contractor brings the inconsistency to the Architect's attention. Failure to report an inconsistency shall be evidence that Contractor has elected to proceed in the more expensive manner.

1.2.5 Materials, Equipment, and Processes

Exact location and arrangement of the various pieces of equipment specified shall be determined with the approval of the Architect after equipment has been selected and/or as the Work progresses. All equipment shall, insofar as possible, be installed in such a manner as will not interfere with architectural or structural portions of the building. Should changes become necessary because of a failure of the Contractor to comply with the Contract Documents which results in equipment requiring more area than shown on the Contract Documents, the Contractor shall be fully responsible for completing any required modifications or eliminating any interferences. Where in the Drawings and Specifications, certain products, manufacturer's trade names, or catalog numbers are specified, it is done for the express purpose of establishing a standard of function, dimension, appearance, and quality of design in harmony with the Work, and is not intended for the purpose of limiting competition. Materials or equipment shall not be substituted unless the Architect has specifically accepted such substitution for use on this Project. When more than one material, process, or brand is specified for a particular item of Work, the choice shall be the Contractor's. The final selection of color and pattern will be made by the Owner from the range available within the option selected by the Contractor, unless the item is specified to match a specific color or sample furnished. Where particular items are specified, products of those named manufacturers are required unless Contractor submits for consideration proposed substitutions of materials equipment, or processes from those set out in the Contract Documents. Submittals of proposed substitutions should contain sufficient information to allow the Architect and Owner to determine if the proposed substitution is in fact equal to or better than the requirements in the Contract Documents. The Architect shall review and respond to proposed substitutions within fifteen (15) days of receipt. Contractor shall bear all risk caused by submitting substitutions, including all costs. The Owner may approve substitutions only when the substitution is clearly provided by the Contract to be equal in performance characteristics to the requirements of the Contract Documents, equally compatible with the existing installations and complementary to the architectural design for the Work. Certain special construction and equipment details may not be regularly included as part of the named manufacturer's standard catalog equipment, but shall be obtained by the Contractor from the manufacturer as required for the proper evaluation and/or function of the equipment. Reasonable minor variations in equipment are expected and will be acceptable, if approved by the Architect and Owner, however, indicated and specified

performance and material requirements are the minimum. The Owner and the Architect reserve the right to determine the quality of equipment and materials that deviate from any of the indicated and specified requirements.

1.2.6 Standards And Requirements

When the Contract Documents refer to standards, building codes, manufacturers' instructions, or other documents, unless otherwise specified, then the current edition as of the date of execution of the Agreement by the last party to execute said Agreement shall apply. It shall be the responsibility of the Architect to address revisions or amendments to applicable codes or standards which arise after the date of execution of the Agreement and until Final Completion, pursuant to the terms of the Agreement between Owner and Architect. Requirements of public authorities apply as minimum requirements only and do not supersede more stringent specified requirements.

§ 1.3 Capitalization

Terms capitalized in these General Conditions include those that are (1) specifically defined, (2) the titles of numbered articles, or (3) the titles of other documents published by the American Institute of Architects.

§ 1.4 Interpretation

In the interest of brevity the Contract Documents frequently omit modifying words such as "all" and "any" and articles such as "the" and "an," but the fact that a modifier or an article is absent from one statement and appears in another is not intended to affect the interpretation of either statement.

§ 1.5 Ownership and Use of Drawings, Specifications, and Other ~~Construction Instr~~Documents of Service

§ 1.5.1 ~~All ownership rights, whether common law, statutory, or other reserved rights, including copyright ownership of the Construction Documents, are controlled by the Agreement between the Owner and The Architect and the Architect's consultants shall be deemed the authors and owners of their respective Instruments of Service, including the Drawings and Specifications, and retain all common law, statutory, and other reserved rights in their Instruments of Service, including copyrights.~~ The Contractor, Subcontractors, Sub-subcontractors, and suppliers shall not own or claim a copyright in the ~~Instruments of Service~~Construction Documents. Submittal or distribution to meet official regulatory requirements or for other purposes in connection with the Project is not to be construed as publication in derogation of ~~any~~the Architect's or Architect's consultants' reserved rights.

§ 1.5.2 The Contractor, Subcontractors, Sub-subcontractors, and suppliers are ~~granted a limited license~~authorized to use and reproduce the ~~Construction Documents~~Instruments of Service provided to them, subject to any protocols established pursuant to Sections ~~1.7 and 1.8~~, solely and exclusively for execution of the Work. All copies made under this authorization shall bear the copyright notice, if any, shown on the ~~Construction Documents~~Instruments of Service. The Contractor, Subcontractors, Sub-subcontractors, and suppliers may not use the ~~Instruments of Service~~Construction Documents on other projects or for additions to the Project outside the scope of the Work without the specific written consent of the Owner, Architect, and the Architect's consultants. All copies of the Construction Documents, except the Contractor's record set, shall be returned or suitably accounted for to the copyright holder upon completion of the Work.

§ 1.6 Notice

§ 1.6.1 ~~Except as otherwise provided in Section 1.6.2, where the Contract Documents require one party to notify or give notice to the other party, such notice shall be provided in writing to the designated representative of the party to whom the notice is addressed and shall be deemed to have been duly served if delivered in person, by mail, by courier, or by electronic transmission if a method for electronic transmission is set forth in the Agreement~~Written notice shall be deemed to have been duly served if delivered in person to the individual, to a member of the firm or entity, or to an officer of the corporation for which it was intended; if delivered at, or sent by registered or certified mail, or by courier service providing proof of delivery to the last business address known to the party giving notice, or if sent by electronic facsimile transmission, to the last business number known to the party giving notice, with electronic confirmation of receipt; or, if sent by electronic mail, to the email address of the Owner's or Contractor's designated representative, with electronic confirmation of receipt.

§ 1.6.2 ~~Notice of Claims as provided in Section 15.1.3 shall be provided in writing and shall be deemed to have been duly served only if delivered to the designated representative of the party to whom the notice is addressed by certified or registered mail, or by courier providing proof of delivery.~~

§ 1.7 Digital Data Use and Transmission

~~If the parties intend to transmit Construction Documents or any other information or documentation in digital form, they shall endeavor to establish necessary protocols governing such transmissions, unless otherwise already provided in the Agreement or the Contract Documents and use of Instruments of Service or any other information or documentation in digital form. The parties will use AIA Document E203™ 2013, Building Information Modeling and Digital Data Exhibit, to establish the protocols for the development, use, transmission, and exchange of digital data.~~

§ 1.8 Building Information Models Use and Reliance

~~Any use of, or reliance on, all or a portion of a building information model without agreement to protocols governing the use of, and reliance on, the information contained in the model and without having those protocols set forth in AIA Document E203™ 2013, Building Information Modeling and Digital Data Exhibit, and the requisite AIA Document G202™ 2013, Project Building Information Modeling Protocol Form, shall be at the using or relying party's sole risk and without liability to the other party and its contractors or consultants, the authors of, or contributors to, the building information model, and each of their agents and employees.~~

ARTICLE 2 OWNER

§ 2.1 General

~~§ 2.1.1 The Owner is the independent school district person or entity identified as such in the Agreement and is referred to throughout in the Contract Documents as if singular in number. The Board of Trustees, by majority vote, is the only representative of the Owner, an independent school district, having the power to: enter into a contract; amend a contract, including but not limited to, AIA Document A133 Exhibit A; approve changes in the scope of the Work; approve and execute a Change Order or Construction Change Directive modifying the Contract Sum or Guaranteed Maximum Price; agree to an extension to the date of Substantial or Final Completion; or terminate a contract. The Board will act as soon as reasonably possible to avoid undue delays. The Board shall designate authorized representatives to act on its behalf for day-to-day operations under the Contract. Unless otherwise designated in the Contract Documents, Owner's authorized in writing a representative who shall be the Superintendent of Schools, who may delegate responsibilities as appropriate, have express authority to bind the Owner's Board of Trustees hereby delegates to the Superintendent of Schools or designee the authority to approve changes to the Work where such changes are within the Owner's contingency or the Contractor's contingency, and which do not exceed \$ _____, or will not increase the dates for Substantial or Final Completion by more than () days. Any such change shall be confirmed in writing between the Contractor and Owner's Superintendent or designee, and notice of such approved changes shall be given to the Board at its next regular meeting. Except as otherwise provided in the Contract Documents, the Architect does not have such authority. Neither Architect nor Contractor may rely upon the direction of any employee of Owner who has not been designated in writing by the Superintendent or Board of Trustees; Owner shall not be financially responsible for actions taken by the Architect or Contractor in reliance upon direction from unauthorized persons with respect to all matters requiring the Owner's approval or authorization. Except as otherwise provided in Section 4.2.1, the Architect does not have such authority. The term "Owner" means the Owner or the Owner's authorized representative.~~

~~§ 2.1.2 The Owner shall furnish to the Contractor, within fifteen days after receipt of a written request, information necessary and relevant for the Contractor to evaluate, give notice of, or enforce mechanic's lien rights. Such information shall include a correct statement of the record legal title to the property on which the Project is located, usually referred to as the site, and the Owner's interest therein. It shall be distinctly understood that by virtue of this Contract, no mechanic, contractor, material person, artisan, or laborer, skilled or unskilled, shall ever in any manner have, claim, or acquire any lien upon the buildings or any of the improvements of whatsoever nature or kind so erected or to be erected by virtue of this Contract or upon any of the land on which said buildings of any of the improvements are so erected, built, or situated, such property belonging to a political subdivision of the State of Texas. It shall be further understood that this Contract is not written for the benefit of their parties.~~

~~2.1.3 The Owner shall require the Contractor and the Architect to meet periodically at mutually-agreed-upon intervals, for the purpose of establishing procedures to facilitate cooperation, communication, and timely responses among the participants. By participating in this arrangement, the parties do not intend to create additional contractual obligations or modify the legal relationship which may otherwise exist.~~

~~2.1.4 The Owner may require that the Contractor use and/or respond to certain Owner-furnished forms or inquiries during the course of the Project. From time to time, there may be future revisions, changes, additions, or deletions to~~

these forms. The fact that the Owner modifies and increases reasonable reporting requirements shall not serve as the basis for a claim for additional time or compensation by the Contractor.

2.1.5 The Contractor stipulates and agrees that the Owner has no duty to discover any design errors or omissions in the Drawings, Plans, Specifications, and other Construction Documents, and has no duty to notify Contractor of same. By entering into the Contract Documents or any Agreement with any Architect, Owner does not warrant the adequacy and accuracy of any Drawings, Plans, Specifications, or other Construction Documents.

§ 2.2 Evidence of the Owner's Financial Arrangements

~~§ 2.2.1 Prior to commencement of the Work and upon written request by the Contractor, t~~The Owner, being a public body under the laws of the State of Texas, must have adequate funds and/or financing as provided by law prior to award and execution of ~~shall furnish to the Contractor Documents~~reasonable evidence that the Owner has made financial arrangements to fulfill the Owner's obligations under the Contract. The Contractor shall have no obligation to commence the Work until the Owner provides such evidence. If commencement of the Work is delayed under this Section 2.2.1, the Contract Time shall be extended appropriately.

~~§ 2.2.2 Following commencement of the Work and upon written request by the Contractor, the Owner shall furnish to the Contractor reasonable evidence that the Owner has made financial arrangements to fulfill the Owner's obligations under the Contract only if (1) the Owner fails to make payments to the Contractor as the Contract Documents require; (2) the Contractor identifies in writing a reasonable concern regarding the Owner's ability to make payment when due; or (3) a change in the Work materially changes the Contract Sum. If the Owner fails to provide such evidence, as required, within fourteen days of the Contractor's request, the Contractor may immediately stop the Work and, in that event, shall notify the Owner that the Work has stopped. However, if the request is made because a change in the Work materially changes the Contract Sum under (3) above, the Contractor may immediately stop only that portion of the Work affected by the change until reasonable evidence is provided. If the Work is stopped under this Section 2.2.2, the Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable costs of shutdown, delay and start up, plus interest as provided in the Contract Documents.~~

~~§ 2.2.3 After the Owner furnishes evidence of financial arrangements under this Section 2.2, the Owner shall not materially vary such financial arrangements without prior notice to the Contractor.~~

~~§ 2.2.4 Where the Owner has designated information furnished under this Section 2.2 as "confidential," the Contractor shall keep the information confidential and shall not disclose it to any other person. However, the Contractor may disclose "confidential" information, after seven (7) days' notice to the Owner, where disclosure is required by law, including a subpoena or other form of compulsory legal process issued by a court or governmental entity, or by court or arbitrator(s) order. The Contractor may also disclose "confidential" information to its employees, consultants, sureties, Subcontractors and their employees, Sub-subcontractors, and others who need to know the content of such information solely and exclusively for the Project and who agree to maintain the confidentiality of such information.~~

§ 2.3 Information and Services Required of the Owner

~~§ 2.3.1 Except for permits and fees that are the responsibility of the Contractor under the Contract Documents, including those required under Section 3.7.1, the Owner shall secure and pay for necessary approvals, easements, assessments and charges required for construction, use or occupancy of permanent structures or for permanent changes in existing facilities.~~

~~§ 2.3.2 The Owner shall retain an architect lawfully licensed to practice architecture, or an entity lawfully practicing architecture, in the jurisdiction where the Project is located. That person or entity is identified as the Architect in the Agreement and is referred to throughout the Contract Documents as if singular in number.~~

~~§ 2.3.3 If the employment of the Architect terminates, the Owner shall employ a successor to whom the Contractor has no reasonable objection and whose status under the Contract Documents shall be that of the Architect. Owner shall notify Contractor if successor architect has been employed by Owner.~~

~~§ 2.3.4 The Owner shall furnish surveys describing physical characteristics, legal limitations and utility locations for the site of the Project, and a legal description of the site. Other than the metes and bounds noted in the survey, if any, Owner does not guarantee or warrant the accuracy of surveys provided, including the location of utility lines, cables,~~

~~pipes, or pipelines, or the presence or absence of easements. The Contractor shall be entitled to rely on the accuracy of information furnished by the Owner but shall exercise proper precautions relating to the safe performance of the Work.~~

§ 2.3.5 The Owner shall furnish information or services required of the Owner by the Contract Documents with reasonable promptness. ~~The Owner shall also furnish any other information or services under the Owner's control and relevant to the Contractor's performance of the Work with reasonable promptness~~ after receiving the Contractor's written request for such information or services. Absent such timely notification, any Claim based upon lack of such information or services shall be waived.

§ 2.3.6 Unless otherwise provided in the Contract Documents, the Owner shall furnish to the Contractor one copy of the ~~Construction~~ Documents, as provided for in the Project Manual, for purposes of making reproductions pursuant to Section 1.5.2.

§ 2.4 Owner's Right to Stop the Work

If the Contractor fails to correct defective Work, fails to correct Work that is not in accordance with the requirements of the Contract Documents or the Construction Documents as required by Section 12.2 or repeatedly fails to carry out Work in accordance with the Contract Documents, the Owner may issue a written order to the Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, the right of the Owner to stop the Work shall not give rise to a duty on the part of the Owner to exercise this right for the benefit of the Contractor or any other person or entity, except to the extent required by Section 6.1.3. The authorized Owner's representative having the legal right to stop the Work shall be limited to the Owner's Superintendent of Schools.

§ 2.5 Owner's Right to Carry Out the Work

If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents and fails within a ten-day period after receipt of written notice from the Owner to commence and continue correction of such default or neglect with diligence and promptness, the Owner may, without prejudice to other remedies the Owner may have, correct such default or neglect. ~~Such action by the Owner and amounts charged to the Contractor are both subject to prior approval of the Architect and t~~The Architect may shall, pursuant to Section 9.5.1, withhold or nullify a Certificate for Payment in whole or in part, to the extent reasonably necessary to reimburse the Owner for the reasonable cost of correcting such deficiencies, including Owner's expenses and compensation for the Architect's and other consultants' additional services, if any, made necessary by such default, neglect, or failure. If current and future payments are not sufficient to cover such amounts, then the Contractor shall pay the difference to the Owner. If the Contractor disagrees with the actions of the Owner or the Architect, or the amounts claimed as costs to the Owner, then the Contractor may file a Claim pursuant to Article 15.

ARTICLE 3 CONTRACTOR

§ 3.1 General

§ 3.1.1 The Contractor is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Contractor shall be lawfully licensed, if required in the jurisdiction where the Project is located. The Contractor shall designate in writing a representative who shall have express authority to bind the Contractor with respect to all matters under this Contract. The term "Contractor" means the Contractor or the Contractor's authorized representative, and includes the Construction Manager at Risk, if applicable.

§ 3.1.2 The Contractor shall perform the Work in accordance with the Contract Documents.

§ 3.1.3 The Contractor shall not be relieved of its obligations to perform the Work in accordance with the Contract Documents either by activities or duties of the Architect in the Architect's administration of the Contract, activities of the Owner (or Owner's Program Manager, if applicable), or by tests, inspections or approvals required or performed by persons or entities other than the Contractor.

3.1.4 The Contractor represents and warrants the following to the Owner (in addition to the other representations and warranties contained in the Contract Documents), as an inducement to the Owner to execute this Contract, which representations and warranties shall survive the execution and delivery of the Contract and the Final Completion of the Work:

.1 that it is financially solvent, able to pay its debts as they mature, and possessed of sufficient working capital to complete the Work and perform its obligations under the Contract Documents;

.2 that it is able to furnish the tools, materials, supplies, equipment, and labor required to timely complete the Work and perform its obligation hereunder and has sufficient experience and competence to do so;

.3 that it is authorized to do business in the State where the Project is located and properly licensed by all necessary governmental, public, and quasi-public authorities having jurisdiction over it, the Work, or the site of the Project; and

.4 that the execution of the Contract and its performance thereof are within its duly-authorized powers.

§ 3.2 Review of Contract Documents and Field Conditions by Contractor

§ 3.2.1 Execution of the Contract by the Contractor is a representation that the Contractor has visited the site, become generally familiar with local conditions under which the Work is to be performed, and correlated personal observations with requirements of the Contract Documents. The Contractor represents and warrants by submission of a Proposal that he has carefully examined the Contract Documents, any soil test reports, drainage studies, geotechnical or other reports, and the site of the Work, and that, from his own investigations, he has satisfied himself as to the nature and location of the Work, the character, quality and quantity of surface and subsurface materials likely to be encountered, the character of equipment and other facilities needed for the performance of the Work, the general and local conditions and all other materials which may in any way affect the Work or its performance. Should the Contractor find discrepancies, omissions or conflicts within the Contract Documents, or be in doubt as to their meaning, the Contractor shall at once notify in writing the Architect and Owner, and Architect will issue a written addendum to all parties that is consistent with the Owner's Scope of the Work. The Contractor shall not be entitled to any additional time or compensation for Contractor's failure to visit the site, or for any additional Work caused by the Contractor's fault, by improper construction, or by Contractor's failure to visit the site or to carefully study and compare the Contract Documents prior to execution of the Work.

§ 3.2.2 Because the Contract Documents are complementary, the Contractor shall, before starting each portion of the Work, carefully study and compare the various Contract Documents relative to that portion of the Work, as well as the information furnished by the Owner pursuant to Section 2.3.4, shall take field measurements of any existing conditions related to that portion of the Work, and shall observe any conditions at the site affecting it. These obligations are for the purpose of facilitating coordination and construction by the Contractor and are ~~not~~ for the purpose of discovering errors, omissions, or inconsistencies in the Contract Documents; ~~however,~~ the Contractor shall promptly report to the Architect any errors, inconsistencies or omissions discovered by or made known to the Contractor as a request for information in such form as the Architect may require. It is recognized that the Contractor's review is made in the Contractor's capacity as a contractor and not as a licensed design professional, unless otherwise specifically provided in the Contract Documents. Contractor shall not perform any Work involving an error, inconsistency, or omission without further instructions to Contractor or revised Construction Documents from the Architect.

§ 3.2.3 ~~Neither the Owner nor the~~ Contractor is ~~not~~ required to ascertain that the Contract Documents are in accordance with applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, but the Contractor shall promptly report to the Architect any nonconformity discovered by or made known to the Contractor as a request for information in such form as the Architect may require.

§ 3.2.4 If the Contractor has knowledge that any of the products or systems specified will perform in a manner that will limit the Contractor's ability to satisfactorily perform the Work or to honor his warranty, or will result in a limitation of or interference with the Owner's intended use, then the Contractor shall promptly notify the Architect and Owner in writing, providing substantiation for his position. Any necessary changes, including substitution of materials, shall be accomplished by appropriate Modification. If the Contractor believes that additional cost or time is involved because of clarifications or instructions the Architect issues in response to the Contractor's notices or requests for information pursuant to Sections 3.2.2 or 3.2.3, the Contractor shall submit Claims as provided in Article 15. If the Contractor fails to perform the obligations of Sections 3.2.2 or 3.2.3, the Contractor shall pay such costs and damages to the Owner, subject to Section 15.1.7, as would have been avoided if the Contractor had performed such obligations. Contractor shall take field measurements, verify field conditions, and shall carefully compare them to the Construction Documents. ~~If the Contractor performs those obligations, the Contractor shall~~

not be liable to the Owner or Architect for damages resulting from errors, inconsistencies or omissions in the Contract Documents, for differences between field measurements or conditions and the Contract Documents, or for nonconformities of the Contract Documents to applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities when the Contractor recognized or should have recognized such error, inconsistency, omissions or difference, and failed to report it to the Architect. Contractor shall not be entitled to additional compensation or additional Work caused by Contractor's failure to carefully study and compare the Construction Documents prior to the execution of the Work.

3.2.5 Prior to performing any Work, and only if applicable, Contractor shall locate all utility lines as shown and located on the plans and specifications, including the telephone company lines and cables, sewer lines, water pipes, gas lines, electrical lines, including, but not limited to, all buried pipelines and buried telephone cables, and shall perform any Work in such a manner so as to avoid damaging any such lines, cables, pipes, and pipelines. In addition, Contractor shall independently determine the location of same. Contractor shall be responsible for any damage done to such utility lines, cables, pipes, and pipelines during its Work, and shall be responsible for any loss, damage, or extra expense resulting from such damage. Repairs shall be made immediately to restore all service. Any delay for such break shall be attributable to Contractor. In addition, and only if applicable, Contractor shall review the appropriate AHERA and hazardous materials surveys for the particular campuses involved in the Project, and shall notify all Subcontractors and Sub-subcontractors of the necessity to review said surveys. Contractor shall perform any Work in such a manner as to avoid damaging, exposing, or dislodging any asbestos-containing materials that are clearly identified and located in AHERA and other hazardous material surveys. Before performing any portion of the Work, the Contractor shall fully investigate all physical aspects of the Project Site and verify all dimensions, measurements, property lines, grades and elevations, existing improvements, and general suitability of existing conditions at the Project site. If applicable, Contractor shall comply with U.S. Environmental Protection Agency rules concerning renovating, repairing, or painting work in schools built prior to 1978 involving lead-based paint.

3.2.6 The Owner shall be entitled to deduct from the Contract Sum, amounts paid to the Architect for the Architect to evaluate and respond to the Contractor's requests for information, where such information was available to the Contractor from a careful study and comparison of the Contract Documents, field conditions, Owner provided information, Contractor-prepared coordination drawings, or prior Project correspondence or documentation. If, in the reasonable opinion of the Architect, the Contractor does not make reasonable effort to comply with any of the above requirements of the Contract Documents, and this causes Architect or his Consultants to expend an unreasonable amount of time in the discharge of the duties imposed by the Contract Documents, then the Contractor shall bear the cost of compensation for the Architect's additional services made necessary by such failure.

3.2.7 The Contractor shall arrange meetings prior to commencement of the Work of all major Subcontractors to allow the Subcontractors to demonstrate an understanding of the Construction and Contract Documents to the Architect and to allow the Subcontractors to ask for interpretations, when necessary. The Contractor and each Subcontractor shall be evaluated and satisfy themselves as to the conditions and limitations under which the Work is to be performed, including:

- .1 The location, condition, layout, drainage, and nature of the Project site and surrounding areas;
- .2 Generally prevailing climatic conditions;
- .3 Anticipated labor supply and costs;
- .4 Availability and cost of materials, tools, and equipment; and
- .5 Other similar issues.

§ 3.3 Supervision and Construction Procedures

§ 3.3.1 The Contractor shall supervise and direct the Work, using the Contractor's best skill and attention. The Contractor shall be solely responsible for, and have control over, construction means, methods, techniques, sequences, and procedures, and for coordinating all portions of the Work under the Contract. If the Contract Documents give specific instructions concerning construction means, methods, techniques, sequences, or procedures, the Contractor shall evaluate the jobsite safety thereof and shall be solely responsible for the jobsite safety of such means, methods, techniques, sequences, or procedures. If the Contractor determines that such means, methods, techniques, sequences or procedures may not be safe, the Contractor shall give timely written notice to the Owner and Architect, and shall propose alternative means, methods, techniques, sequences, or procedures. The Architect shall evaluate the proposed alternative solely for conformance with the design intent for the completed

construction. Unless the Architect objects, in writing, to the Contractor's proposed alternative, the Contractor shall perform the Work using its alternative means, methods, techniques, sequences, or procedures.

§ 3.3.2 The Contractor shall be responsible to the Owner for acts and omissions of the Contractor's employees, Subcontractors and their agents and employees, and other persons or entities performing portions of the Work for, or on behalf of, the Contractor or any of its Subcontractors. As part of that responsibility, Contractor shall enforce the Owner's alcohol-free, drug-free, tobacco-free, harassment-free, and weapon-free policies and zones, which will require compliance with those policies and zones by Contractor's employees, subcontractors, and all other persons carrying out the Contract. Contractor shall require all construction workers, whether Contractor's own forces or the forces of Contractor's subcontractors, while on Owner's property to refrain from committing any criminal conduct, using tobacco products, possessing or drinking alcoholic beverages, possessing or using illegal drugs or controlled substances, carrying or possessing weapons, speaking profane and/or offensive language, or engaging in any inappropriate interactions of any nature whatsoever with students and employees, including talking, touching, staring or otherwise contributing to a hostile or offensive environment for Owner's students and employees. All areas of campus, other than the defined construction area, shall be off limits to Contractor's forces, unless their work assignment specifies otherwise. Contractor shall also require adequate and appropriate dress and identification of Contractor's employees, subcontractors, and all other persons carrying out the Work. Contractor shall require all construction workers, whether Contractor's own forces or the forces of Contractor's subcontractors, to wear identification tags on the front of their persons during all times that they are on Owner's property. Such identification tags shall contain a current photograph and the worker's full name in a typeface large enough to be seen from a reasonable distance. The Contractor shall further ensure that no on-site fraternization shall occur between personnel under the Contractor's and Subcontractor's direct or indirect supervision and Owner's students or employees and the general public. Failure of an individual to adhere to these standards of conduct shall result in the immediate removal of the offending employee from all construction on any of Owner's property. Repeated removal of Contractor's or Contractor's subcontractor's forces, or one serious infraction, shall constitute a substantial breach of the Agreement justifying the immediate termination by Owner pursuant to Article 14. Contractor shall require all construction workers, whether Contractor's own forces or the forces of Contractor's subcontractor, to park their personal motor vehicles on Owner's property only in the parking places designated by the Owner's campus principal. Any vehicles not parked in the appropriate locations shall be towed at the vehicle owner's sole expense. Contractor shall follow, and shall require all employees, agents, or subcontractors to follow, the tree ordinance of the municipality in which the Project is located. In addition, if not covered by the municipal tree ordinance, Contractor shall barricade and protect all trees on the Project, which shall be included in the Cost of the Work. Contractor shall institute a theft deterrence program designed to restrict construction worker access to properties of Owner that are currently in use, to maintain supervision of Contractor's and Contractor's subcontractor's forces, and to reimburse the Owner or those persons suffering a theft loss which results from Contractor's forces or Contractor's subcontractor's forces' actions, omissions, or failure to secure the Work connecting or adjacent to property of Owner.

§ 3.3.3 The Contractor shall be responsible for inspection of portions of Work already performed to determine that such portions are in proper condition to receive subsequent Work.

3.3.4 The Contractor shall properly and efficiently coordinate the timing, scheduling, and routing of all Work performed by all sub-contractors and sub-subcontractors.

3.3.5 To the extent that any portion of the Work requires a trench excavation exceeding five (5') feet in depth, in accordance with Texas Health and Safety Code § 756.023(a), Contractor shall fully comply, and shall require any applicable subcontractor to comply, with:

.1 The Occupational Safety and Health Administration standards for trench safety in effect for the Construction of the Work;

.2 The special shoring requirements, if any, of the Owner;

.3 Any geotechnical information obtained by Owner for use by the Contractor in the design of the trench safety system; and

.4 Trench excavation safety protection shall be a separate pay item, and shall be based on linear feet of trench excavated. Special shoring requirements shall also be a separate pay item, and shall be based on the square feet of shoring use.

3.3.6 The Contractor shall review Subcontractor safety programs, procedures, and precautions in connection with performance of the Work. However, the Contractor's duties shall not relieve any Subcontractor(s) or any other person or entity (e.g. a supplier), including any person or entity with whom the Contractor does not have a contractual relationship, of their responsibility or liability relative to compliance with all applicable federal, state, and local laws, rules, regulations, and ordinances which shall include the litigation to provide for the safety of their employees, persons, and property and their requirements to maintain a work environment free of recognized hazards. The foregoing notwithstanding, the requirements of this Paragraph are not intended to impose upon the Contractor any additional obligations that the Contractor would not have under any applicable state or federal laws, including, but not limited to, any rules, regulations, or statutes pertaining to the Occupations Safety and Health Administration.

3.3.7 It is understood and agreed that the relationship of Contractor to Owner shall be that of an independent contractor. Nothing contained in this Agreement or inferable from this Agreement shall be deemed or construed to: 1) make Contractor the agent, servant or employee of the Owner; or 2) create any partnership, joint venture, or other association between Owner and Contractor. Any direction or instruction by Owner or any of its authorized representatives in respect of the Work, shall relate to the result the Owner desires to obtain from the Work, and shall in no way affect Contractor's independent contractor status.

3.3.8 Pursuant to Texas Labor Code § 214.008, the Contractor and any subcontractor on the Project, shall properly classify, as an employee or an independent contractor, in accordance with Texas Labor Code Chapter 201, any individual the Contractor or subcontractor directly retains and compensates for services performed in connection with this Agreement. Any Contractor or subcontractor who fails to properly classify such an individual, may be subject to penalties of Texas Labor Code § 214.008(c).

§ 3.4 Labor and Materials

§ 3.4.1 These Contract Documents shall not be construed to deny or diminish the right of any person to work because of the person's membership or other relationship status with respect to any organization. Texas Government Code § 2269.054. These Contract Documents shall also not prohibit, require, discourage or encourage a person, or discriminate against a person bidding on this contract from entering into or declining to enter into, or adhering to, an agreement with a collective bargaining organization relating to this Project. Texas Government Code § 2269.0541. Unless otherwise provided in the Contract Documents, the Contractor shall provide and pay for qualified, careful, and efficient workers and labor, eligible to work in accordance with state and federal law. Contractor shall appropriately classify all workers in accordance with the Fair Labor Standards Act, its implementing regulations, and Texas Labor Code § 214.008. In addition, unless otherwise provided in the Contract Documents, the Contractor shall provide and pay for materials, equipment, tools, construction equipment and machinery, water, heat, utilities, transportation, and other facilities and services necessary for proper execution and completion of the Work, whether temporary or permanent and whether or not incorporated or to be incorporated in the Work. Before ordering any material or doing any Work, Contractor shall verify all dimensions and check all conditions in order to assure Contractor that they are the same as those in Drawings, Specifications, and other Construction Documents. Any inconsistency shall be brought to the attention of the Architect. In the event that discrepancies occur between ordered material and actual conditions and Architect was not notified beforehand, then costs to correct such discrepancies shall be borne by Contractor.

§ 3.4.2 Except in the case of minor changes in the Work approved by the Architect in accordance with Section 3.12.8 or ordered by the Architect in accordance with Section 7.4, the Contractor may make substitutions only with the prior written consent of the Owner, after evaluation by the Architect and in accordance with a Change Order or Construction Change Directive.

3.4.2.1 After evaluation by the Architect, substitutions and alternates may be rejected by the Architect without explanation and will be considered only under one or more of the following conditions: (i) the proposal is required for compliance with interpretation of code requirements or insurance regulations then existing; (ii) specified products are unavailable through no fault of the Contractor; (iii) and when, in the judgment of the Architect, a substitution would be substantially in the Owner's best interests, in terms of cost, time, or other considerations.

3.4.2.2 The Contractor must submit to the Architect: (i) a full explanation of the proposed substitution and submittals of all supporting data, including technical information, catalog cuts, warranties, test results, installation instructions, operating procedures, and other like information necessary for a complete evaluation for the substitution; (ii) a written explanation of the reasons the substitution should be considered, including the benefits to the Owner and the

Work in the event the substitution is acceptable; (iii) the adjustment, if any, in the Contract Sum; (iv) the adjustment, if any, in the time of completion of the Contract and the construction schedule; and (v) an affidavit stating (a) the proposed substitution conforms to and meets all requirements of the pertinent Specifications and the requirements shown on the Drawings, and (b) the Contractor accepts the warranty and will coordinate the Work to be complete in all respects, as if originally specified by the Architect. Proposals for substitution shall be submitted in writing to the Architect in sufficient time to allow the Architect no less than fifteen (15) working days for review. No substitutions will be considered or allowed without the Contractor's submittals of complete substantiating data and information.

3.4.2.3 Whether or not the Architect accepts any proposed substitution, the Contractor shall reimburse the Owner for any fees charged by the Architect or other consultants for evaluating each proposed substitution.

§ 3.4.3 The Contractor shall enforce strict discipline and good order among the Contractor's employees and other persons carrying out the Work. The Contractor shall not permit employment of unfit persons or persons not properly skilled in tasks assigned to them. THE CONTRACTOR RELEASES, INDEMNIFIES AND HOLDS HARMLESS THE OWNER FOR CONTRACTOR'S FORCES' NON-COMPLIANCE WITH OWNER'S DRUG-FREE, ALCOHOL-FREE, WEAPON-FREE, HARASSMENT-FREE, AND TOBACCO-FREE ZONES, CONTRACTOR'S FORCES' NON-COMPLIANCE WITH CRIMINAL LAW, OR CONTRACTOR'S OR CONTRACTOR'S FORCES' NON-COMPLIANCE WITH IMMIGRATION LAW OR REGULATIONS. Any individual found by Owner to have violated these restrictions is subject to permanent removal from the Project, at the Owner's request. Contractor shall place similar language in its subcontract agreements, requiring the Subcontractors and Sub-subcontractors to be responsible for their own forces, and Contractor shall cooperate with the Owner to ensure Subcontractor and Sub-subcontractor compliance.

3.4.4 Including, but not limited to, the specific requirement of Article 10, Contractor, its subcontractors and vendors shall bear responsibility for compliance with all federal, state, and local laws, regulations, guidelines, and ordinances pertaining to work safety and applicable to the Work. Contractor further recognizes that the Owner and Architect do not owe the Contractor any duty to supervise or direct his work so as to protect the Contractor from the consequences of his own conduct.

3.4.5 Pursuant to Texas Education Code § 44.034, Contractor must give advance written notice to the Owner if the Contractor or an owner or operator of the Contractor has been convicted of a felony. The Owner may terminate this Agreement if the Owner determines that the Contractor failed to give such notice or misrepresented the conduct resulting in the conviction. This paragraph requiring advance notice does not apply to a publicly-held corporation.

3.4.6 CRIMINAL HISTORY CHECKS

3.4.6.1 Contractor shall obtain all criminal history information required by Texas Education Code Chapter 22 regarding its "covered employees," as defined below. If Contractor is required by Chapter 22 to obtain the information from the Fingerprint-based Applicant Clearinghouse of Texas, then Contractor will also subscribe to that person's criminal history record information. Before beginning any Work on the Project, Contractor will provide written certification to the District that Contractor has complied with the statutory requirements as of that date. Upon request by Owner, Contractor will provide, in writing; updated certifications and the names and any other requested information regarding covered employees, so that the Owner may obtain criminal history record information on the covered employees. Contractor shall assume all expenses associated with obtaining criminal history record information.

3.4.6.2 Contractor will not assign any "covered employee" with a "disqualifying criminal history," as those terms are defined below, to work on the Project. If Contractor receives information that a covered employee has a reported disqualifying criminal history, then Contractor will immediately remove the covered employee from the Project and notify the Owner in writing within three (3) business days. If the Owner objects to the assignment of any covered employee on the basis of the covered employee's criminal history record information, then Contractor agrees to discontinue using that covered employee to provide services on Owner's Project. If Contractor has taken precautions or imposed conditions to ensure that the employees of Contractor and any subcontractor will not become covered employees, Contractor will ensure that these precautions or conditions continue throughout the time the contracted services are provided.

3.4.6.3 For the purposes of this Section, “covered employees” means employees, agents, or applicants of Contractor who has or will have continuing duties related to the services to be performed on Owner’s Project and has or will have direct contact with Owner’s students. The Owner will decide what constitutes direct contact with Owner’s students. “Disqualifying criminal history” means: any conviction or other criminal history information designated by the Owner; any felony or misdemeanor conviction that would disqualify a person from obtaining educator certification under Texas Education Code § 21.060, and 19 Texas Administrative Code § 249.16; or one of the following offenses, if at the time of the offense, the victim was under 18 years of age or enrolled in a public school; a felony offense under Texas Penal Code Title 5 Offense Against Persons; an offense for which a defendant is required to register as a sex offender under Texas Code of Criminal Procedure Chapter 62; or an equivalent offense under federal law or the laws of another state.

3.4.6.4 Subcontractors or any subcontractor entity, as defined by Texas Education Code § 22.08341(a)(3), shall be required by the terms of their contract with Contractor or any other contracting entity (as defined in Texas Education Code § 22.08341(a)(1)), and by Texas law, to obtain the required criminal history record information on their employees, agents, or applicants, to give required certifications to Owner and the contracting entities, and to obtain required certifications from the subcontracting entity’s subcontractors.

3.4.6.5 On request of Owner, Contractor shall provide all necessary identifying information to allow Owner to obtain criminal history record information for covered employees of the Contractor and all subcontractors. Contractor shall update this list on Owner’s request.

3.4.7 OWNER’S ADDITIONAL REQUIREMENTS RELATED TO CRIMINAL HISTORIES

In addition, Contractor will at least annually obtain criminal history record information that relates to any employee, agent, or applicant of the Contractor, if the person has or will have duties related to the Project, and the duties are or will be performed on Owner’s Project, or at another location where students are likely to be present. Contractor shall assume all expenses associated with the background checks and shall immediately remove any employee, agent, or subcontractor who was convicted of a felony or a misdemeanor involving moral turpitude from Owner’s property, or other location where students are likely to be present. Owner shall determine what constitutes “moral turpitude” or a “location where students are likely to be present.”

3.4.8 PREVAILING WAGE RATES

3.4.8.1 Contractor, Contractor’s Subcontractors and Sub-subcontractors shall pay all workers not less than the general prevailing rate of per diem wages for work of a similar character where the project is located as detailed in the “Minimum Wage Schedule” attached to this Agreement. Wages listed are minimum rates only. However, no claims for additional compensation above the Contract Sum shall be considered by the Owner because of payments of wage rates in excess of the applicable rate provided herein. Texas Government Code § 2258.001 *et seq.*

3.4.8.2 Contractor shall forfeit, as a penalty to the Owner, \$60 for each laborer, worker, or mechanic, employed for each calendar day or part of the day that the worker is paid less than the wage rates stipulated in the Contract Documents.

3.4.8.3 Owner reserves the right to receive and review payroll records, payment records, and earning statements of employees of Contractor, and of Contractor’s Subcontractors and Sub-subcontractors.

3.4.8.4 In executing the Work under the Contract Documents, Contractor shall comply with all applicable state and federal laws, including but not limited to, laws concerned with labor, equal employment opportunity, safety and minimum wages.

3.4.8.5 If no schedule is attached, then the parties shall use the wage rate determined by the U.S. Department of Labor in accordance with the Davis-Bacon Act, 40 U.S.C. § 276a, (which can be accessed on the internet at <https://www.wdol.gov/> or <https://beta.sam.gov/>) effective as of the date of this Agreement.

§ 3.5 Warranty

§ 3.5.1 The Contractor warrants to the Owner and Architect that materials and equipment furnished under the Contract will be of good quality and new unless the Contract Documents require or permit otherwise. The Contractor further warrants that the Work will conform to the requirements of the Contract Documents and will be free from defects, except for those inherent in the quality of the Work the Contract Documents require or permit. The Contractor further warrants that Contractor shall perform the Work in a good and workmanlike manner.

continuously and diligently in accordance with generally accepted standards of construction practice for construction of projects similar to the Project, except to the extent the Contract Documents expressly specify a higher degree of finish or workmanship, in which case the standard shall be the higher standard. All material shall be installed in a true and straight alignment, level and plumb; patterns shall be uniform; and jointing of materials shall be flush and level, unless otherwise directed in writing by the Architect. Work, materials, or equipment not conforming to these requirements may be considered defective. The Contractor's warranty excludes remedy for damage or defect caused by abuse, alterations to the Work not executed by the Contractor, improper or insufficient maintenance (unless such maintenance is Contractor's responsibility), improper operation, or normal wear and tear and normal usage, but such exclusions shall only apply after Owner has taken occupancy of the damaged or defective portion of the Project. If required by the Architect, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment. Notwithstanding anything in the Contract Documents to the contrary, Owner and Contractor expressly agree that the warranties stated herein shall mean the individual warranties associated with each particular Work within the Project, and each such individual warranty shall run from the applicable Work's Final Completion date (unless otherwise expressly provided in the applicable Contract Documents for that particular Work.) Contractor's express warranty is in addition to, and not in lieu of, Owner's other available remedies. All required warranties on equipment, machinery, materials, or components shall be submitted to the Architect on the manufacturer's or supplier's approved forms for delivery to the Owner. The warranties set out in this Subparagraph are not exclusive of any other warranties or guarantees set out in other places in the Contract Documents or expressed or implied under applicable law.

§ 3.5.2 All material, equipment, or other special warranties required by the Contract Documents shall be issued in the name of the Owner, or shall be transferable to the Owner, and shall commence in accordance with Section 9.8.4 Contractor shall certify that the Project has been constructed in general conformance with the Architect's or Engineer's plans, specifications, and Construction Documents, as modified from time to time pursuant to the terms of the Contract Documents. Contractor shall fully complete a "Certification of Project Completion" as required by 19 Texas Administrative Code § 61.1036.

3.5.3 In the event of failure of materials, products, or workmanship, either during construction or the warranty period, the Contractor shall take appropriate measures to ensure correction of defective Work or replacement of the defective items, without cost to the Owner. Such warranty shall be maintained notwithstanding that certain systems may be activated prior to Substantial Completion as required for the satisfactory completion of the Project. Upon written notice from the Owner or Architect, the Contractor shall promptly remedy defects as covered by Contractor's warranty. If Contractor does not respond to the written notice, either by beginning corrective work or notifying Owner in writing regarding when corrective work will begin, within ten (10) days of Contractor's receipt of the written notice, then the Owner may take measures to correct the Work and Contractor will be obligated to reimburse Owner's costs. The provisions of this subparagraph shall be in addition to, and not in lieu of, any other rights and remedies available to the Owner.

3.5.4 When deemed necessary by the Owner and prior to installation of any item specifically made subject to a performance standard or regulatory agency standard under any provision of the Contract Documents, Contractor shall furnish proof of conformance to the Architect. Proof of conformance shall be in the form of:

- .1 an affidavit from the manufacturer certifying that the item is in conformance with the applicable standards; or
- .2 an affidavit from a testing laboratory certifying that the product has been tested within the past year and is in conformance with the applicable standards; or
- .3 such further reasonable proof as is required by the Architect.

3.5.5 The Contractor agrees to issue in the name of the Owner, or assign to the Owner at Final Completion of the Work, such assignment to be effective no later than Final Completion, any and all material, equipment, fixtures, and furniture (if supplied or installed by Contractor or its subcontractor), or other special warranties, and manufacturers' warranties relating to materials and labor used in the Work. Contractor further agrees to perform the Work in such manner so as to preserve any and all manufacturer's warranties. All forms will be required to be submitted prior to Final Payment.

3.5.6 The warranties of Contractor provided in Subparagraphs 3.5.1, 3.5.2, and 3.5.3 shall in no way limit or abridge the warranties of the suppliers of equipment and systems which are to comprise a portion of the Work and all such warranties shall be in form and substance as required by the Contract Documents. Contractor shall take no action or fail to act in any way which results in the termination or expiration of such third party warranties or which otherwise results in prejudice to the rights of Owner under such warranties. Contractor agrees to provide all notices required for the effectiveness of such warranties and shall include provisions in the contracts with the providers and manufacturers of such systems and equipment whereby Owner shall have a direct right, but not a duty, of enforcement of such warranty obligations.

3.5.7 Contractor shall maintain a complete and accurate schedule of the date(s) of Substantial Completion, the date(s) of Final Completion, and the dates upon which the warranty under Section 12.2 herein on each phase or building will expire. Contractor shall provide a copy of such schedules to Owner and Architect. Prior to termination of the warranty period under Section 12.2 herein, Contractor shall accompany Owner and Architect on re-inspection of each Work in the Project and Contractor shall be responsible from correcting any warranty items which are observed or reported during the warranty period under Section 12.2 herein. Contractor shall prosecute such warranty work under Section 12.2 herein without interruption until accepted by Owner and Architect, even though such work shall extend beyond the warranty period under Section 12.2 herein. If Contractor fails to provide the schedules to Owner and Architect, Contractor's warranty obligation described herein shall continue until such inspection is conducted and deficiencies are corrected.

3.5.8 Prior to receipt of Final Payment, Contractor shall:

.1 Obtain duplicate original warranties, executed by all subcontractors, making the dates of beginning of the warranties the Date of Final Completion; and the warranties of suppliers and manufacturers, making the dates of beginning of the warranties no later than the Date of Final Completion;

.2 Verify that the documents are in proper form and contain full information;

.3 Co-sign warranties when required;

.4 Bind all warranties in commercial quality 8-1/2 X 11 inch three-ring binder, with hardback, cleanable, plastic covers;

.5 Label the cover of each binder with a typed or printed title labeled "WARRANTIES", along with the title of the Project, name, address, and telephone number of Contractor, and name of its responsible principal;

.6 Include a Table of Contents, with each item identified by the number and title of the specification section under which the product is specified;

.7 Separate each warranty with index tab sheets keyed to the Table of Contents listing; and

.8 Deliver warranties and bonds in the form described above, to the Architect who will review same prior to submission to the Owner.

§ 3.6 Taxes

The Contractor shall pay sales, consumer, use and similar taxes for the Work provided by the Contractor that are legally enacted when bids are received or negotiations concluded, whether or not yet effective or merely scheduled to go into effect. Owner is an exempt entity under the tax laws of the State of Texas. Texas Tax Code § 151.309; 34 TAC § 3.322. The Owner represents that this Project is eligible for exemption from the State Sales Tax on tangible personal property and material incorporated in the Project, provided that the Contractor fulfills the requirements of the Texas Tax Code § 151.309; § 151.310; § 151.311, and 34 TAC § 3.291 and § 3.287. For the purpose of establishing exemptions, it is understood and agreed that the Contractor may be required to segregate materials and labor costs at the time a Contract is awarded. Contractor will accept a Certificate of Exemption from the Owner, pursuant to Texas Tax Code § 151.054(e), § 151.155, and 34 TAC § 3.287. Contractor shall obtain Certificates of Resale from Contractor's suppliers. Texas Tax Code § 151.154; 34 TAC § 3.285. Failure of Contractor or any Sub-Contractor to obtain Certificates of Resale from their suppliers shall make the Contractor or Sub-Contractor responsible for absorbing the tax without compensation from Owner. Contractor shall pay all necessary local, county, and state taxes, income tax, compensation tax, social security, and withholding payments, as required by

law. CONTRACTOR HEREBY RELEASES, INDEMNIFIES, AND HOLDS HARMLESS OWNER FROM ANY AND ALL CLAIMS AND DEMANDS MADE AS A RESULT OF THE FAILURE OF CONTRACTOR OR ANY SUBCONTRACTOR TO COMPLY WITH THE PROVISIONS OF ANY OR ALL SUCH LAWS AND REGULATIONS.

§ 3.7 Permits, Fees, Notices and Compliance with Laws

§ 3.7.1 Unless otherwise provided in the Contract Documents, the Contractor shall secure and pay for the building permit as well as for other permits, fees, licenses, and inspections by government agencies necessary for proper execution and completion of the Work that are customarily secured after execution of the Contract and legally required at the time bids are received or negotiations concluded. After Architect has filed the plans and specifications with the Texas Department of Licensing and Regulation, Architect shall notify Contractor that Contractor may make and submit the applications for the building permit. The Owner shall pay the municipality directly for the building permit and all other development “impact” fees, if any. The Contractor shall continue to be responsible for payment of other permits, governmental fees, licenses and inspections necessary for proper execution of the Contract and which are legally required when bids or proposals are received. Such fees and expenses shall only be reimbursable to Contractor if expressly agreed to herein.

3.7.1.1 The Owner shall pay directly to the governing authority the cost of all permanent property utility assessments and similar connection charges.

3.7.1.2 The Contractor shall pay directly all temporary utility charges, tap charges, and water meter charges, without reimbursement from Owner. After consultation with the Owner, the Contractor shall also obtain all permits and approvals, and pay all fees and expenses, if any, associated with National Pollutant Discharge Elimination System (NPDES) regulations administered by the Environmental Protection Agency (EPA) and local authorities, if applicable, that require completion of documentation and/or acquisition of a “Land Disturbing Activities Permit” for the Project. Also after consultation with the Owner, the Contractor shall obtain all permits and approvals, and pay all fees and expenses, if any, associated with Storm Water Pollution Prevention and Pollution Control Plan (SWPPP) regulations administered by the Texas Commission on Environmental Quality (TCEQ) and local authorities. Contractor’s obligations under this Section may or may not require it to obtain or perform engineering services during the pre-construction phase to prepare proper drainage for the construction sites. Any drainage alterations made by Contractor during the construction process, which require the issuance of a permit, shall be at Contractor’s sole cost. Reimbursable expenses shall not include any fines or penalties assessed against the Contractor, Contractor’s subcontractors, the Project, or the Owner.

§ 3.7.2 The Contractor shall comply with and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities applicable to performance of the Work. In addition, Contractor shall authorize posting of any notices concerning the Workers Compensation insurance carried by other parties involved in the Project, including without limitation, Architect, at the same location where Contractor posts notices regarding Workers Compensation. If applicable, the Contractor shall procure and obtain all bonds required of the Owner or the Contractor by the municipality in which the Project is located or by any other public or private body with jurisdiction over the Project. In connection with such bonds, the Contractor shall prepare all applications, supply all necessary back-up material, and furnish the surety with any required personal undertakings. The Contractor shall also obtain and pay all charges for all approvals for street closings, traffic control, parking meter removal, and other similar matters as may be necessary or appropriate from time to time for the performance of the Work.

§ 3.7.3 If the Contractor performs Work when Contractor knows or reasonably should have known it to be contrary to applicable laws, statutes, ordinances, codes, rules and regulations, the Contract Documents, or lawful orders of public authorities, the Contractor shall assume appropriate responsibility for such Work and shall bear the costs attributable to correction.

§ 3.7.4 Concealed or Unknown Conditions

If the Contractor encounters conditions at the site that are (1) subsurface or otherwise concealed physical conditions that differ materially from those indicated in the Contract Documents or (2) unknown physical conditions of an unusual nature that differ materially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for in the Contract Documents, the Contractor shall promptly provide notice to the Owner and the Architect before conditions are disturbed and in no event later than three (3) business days after first observance of the conditions. Contractor agrees that this is a reasonable notice requirement.

The Architect will promptly investigate such conditions and, if the Architect determines that they differ materially, report findings and a recommended resolution in writing to Owner and Contractor. If Owner's Board of Trustees and Contractor cannot agree on an equitable adjustment to the Contract Sum or Contract Time, then either party may pursue alternative dispute resolution as provided for in Article 15, within ninety (90) days of the Architect's recommendation. If such conditions will cause an increase or decrease in the Contractor's cost of, or time required for, performance of any part of the Work, the Architect will recommend that an equitable adjustment be made in the Contract Sum or Contract Time, or both. ~~If the Architect determines that the conditions at the site are not materially different from those indicated in the Contract Documents and that no change in the terms of the Contract is justified, the Architect shall promptly notify the Owner and Contractor, stating the reasons. If either party disputes the Architect's determination or recommendation, that party may submit a Claim as provided in Article 15.~~

§ 3.7.5 If, in the course of the Work, the Contractor encounters human remains or recognizes the existence of burial markers, archaeological sites or wetlands not indicated in the Contract Documents, the Contractor shall immediately suspend any operations that would affect them and shall notify the Owner and Architect in writing. Upon receipt of such notice, the Owner shall promptly take any action necessary to obtain governmental authorization required to resume the operations. The Contractor shall continue to suspend such operations until otherwise instructed by the Owner but shall continue with all other operations that do not affect those remains or features. Requests for adjustments in the Contract Sum and Contract Time arising from the existence of such remains or features may be made as provided in Article 15.

3.7.6 The Contractor shall be responsible for timely notification to and coordination with all utility companies regarding the provision of services to the Project. The Contractor shall inform the Architect at once when the Owner's participation is required, and the Architect shall immediately notify the Owner. Connections for temporary and permanent utilities and payment for temporary utilities services required for the Work, whether the Work is new construction or renovation of an existing facility, are the responsibility of the Contractor unless otherwise agreed. If the Work is new construction, the payment for temporary and/or permanent utility services shall be the responsibility of the Contractor until Substantial Completion.

§ 3.8 Allowances

§ 3.8.1 The Contractor shall include in the Contract Sum all allowances stated in the Contract Documents. Items covered by allowances shall be supplied for such amounts and by such persons or entities as the Owner may direct, but the Contractor shall not be required to employ persons or entities to whom the Contractor has reasonable objection, unless required to do so by the terms of the Construction Documents.

§ 3.8.2 Unless otherwise provided in the Contract Documents,

- .1 allowances shall cover the cost to the Contractor of materials and equipment delivered at the site ~~and all required taxes~~, less applicable trade discounts;
- .2 Contractor's costs for unloading and handling at the site, labor, installation costs, overhead, profit, and other expenses contemplated for stated allowance amounts shall be included in the Contract Sum but not in the allowances; and
- .3 whenever costs are more than or less than allowances, the Contract Sum, unless required to do so by the terms of the Construction Documents, shall be adjusted accordingly ~~by Change Order~~. The amount of the ~~adjustment~~ Change Order shall reflect (1) the difference between actual costs and the allowances under Section 3.8.2.1 and (2) changes in Contractor's costs under Section 3.8.2.2.

§ 3.8.3 Materials and equipment under an allowance shall be selected by the Owner with reasonable promptness.

3.8.4 When performing Work under allowances, Contractor shall solicit and receive not less than three (3) written proposals and shall provide the Work as directed by the Architect, upon Owner's written approval, on the basis of the best value to the District.

§ 3.9 Superintendent

§ 3.9.1 The Contractor shall employ a competent superintendent and necessary assistants who shall be in attendance at the Project site during performance of the Work. In addition, the Contractor may employ a project manager and necessary assistants who may supervise several Project sites. The superintendent shall represent the Contractor, and communications given to the superintendent shall be as binding as if given to the Contractor. Important communication shall be similarly confirmed in writing. Other communications shall be similarly confirmed on written request in each case. Questions about plan interpretation or directions shall be submitted to the Architect in

the form of a written request for information and the Architect shall respond to such request for information in a reasonable and timely fashion. Contractor's selection of project manager or superintendent(s) shall be approved by Owner, and Contractor shall not replace the project manager or superintendent(s) without Owner's consent or until a replacement project manager or superintendent(s) has been selected in accordance with this Section. The Owner may reject or require removal of any job superintendent, project manager, or employee of the Contractor, Subcontractor, or Sub-Subcontractor involved in the Project. Contractor shall provide an adequate staff for the proper coordination and expedition of the Work. Owner reserves the right to require Contractor to dismiss from the Work any employee or employees that Owner may deem incompetent, careless, insubordinate, or in violation of any provision in these Contract Documents. This provision is applicable to Subcontractor, Sub-Subcontractor, and their employees.

§ 3.9.2 ~~The Contractor, as soon as practicable after award of the Contract, shall notify the Owner and Architect of the name and qualifications of a proposed superintendent. Within 14 days of receipt of the information, the Architect may notify the Contractor, stating whether the Owner or the Architect (1) has reasonable objection to the proposed superintendent or (2) requires additional time for review. Failure of the Architect to provide notice within the 14 day period shall constitute notice of no reasonable objection.~~

§ 3.9.3 ~~The Contractor's superintendent shall be present full-time on the site as soon as possible after commencement of the Work, and shall remained assigned to this Work and present on the site during performance of the Work, throughout the course of the Work, until items requiring completion or correction, identified at Substantial Completion pursuant to Section 9.8, have been completed or corrected. From Substantial Completion until Final Completion, the superintendent shall be on the site as necessary to ensure that Final Completion occurs within 30 days of Substantial Completion not employ a proposed superintendent to whom the Owner or Architect has made reasonable and timely objection. The Contractor shall not change the superintendent without the Owner's consent, which shall not unreasonably be withheld or delayed.~~

3.9.4 Owner shall be notified not less than 24 hours before any time that superintendent will not be present at the site for any reason except periodic illness. If the reason is due to illness, then Owner shall be notified at the beginning of that day. Owner shall be notified of the identity of the acting superintendent. In the event the superintendent is absent from the site and notice has not been provided nor has an acting superintendent been assigned to the Work, then an amount equal to the superintendent's daily rate shall be deducted for the amount owed to the Contractor under general conditions for such day.

§ 3.10 Contractor's Construction and Submittal Schedules

§ 3.10.1 The Contractor, promptly after being awarded the Contract, shall prepare for and submit for the Owner's and Architect's information a Contractor's construction schedule for the Work. The schedule shall contain detail appropriate for the Project, including (1) the date of commencement of the Work, interim schedule milestone dates, and the date of Substantial Completion; (2) an apportionment of the Work by construction activity; and (3) the time required for completion of each portion of the Work. The schedule shall provide for the orderly progression of the Work to completion and shall not exceed time limits current under the Contract Documents. The schedule shall be revised at appropriate intervals as required by the conditions of the Work and Project. The schedule shall not interfere with the operation of Owner's existing facilities and operations without Owner's prior written approval.

§ 3.10.2 The Contractor, promptly after being awarded the Contract and thereafter as necessary to maintain a current submittal schedule, shall prepare and submit a submittal schedule for the Architect's approval. The Architect's approval shall not be unreasonably delayed or withheld. The submittal schedule shall (1) be coordinated with the Contractor's construction schedule, and (2) allow the Architect reasonable time to review submittals. If the Contractor fails to submit a submittal schedule, or fails to provide submittals in accordance with the approved submittal schedule, the Contractor shall not be entitled to any increase in Contract Sum or extension of Contract Time based on the time required for review of submittals.

§ 3.10.3 The Contractor shall perform the Work in ~~general~~ accordance with the most recent schedules submitted to the Owner and Architect.

3.10.4 The Contractor shall hold weekly progress meetings at the Project Site, or at such other time and frequency as are acceptable to the Owner. Progress of the Work shall be reported at said meeting with reference to Contractor's construction schedule. The Contractor shall submit to the Architect, with each monthly application for payment, a copy of the progress schedule showing all modifications required, and shall take whatever corrective action is necessary to assure that the project completion schedule is met at no additional cost to Owner, except as allowed herein. In the event that Contractor shall fall behind schedule at any time, Contractor shall develop and deliver a recovery plan to the Owner with a recovery schedule and a program describing the additional manpower, overtime, material expediting, resequencing of the Work, and other steps Contractor shall take to meet the requirements of the Contract. Contractor shall not be entitled to compensation from the Owner or any increase in the Contract Sum for the schedule recovery efforts. No approval or consent by the Owner of any plan for resequencing or acceleration of the Work submitted by Contractor shall constitute a waiver by Owner of any damages or losses which Owner may suffer by reason of such resequencing or the failure of Contractor to meet the Substantial Completion Date or the Final Completion Date.

§ 3.11 Documents and Samples at the Site

The Contractor shall maintain and make available, at all times, at the Project site, the Construction Documents, including Change Orders, Construction Change Directives, field test records (including environmental inspection and test records), inspection certificates or records, manufacturers' certificates, and other Modifications, in good order and marked currently to indicate field changes and selections made during construction, and the approved Shop Drawings, Product Data, Samples, and similar required submittals. These shall be in electronic form or paper copy, available to the Architect and Owner at all times, and delivered to the Architect for submittal to the Owner upon completion of the Work as a record of the Work as constructed.

3.11.2 In addition to any other requirement in the Contract Documents and prior to installation, Contractor shall furnish or cause a subcontractor to furnish for the Owner's and Architect's written approval, a physical sample of each specified item, product, fixture, or device which is visible by the general public and/or attached to an architecturally-finished surface. Samples shall be suitably labeled, adequately protected, and properly stored at the site. Samples which are approved and undamaged will be considered to be suitable for incorporation into the Work.

§ 3.12 Shop Drawings, Product Data and Samples

§ 3.12.1 Shop Drawings are drawings, diagrams, schedules, and other data specially prepared for the Work by the Contractor or a Subcontractor, Sub-subcontractor, manufacturer, supplier, or distributor to illustrate some portion of the Work.

§ 3.12.2 Product Data are illustrations, standard schedules, performance charts, instructions, brochures, diagrams, and other information furnished by the Contractor to illustrate materials or equipment for some portion of the Work.

§ 3.12.3 Samples are physical examples that illustrate materials, equipment, or workmanship, and establish standards by which the Work will be judged.

§ 3.12.4 Shop Drawings, Product Data, Samples, and similar submittals are not Contract Documents. Their purpose is to demonstrate how the Contractor proposes to conform to the ~~information given and the design concept expressed in the~~ Contract Documents for those portions of the Work for which the Contract Documents require submittals. Review by the Architect is subject to the limitations of Section 4.2.7. Informational submittals upon which the Architect is not expected to take responsive action may be so identified in the Contract Documents. Submittals that are not required by the Contract Documents may be returned by the Architect without action.

§ 3.12.5 The Contractor shall review for compliance with the Contract Documents, approve, and submit to the Architect, Shop Drawings, Product Data, Samples, and similar submittals required by the Contract Documents, in accordance with the submittal schedule approved by the Architect or, in the absence of an approved submittal schedule, with reasonable promptness and in such sequence as to cause no delay in the Work or in the activities of the Owner or of Separate Contractors.

§ 3.12.6 By submitting Shop Drawings, Product Data, Samples, and similar submittals, the Contractor represents to the Owner and Architect that the Contractor has (1) reviewed and approved them, (2) determined and verified materials, field measurements and field construction criteria related thereto, or will do so, and (3) checked and coordinated the information contained within such submittals with the requirements of the Work and of the Contract

Documents. Specific dimensions, quantities, installation and performance of equipment and systems in compliance with the Construction Documents and the Contract Documents remain the Contractor's responsibility.

§ 3.12.7 The Contractor shall perform no portion of the Work for which the Contract Documents require submittal and review of Shop Drawings, Product Data, Samples, or similar submittals, until the respective submittal has been approved by the Architect.

§ 3.12.8 The Work shall be in accordance with approved submittals except that the Contractor shall not be relieved of responsibility for deviations from the requirements of the Contract Documents by the Architect's approval of Shop Drawings, Product Data, Samples, or similar submittals, unless the Contractor has specifically notified the Architect in writing of such deviation at the time of submittal and (1) the Architect has given written approval to the specific deviation as a minor change in the Work, or (2) a Change Order or Construction Change Directive has been issued authorizing the deviation. The Contractor shall not be relieved of responsibility for errors or omissions in Shop Drawings, Product Data, Samples, or similar submittals, by the Architect's approval thereof.

§ 3.12.9 The Contractor shall direct specific attention, in writing or on resubmitted Shop Drawings, Product Data, Samples, or similar submittals, to revisions other than those requested by the Architect on previous submittals. In the absence of such written notice, the Architect's approval of a resubmission shall not apply to such revisions.

§ 3.12.10 The Contractor shall not be required to provide professional services that constitute the practice of architecture or engineering unless such services are specifically required by the Contract Documents for a portion of the Work or unless the Contractor needs to provide such services in order to carry out the Contractor's responsibilities for construction means, methods, techniques, sequences, and procedures. The Contractor shall not be required to provide professional services in violation of applicable law.

§ 3.12.10.1 If professional design services or certifications by a design professional related to systems, materials, or equipment are specifically required of the Contractor by the Contract Documents, the Owner and the Architect will specify all performance and design criteria that such services must satisfy. ~~The Contractor shall be entitled to rely upon the adequacy and accuracy of the performance and design criteria provided in the Contract Documents.~~ The Contractor shall cause such services or certifications to be provided by an appropriately licensed design professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, Shop Drawings, and other submittals prepared by such professional. Shop Drawings, and other submittals related to the Work, designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to the Architect. The Owner and the Architect shall be entitled to rely upon the adequacy, completeness, and accuracy of the services, certifications, and approvals performed or provided by such design professionals, ~~provided the Owner and Architect have specified to the Contractor the performance and design criteria that such services must satisfy.~~ Pursuant to this Section 3.12.10, the Architect will review and approve or take other appropriate action on submittals only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. A registered architect must prepare plans and specifications for all the Work, as governed by the Texas Occupations Code Chapter 1051; and a registered engineer must prepare plans, specifications, and estimates for all Work governed by Texas Occupations Code Chapter 1001. In the event that Contractor retains a licensed design professional under the terms of this paragraph, Contractor shall require that the licensed design professional carry commercial general liability and errors and omissions insurance coverage in the same amounts and forms as required by the Architect on this Project. In the event that the licensed design professional retained by the Contractor will be conducting on-site services or observations, the licensed design professional shall also carry worker's compensation insurance and comprehensive automobile liability in the same amounts and form as required of the Architect to this Project.

§ 3.12.10.2 If the Contract Documents require the Contractor's design professional to certify that the Work has been performed in accordance with the design criteria, the Contractor shall furnish such certifications to the Architect at the time and in the form specified by the Architect.

3.12.11 The Contractor shall submit complete drawings, data, and samples to the Architect at least fifteen (15) days prior to the date the Contractor needs the reviewed submittals and samples returned. The Contractor shall be prepared to submit color samples on any key items (such as quarry tile, vinyl wall covering, etc.) within fifteen (15) days of the award of Subcontract(s). All color samples required for the Work shall be received within sixty (60) days of the date of the approval of the Contract Sum, if the Project is an A101 project; or Guaranteed Maximum Price, if

the Project is an A133 project. Once samples of all key items are received, the Architect will finalize color selections.

3.12.12 The Contractor shall submit the number of copies of product data and samples which the Contractor and subcontractors need for their use, plus two (2) additional sets for the Architect, one (1) additional set for the Owner, and one (1) additional set for each of the Architect's consultants involved with the particular section of Work. Where shop drawings are involved, the Contractor shall submit one (1) high quality reproducible transparency, and one (1) opaque print of the shop drawing for the Architect, plus one (1) additional opaque print for each of the Architect's consultants involved with the particular section of Work. The reproducible transparency will be marked by the Architect and/or his consultants. After final review and correction of the submittal, the Contractor shall send one corrected set to the Architect and each of the Architect's consultants involved with the particular section of the Work.

3.12.13 The Architect's review of Contractor's submittals shall be limited to examination of an initial submittal and one (1) re-submittal. The Architect's review of additional submittals will be made only with the consent of the Owner after notification by the Architect. The Owner shall be entitled to reimbursement from the Contractor of amounts paid to the Architect for evaluation of such additional re-submittals.

3.1.2.14 The Contractor represents and warrants that all shop drawings shall be prepared by persons and entities possessing expertise and experience in the trade for which the shop drawings are prepared and, if required by the Architect or applicable law, by a licensed engineer.

§ 3.13 Use of Site

3.13.1 The Contractor shall confine operations at the site to areas permitted by applicable laws, statutes, ordinances, codes, rules and regulations, lawful orders of public authorities, and the Contract Documents and shall not unreasonably encumber the site with materials or equipment.

3.13.2 Only materials and equipment which are to be used directly in the Work shall be brought to and stored on the Project site by the Contractor. After equipment is no longer required for the Work, it shall be properly removed from the Project site. Protection of construction material and equipment stored at the Project site from weather, theft, damage, and all other adversity is solely the responsibility of the Contractor.

3.13.3 The Contractor and its subcontractor shall not erect any sign on the Project site without the prior written consent of the Owner.

3.13.4 Contractor shall ensure that the Work, at all times, is performed in a manner that affords Owner reasonable access, both vehicular and pedestrian, to the site of the Work and all adjacent areas. The Work shall be performed in such a manner that the public area adjacent to the Site of the Work shall be free from all debris, building material, and equipment likely to cause hazardous conditions. Without limitation of any other provision of the Construction Documents, Contractor shall use its best efforts to minimize any interference with the occupancy or beneficial use of any area or building adjacent to the site of the Work, or the building, in the event of partial occupancy.

3.13.5 Without prior approval of the Owner, the Contractor shall not permit any workers to use any existing facilities at the Project site, including, without limitation, lavatories, toilets, entrance and parking areas other than those designated by the Owner. The Contractor shall comply with all rules and regulations promulgated by the Owner in connection with the use and occupancy of the Project site and the Building.

§ 3.14 Cutting and Patching

§ 3.14.1 The Contractor shall be responsible for cutting, fitting, or patching required to complete the Work or to make its parts fit together properly provided, however, that any such cutting, fitting, or patching can only be performed if the cutting, fitting, or patching results in Work that is in accordance with the Construction Documents and Contract Documents. All areas requiring cutting, fitting, or patching shall be restored to the condition existing prior to the cutting, fitting, or patching, unless otherwise required by the Contract Documents.

§ 3.14.2 The Contractor shall not damage or endanger a portion of the Work or fully or partially completed construction of the Owner or Separate Contractors by cutting, patching, or otherwise altering such construction, or by excavation. The Contractor shall not cut or otherwise alter construction by the Owner or a Separate Contractor except with written consent of the Owner and of the Separate Contractor. Consent shall not be unreasonably

withheld. The Contractor shall not unreasonably withhold, from the Owner or a Separate Contractor, its consent to cutting or otherwise altering the Work.

3.14.3 No cutting of structural elements will be permitted unless specifically approved in writing by Architect. Fitting and patching shall only be done with new products, and shall only be performed by those skilled in performing the original Work.

§ 3.15 Cleaning Up

§ 3.15.1 The Contractor shall, on a daily basis, keep the premises and surrounding area free from accumulation of waste materials and rubbish caused by operations under the Contract. Contractor shall provide on-site containers for the collection of waste materials, debris and rubbish, and shall periodically remove waste materials, debris and rubbish from the Work and dispose of all such materials at legal disposal areas away from the site. All cleaning operations shall be scheduled so as to ensure that contaminants resulting from the cleaning process will not fall on newly-coated or newly-painted surfaces. Immediately after unpacking materials, all packing case lumber or other packing materials, wrapping or other like flammable waste shall be collected and removed from the building and premises. At completion of the Work, the Contractor shall remove waste materials, rubbish, the Contractor's tools, construction equipment, machinery, and surplus materials from and about the Project. Care shall be taken by all workers not to mark, soil, or otherwise deface any finish. In the event that any finish becomes defaced in any way by mechanics or workers, the Contractor or any of his Subcontractors shall clean and restore such surfaces to their original condition.

§ 3.15.2 If the Contractor fails to clean up as provided in the Contract Documents, the Owner may do so and the Owner shall be entitled to reimbursement from the Contractor.

3.15.3 The Contractor shall be responsible for the protection of the Work. Prior to the Architect's inspection for Substantial Completion, the Contractor shall clean exterior and interior surfaces exposed to view; remove temporary labels, stains, putty, soil, paint and foreign substances from all surfaces, including glass and painted surfaces; polish transparent and glossy surfaces; clean equipment and fixtures to a sanitary condition; replace air filters in mechanical equipment; clean roofs, gutters, and downspouts; remove obstructions and flush debris from drainage systems; clean site; sweep paved areas, and rake clean other surfaces; remove trash and surplus materials from the site; clean and polish all floors; clean and polish all hardware; and repair all Work damaged during cleaning.

3.15.4 After construction is complete, Contractor shall: (1) employ skilled workers for final cleaning; (2) remove grease, mastic adhesive, dust, dirt, stains, fingerprints, labels and other foreign materials from all sight-exposed interior and exterior surfaces; (3) wash and shine glazing and mirrors; (4) polish glossy surfaces to a clear shine; (5) vacuum clean carpet and similar soft surfaces; (6) clean (damp mop with clean mop and water) resilient and hard surface floors, repeating as necessary until no visible residue remains on floors; (7) clean plumbing fixtures to a sanitary condition; (8) clean surfaces of all equipment and remove excess lubrication; (9) clean permanent filters and replace disposable filters in ventilating system if units are operated during construction and clean ducts, blowers, and coils; (10) clean light fixtures; (11) remove waste, foreign matter, and debris from roofs, gutters, area ways, and drainage ways; (12) remove waste, debris, and surplus materials from the site; (13) remove stains, spills, and foreign substances from paved areas; and (14) broom clean exterior concrete and paved surfaces, and rake clean the grounds.

§ 3.16 Access to Work

The Contractor shall provide the Owner and Architect and their designated representatives with access to the Work in preparation and progress wherever located. The presence of the Owner, Architect, or their representatives does not constitute acceptance or approval of the Work.

§ 3.17 Royalties, Patents and Copyrights

The Contractor shall pay all royalties and license fees. THE CONTRACTOR SHALL DEFEND SUITS OR CLAIMS FOR INFRINGEMENT OF COPYRIGHTS AND PATENT RIGHTS AND SHALL WAIVE AND RELEASE CLAIMS AGAINST THE OWNER AND ARCHITECT, AND SHALL INDEMNIFY AND HOLD HARMLESS THE OWNER AND ARCHITECT HARMLESS FROM LOSS ON ACCOUNT THEREOF, PROVIDED, HOWEVER, CONTRACTOR BUT SHALL NOT BE RESPONSIBLE TO ARCHITECT FOR SUCH DEFENSE OR LOSS WHEN A PARTICULAR DESIGN, PROCESS, OR PRODUCT OF A PARTICULAR MANUFACTURER OR MANUFACTURERS IS REQUIRED BY THE CONTRACT DOCUMENTS, OR WHERE THE COPYRIGHT VIOLATIONS ARE CONTAINED IN DRAWINGS,

SPECIFICATIONS, OR OTHER DOCUMENTS PREPARED BY THE ~~OWNER OR ARCHITECT, AND SHALL NOT BE RESPONSIBLE TO OWNER IF OWNER REQUIRES A PARTICULAR DESIGN, PROCESS, OR PRODUCT THAT CONSTITUTES A COPYRIGHT VIOLATION.~~ However, if ~~the Contractor has reason to believe that the required design, process, or product is~~ an infringement of a copyright or patent ~~is discovered by, or made known to, the Contractor,~~ the Contractor shall be responsible for ~~thesuch~~ loss unless ~~suchthe~~ information is promptly furnished to the Owner and Architect in writing.

§ 3.18 Indemnification

§ 3.18.1 TO THE FULLEST EXTENT PERMITTED BY LAW, THE CONTRACTOR SHALL WAIVE AND RELEASE CLAIMS AGAINST AND SHALL INDEMNIFY AND HOLD HARMLESS THE OWNER, ARCHITECT, ARCHITECT'S CONSULTANTS, OWNER'S CONSULTANTS AND OFFICERS, AGENTS AND EMPLOYEES OF ANY OF THEM FROM AND AGAINST CLAIMS, DAMAGES, LOSSES, CAUSES OF ACTION, SUITS, JUDGMENTS AND EXPENSES, INCLUDING BUT NOT LIMITED TO ATTORNEYS' FEES, ARISING OUT OF OR RESULTING FROM PERFORMANCE OF THE WORK, PROVIDED THAT SUCH CLAIM, DAMAGE, LOSS, OR EXPENSE IS ATTRIBUTABLE TO BODILY INJURY, SICKNESS, DISEASE OR DEATH, OR TO INJURY TO OR DESTRUCTION OF TANGIBLE PROPERTY (INCLUDING THE WORK ITSELF), INCLUDING LOSS OF USE RESULTING THEREFROM, BUT ONLY TO THE EXTENT CAUSED IN WHOLE OR IN PART BY THE WILLFUL OR NEGLIGENT ACTS OR OMISSIONS OF THE CONTRACTOR, A SUBCONTRACTOR, ANYONE DIRECTLY OR INDIRECTLY EMPLOYED BY THEM, ANYONE THEY CONTROL OR EXERCISE CONTROL OVER OR ANYONE FOR WHOSE ACTS THEY MAY BE LIABLE, REGARDLESS OF WHETHER OR NOT SUCH CLAIM, DAMAGE, LOSS, OR EXPENSE IS CAUSED IN PART BY A PARTY BY ANY WILLFUL OR NEGLIGENT ACTS OR OMISSIONS OF OWNER OR OWNER'S CONSULTANTS OR OTHER INDEMNIFIED PARTIES. SUCH OBLIGATION SHALL NOT BE CONSTRUED TO NEGATE, ABRIDGE, OR REDUCE OTHER RIGHTS OR OBLIGATIONS OF INDEMNITY THAT WOULD OTHERWISE EXIST AS TO A PARTY OR PERSON DESCRIBED IN THIS SECTION 3.18. ALL COSTS AND EXPENSES SO INCURRED BY ANY OF THE INDEMNIFIED PARTIES IN THAT EVENT SHALL BE REIMBURSED BY CONTRACTOR TO THE INDEMNIFIED PARTIES, AND ANY COST AND EXPENSES SO INCURRED BY INDEMNIFIED PARTIES SHALL BEAR INTEREST UNTIL REIMBURSED BY CONTRACTOR, AT THE RATE OF INTEREST PROVIDED TO BE PAID BY THE JUDGMENT UNDER THE LAWS OF THE STATE OF TEXAS.

§ 3.18.2 IN CLAIMS AGAINST ANY PERSON OR ENTITY INDEMNIFIED UNDER THIS SECTION 3.18 BY AN EMPLOYEE OF THE CONTRACTOR, A SUBCONTRACTOR, ANYONE DIRECTLY OR INDIRECTLY EMPLOYED BY THEM, OR ANYONE FOR WHOSE ACTS THEY MAY BE LIABLE, THE INDEMNIFICATION OBLIGATION UNDER SECTION 3.18.1 SHALL NOT BE LIMITED BY A LIMITATION ON AMOUNT OR TYPE OF DAMAGES, COMPENSATION, OR BENEFITS PAYABLE BY OR FOR THE CONTRACTOR OR A SUBCONTRACTOR UNDER INSURANCE POLICIES, WORKERS' COMPENSATION ACTS, DISABILITY BENEFIT ACTS, OR OTHER EMPLOYEE BENEFIT ACTS.

3.18.3 THE OBLIGATIONS OF THE CONTRACTOR UNDER THIS SECTION 3.18 SHALL NOT EXTEND TO THE LIABILITY OF THE ARCHITECT, THE ARCHITECT'S CONSULTANTS, AND AGENTS, AND EMPLOYEES OF ANY OF THEM, CAUSED BY OR RESULTING FROM: (1) DEFECTS IN PLANS, DESIGNS, OR SPECIFICATIONS PREPARED, APPROVED, OR USED BY THE ARCHITECT OR ENGINEER; OR (2) NEGLIGENCE OF THE ARCHITECT OR ENGINEER IN THE RENDITION OR CONDUCT OF PROFESSIONAL DUTIES CALLED FOR OR ARISING OUT OF THE CONSTRUCTION CONTRACT AND THE PLANS, DESIGNS, OR SPECIFICATIONS THAT ARE A PART OF THE CONSTRUCTION CONTRACT; AND (3) ARISING FROM: (A) PERSONAL INJURY OR DEATH; (B) PROPERTY DAMAGE; OR (C) ANY OTHER EXPENSES THAT ARISE FROM PERSONAL INJURY, DEATH, OR PROPERTY DAMAGE OR AS OTHERWISE LIMITED BY TEXAS CIVIL PRACTICE & REMEDIES CODE SECTION 130.001 *ET SEQ.*

3.18.4 THE OWNER MAY CAUSE ANY OTHER CONTRACTOR WHO MAY HAVE A CONTRACT WITH THE OWNER TO PERFORM CONSTRUCTION OR INSTALLATION WORK IN THE AREAS WHERE WORK WILL BE PERFORMED UNDER THIS AGREEMENT, TO AGREE TO INDEMNIFY AND TO HOLD THE OWNER AND THE CONTRACTOR HARMLESS FROM ALL CLAIMS FOR BODILY INJURY AND PROPERTY DAMAGE TO THE SAME EXTENT AS IS PROVIDED IN SECTION 3.18.1 ABOVE. LIKEWISE, CONTRACTOR AGREES TO INDEMNIFY AND TO HOLD THE OWNER'S OTHER CONTRACTORS

HARMLESS FROM ALL CLAIMS FOR BODILY INJURY AND PROPERTY DAMAGE TO THE SAME EXTENT AS PROVIDED IN SECTION 3.18.1 ABOVE.

3.18.5 THE PROVISIONS OF SECTION 3.18 IN ITS ENTIRETY SHALL SURVIVE THE COMPLETION, TERMINATION, OR EXPIRATION OF THIS CONTRACT.

3.18.6 It is agreed with respect to any legal limitations now or hereafter in effect and affecting the validity or enforceability of the indemnification obligations under Paragraph 3.18, such legal limitations are made a part of the indemnification obligation and shall operate to amend the indemnification obligation to the minimum extent necessary to bring the provision into conformity with the requirements of such limitations, and as so modified, the indemnification obligations shall continue in full force and effect.

3.18.7 It is understood and agreed that Subparagraph 3.18.1 above is subject to, and expressly limited by, the terms and conditions of Texas Civ. Prac. & Rem. Code Ann. Sec. 130.001 to 130.005, as amended.

3.18.8 THE OWNER MAY CAUSE ANY OTHER CONTRACTOR WHO MAY HAVE A CONTRACT WITH THE OWNER TO PERFORM CONSTRUCTION OR INSTALLATION WORK IN THE AREAS WHERE WORK WILL BE PERFORMED UNDER THIS AGREEMENT, TO AGREE TO INDEMNIFY AND TO HOLD THE OWNER AND THE CONTRACTOR HARMLESS FROM ALL CLAIMS ATTRIBUTABLE TO BODILY INJURY, SICKNESS, DISEASE, OR DEATH OR TO INJURY TO, OR DESTRUCTION OF TANGIBLE PROPERTY (INCLUDING THE WORK ITSELF) INCLUDING LOSS OF USE, TO THE SAME EXTENT AS PROVIDED IN SUBPARAGRAPH 3.18.1 ABOVE.

3.19 ANTITRUST VIOLATION. To permit the Owner to recover damages suffered in antitrust violations, Contractor hereby assigns to Owner any and all claims for overcharges associated with this Contract which violate the antitrust laws of the United States, 15 U.S.C.A. Section 1 et seq. The Contractor shall include this provision in its agreements with each subcontractor and supplier. Each subcontractor shall include such provisions in agreements with sub-contractors and suppliers.

ARTICLE 4 ARCHITECT

§ 4.1 General

§ 4.1.1 The Architect is the person or entity retained by the Owner pursuant to Section 2.3.2 and identified as such in the Agreement.

§ 4.1.2 Duties, responsibilities, and limitations of authority of the Architect as set forth in the Contract Documents shall not be restricted, modified, or extended without written consent of the Owner, ~~Contractor, and Architect.~~ Consent shall not be unreasonably withheld.

4.1.3 Except as expressly provided herein, the Contractor shall not be relieved of Contractor's obligation to perform the Work in strict accordance with the Construction Documents and the Contract Documents by the duties, responsibilities, or activities of the Architect.

§ 4.2 Administration of the Contract

§ 4.2.1 The Architect will provide administration of the Contract as described in the Contract Documents and will be an Owner's representative during construction, until the date the Architect issues the final payment is due, and, with the Owner's concurrence, from time to time during the one-year period for correction of Work described in Section 12.2.2 Certificate for Payment. The Architect will have authority to act on behalf of the Owner only to the extent provided in the Contract Documents, or as they may be amended in the future.

§ 4.2.2 The Architect ~~will~~shall visit the site at least twice per week (or more per week when deemed necessary by the Owner's Superintendent or when necessary to protect Owner's interests) and at any other intervals appropriate to the stage of construction, to inspect or as otherwise agreed with the Owner, to become generally familiar with the progress, and quantity and quality of the portion of the Work completed, to reject any observed nonconforming Work, and to determine in general if the Work observed is being performed in a manner indicating that the Work, when fully completed, will be in accordance with the Construction Documents and the Contract Documents and on time. Furthermore, a minimum of two job site meetings per month from commencement of construction through Final Completion will be initiated by the Architect and attended by the Contractor. Attendees will include Owner, the Contractor's project manager and/or superintendent, Architect's project representative, and Architect. The

Architect, Owner and their representatives shall at all times have access to the Work. Architect, or its structural consultant will provide on-site observation prior to and during all concrete pours that contribute to the structural integrity of the building, including all pours of concrete piers, footings, grade beams, floor slabs, and concrete superstructure components, if applicable. In addition, Architect or its structural consultant will provide on-site observation prior to covering up or closing up of portions of the construction, which if covered, would conceal problems with the structural integrity of the Project. Contractor shall not close or cover said Work until said observations have occurred. Contractor or Architect will advise Owner of the need for any third party laboratory or testing services to assist the Architect and Owner. On the basis of the on-site observations by Architect, Architect shall keep Owner and Contractor informed of the progress and the quality of the Work, through Architect's field reports, and shall guard Owner against defects and deficiencies in the Work. Architect shall promptly notify Owner and Contractor, orally, regarding any defect or nonconforming Work, which shall be followed by notice in writing of defects or nonconforming Work noted and corrective action taken or recommended. However, the Architect will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. The Architect, however, will shall not have control over, charge of, or responsibility for the Contractor's construction means, methods, techniques, sequences, or procedures, or for the safety precautions and programs, but this does not relieve Architect of Architect's responsibilities under this Agreement. Any services by Contractor made necessary by Contractor's construction defect or nonconforming Work, shall be performed at no additional cost to Owner in connection with the Work, since these are solely the Contractor's rights and responsibilities under the Contract Documents.

§ 4.2.3 On the basis of the site visits, the Architect will keep the Owner reasonably informed about the progress and quality of the portion of the Work completed, and promptly report to the Owner (1) known deviations from the Contract Documents, (2) known deviations from the most recent construction schedule submitted by the Contractor, and (3) defects and deficiencies observed in the Work. The Architect will not be responsible for the Contractor's failure to perform the Work in accordance with the requirements of the Contract Documents. The Architect will not have control over or charge of, and will not be responsible for acts or omissions of, the Contractor, Subcontractors, or their agents or employees, or any other persons or entities performing portions of the Work. The Contractor shall reimburse the Owner for compensation paid to the Architect for additional site visits made necessary by the fault, neglect, or request of the Contractor.

§ 4.2.4 Communications

Except as otherwise provided in the Contract Documents or when direct communications have been specially authorized, the Owner and Contractor shall endeavor to communicate with each other through the Architect about matters arising out of or relating to the Contract. However, Owner reserves the right to communicate directly with Contractor and Subcontractors include the Architect in all communications that relate to or affect the Architect's services or professional responsibilities. The Owner shall promptly notify the Architect of the substance of any direct communications between the Owner and the Contractor otherwise relating to the Project. Communications by and with the Architect's consultants shall be through the Architect. Communications by and with Subcontractors and suppliers shall be through the Contractor. Communications by and with Separate Contractors shall be through the Owner. The Contract Documents may specify other communication protocols.

§ 4.2.5 As further provided in the Contract Documents, based on the Architect's evaluations of the Contractor's Applications for Payment, the Architect will review and certify the amounts due the Contractor and will issue Certificates for Payment in such amounts.

§ 4.2.6 The Architect ~~has authority to~~ shall reject Work that does not conform to the Construction Documents and the Contract Documents. Whenever the Architect considers it necessary or advisable, the Architect will ~~have recommend to Owner additional authority to require~~ inspection or testing of the Work in accordance with Sections 13.4.2 and 13.4.3 the provision of the Contract Documents, whether or not the Work is fabricated, installed or completed. However, neither this authority of the Architect nor a decision made in good faith either to exercise or not to exercise such authority shall give rise to a duty or responsibility of the Architect or the Owner to the Contractor, Subcontractors, suppliers, their agents or employees, or other persons or entities performing portions of the Work. Architect and/or Contractor shall promptly notify, orally and in writing, the other party and Owner of any fault or defect in the Project or nonconformance with Construction Documents or the Contract Documents they may respectively discover, and each, upon discovery of the defect or nonconformance, shall be responsible for notifying the other party and Owner of those corrective actions they respectively take; provided, however, Contractor shall have no duty to notify Owner of discoveries made or actions taken by Architect. Testing or inspection required by this subparagraph shall be conducted subject to the requirements of Chapter 2269 of the Texas Government Code.

§ 4.2.7 The Architect will review and approve, or take other appropriate action upon, the Contractor's submittals such as Shop Drawings, Product Data, and Samples, but only for the limited purpose of checking for conformance with information given and the design concept expressed in the Construction Documents and the Contract Documents. The Architect's action will be taken ~~in accordance with the submittal schedule approved by the Architect or, in the absence of an approved submittal schedule, with~~ reasonable promptness as to cause no delay in the Work or in the activities of the Owner, Contractor, or Separate Contractors, while allowing sufficient time in the Architect's professional judgment to permit adequate review. Review of such submittals is not conducted for the purpose of determining the accuracy and completeness of other details such as dimensions and quantities, or for substantiating instructions for installation ~~or performance~~ of equipment or systems, ~~all of which~~ remain the responsibility of the Contractor as required by the Construction Documents and the Contract Documents. The Architect's review of the Contractor's submittals shall not relieve the Contractor of the obligations under Sections 3.3, 3.5, and 3.12. The Architect's review shall not constitute approval of safety precautions or, unless otherwise specifically stated by the Architect, of any construction means, methods, techniques, sequences, or procedures. The Architect's approval of a specific item shall not indicate approval of an assembly of which the item is a component. If any submittal does not comply with the requirements of the Construction Documents or the Contract Documents, then Architect shall require Contractor to come into compliance. The Architect shall promptly report, in writing, to the Contractor and Owner any errors, inconsistencies, and omissions discovered by the Architect in the Shop Drawings, Product Data, and Samples.

§ 4.2.8 The Architect ~~will~~shall review, prepare, and make recommendations to Owner regarding all Change Orders and Construction Change Directives for the Owner's approval and execution in accordance with the Construction Documents and the Contract Documents, accompanied by all supporting documentation. The Architect, ~~and~~ may ~~order~~authorize minor changes in the Work not involving any adjustment in Contract Sum or Guaranteed Maximum Price, or an extension of the Contract Time which are consistent with the intent of the Contract Documents. If necessary, the Architect shall prepare, reproduce, and distribute Drawings and Specifications to describe Work to be added, deleted, or modified, as provided in Section 7.4. The Architect shall accept requests by the Owner, and Owner shall review properly prepared, timely requests by the Contractor for change in the Work, including adjustments to the Contract Sum or Guaranteed Maximum Price, or Contract Time. A properly prepared request for a change in the Work by the Contractor shall be accompanied by sufficient supporting data and information to permit the Architect will investigate and to make a reasonable determination, without extensive investigation or preparation of additional drawings or specifications. If the Architect determines that requested changes in the Work are not materially different from the requirements of the Construction Documents or the Contract Documents, and do not change the Contract Sum or Guaranteed Maximum Price, or Contact Time, then the Architect may issue an order for a minor change in the Work, with prior written notice to the Owner or recommend to the Owner that the requested change be denied. The Architect is not authorized to approve changes involving major system such as: Heating, Ventilation and Air Conditioning ("HVAC"); roof, foundation; outward appearance, color scheme, floor plans, building materials; drainage or mechanical equipment with Owner's prior written consent and recommendations regarding concealed and unknown conditions as provided in Section 3.7.4.

§ 4.2.9 The Architect will conduct inspections to determine the date or dates of Substantial Completion and the date of final completion; issue Certificates of Substantial Completion pursuant to Section 9.8; receive and forward to the Owner, for the Owner's review and records, written warranties and related documents required by the Contract and assembled by the Contractor pursuant to Section 9.10; and issue a final Certificate for Payment pursuant to Section 9.10.

§ 4.2.10 If the Owner and Architect agree, the Architect will provide one or more Project representatives to assist in carrying out the Architect's responsibilities at the site. The Owner shall notify the Contractor of any change in the duties, responsibilities and limitations of authority of the Project representatives.

§ 4.2.11 The Architect will interpret and ~~decide matters~~make recommendations concerning performance under, and requirements of, the Contract Documents on written request of either the Owner or Contractor. The Architect's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness.

§ 4.2.12 Interpretations ~~and decisions~~or recommendations of the Architect will be consistent with the intent of, and reasonably inferable from, the Contract Documents and will be in writing or in the form of drawings. When making such interpretations and ~~decisions~~recommendations, the Architect will endeavor to secure faithful performance by

both Owner and Contractor, ~~will not show partiality to either, and will not be liable for results of interpretations or decisions rendered in good faith.~~

§ 4.2.13 The ~~Architect's-Owner's~~ decisions on matters relating to aesthetic effect ~~wi~~shall be final ~~if consistent with the intent expressed in the Contract Documents.~~

§ 4.2.14 The Architect will review and respond to requests for information about the Construction Documents and the Contract Documents. The Architect's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness. If appropriate, the Architect will prepare and issue supplemental Drawings and Specifications in response to the requests for information, at no additional cost to the Owner.

ARTICLE 5 SUBCONTRACTORS

§ 5.1 Definitions

§ 5.1.1 A Subcontractor is a person or entity who has a direct contract with the Contractor to perform a portion of the Work at the site. The term "Subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Subcontractor or an authorized representative of the Subcontractor. The term "Subcontractor" does not include a Separate Contractor or the subcontractors of a Separate Contractor.

§ 5.1.2 A Sub-subcontractor is a person or entity who has a direct or indirect contract with a Subcontractor to perform a portion of the Work at the site. The term "Sub-subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Sub-subcontractor or an authorized representative of the Sub-subcontractor.

§ 5.2 Award of Subcontracts and Other Contracts for Portions of the Work

§ 5.2.1 Unless otherwise stated in the Contract Documents, the Contractor, as soon as practicable after award of the Contract, shall notify the Owner and Architect, in writing, of the persons or entities proposed for each principal portion of the Work, including those who are to furnish materials or equipment fabricated to a special design. Within 14 days of receipt of the information, the Architect ~~may~~shall notify, in writing, the Contractor whether the Owner or the Architect (1) has reasonable objection to any such proposed person or entity or (2) requires additional time for review. Failure of the Architect to provide notice within the 14-day period shall constitute notice of no reasonable objection. All subcontractors shall be procured in accordance with Texas Education Code Chapter 44, Subchapter B, and Texas Government Code Chapter 2269, as applicable. A notice of no reasonable objection shall in no way relieve the Contractor from full responsibility for performance and completion of the Work and its obligations under the Contract Documents. The Contractor shall be fully responsible for the performance of its subcontractors, including those recommended or approved by the Owner.

§ 5.2.2 The Contractor shall not contract with a proposed person or entity to whom the Owner or Architect has made reasonable and timely objection. The Contractor shall not be required to contract with anyone to whom the Contractor has made reasonable objection.

§ 5.2.3 If the Owner or Architect has reasonable objection to a person or entity proposed by the Contractor, the Contractor shall propose another to whom the Owner or Architect has no reasonable objection. ~~When~~If the parties agree on a proposed substitute but rejected Subcontractor ~~was reasonably capable of performing the Work, then~~ the Contract Sum and Contract Time ~~sh~~mayll be increased or decreased by the difference, if any, occasioned by such change, and an appropriate Change Order shall be issued before commencement of the substitute Subcontractor's Work. However, no increase in the Contract Sum or Contract Time shall be allowed for such change unless the Contractor has acted promptly and responsively in submitting names as required.

§ 5.2.4 The Contractor shall not substitute a Subcontractor, person, or entity for one previously selected if the Owner or Architect makes reasonable objection to such substitution.

5.2.5 Each Contractor or Subcontractor shall be required to completely familiarize itself with the plans and specifications, to visit the Work site to completely familiarize itself with existing conditions, and to conduct any other appropriate investigations, inspections, or inquiries prior to submission of a bid or proposal. No increases in Contract Sums or Guaranteed Maximum Price shall be allowed for failure to so inspect or investigate.

§ 5.3 Subcontractual Relations

By appropriate written agreement, the Contractor shall require each Subcontractor, to the extent of the Work to be performed by the Subcontractor, to be bound to the Contractor by terms of the Contract Documents, and to assume toward the Contractor all the obligations and responsibilities, including the responsibility for safety of the Subcontractor's Work that the Contractor, by these Contract Documents, assumes toward the Owner and Architect. The terms and conditions of the Contract Documents shall be incorporated by reference into each subcontract agreement, included as provided below. Each subcontract agreement shall preserve and protect the rights of the Owner and Architect under the Contract Documents with respect to the Work to be performed by the Subcontractor so that subcontracting thereof will not prejudice such rights, and shall allow to the Subcontractor, unless specifically provided otherwise in the subcontract agreement, the benefit of all rights, remedies, and redress against the Contractor that the Contractor, by the Contract Documents, has against the Owner. Where appropriate, the Contractor shall require each Subcontractor to enter into similar agreements with Sub-subcontractors. The Contractor shall make available to each proposed Subcontractor, prior to the execution of the subcontract agreement, copies of the Contract Documents to which the Subcontractor will be bound, and, upon written request of the Subcontractor, identify to the Subcontractor terms and conditions of the proposed subcontract agreement that may be at variance with the Contract Documents. Subcontractors will similarly make copies of applicable portions of such documents available to their respective proposed Sub-subcontractors. Each subcontractor shall provide proof of insurance to Contractor consistent with the Contractor's insurance to Owner and in an amount commensurate with the Work to be performed by the Subcontractor.

5.3.2 Neither the Owner nor the Architect shall be obligated to pay or to ensure the payment of any monies to subcontractors due to any non-payment to the Contractor or non-payment of subcontractors by the Contractor.

5.3.3 The Contractor shall require any potential subcontractor to disclose to the Contractor any ownership interest or familial relationship between the Contractor, the Architect, or the Owner, and the potential subcontractor prior to entering into a subcontract. Contractor shall report to Owner all such disclosures and the Owner shall have the right, in its sole discretion, to reject any such affiliated subcontractor.

§ 5.4 Contingent Assignment of Subcontracts

§ 5.4.1 Each subcontract agreement for any unperformed portion of the Work is assigned by the Contractor to the Owner, provided that

- .1 assignment is effective only after termination of the Contract by the Owner for cause pursuant to Section Article 14.2 or abandonment of the Project by the Contractor; and only for those subcontract agreements that the Owner accepts by notifying the Subcontractor and Contractor in writing; and
- .2 assignment is subject to the prior rights and obligations of the surety, if any, obligated under bond relating to the Contract; and
- .3 The Subcontractor provides bonds as required by law of prime contractors and by Owner.

When the Owner accepts the assignment of a subcontract agreement, the Owner assumes the Contractor's rights and obligations under the subcontract.

§ 5.4.2 ~~Upon s~~Such assignment shall not constitute a waiver by Owner of its rights against Contractor, including, but not limited to, claims for defaults, delays or defects for which a subcontractor or material vendor may also be liable; if the Work has been suspended for more than 30 days, the Subcontractor's compensation shall be equitably adjusted for increases in cost resulting from the suspension.

§ 5.4.3 Upon assignment to the Owner under this Section 5.4, the Owner may further assign the subcontract to a successor contractor or other entity. ~~If the Owner shall only be~~ assigns the subcontract to a successor contractor or other entity, the Owner shall nevertheless remain legally responsible for compensating subcontractors for Work performed or materials furnished from and after the date on which the Owner gives written notice of its acceptance of the subcontract agreement. Owner shall not be responsible for any Work performed or materials furnished by subcontractors prior to the date of Owner's written notice of acceptance. ~~all of the successor contractor's obligations under the subcontract.~~

5.5 NOTICE OF SUBCONTRACTOR DEFAULT

Contractor shall promptly notify Owner and Architect of any material defaults by any Subcontractor or Sub-subcontractor. Notwithstanding any provision contained in Article 5 to the contrary, it is hereby acknowledged and agreed that Owner has in no way agreed, expressly or implicitly, nor will Owner agree, to allow any Subcontractor,

Sub-subcontractor or other materialman or worker employed by Contractor the right to obtain a personal judgment or to create a mechanic's or materialman's lien against Owner for the amount due from the Owner or the Contractor.

ARTICLE 6 CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS

§ 6.1 Owner's Right to Perform Construction and to Award Separate Contracts

§ 6.1.1 The term "Separate Contractor(s)" shall mean other contractors retained by the Owner under separate agreements. The Owner reserves the right to perform construction or operations related to the Project with the Owner's own forces, and with Separate Contractors retained under Conditions of the Contract substantially similar to those of this Contract, including those provisions of the Conditions of the Contract related to insurance and waiver of subrogation. The Owner reserves the right to perform other non-Project-related construction work, maintenance and repair work, and school program operations at the site and near the site during the time period of the Work.

§ 6.1.2 When separate contracts are awarded for different portions of the Project or other construction or operations on the site, the term "Contractor" in the Contract Documents in each case shall mean the Contractor who executes each separate Owner-Contractor Agreement.

§ 6.1.3 The ~~Owner-Contractor~~ shall ~~provide for~~ coordination of the activities of the Owner's own forces and of each Separate Contractor with the Work of the Contractor to ensure that the Work remains on schedule, who shall cooperate with them. The Contractor shall participate with any Separate Contractors and the Owner in reviewing their construction schedules. The Contractor shall make any revisions to its construction schedule deemed necessary after a joint review and mutual agreement between the Owner and Contractor. The construction schedules shall then constitute the schedules to be used by the Contractor, Separate Contractors, and the Owner until subsequently revised.

~~§ 6.1.4 Unless otherwise provided in the Contract Documents, when the Owner performs construction or operations related to the Project with the Owner's own forces or with Separate Contractors, the Owner or its Separate Contractors shall have the same obligations and rights that the Contractor has under the Conditions of the Contract, including, without excluding others, those stated in Article 3, this Article 6, and Articles 10, 11, and 12.~~

§ 6.2 Mutual Contractor's Responsibility

§ 6.2.1 It shall be the responsibility of the Contractor to assist, review, and coordinate the scheduling of work performed by any of the Owner's Separate Contractors. In addition, the Contractor shall be responsible for coordinating and providing all construction administration necessary for the Work and the work of any of Owner's Separate Contractors. The Contractor shall afford the Owner and Separate Contractors reasonable opportunity for introduction and storage of their materials and equipment and performance of their activities, and shall connect and coordinate the Contractor's construction and operations with theirs as required by the Contract Documents. Contractor shall be responsible for coordination between Contractor's subcontractors and Owner's Separate Contractors. Contractor shall review Owner's contract with Owner's Separate Contractors and become familiar with the requirements and scope of services contained therein.

§ 6.2.2 If part of the Contractor's Work depends for proper execution or results upon construction or operations by the Owner or a Separate Contractor, the Contractor shall, prior to proceeding with that portion of the Work, promptly notify, in writing, the Architect and Owner of apparent discrepancies or defects in the construction or operations by the Owner or Separate Contractor that would render it unsuitable for proper execution and results of the Contractor's Work, and shall promptly report, in writing, to the Architect and Owner if Owner's Separate Contractors fail in any way to timely perform their services or negatively impact Contractor's schedule or ability to perform the Work. Failure of the Contractor to notify, in writing, the Architect and Owner of apparent discrepancies or defects prior to proceeding with the Work shall constitute an acknowledgment that the Owner's or Separate Contractor's completed or partially completed construction is fit and proper, and is performed in a timely manner, to receive the Contractor's Work. The Contractor shall not be responsible for latent discrepancies or defects in the construction or operations by the Owner or Separate Contractor ~~that are not apparent.~~

§ 6.2.3 The Contractor shall reimburse the Owner for costs the Owner incurs that are payable to a Separate Contractor because of the Contractor's delays, improperly timed activities or defective construction. ~~The Owner shall be responsible to the Contractor for costs the Contractor incurs because of a Separate Contractor's delays, improperly timed activities, damage to the Work or defective construction.~~

6.2.3.1 If the Architect is required to provide additional services, as provided in the Agreement between the Owner and the Architect, specifically relating to additional compensation for the Architect for evaluating an excessive number of claims submitted by the Contractor or others in connection with the Work in accordance with Owner's Agreement with the Architect, then such services shall be paid for by the Contractor through the Owner, unless the additional services result from negligence of or an omission by the Architect.

6.2.3.2 If the Architect provides services in connection with a legal proceeding, except when the Architect is a party thereto, and the Owner requests the Architect, in writing, to provide such services, then the cost of such services shall be paid for by the party whose act or omission was a proximate cause of the problem that led to the requirement to provide such services. Such services shall be paid for by such party through Owner, who upon receipt of same shall reimburse the Architect.

6.2.3.3 All construction costs resulting from the Contractor's negligence, lack of oversight, inattention to details, failure to investigate, or failure to follow the Construction Documents or Contract Documents, will be borne by the Contractor.

§ 6.2.4 The Contractor shall promptly remedy damage that the Contractor wrongfully causes to completed or partially completed construction or to property of the Owner or Separate Contractor as provided in Section 10.2.5.

§ 6.2.5 The Owner and each Separate Contractor shall have the same responsibilities for cutting and patching as are described for the Contractor in Section 3.14.

§ 6.3 Owner's Right to Clean Up

If a dispute arises among the Contractor, Separate Contractors, and the Owner as to the responsibility under their respective contracts for maintaining the premises and surrounding area free from waste materials and rubbish, the Owner may clean up and the ~~Owner~~ Architect will allocate the cost among those responsible.

ARTICLE 7 CHANGES IN THE WORK

§ 7.1 General

§ 7.1.1 Changes in the Work may be accomplished after execution of the Contract, and without invalidating the Contract, by Change Order, Construction Change Directive or order for a minor change in the Work, subject to the limitations stated in this Article 7 and elsewhere in the Contract Documents. A properly prepared written request for a change in the Work by Contractor shall be accompanied by sufficient supporting data and information to permit the Architect to make a recommendation to Owner.

§ 7.1.2 A Change Order shall be based upon agreement among the Owner, Contractor, and Architect. A Construction Change Directive requires agreement by the Owner and Architect and may or may not be agreed to by the Contractor. An order for a minor change in the Work may be issued by the Architect alone.

§ 7.1.3 Changes in the Work shall be performed under applicable provisions of the Construction Documents or the Contract Documents. The Contractor shall proceed promptly with changes in the Work, unless otherwise provided in the Change Order, Construction Change Directive, or order for a minor change in the Work. Contractor shall not make any claim for an adjustment to time, Contract Sum, or Guaranteed Maximum Price due to: a change in the materials used; a change in the specified manner of constructing and/or installing the Work; or additional labor, services, or materials beyond that actually required by the terms of the Construction Documents or the Contract Documents, unless made pursuant to a written order or directive from Owner authorizing Contractor to proceed with a change in the Work. No claim for an adjustment to time, Contract Sum, or Guaranteed Maximum Price shall be valid unless so ordered or directed.

7.1.4 The total Contractor mark-up for overhead, profit, or fee for work performed by the Contractor's own forces shall not exceed 10% of the cost of the change in the Work. The total Contractor mark-up for overhead, profit, or fee for supervision of work performed by subcontractors' forces shall not exceed 4% of the cost of the change in the Work. The total subcontractor mark-up for overhead, profit, or fee for work performed by the subcontractor's forces shall not exceed 10% of the cost of the change in the Work. In no event shall total mark-up for overhead, profit, or fee in any work which involves a subcontractor or one or more sub-subcontractors, regardless of who performs the Work, exceed 14% of the total cost of the change in the Work.

7.1.5 Allowance balances may be used to fund changes in the Work. The Contractor will not be allowed an

overhead, profit, or fee mark-up when changes in the Work are funded by one of the Allowances.

7.1.6 If the Contract Sum is \$1,000,000.00 or more, or if the Contract Sum is less than \$1,000,000.00, and any Change Order, Construction Change Directives, or other Changes in the Work would increase the Contract Sum to \$1,000,000.00 or more, the total of all Change Orders, Construction Change Directives, or other Changes in the Work, may not increase the Contract Sum by more than 25% of the original Contract Sum. Any Change Order, Construction Change Directive, or other Change in the Work that would exceed that limit is void and of no effect. Texas Education Code § 44.0411.

§ 7.2 Change Orders

§ 7.2.1 A Change Order is a written instrument prepared by the Architect and signed by the Owner, Contractor, and Architect stating their agreement upon all of the following:

- .1 The change in the Work;
- .2 The amount of the adjustment, if any, in the Contract Sum or Guaranteed Maximum Price; and
- .3 The extent of the adjustment, if any, in the Contract Time.

7.2.2 Methods used in determining adjustments to the Contract Sum or Guaranteed Maximum Price may include those listed in Section 7.3.3.

7.2.3 Contractor stipulates that acceptance of a Change Order by the Contractor constitutes full accord and satisfaction for any and all Claims, whether direct or indirect, arising from the subject matter of the Change Order.

7.2.4 In no event shall a single change, or the aggregate of all changes, result in the total costs, reimbursements, and fees exceeding the Contract Sum or the Guaranteed Maximum Price, unless agreed to in writing by Owner prior to the commencement of such modified or changed Work.

§ 7.3 Construction Change Directives

§ 7.3.1 A Construction Change Directive is a written order prepared by the Architect and signed by the Owner and Architect, directing a change in the Work prior to agreement on adjustment, if any, in the Contract Sum or Guaranteed Maximum Price, or Contract Time, or both. The Owner may by Construction Change Directive, without invalidating the Contract, order changes in the Work within the general scope of the Contract consisting of additions, deletions, or other revisions, the Contract Sum or Guaranteed Maximum Price, and Contract Time being adjusted accordingly.

§ 7.3.2 A Construction Change Directive shall be used in the absence of total agreement on the terms of a Change Order.

§ 7.3.3 If the Construction Change Directive provides for an adjustment to the Contract Sum or Guaranteed Maximum Price, the adjustment shall be based on one of the following methods:

- .1 Mutual acceptance of a lump sum properly itemized and supported by sufficient substantiating data to permit evaluation;
- .2 Unit prices stated in the Contract Documents or subsequently agreed upon (additional mark-ups for overhead, profit, and fees will not be allowed);
- .3 Cost to be determined in a manner agreed upon by the parties and a mutually acceptable fixed or percentage fee, subject to the limitations of subparagraph 7.1.4; or
- .4 As provided in Section 7.3.4, subject to the limitations of subparagraph 7.1.4.

§ 7.3.4 If the Contractor does not respond promptly or disagrees with the method for adjustment in the Contract Sum or Guaranteed Maximum Price, then the Architect shall determine the adjustment on the basis of the amount by which the Contractor's direct costs have actually been increased over the direct cost of performing the Work, without the Change in the Work. Direct costs reasonable expenditures and savings of those performing the Work attributable to the change, including, in case of an increase in the Contract Sum, an amount for overhead and profit as set forth in the Agreement, or if no such amount is set forth in the Agreement, a reasonable amount. In such case, and also under Section 7.3.3.3, the Contractor shall keep and present, in such form as the Architect may prescribe, an itemized accounting together with appropriate supporting data. Unless otherwise provided in the Contract Documents, costs for the purposes of this Section 7.3.4 shall be limited to the following:

- .1 Actual Costs of labor, including applicable payroll taxes, fringe benefits required by agreement or custom, and workers' compensation insurance, and other employee costs approved by the Architect;

2. ~~Actual~~ Costs of materials, supplies, and equipment, including cost of transportation, used in performing the Change in the Work whether incorporated or consumed;
3. ~~Actual~~ Rental costs of machinery and equipment rented from third parties, exclusive of hand tools, ~~whether rented from the Contractor or others~~;
4. ~~Actual~~ Costs of premiums for all bonds and insurance, and permit fees, ~~and sales, use, or similar taxes~~, directly related to the change; ~~and~~
5. ~~Costs of supervision and field office personnel directly attributable to the change~~

The Contractor shall keep and present, in such form as the Architect or Owner may prescribe, an itemized accounting of the items listed above, together with appropriate supporting documentation.

§ 7.3.5 If the Contractor disagrees with the adjustment in the Contract Time, the Contractor may make a Claim in accordance with applicable provisions of Article 15.

§ 7.3.6 Upon receipt of a Construction Change Directive, the Contractor shall promptly proceed with the change in the Work involved and advise the Architect of the Contractor's agreement or disagreement with the method, if any, provided in the Construction Change Directive for determining the proposed adjustment in the Contract Sum or Guaranteed Maximum Price, or Contract Time.

§ 7.3.7 A Construction Change Directive signed by the Contractor indicates the Contractor's agreement therewith, including adjustment in Contract Sum or Guaranteed Maximum Price, and Contract Time or the method for determining them. Such agreement shall be effective immediately and shall be recorded as a Change Order.

§ 7.3.8 The amount of credit to be allowed by the Contractor to the Owner for a deletion or change that results in a net decrease in the Contract Sum shall be actual net cost plus the Contractor's allocated percent of profit and overhead, all as confirmed by the Architect. ~~When both additions and credits covering related Work or substitutions are involved in a change, the allowance for overhead and profit shall be figured on the basis of net increase, if any, with respect to that change.~~

§ 7.3.9 Pending final determination of the total cost of a Construction Change Directive to the Owner, the Contractor may request payment for Work completed under the Construction Change Directive in Applications for Payment. The Architect will make an interim determination for purposes of monthly certification for payment for those costs and certify for payment the amount that the Architect determines, in the Architect's professional judgment, to be reasonably justified. The Architect's interim determination of cost shall adjust the Contract Sum on the same basis as a Change Order, subject to the right of either party to disagree and assert a Claim in accordance with Article 15.

§ 7.3.10 When the Owner and Contractor agree with a determination made by the Architect concerning the adjustments in the Contract Sum and Contract Time, or otherwise reach agreement upon the adjustments, such agreement shall be effective immediately and the Architect will prepare a Change Order. Change Orders may be issued for all or any part of a Construction Change Directive.

§ 7.4 Minor Changes in the Work

With prior written notice to the Owner's representative, ~~the~~ Architect may order minor changes in the Work that are consistent with the intent of the Construction Documents or the Contract Documents and do not involve an adjustment in the Contract Sum or Guaranteed Maximum Price, or an extension of the Contract Time. The Architect's order for minor changes shall be in writing. If the Contractor believes that the proposed minor change in the Work will affect the Contract Sum or Guaranteed Maximum Price, or Contract Time, the Contractor shall notify the Architect and shall not proceed to implement the change in the Work. If the Contractor performs the Work set forth in the Architect's order for a minor change without prior notice to the Architect that such change will affect the Contract Sum or Guaranteed Maximum Price, or Contract Time, the Contractor waives any adjustment to the Contract Sum or Guaranteed Maximum Price, or extension of the Contract Time. The Contractor shall carry out such written orders promptly. Minor changes in the Work shall not include changes that involve the outward appearance of the structure, color schemes, floor plans, building materials, landscaping, or mechanical equipment

ARTICLE 8 TIME

§ 8.1 Definitions

§ 8.1.1 Unless otherwise provided, Contract Time is the period of time, including authorized adjustments, allotted in the Contract Documents for ~~Substant~~Final Completion of the Work.

§ 8.1.2 The date of commencement of the Work is the ~~date established in the Agreement~~ first business day after Contractor's receipt of the written Notice to Proceed. The Notice to Proceed shall not be issued by Architect until the Agreement (or Amendment, if Contractor is a Construction Manager at Risk) has been signed by the Contractor, approved by Owner's Board of Trustees, signed by the Owner's authorized representative, and Owner and Architect have received, and approved as to form, all required payment and performance bonds and insurance, in compliance with Article 11. Issuance of the Notice to Proceed shall not relieve the Contractor of its responsibility to comply with Article 11.

§ 8.1.3 The date of Substantial Completion is the date certified by the Architect in accordance with Section 9.8. The date of Final Completion is the date certified by the Architect in accordance with Paragraph 9.10. Unless otherwise agreed in writing by Owner, Contractor agrees that Final Completion shall occur not more than 30 days after the date of Substantial Completion.

§ 8.1.4 The term "day" as used in the Contract Documents shall mean calendar day unless otherwise specifically defined.

§ 8.2 Progress and Completion

§ 8.2.1 Time limits stated in the Contract Documents are of the essence of the Contract. By executing the Agreement, the Contractor ~~confirms~~ stipulates that the Contract Time is a reasonable period for performing the Work.

§ 8.2.2 The Contractor shall not knowingly, except by agreement or instruction of the Owner in writing, commence the Work prior to the effective date of insurance required to be furnished by the Contractor and Owner.

§ 8.2.3 The Contractor shall proceed expeditiously with adequate forces and shall achieve Substantial and Final Completion within the Contract Time.

8.2.4 The Contractor is subject to liquidated damages, as specified in the Agreement, if the Work is not completed by the date of Substantial Completion or the date of Final Completion.

§ 8.3 Delays and Extensions of Time

§ 8.3.1 If the Contractor is delayed at any time in the commencement or progress of the Work by (1) an act or neglect of the Owner or Architect, of an employee of either, or of a Separate Contractor; (2) by changes ordered in the Work; (3) by ~~labor disputes, fire, governmental actions, unusual delay in deliveries, unavoidable casualties, or~~ adverse weather conditions documented in accordance with Section 15.1.6.2, ~~or other causes beyond the Contractor's control~~; (4) by delay authorized, in writing, by the Owner ~~pending mediation and binding dispute resolution~~; or (5) by other causes that the Contractor asserts, and the Owner and Architect determines, may justify delay, then the Contract Time ~~shall~~ may be extended for such reasonable time as the Owner and Architect may determine.

§ 8.3.2 Claims relating to time shall be made in accordance with applicable provisions of Article 15.

§ 8.3.3 This Agreement Section 8.3 does not ~~permit~~ reclude the recovery of damages, including, without limitation, extended home office overhead expenses, general conditions, or other consequential damages, by the Contractor for delay or disruption or for extensions of time due to bad weather or acts of God. Contractor agrees that the only possible compensation for any delay is an extension of time by either party under other provisions of the Contract Documents.

ARTICLE 9 PAYMENTS AND COMPLETION

§ 9.1 Contract Sum

§ 9.1.1 The Contract Sum is stated in the Agreement and, including authorized adjustments, is the total amount payable by the Owner to the Contractor for performance of the Work under the Contract Documents. In the event that the Project is a Construction Management at Risk Project, the Contract Sum shall not exceed the Guaranteed Maximum Price.

§ 9.1.2 If unit prices are stated in the Contract Documents or subsequently agreed upon, and if quantities originally contemplated are materially changed so that application of such unit prices to the actual quantities causes substantial

inequity to the Owner or Contractor, the applicable unit prices ~~shall~~ be equitably adjusted by prior written agreement.

§ 9.2 Schedule of Values

9.2.1 Where the Contract is based on a stipulated sum or Guaranteed Maximum Price, the Contractor shall submit a schedule of values to the Architect before the first Application for Payment, allocating the entire Contract Sum or, in the case of a Guaranteed Maximum Price, within 15 days after establishing the Guaranteed Maximum Price, to the various portions of the Work. The schedule of values shall be prepared in the form, and supported by the data to substantiate its accuracy, required by the Architect. This schedule, unless objected to by the Architect, shall be used as a basis for reviewing the Contractor's Applications for Payment. Any changes to the schedule of values shall be submitted to the Architect and supported by such data to substantiate its accuracy as the Architect may require, and unless objected to by the Architect, shall be used as a basis for reviewing the Contractor's subsequent Applications for Payment. The schedule of values shall be prepared in such a manner that each major item of work, whether done by Contractor's own forces or subcontracted, is shown as a single line item on AIA Document G702 and G703, Application and Certificate for Payment and Continuation Sheet. If the Contractor is a Construction Manager at Risk, then the Contractor's fee and general conditions shall be specifically shown, and AIA Documents G702CMA and G703 shall be used.

9.2.2 if the Project is a Construction Manager at Risk project, in order to facilitate the review of Applicants for Payment, the Schedule of Values shall be submitted on AIA Documents G702 and G703, and shall include the following:

.1 Contractor's cost for Contractor's fee (if applicable) bonds and insurance, mobilization, or general conditions, etc. shall be listed as individual line item.

.2 Contractor's costs for various construction items shall be detailed. For example, concrete work shall be subdivide into footings, grade beams, floor slabs, or paving, etc.

.3 On major subcontracts, such as mechanical, electrical, and plumbing, the schedule shall indicate line items and amounts in detail (for example: underground, major equipment, fixtures, installation fixtures, or start-up, etc.)

.4 Costs for subcontract work shall be listed without any additional mark-up of Contractor's costs for overhead, profit, or supervision.

.5 If payment for stored materials is requested prior to installation, then material and labor shall be listed as separate line items.

.6 Contractor shall provide a report of actual versus projected reimbursable expenses (general conditions), updated monthly.

§ 9.3 Applications for Payment

9.3.1 At least ten days before the date established for each progress payment, the Contractor shall submit to the Architect an itemized Application for Payment prepared in accordance with the schedule of values, if required under Section 9.2, for completed portions of the Work. The application shall be notarized, if required, and supported by all data substantiating the Contractor's right to payment that the Owner or Architect require, such as copies of requisitions, and releases and waivers of liens from Subcontractors and suppliers, and shall reflect retainage ~~if provided for in the Contract Documents~~.

9.3.1.1 Contractor agrees that, for purposes of Texas Government Code Sections 2251 and 2251.042, receipt of the Application for Payment by the Architect shall not be construed as receipt of an invoice by the Owner. Contractor further agrees that Owner's receipt of the Certificate for Payment shall be construed as receipt of an invoice by the Owner, for purposes of Texas Government Code Sections 251.021 and 2251.042. ~~As provided in Section 7.3.9, such applications may include requests for payment on account of changes in the Work that have been properly authorized by Construction Change Directives, or by interim determinations of the Architect, but not yet included in Change Orders.~~

~~§ 9.3.1.2 Applications for Payment shall not include requests for payment for portions of the Work for which the Contractor does not intend been invoiced by to pay a Subcontractor or supplier, unless such Contractor has self-performed the Work has been performed by others whom the Contractor intends to pay.~~

~~9.3.1.3 Until Final Completion of the Work, the Owner shall withhold retainage as provided in the Contract Documents, except that Owner shall not pay amounts for which the Architect refuses to certify payment, or the Owner refuses to pay, as provided herein Section 9.4.3 or 9.5 as amended. The retainage shall be paid with the Final Payment. (Note: if more than 5% is retained, under Texas law, then the retainage must be placed in an interest-bearing account, and the Contractor must be paid the interest earned on the retainage upon completion of the Work. Texas Government Code Section 2252.032).~~

~~§ 9.3.2 Unless otherwise provided in the Contract Documents, pPayments shall be made on the basis of invoices for specific account of materials and/or equipment delivered and suitably stored at the site for subsequent incorporation in the Work, and -If approved in advance by the Owner, payment may similarly be made for specific materials and/or equipment (1) suitably stored the site or (2) suitably stored at some off-the-site at a location, provided the following conditions are met for agreed upon in writing. Payment for materials and equipment stored on or off the site shall be conditioned upon compliance by the Contractor with procedures satisfactory to the Owner to establish the Owner's title to such materials and equipment or otherwise protect the Owner's interest, and shall include the costs of applicable insurance, storage, and transportation to the site, for such materials and equipment stored off-the-site storage:~~

~~_____ .1 The location must be agreed to, in writing, by Owner and Surety.~~

~~_____ .2 The location must be a bonded warehouse.~~

~~_____ .3 The Contractor's Surety must agree, in writing, to the amounts included in each Application for Payment.~~

~~_____ .4 The Contractor must bear the cost of the Owner's and Architect's expenses related to visiting the off-site storage area and reviewing the stored contents. Contractor acknowledges that Architect's time may be an Additional Service and shall compensate Architect directly for same upon request.~~

~~_____ .5 Payment shall not include any charges for overhead or profit on stored materials.~~

~~_____ .6 Payments for materials or equipment stored on or off the site shall be conditioned upon submission by the Contractor of bills of sale or such other documentation satisfactory to the Owner to establish the Owner's title to such materials or equipment or otherwise protect the Owner's interest, including applicable insurance (naming the Owner as insured and naming the specific materials or equipment stored and their location) and proof of delivery to the site for those materials and equipment stored off the site. Under no circumstances will the Owner reimburse the Contractor for down payment, deposits, or other advance payment for materials or equipment until the materials or equipment are delivered to Owner's site or the agreed-upon off-site storage. Failure to follow these procedures shall result in nonpayment for storage of or insurance on stored materials and equipment. Failure to follow these procedures shall also result in nonpayment of materials and equipment until said materials and equipment are incorporated into the Work.~~

~~§ 9.3.3 The Contractor warrants that title to all Work covered by an Application for Payment will pass to the Owner no later than the time of payment. The Contractor further warrants that upon submittal of an Application for Payment all Work for which Certificates for Payment have been previously issued and payments received from the Owner shall, to the best of the Contractor's knowledge, information, and belief, be free and clear of liens, claims, security interests, or encumbrances, in favor of the Contractor, Subcontractors, suppliers, or other persons or entities that provided labor, materials, and equipment relating to the Work. Neither Contractor nor any of its materialmen, laborers, or Subcontractors shall have any lien rights against the Owner's lands, building funds, materials or other property. No materialmen, laborers or Subcontractor of the Contractor shall have any enforceable rights against the Owner of this Contract. Materialmen, laborers and Subcontractors of the Contractor may have rights under any Payment Bond provided by the Contractor, but cannot look to the Owner for any help in enforcement of those rights. CONTRACTOR SHALL WAIVE, RELEASE, INDEMNIFY, AND HOLD OWNER HARMLESS FROM ANY LIENS, CLAIMS, SECURITY INTERESTS OR ENCUMBRANCES FILED BY THE CONTRACTOR, SUBCONTRACTORS, OR ANYONE CLAIMING BY, THROUGH, OR UNDER THE CONTRACTOR OR SUBCONTRACTOR FOR ITEMS COVERED BY PAYMENTS MADE BY THE OWNER TO CONTRACTOR.~~

~~9.3.4 Contractor shall submit Applications for Payment, in quadruplicate, using AIA Documents G702 and G703 Application and Certificate of Payment (or G702CMA, if applicable) and Continuation Sheet. All blanks in the form must be completed and signatures of Contractor and Notary Public must be original on each form. Incomplete or~~

inaccurate Applications for Payment shall be returned to the Contractor by the Architect for completion and/or correction. Owner shall have no responsibility for payment of same if the Application for Payment is incomplete or inaccurate.

9.3.5 By signing each Application for Payment, the Contractor stipulates and certifies to the following: that the information presented is true, correct, accurate, and complete; that the Contractor has made the necessary detailed examinations, audits, and arithmetic verifications; that the submitted Work has been completed to the extent represented in the Applications for Payment; that the materials and supplies identified in the Applications for Payment have been purchased, paid for, and received; that the subcontractors have been paid as identified in the Applications for Payment or that Contractor has been invoiced for same; that Contractor has made the necessary on-site inspections to confirm the accuracy of the Applications for Payment; that there are no known mechanics' or materialmen's liens outstanding at the date of the Applications for Payment; that all due and payable bills with respect to the Work have been paid to date or are included in the amount requested in the current Payment Application; that, except for such bills not paid but so included, there is no known basis for the filing of any mechanics' or materialmen's liens on the Work; that the Payment Application includes only Work self-performed by Contractor or for which Contractor has been invoiced; and that releases from all Subcontractors and materialmen have been obtained in such form as to constitute an effective release of lien under the laws of the State of Texas, covering all Work performed and for which payment has been made by the Owner to the Contractor. Contractor understands that documents submitted to Owner become government documents under the laws of the State of Texas. Contractor further understands that falsification of Contractor's Applications for Payment may constitute a violation of the penal laws of the State of Texas, including, but not limited to, Texas Penal Code Sections 32.46; 37.09, and 37.10, and may justify termination of Contractor's Contract with Owner. Contractor further understands and agrees that falsification of documents may entitle Owner to restitution as permitted by Texas law and these Contract Documents.

§ 9.4 Certificates for Payment

§ 9.4.1 The Architect will, within seven days after receipt of the Contractor's Application for Payment, carefully evaluate and review the Applications for Payment and, when appropriate, return the Applications for Payment to the Contractor as provided in Section 9.3.4. If the Applications for Payment are complete, then the Architect shall sign and either (1) certify and issue to the Owner a Certificate for Payment in the full amount of the Applications for Payment, with a copy to the Contractor; or (2) certify and issue to the Owner a Certificate for Payment for such amount as the Architect determines is properly due, and notify the Contractor and Owner in writing of the Architect's reasons for withholding certification in part as provided in Section 9.5.1; or (3) withhold certification of the entire Applications for Payment, and notify the Contractor and Owner in writing of the Architect's reason for withholding certification in whole as provided in Section 9.5.1. Architect's written reason for withholding certification shall be construed as the notice required by Texas Government Code Section 2251.042 et. seq.

§ 9.4.2 The issuance of a Certificate for Payment will constitute a representation by the Architect to the Owner, based on the Architect's evaluation of the Work and the data in the Application for Payment, that the Architect has observed the progress of the Work and determined that, in the Architect's professional opinion, to the best of the Architect's knowledge, information, and belief, the Work has progressed to the point indicated, and the quality of the Work is in accordance with the Contract Documents. Further, the issuance of the Certificate for Payment will constitute a representation by the Architect to the Owner that the Architect has carefully evaluated and certified that the amounts requested in the Applications for Payment are valid and correct and that the Contractor is entitled to payment in the amount certified. The foregoing representations are subject to an evaluation of the Work for conformance with the Contract Documents upon Substantial Completion, to results of subsequent tests and inspections, to correction of minor deviations from the Contract Documents prior to completion, and to specific qualifications expressed by the Architect in writing to the Owner. However, the issuance of a Certificate for Payment will not be a representation that the Architect has (1) made exhaustive or continuous on-site inspections to check the quality or quantity of the Work; (2) reviewed construction means, methods, techniques, sequences, or procedures; (3) reviewed copies of requisitions received from Subcontractors and suppliers and other data unless requested by the Owner to substantiate the Contractor's right to payment; or (4) made examination to ascertain how or for what purpose the Contractor has used money previously paid on account of the Contract Sum. Examinations, audits, and verifications, if required by the Owner, will be performed by the Owner's accountants or other representatives of the Owner acting in the sole interest of the Owner.

9.4.3 The issuance of a Certificate for Payment shall constitute a recommendation to the Owner regarding the amount to be paid. This recommendation is not binding on the Owner if Owner knows of other reasons under the Contract Documents why payment should be withheld.

§ 9.5 Decisions to Withhold Certification

§ 9.5.1 The Architect may withhold a Certificate for Payment in whole or in part, to the extent reasonably necessary to protect the Owner, if in the Architect's opinion the representations to the Owner required by Section 9.4.2 cannot be made. If the Architect is unable to certify payment in the amount of the Application, the Architect will notify the Contractor and Owner as provided in Section 9.4.1. If the Contractor and Architect cannot agree on a revised amount, the Architect will promptly issue a Certificate for Payment for the amount for which the Architect is able to make such representations to the Owner. The Architect may also withhold a Certificate for Payment or, because of subsequently discovered evidence, may nullify the whole or a part of a Certificate for Payment previously issued, to such extent as may be necessary in the Architect's opinion to protect the Owner from loss for which the Contractor is responsible, including loss resulting from acts and omissions described in Section 3.3.2, because of

- .1 defective Work not remedied;
- .2 third party claims filed or reasonable evidence indicating probable filing of such claims, unless security acceptable to the Owner is provided by the Contractor;
- .3 failure of the Contractor to make payments properly to Subcontractors or suppliers for labor, materials or equipment;
- .4 reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Sum;
- .5 damage to the Owner or a Separate Contractor;
- .6 reasonable evidence that the Work will not be completed within the Contract Time, and that the unpaid balance would not be adequate to cover actual or liquidated damages for the anticipated delay;
- ~~or~~
- .7 repeated failure to carry out the Work in accordance with the Contract Documents; or
- .8 failure to submit a written plan indicating action by the Contractor to regain the time schedule for completion of Work within the Contract time.

§ 9.5.2 When ~~either party~~the Contractor disputes the Architect's decision regarding a Certificate for Payment under Section 9.5.1, in whole or in part, ~~that party~~the Contractor may submit a Claim in accordance with Article 15.

§ 9.5.3 When the reasons for withholding certification are removed, certification will be made for amounts previously withheld.

§ 9.5.4 Notwithstanding any provision contained within this Article, if the Work has not attained Substantial Completion or Final Completion by the required dates, subject to extensions of time allowed under the Contract Documents, then ~~If then~~ Architect may withhold ~~any further eCertificateion~~ for ~~pPayment~~ under Section 9.5.1.3, the Owner may, at its sole option, issue joint checks to the Contractor and to any Subcontractor or supplier to whom ~~the from~~ Contractor to the extent necessary to preserve sufficient funds to complete construction of the Project and to cover liquidated damages. failed to make payment for Work properly performed or material or equipment suitably delivered. If tThe Owner shall not be deemed in default by reason of withholding ~~makes~~ payments as provided in Sections 9.3.4, 9.4.3, 9.5.1, or this Section by joint check, the Owner shall notify the Architect and the Contractor shall reflect such payment on its next Application for Payment.

§ 9.6 Progress Payments

§ 9.6.1 After the Architect has issued a Certificate for Payment, the Owner shall make payment for undisputed amounts in the manner and within the time provided in the Contract Documents, and shall so notify the Architect. Owner shall notify Contractor within 21 days if Owner disputes the Architect's Certificate of Payment pursuant to Texas Government Code Section 2251.042 et seq. listing the specific reason for nonpayment. Payments to the Contractor shall not be construed as releasing the Contractor or his Surety from any obligations under the Contract Documents.

§ 9.6.2 The Contractor shall pay each Subcontractor, no later than seven days after receipt of payment from the Owner, the amount to which the Subcontractor is entitled, reflecting percentages actually retained from payments to the Contractor on account of the Subcontractor's portion of the Work. The Contractor shall, by appropriate agreement with each Subcontractor, require each Subcontractor to make payments to Sub-subcontractors in a similar manner. In compliance with Texas Government Code Section 2251.022, the Contractor shall, within ten (10) days following receipt of payment from the Owner, pay all bills for labor and materials performed and furnished by

others in connection with the Work, and shall, if requested, provide the Owner with evidence of such payment. Contractor shall include a provision in each of its subcontracts imposing the same payment obligations on its Subcontractors as are applicable to the Contractor hereunder, and if the Owner so requests, shall provide to the Owner copies of such Subcontractor payments. If the Contractor has failed to make payments promptly to the Contractor's Subcontractors or for materials or labor used in the Work for which the Owner has made payment to the Contractor, then the Owner shall be entitled to withhold payment to the Contractor, in part or in whole, to the extent necessary to protect the Owner. This Section is subject to the provisions of Texas Business and Commerce Code Chapter 56.

§ 9.6.3 The Architect will, on request, furnish to a Subcontractor, if practicable, information regarding percentages of completion or amounts applied for by the Contractor and action taken thereon by the Architect and Owner on account of portions of the Work done by such Subcontractor.

§ 9.6.4 The Owner has the right to request written evidence from the Contractor that the Contractor has properly paid Subcontractors and suppliers amounts paid by the Owner to the Contractor for subcontracted Work. If the Contractor fails to furnish such evidence within seven days, the Owner shall have the right to contact Subcontractors and suppliers to ascertain whether they have been properly paid. Neither the Owner nor Architect shall have an obligation to pay, or to see to the payment of money to, a Subcontractor or supplier, ~~except as may otherwise be required by law.~~ Any action taken by Owner to require the Contractor to pay a Subcontractor shall not impose any liability on Owner to the Subcontractor or supplier.

§ 9.6.5 The Contractor's payments to suppliers shall be treated in a manner similar to that provided in Sections 9.6.2, 9.6.3 and 9.6.4.

§ 9.6.6 A Certificate for Payment, a progress payment, or partial or entire use or occupancy of the Project by the Owner shall not constitute acceptance of Work not in accordance with the Contract Documents.

§ 9.6.7 Unless the Contractor provides the Owner with a payment bond in the full penal sum of the Contract Sum, payments received by the Contractor for Work properly performed by Subcontractors or provided by suppliers shall be held by the Contractor for those Subcontractors or suppliers who performed Work or furnished materials, or both, under contract with the Contractor for which payment was made by the Owner. Nothing contained herein shall require money to be placed in a separate account and not commingled with money of the Contractor, create any fiduciary liability or tort liability on the part of the Contractor for breach of trust, or entitle any person or entity to an award of punitive damages against the Contractor for breach of the requirements of this provision. Payments received by the Contractor from the Owner for Work properly performed by Subcontractors, or materials properly provided by suppliers, shall be held in trust by the Contractor for the benefit of those Subcontractors or suppliers who performed Work or furnished materials, or both, under contract with the Contractor. Texas Property Code § 162.001.

~~§ 9.6.8 Provided the Owner has fulfilled its payment obligations under the Contract Documents, THE CONTRACTOR SHALL DEFEND AND INDEMNIFY THE OWNER FROM ALL LOSS, LIABILITY, DAMAGE OR EXPENSE, INCLUDING REASONABLE ATTORNEY'S FEES AND LITIGATION EXPENSES, ARISING OUT OF ANY LIEN CLAIM OR OTHER CLAIM FOR PAYMENT BY ANY SUBCONTRACTOR OR SUPPLIER OF ANY TIER. UPON RECEIPT OF NOTICE OF A LIEN CLAIM OR OTHER CLAIM FOR PAYMENT, THE OWNER SHALL NOTIFY THE CONTRACTOR. IF APPROVED BY THE APPLICABLE COURT, WHEN REQUIRED, THE CONTRACTOR MAY SUBSTITUTE A SURETY BOND FOR THE PROPERTY AGAINST WHICH THE LIEN OR OTHER CLAIM FOR PAYMENT HAS BEEN ASSERTED.~~

9.6.9 Contractor shall not withhold as a retainage a greater percentage from Subcontractors or materialmen than the percentage that Owner withheld as retainage from payments to Contractor.

§ 9.7 Failure of Payment

~~9.7.1 If the Architect does not issue a Certificate for Payment, through no fault of the Contractor, within seven days after receipt of the Contractor's Application for Payment, or Pursuant to Texas Government Code Section 2251.051, if the Owner does not pay the Contractor any payment certified by the Architect, which is undisputed, due and owing within seven days after the date the payment is due under the Contract Documents established in the Contract Documents, the amount certified by the Architect or awarded by binding dispute resolution, then the Contractor may, upon seven (10) additional days' written notice to the Owner and Architect, that payment has not been made~~

and the Contractor intends to suspend performance for nonpayment, may stop the Work until payment of the amount owing has been received. The Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable costs of shutdown, delay and start up, plus interest as provided for in the Contract Documents. If the Owner provides written notice to the Contractor that: 1) payment has been made; or 2) a bona fide dispute for payment exists, listing the specific reasons for nonpayment, then Contractor shall be liable for damages resulting from suspension of the Work. If a reason specified is that labor, services, or materials provided by the Contractor are not provided in compliance with the Contract Documents, then the Contractor shall be provided a reasonable opportunity to cure the noncompliance or to compensate Owner for any failure to cure the noncompliance. No amount shall be added to the Contract Sum as a result of a dispute between Owner and Contractor unless and until such dispute is resolved in Contractor's favor.

9.7.2 If the Architect does not issue a Certificate for Payment within seven (7) days after receipt of the Contractor's Application for Payment, through no fault of the Contractor, then the Contractor shall provide written notice to the Owner, and the Owner shall have fourteen (14) business days after receipt of such notice to provide or obtain a Certificate for Payment. If Owner fails to provide or obtain the Certificate for Payment, then the Contractor may, upon fourteen (14) additional business days' written notice to the Owner and Architect, stop the Work until payment of the undisputed amount owing has been received.

9.7.3 If the Owner is entitled to reimbursement or payment from the Contractor under or pursuant to the Contract Documents, then such payment shall be made promptly upon demand by the Owner. Notwithstanding anything contained in the Contract Documents to the contrary, if the Contractor fails to promptly make any payment due to Owner, pursuant to the Contractor, or if the Owner incurs any costs and expenses to cure any default of the Contractor or to correct defective Work, then the Owner shall have an absolute right to offset such amount against the Contract Sum and, in the Owner's sole discretion and without waiving any other remedies, may elect either to:
.1 deduct an amount equal to that which the Owner is entitled from any payment then or thereafter due to Contractor from the Owner, or
.2 issue a written notice to the Contractor reducing the Contract Sum by an amount equal to that which the Owner is entitled.

§ 9.8 Substantial Completion

§ 9.8.1 Substantial Completion is the stage in the progress of the Work when the Work or designated portion thereof is sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work for its intended use; all Project systems included in the Work or designated portion thereof have been successfully tested and are fully operational; all required governmental inspections and certifications required by the Work have been made, approved, and posted; designated initial instruction of Owner's personnel in the operation of Project systems has been completed; and all the required finishes set out in the Construction Documents are in place. The only remaining Work shall be minor in nature so that the Owner can occupy the Work or the applicable portion of the Work for all of its intended purposes on that date; and the completion of the Work by the Contractor will not materially interfere with or hamper Owner's normal school operations or other intended use. As a further condition of a determination of Substantial Completion, the Contractor shall certify that all remaining Work shall be completed within 30 days. Contractor shall complete Owner's Substantial Completion Certificate.

§ 9.8.2 When the Contractor considers that the Work, or a portion thereof which the Owner agrees to accept separately, is substantially complete, the Contractor shall prepare and submit to the Architect a comprehensive list of items to be completed or corrected prior to final payment. Failure to include an item on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.

§ 9.8.3 Upon receipt of the Contractor's list, the Architect will make an inspection to determine whether the Work or designated portion thereof is substantially complete. If the Architect's inspection discloses any item, whether or not included on the Contractor's list, which is not sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work or designated portion thereof for its intended use, then the Architect shall so notify the Contractor and Owner in writing, and the Contractor shall, before issuance of the Certificate of Substantial Completion, complete or correct such item upon notification by the Architect. In such case, the Contractor shall then submit a request for another inspection by the Architect to determine Substantial Completion. Except with the consent of the Owner, the Architect shall perform no more than five (5) inspections to determine whether the Work or a designated portion thereof has attained Substantial Completion in accordance with the Contract Documents. The Owner shall be entitled to reimbursement from the Contractor for amounts paid to the Architect for any additional inspections.

§ 9.8.4 When the Work or designated portion thereof is substantially complete, the Architect will prepare, sign and issue Owner's a Certificate of Substantial Completion that shall establish the date of Substantial Completion; establish responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work and insurance; and fix the time within which the Contractor shall finish all items on the list accompanying the Certificate. Warranties required by the Contract Documents shall commence on the date of Substantial-Final Completion of the Work or designated portion ~~thereof unless otherwise provided in the Certificate of Substantial Completion.~~

§ 9.8.5 The Certificate of Substantial Completion shall be submitted to the Owner and Contractor for their written acceptance of responsibilities assigned to them in the Certificate. ~~Upon such acceptance, and consent of surety if any, the Owner shall make payment of retainage applying to the Work or designated portion thereof. Such payment shall be adjusted for Work that is incomplete or not in accordance with the requirements of the Contract Documents.~~

§ 9.9 Partial Occupancy or Use

§ 9.9.1 The Owner may occupy or use any completed or partially completed portion of the Work at any stage when ~~such portion is designated by separate agreement with~~ agreed to by the Owner and the Contractor in writing, provided such occupancy or use is consented to by the insurer and authorized by public authorities having jurisdiction over the Project. Such partial occupancy or use may commence whether or not the portion is substantially complete, provided that the Owner and Contractor have accepted in writing the responsibilities assigned to each of them for payments, retainage, if any, security, maintenance, heat, utilities, damage to the Work resulting from such occupancy, use or installation, and property and liability insurance, and have agreed in writing concerning the period for correction of the Work and commencement of warranties required by the Contract Documents. When the Contractor considers a portion substantially complete, the Contractor shall prepare and submit a list to the Architect as provided under Section 9.8.2. Consent of the Contractor to partial occupancy or use shall not be unreasonably withheld. The stage of the progress of the Work shall be determined by written agreement between the Owner and Contractor or, if no agreement is reached, by decision of the Architect. Contractor agrees that the Owner may place and install as much equipment and furnishings as is possible before completion or partial completion of portions of the Work.

§ 9.9.2 Immediately prior to such partial occupancy, ~~or~~ use, or installation, the Owner, Contractor, and Architect shall jointly inspect the area to be occupied or portion of the Work to be used in order to determine and record the condition of the Work.

§ 9.9.3 Unless otherwise agreed upon in writing, partial occupancy or use of a portion or portions of the Work or installation of furnishings and equipment shall not constitute acceptance of Work not complying with the requirements of the Contract Documents, nor shall it constitute evidence of Substantial Completion or Final Completion.

9.9.4 In the event that Owner takes partial occupancy or installs furnishings and equipment prior to Substantial Completion of the Project. Contractor shall obtain an endorsement to Contractor's Builder's Risk Policy to provide extended coverage for partial occupancy if Contractor's Builder's Risk Coverage required by Article 11 would not otherwise provide such coverage.

§ 9.10 Final Completion and Final Payment

§ 9.10.1 Upon receipt of the Contractor's written notice that the Work is ready for final inspection and acceptance and upon receipt of a final Application for Payment, the Architect will promptly make such inspection. When the Architect finds the Work acceptable under the Contract Documents and the Contract fully performed, the Architect will promptly prepare, sign, and issue Owner's Certificate of Final Completion and a final Certificate for Payment stating that to the best of the Architect's knowledge, information and belief, certifying to the Owner that, and on the basis of the Architect's on-site visits and inspections, the Work has been completed in accordance with the Contract Documents and that the entire balance, including all retainages, found to be due the Contractor and noted in the final Certificate is due and payable. The Architect's final Certificate for Payment will constitute a further representation that conditions listed in Section 9.10.2 as precedent to the Contractor's being entitled to final payment have been fulfilled. Final payment shall be made by the Owner in accordance with Owner's regular schedule for payments.

§ 9.10.2 Neither final payment nor any remaining retained percentage shall become due until the Contractor submits to the Architect (1) using AIA Document G706, an affidavit that payrolls, bills for materials and equipment, and

other indebtedness connected with the Work for which the Owner or the Owner's property might be responsible or encumbered (less amounts withheld by Owner) have been paid or otherwise satisfied, (2) ~~a certificate~~ evidencing satisfactory to Owner that insurance required by the Contract Documents to remain in force after final payment is currently in effect, (3) a written statement that the Contractor knows of no reason that the insurance will not be renewable to cover the period required by the Contract Documents, (4) using AIA Document G707, consent of surety, if any, to final payment, (5) documentation of any special warranties, such as manufacturers' warranties or specific Subcontractor warranties, and (6) ~~if required by the Owner, except for amounts previously withheld by the Owner~~, other data establishing payment or satisfaction of obligations, such as AIA Document G706A, notarized subcontractor's lien releases, receipts and releases and waivers of liens, claims, security interests, or encumbrances arising out of the Contract, to the extent and in such form as may be designated by the Owner. If a Subcontractor refuses to furnish a release or waiver required by the Owner, the Contractor may furnish a bond satisfactory to the Owner to indemnify the Owner against such lien, claim, security interest, or encumbrance. If a lien, claim, security interest, or encumbrance remains unsatisfied after payments are made, the Contractor shall refund to the Owner all money that the Owner may be compelled to pay in discharging the lien, claim, security interest, or encumbrance, including all costs and reasonable attorneys' fees. In addition, the following items must be completed and received by the Owner before Final Payment will be due:

- .1 Written certifications required by Sections 10.5, 10.6, and 10.7;
- .2 Final list of subcontractors (AIA Document G705);
- .3 Contractor's certification in Texas Education Agency's Certification of Project Compliance, located at www.tea.state.tx.us/school.finalce/facilities/cert_2004.pdf;
- .4 Contractor's warranties, organized as required elsewhere in the Contract Documents;
- .5 Maintenance and Instruction Manuals;
- .6 Owner's Final Completion Certificate; and
- .7 "As-constructed record drawings." At the completion of the Project, the Contractor shall submit one (1) complete set of "as-constructed" record drawings, with all changes made during construction, including concealed mechanical, electrical, and plumbing items. The Contractor shall submit these as electronic, sepia, or other acceptable medium, in the discretion of the Owner. The "as-constructed" record drawings shall delete the seal of the Architect and/or the Engineer and any reference to those firms providing professional services to the Owner, except for historical or reference purposes.

Documents identified as affidavits must be notarized. All manuals will contain an index listing the information submitted. The Index section will be divided and identified by tabbing each section as listed in the index. Upon request, the Architect will furnish the Contractor with blank copies of the forms listed above. Final payment shall be paid by the Owner to the Contractor within thirty (30) days after Owner's Board of Trustees has voted to accept the Work and approve Final Payment.

§ 9.10.3 If, after Substantial Completion of the Work, final completion thereof is materially delayed through no fault of the Contractor or by issuance of Change Orders affecting final completion, and the Architect so confirms, the Owner shall, upon application by the Contractor and certification by the Architect, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed, corrected, and accepted. If the remaining balance for Work not fully completed or corrected is less than retainage stipulated in the Contract Documents, and if bonds have been furnished, the written consent of the surety to payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by the Contractor to the Architect prior to certification of such payment. Such payment shall be made under terms and conditions governing final payment, ~~except that~~ and it shall not constitute a waiver of Claims.

§ 9.10.4 The making of final payment shall not constitute a waiver of any Claims by the Owner ~~except those arising from~~

- .1 liens, Claims, security interests, or encumbrances arising out of the Contract and unsettled;
- .2 failure of the Work to comply with the requirements of the Contract Documents;
- .3 terms of special warranties required by the Contract Documents; or
- .4 audits performed by the Owner, if permitted by the Contract Documents, after final payment.

§ 9.10.5 Acceptance of final payment by the Contractor, a Subcontractor, or a supplier, shall constitute a waiver of claims by that payee except those previously asserted pursuant to Article 15 made in writing and identified by that payee as unsettled at the time of final Application for Payment.

ARTICLE 10 PROTECTION OF PERSONS AND PROPERTY

§ 10.1 Safety Precautions and Programs

The Contractor shall be responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the performance of the Contract and shall conform to all provisions of the “Manual of Accident Prevention in Construction,” published by the Associated General Contractors of America, Inc., latest edition, and the Contractor further agrees to fully comply with all safety standards required by the Occupational Safety and Health Administration (“OSHA”) 29 U.S.C. Section 651 et seq., and all amendments thereto. However, the Contractor’s duties herein shall not relieve any Subcontractor or any other person or entity, including any person or entity required to comply with all applicable federal, state, and local laws, rules, regulations, and ordinances from the obligation to provide for the safety of their employees, persons, and property and their requirements to maintain a work environment free of recognized hazards. Contractor shall provide reasonable fall protection safeguards and provide approved fall protection safety equipment for use by all exposed Contractor employees.

10.1.2 Contractor’s employees, agents, Subcontractors, anyone directly or indirectly employed by any of them, or anyone for whose acts any of them may be liable, shall not perform any service for Owner while under the influence of any amount of alcohol or any illegal controlled substance; or use, possess, distribute, or sell alcoholic beverages while on Owner’s premises. No person shall: use, possess, distribute, or sell illegal or nonprescribed controlled drugs or drug paraphernalia; misuse legitimate prescription or over-the-counter drugs; or act in contravention of warnings on medications while performing the Work or while on Owner’s premises. Contractor’s employees, agents, Subcontractors, or anyone directly or indirectly employed by any of them, shall not distribute or sell alcohol or drugs of any kind to Owner’s students or staff, regardless of the location of the distribution or sale.

10.1.3 Contractor will comply with all applicable federal, state, and local drug and alcohol-related laws and regulations (e.g., Department of Transportation regulations, Drug-Free Workplace Act). Contractor has adopted or will adopt its own policy to assure a drug-free and alcohol-free workplace while on Owner’s premises or performing the Work. Contractor will remove any of its employees, agents, subcontractors, anyone directly or indirectly employed by any of them, or anyone for whose acts any of them may be liable, from performing the Work any time there is suspicion of alcohol and/or drug use, possession, or impairment involving such person, and at any time an incident occurs where drug or alcohol use could have been a contributing factor. Owner has the right to require Contractor to remove any person from performing the Work any time cause exists to suspect alcohol or drug use. In such cases, the person so removed may only be considered for return to work after the Contractor certifies, as a result of a for-cause test, conducted immediately following removal, that said person was in compliance with this Contract. Contractor will not use any person to perform the Work who fails or refuses to take, or tests positive on, any for-cause alcohol or drug test.

10.1.4 Owner has also banned the presence of all weapons on the Project site, whether or not the owner thereof has a permit for a weapon, and Contractor agrees that Contractor’s representatives, employees, agents, and subcontractors will abide by same. Weapons may only be permitted in Owner’s parking lots if weapons are locked in personal vehicles in Owner’s parking lot.

§ 10.2 Safety of Persons and Property

§ 10.2.1 The Contractor shall take reasonable precautions for safety of, and shall provide reasonable protection to prevent damage, injury, or loss to

- .1 employees on the Work, school personnel, students, and other persons on Owner’s premises, and other persons who may be affected thereby, including the installation of fencing between the Work site and any connecting or adjacent property of Owner, when required by Texas Education Code Section 22.08341;
- .2 the Work and materials and equipment to be incorporated therein, whether in storage on or off the site, under care, custody, or control of the Contractor, a Subcontractor, or a Sub-subcontractor; and
- .3 other property at the site or adjacent thereto, such as other buildings, and their contents, fencing, trees, shrubs, lawns, walks, athletic fields, facilities and tracks, pavements, roadways, structures, and utilities not designated for removal, relocation, or replacement in the course of construction.

§ 10.2.2 The Contractor shall comply with, and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities, bearing on safety of persons or property or their protection from damage, injury, or loss.

§ 10.2.3 The Contractor shall implement, erect, and maintain, as required by existing conditions and performance of the Contract, reasonable safeguards for safety and protection, including installing fencing, posting danger signs and other warnings against hazards; promulgating safety regulations; and notifying the owners and users of adjacent sites and utilities of the safeguards. The Contractor shall also be responsible, at the Contractor's sole cost and expense, for all measures necessary to protect any personal or real property adjacent to the project and improvements therein. Any damage to such property or improvements shall be promptly repaired by the Contractor.

§ 10.2.4 When use or storage of ~~explosives or other~~ hazardous materials or equipment, or unusual methods are necessary for execution of the Work, the Contractor shall exercise utmost care and carry on such activities under supervision of properly qualified personnel and shall only conduct such activities after giving reasonable advance written notice of the presence or use of such materials, equipment, or methods to Owner and Architect. The storage of explosives on Owner's property is prohibited. The use of explosive materials on Owner's property is prohibited unless expressly approved in advance, in writing, by Owner and Architect.

§ 10.2.5 The Contractor shall promptly remedy damage and loss (other than damage or loss insured under property insurance required by the Contract Documents) to property referred to in Sections 10.2.1.2 and 10.2.1.3 caused in whole or in part by the Contractor, a Subcontractor, a Sub-subcontractor, or anyone directly or indirectly employed by any of them, or by anyone for whose acts they may be liable and for which the Contractor is responsible under Sections 10.2.1.2 and 10.2.1.3. ~~The Contractor may make a Claim for the cost to remedy the damage or loss to the extent such damage or loss is attributable to acts or omissions of the Owner or Architect or anyone directly or indirectly employed by either of them, or by anyone for whose acts either of them may be liable, and not attributable to the fault or negligence of the Contractor.~~ The foregoing obligations of the Contractor are in addition to the Contractor's obligations under Section 3.18.

§ 10.2.6 The Contractor shall designate a responsible member of the Contractor's organization at the site whose duty shall be the prevention of accidents. This person shall be the Contractor's superintendent unless otherwise designated by the Contractor in writing to the Owner and Architect.

§ 10.2.7 The Contractor shall not load or permit any part of the construction or site to be loaded so as to cause damage or create an unsafe condition.

10.2.8 The Contractor shall do all things reasonably necessary to protect the Owner's premises and all persons from damage and injury when all or a portion of the Work is suspended for any reason.

10.2.9 The Contractor shall promptly report, in writing, to the Owner and Architect all accidents arising out of or in connection with the Work which causes death, bodily injury, or property damage, giving full details and statements of any witnesses. In addition, if death, serious bodily injuries, or serious property damages are caused, then the accident shall be reported immediately by any means necessary to give actual notice to the Owner's representative and the Architect.

10.2.10 Contractor's obligations under Section 10.2 as to each portion of the Project shall continue until Owner takes possession of and occupies that portion of the Project.

§ 10.2.11~~8~~ Injury or Damage to Person or Property

If either party to the Contract suffers injury or damage to person or property because of an act or omission of the other party, or of others for whose acts such party is legally responsible, written notice of the injury or damage, whether or not insured, shall be given to the other party within a reasonable time not exceeding 21 days after discovery. The written notice shall provide sufficient detail to enable the other party to investigate the matter. Contractor understands and acknowledges that, under Texas law, Owner has sovereign and/or governmental immunity as to all torts except as to the Owner's permitted use or operation of Owner's motor vehicles, subject to any defenses under law.

§ 10.3 Hazardous Materials and Substances

§ 10.3.1 The Contractor is responsible for compliance with any requirements included in the Contract Documents regarding hazardous materials or substances. If the Contractor encounters a hazardous material or substance not addressed in the Contract Documents and if reasonable precautions will be inadequate to prevent foreseeable bodily injury or death to persons resulting from a material or substance, including but not limited to asbestos or

polychlorinated biphenyl (PCB), encountered on the site by the Contractor, the Contractor shall, upon recognizing the condition, immediately stop Work in the affected area and notify, in writing, the Owner and Architect of the condition. In the event the Contractor encounters polychlorinated biphenyl (PCB), and the specifications require the PCB's removal, the Contractor shall remove the PCB and store it in marked containers at the jobsite provided by the Owner. If PCBs are found which are leaking, then Contractor shall stop work on the affected fixture and shall contact Owner for removal and disposal of the leaking PCBs.

§ 10.3.2 Upon receipt of the Contractor's written notice, the Owner shall obtain the services of a licensed laboratory to verify the presence or absence of the material or substance reported by the Contractor and, in the event such material or substance is found to be present, to cause it to be rendered harmless. Unless otherwise required by the Contract Documents, the Owner shall furnish in writing to the Contractor and Architect the names and qualifications of persons or entities who are to perform tests verifying the presence or absence of the material or substance or who are to perform the task of removal or safe containment of the material or substance. The Contractor and the Architect will promptly reply to the Owner in writing stating whether or not either has reasonable objection to the persons or entities proposed by the Owner. If either the Contractor or Architect has an objection to a person or entity proposed by the Owner, the Owner shall propose another to whom the Contractor and the Architect have no reasonable objection. When the material or substance has been rendered harmless, Work in the affected area shall resume upon written agreement of the Owner and Contractor. ~~By Change Order, the Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable additional costs of shutdown, delay, and start-up.~~ The Contractor may be entitled to an equitable adjustment regarding the Date of Substantial Completion and/or Final Completion.

§ 10.3.3 ~~IF THE CONTRACTOR IMPORTS HAZARDOUS MATERIALS ONTO THE PROJECT SITE, THEN CONTRACTOR HEREBY TO THE FULLEST EXTENT PERMITTED BY LAW, THE OWNER SHALL INDEMNIFY AND HOLD HARMLESS THE OWNER, ITS CONTRACTOR, SUBCONTRACTORS, ARCHITECT, ARCHITECT'S CONSULTANTS, TRUSTEES, OFFICERS, AND AGENTS AND EMPLOYEES OF ANY OF THEM FROM AND AGAINST ANY CLAIMS, DAMAGES, LOSSES, AND EXPENSES, INCLUDING BUT NOT LIMITED TO ATTORNEYS' FEES, ARISING OUT OF OR RELATING TO RESULTING FROM SUCH IMPORTATION, INCLUDING BUT NOT LIMITED TO PERFORMANCE OF THE WORK IN THE AFFECTED AREA IF IN FACT THE MATERIAL OR SUBSTANCE PRESENTS THE RISK OF BODILY INJURY OR DEATH AS DESCRIBED IN SECTION 10.3.1 AND HAS NOT BEEN RENDERED HARMLESS, PROVIDED THAT SUCH CLAIM, DAMAGE, LOSS, OR EXPENSE IS ATTRIBUTABLE TO BODILY INJURY, SICKNESS, DISEASE OR DEATH, OR TO INJURY TO OR DESTRUCTION OF TANGIBLE PROPERTY (OTHER THAN THE WORK ITSELF), EXCEPT TO THE EXTENT THAT SUCH DAMAGE, LOSS, OR EXPENSE IS DUE TO THE FAULT OR NEGLIGENCE OF THE PARTY SEEKING INDEMNITY COSTS AND EXPENSES THE OWNER INCURS FOR REMEDIATION OF A MATERIAL OR SUBSTANCE THE CONTRACTOR BRINGS TO THE SITE, AS PROVIDED FOR IN SUBPARAGRAPH 3.18.~~

§ 10.3.4 The Owner shall not be responsible under this Section 10.3 for hazardous materials or substances the Contractor brings to the site ~~unless such materials or substances are required by the Contract Documents. The Owner shall be responsible for hazardous materials or substances required by the Contract Documents, except to the extent of the Contractor's fault or negligence in the use and handling of such materials or substances.~~

§ 10.3.5 ~~The Contractor shall reimburse the Owner for the cost and expense the Owner incurs (1) for remediation of hazardous materials or substances the Contractor brings to the site and negligently handles, or (2) where the Contractor fails to perform its obligations under Section 10.3.1, except to the extent that the cost and expense are due to the Owner's fault or negligence.~~

§ 10.3.6 ~~If, without negligence on the part of the Contractor, the Contractor is held liable by a government agency for the cost of remediation of a hazardous material or substance solely by reason of performing Work as required by the Contract Documents, the Owner shall reimburse the Contractor for all cost and expense thereby incurred.~~

§ 10.4 Emergencies

10.4.1 In an emergency affecting safety of persons or property, the Contractor shall act, at the Contractor's discretion, to prevent threatened damage, injury, or loss. ~~Additional compensation or extension of time claimed by the Contractor on account of an emergency shall be determined as provided in Article 15 and Article 7.~~

10.4.2 The performance of the foregoing services by the Contractor shall not relieve the subcontractors of their responsibility for the safety of persons and property and or compliance with all federal, state, and local statutes, rules, regulations, and orders of any governmental authority applicable to the conduct of the Work.

10.5 ASBESTOS OR ASBESTOS-CONTAINING MATERIALS

10.5.1 Contractor shall submit to the Architect a written certification addressed to the Owner that all materials used in the construction of this Project contain less than 0.10% by weight of asbestos and for which it can be demonstrated that, under reasonably foreseeable job site conditions, will not release asbestos fibers in excess of 0.1 fibers per cubic centimeter. The written certification shall further state that, should asbestos fibers be found at this Project in concentrations greater than 0.1 fibers per cubic centimeter, then Contractor shall be responsible for determining which materials contain asbestos fibers and shall take all necessary corrective action to remove those materials from the Project, at no additional cost to the Owner. The written certification shall be dated, shall reference this specific Project, and shall be signed by not less than two (2) officers of the Contractors.

10.5.2 Final Payment shall not be made until this written certification has been received.

10.6 LEAD-FREE MATERIAL IN POTABLE WATER SYSTEM

10.6.1 Prior to payment of retainage and final payment, the Contractor and each subcontractor involved with the potable water system, shall furnish a written certification that the potable water system is "lead-free."

10.6.2 The written certification shall further state that should lead be found in the potable water system built under this Project, then Contractor shall be responsible for determining which materials contain lead and shall take all necessary corrective action to remove lead from the Project, at no additional cost to the Owner. The written certification shall be dated, shall reference this specific Project, and shall be signed by not less than two (2) officers of the Contractor.

10.7 HAZARDOUS MATERIALS CERTIFICATION

The Contractor shall provide written certification that no materials used in the Work contain lead or asbestos materials in them in excess of amounts allowed by federal, state, or local standards, laws, codes, rules and regulations; the Federal Environmental Protection Agency (EPA) standards; and/or the Federal Occupational Safety and Health Administration (OSHA) standards, whichever is most restrictive. The Contractor shall provide this written certification as part of submittals under the Section in the Project Manual related to Contract Closeout.

ARTICLE 11 INSURANCE AND BONDS

11.0.1 No Work will be commenced, and no equipment or materials can be shipped, until all requirements of this Article have been satisfied, satisfactory evidence of insurance has been provided, and all insurance is in full force and effect. Contractor shall notify Owner and Architect, in writing, of any proposed nonconformity with these requirements, and shall notify Owner and Architect, in writing, of any insurance changes which occur during the terms required under the Contract Documents. Any deviation from these requirements can only be approved by Owner's Board of Trustees. Any nonconformity may be grounds for termination or modification of the Contract. To the extent that Contractor is unable to procure the insurance designated herein because the insurance is not reasonably available or is cost-prohibitive, then Contractor shall provide written notice to Owner's Board of Trustees. Said lack of insurance may then be grounds for termination or modification of this Agreement.

11.0.2 Satisfactory evidence of insurance required by this Article shall be provided to Owner and Architect not later than five (5) business days after execution of the Contract by Owner. Satisfactory evidence shall include copies of all required insurance policies, declarations, and endorsements themselves. In addition, Contractor shall also provide a duly-executed ACORD Form 25 Certificate of Liability Insurance naming Owner as a certificate holder and additional insured (except as noted in Section 11.0.4) and attaching all endorsements required herein. The Contractor shall furnish Owner all insurance amendments, renewals, notices, cancellations, and additional endorsements, as they are provided to Contractor.

11.0.3 All insurance required herein shall be obtained from a company licensed to do business with the State of Texas by the Texas Department of Insurance, and shall be underwritten by a company rated no less than "A-" X in A.M. Best's Key Rating Guide, Property-Casualty, according to the latest posted ratings available on A.M. Best's website, www.ambest.com, and that permits waivers of subrogation.

11.0.4 All insurance required herein shall name the Owner, its officers, employees, representatives, or agents, as an additional insured, except Contractor's Worker's Compensation insurance.

11.0.5 All insurance required herein shall, by endorsement, be primary and non-contributory insurance with respect to the Owner, its officers, employees, representatives, or agents. All insurance shall be written on an occurrence basis, if available, and shall contain a waiver of subrogation in favor of Owner as provided for in Section 11.3.

11.0.6 Any failure of Contractor to comply with the reporting provision of the policies shall not affect the coverage provided to the Owner, its officers, employees, representatives, or agents.

11.0.7 All workers on the Project must be covered by the required insurance policies of the Contractor or a Subcontractor.

11.0.8 Nothing contained in this Article shall limit or waive Contractor's legal or contractual responsibilities to Owner or others.

§ 11.1 Contractor's Insurance and Bonds

§ 11.1.1 The Contractor and the Contractor's Subcontractors shall purchase and maintain such insurance as will protect them and the Owner from claims that may arise out of, or result from, the Contractor's operations under the Contract, whether such operations be by Contractor or by any Subcontractor, or by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable, at a minimum of the types and limits of liability, containing the endorsements, and subject to the terms and conditions, as described in this Section 11.1, in the Agreement or elsewhere in the Contract Documents. ~~The Contractor shall purchase and maintain the required Such insurance shall include the following: from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located. The Owner, Architect, and Architect's consultants shall be named as additional insureds under the Contractor's commercial general liability policy or as otherwise described in the Contract Documents.~~

.1 Claims under workers' compensation, disability benefit, and other similar employee benefit acts that are applicable to the Work to be performed, including private entities performing work at the site, and exempt from the coverage on account of number of employees or occupation, which entities shall maintain voluntary compensation coverage at the same limit specified for mandatory coverage for the duration of the Project (see Exhibit A).

.2 Claims for damages because of bodily injury, occupational sickness or disease, or death of the Contractor's employees;

.3 Claims for damages because of bodily injury, sickness or disease, or death of any person other than the Contractor's employees;

.4 Claims for damages insured by usual personal injury liability coverage;

.5 Claims for damages, other than to the Work itself, because of injury to or destruction of tangible property, including loss of use resulting therefrom;

.6 Claims for damages because of bodily injury, death of a person, or property damages arising out of ownership, maintenance, or use of a motor vehicle;

.7 Claims for bodily injury or property damage arising out of completed operations;

.8 Claims involving contractual liability insurance applicable to the Contractor's obligations under the Contract Documents, including under Section 3.18; and

.9 Claims for damages to the Work itself, through builder's risk insurance, pursuant to AIA A101-2017, Exhibit A.

§ 11.1.2 The Contractor shall provide surety bonds of the types, for such penal sums, and subject to such terms and conditions as required by the Contract Documents. The Contractor shall purchase and maintain the required bonds from a company or companies lawfully authorized to issue surety bonds in the jurisdiction where the Project is located.

11.1.2.1 The Contractor shall furnish separate payment and performance bonds covering faithful performance of the Contract and payment of obligations arising thereunder, each bond to be in a total amount equal to 100% of the Contract Sum or Guaranteed Maximum Price, if the Project is a Construction Manager at Risk project, whichever is applicable. Provided, however, no limitation herein shall limit Contractor's liability under the Contract Documents. Except as provided below, such bond shall be furnished to Owner before any work begins and not later than five (5)

business days after execution of the Contract by Owner. (If the Guaranteed Maximum Price is not known at the time that a Construction Manager at Risk contract is awarded, then the sum of the payment and performance bonds must each be in an amount equal to the Project budget. The Construction Manager at Risk shall deliver the bonds not later than the tenth (10th) day after the date of the Construction Manager at Risk executes the Contract, unless the Construction Manager at Risk furnished a bid bond or other financial security acceptable to the Owner to the District to ensure that the Construction Manager will furnish the required payment and performance bonds when the Guaranteed Maximum Price is established.) All bond shall be issued by a surety company licensed, listed and authorized to issue bonds in the State of Texas by the Texas Department of Insurance, and shall fully comply with Texas Insurance Code Section 3503.001 *et seq.* and Texas Government Code Chapter 2253, or their successors. The surety company shall have a rating of not less than "A-"X according to the latest posted ratings on the A.M. Best website, www.ambest.com. The surety company shall provide, if requested, information on bonding capacity and other projects under coverage and shall provide proof to establish adequate financial capacity for this Project. Should the bond amount be in excess of ten (10%) percent of the surety company's capital and surplus, then the surety company issuing the bond shall certify that the surety company has acquired reinsurance, in a form and amount acceptable to the Owner, to reinsure the portion of the risk that exceeds ten (10%) percent of the surety company's capital and surplus with one or more insurers who are duly authorized and admitted to do business in Texas and that amount reinsured by a reinsurer does not exceed ten (10%) percent of the reinsurer's capitals and surplus. Contractor shall immediately notify the Owner and Architect in writing if there is any change in: the rating; insolvency or receivership in any State; bankruptcy; right to do business in the State; or status of Contractor's sureties at any time until Final Completion.

11.1.2.2 The Contractor shall deliver copies of the required bonds to the Owner and Architect not later than five (5) business days after execution of the Contract by Owner. All bonds will be reviewed by the Architect for compliance with the Contract Documents. In the event that the Architect has any questions concerning the sufficiency of the bonds, the bonds will be referred to the Owner or the Owner's representative with Architect's recommendation.

11.1.2.3 All bonds shall be originals. The Contractor shall require the attorney-in-fact who executes the required Bonds on behalf of the Surety to affix thereto a certified and current copy of the power-of-attorney. The name, address, and telephone number of a contact person for the bonding company shall be provided.

11.1.2.4 Bonds shall guarantee the faithful performance of all of the covenants, stipulations, and agreements of the Contract. Bonds shall be signed by an agent, resident in the State of Texas. If at any time during the continuance of the Contract, the Owner determines that the Contractor is unable to complete the Work in accordance with the Contract Documents, any of the Contractor's bonds become insufficient, the surety becomes insolvent, or the surety's rating drops below the required level, then the Owner shall have the right to require from the Contractor additional and sufficient sureties or other security acceptable to the Owner, which the Contractor shall furnish to the satisfaction of the Owner within ten (10) days after notice to do so. These contractual remedies are in addition to all remedies available by law. In default thereof, all payment or money due to the Contractor may be withheld until the Contractor provides additional surety or security.

§ 11.1.3 Upon the request of any person or entity appearing to be a potential beneficiary of bonds covering payment of obligations arising under the Contract, the Contractor shall promptly furnish a copy of the bonds or shall authorize a copy to be furnished.

§ 11.1.4 **Notice of Cancellation or Expiration of Contractor's Required Insurance.** Within three (3) business days of the date the Contractor ~~becomes aware~~knows or should know of an impending or actual cancellation ~~or expiration~~ of any insurance required by the Contract Documents, the Contractor shall provide written notice to the Owner of such impending or actual cancellation ~~or expiration~~. Upon receipt of written notice from the Contractor, the Owner shall, unless the lapse in coverage arises from an act or omission of the Owner, have the right to stop the Work until the lapse in coverage has been cured by the procurement of replacement coverage by the Contractor. The furnishing of written notice by the Contractor shall not relieve the Contractor of any contractual obligation to provide any required coverage. At least 30 calendar days prior to the date of expiration of any policy required by Section 11.1, Contractor shall provide Owner written notice of the impending expiration.

§ 11.2 Owner's Insurance

§ 11.2.1 The Owner shall be responsible for purchasing and maintaining property and casualty insurance no later than the date of Substantial Completion and such dates of Owner responsibility shall be documented in the Certificate of Substantial Completion. of the types and limits of liability, containing the endorsements, and subject to

the terms and conditions, as described in the Agreement or elsewhere in the Contract Documents. ~~The If Owner occupies or uses any completed or partially-completed portion of the Work at any stage, then such occupancy or use must be consented to by the insurer and authorized by public authorities having jurisdiction over the Work. To the extent of overlap between Owner's property insurance and Contractor's builder's risk insurance, if any, Contractor's builder's risk shall be primary and non-contributory, shall purchase and maintain the required insurance from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located.~~

§ 11.2.2 Failure to Purchase Required Property Insurance. ~~If the Owner fails to purchase and maintain the required property insurance, with all of the coverages and in the amounts described in the Agreement or elsewhere in the Contract Documents, the Owner shall inform the Contractor in writing prior to commencement of the Work. Upon receipt of notice from the Owner, the Contractor may delay commencement of the Work and may obtain insurance that will protect the interests of the Contractor, Subcontractors, and Sub-Subcontractors in the Work. When the failure to provide coverage has been cured or resolved, the Contract Sum and Contract Time shall be equitably adjusted. In the event the Owner fails to procure coverage, the Owner waives all rights against the Contractor, Subcontractors, and Sub-subcontractors to the extent the loss to the Owner would have been covered by the insurance to have been procured by the Owner. The cost of the insurance shall be charged to the Owner by a Change Order. If the Owner does not provide written notice, and the Contractor is damaged by the failure or neglect of the Owner to purchase or maintain the required insurance, the Owner shall reimburse the Contractor for all reasonable costs and damages attributable thereto. Partial occupancy or use shall not commence until the insurance company providing this insurance has consented, in writing, by endorsement or otherwise. Owner and Contractor shall take reasonable steps to obtain such consent and shall take no action without written mutual consent that would cause cancellation, lapse, or reduction of this insurance.~~

§ 11.2.3 Notice of Cancellation or Expiration of Owner's Required Property Insurance. ~~Within three (3) business days of the date the Owner becomes aware of an impending or actual cancellation or expiration of any property insurance required by the Contract Documents, the Owner shall provide notice to the Contractor of such impending or actual cancellation or expiration. Unless the lapse in coverage arises from an act or omission of the Contractor: (1) the Contractor, upon receipt of notice from the Owner, shall have the right to stop the Work until the lapse in coverage has been cured by the procurement of replacement coverage by either the Owner or the Contractor; (2) the Contract Time and Contract Sum shall be equitably adjusted; and (3) the Owner waives all rights against the Contractor, Subcontractors, and Sub-subcontractors to the extent any loss to the Owner would have been covered by the insurance had it not expired or been cancelled. If the Contractor purchases replacement coverage, the cost of the insurance shall be charged to the Owner by an appropriate Change Order. The furnishing of notice by the Owner shall not relieve the Owner of any contractual obligation to provide required insurance.~~

§ 11.3 Waivers of Subrogation

§ 11.3.1 ~~The Owner and Contractor waive all rights against (1) each other and any of their subcontractors, sub-subcontractors, agents, and employees, each of the other; (2) the Architect and Architect's consultants; and (3) Separate Contractors, if any, and any of their subcontractors, sub-subcontractors, agents, and employees, for damages caused by fire, or other causes of loss, to the extent those losses are covered by property insurance required by the Agreement or other property insurance applicable to the Project, except such rights as they have to proceeds of such insurance. The Owner or Contractor, as appropriate, shall require similar written waivers in favor of the individuals and entities identified above from the Architect, Architect's consultants, Separate Contractors, subcontractors, and sub-subcontractors. The policies of insurance purchased and maintained by each person or entity agreeing to waive claims pursuant to this section 11.3.1 shall not prohibit this waiver of subrogation. This waiver of subrogation shall be effective as to a person or entity (1) even though that person or entity would otherwise have a duty of indemnification, contractual or otherwise, (2) even though that person or entity did not pay the insurance premium directly or indirectly, or (3) whether or not the person or entity had an insurable interest in the damaged property.~~

§ 11.3.2 ~~If during the Project construction period the Owner insures properties, real or personal or both, at or adjacent to the site by property insurance under policies separate from those insuring the Project, or if after final payment property insurance is to be provided on the completed Project through a policy or policies other than those insuring the Project during the construction period, to the extent permissible by such policies, the Owner waives all rights in accordance with the terms of Section 11.3.1 for damages caused by fire or other causes of loss covered by this~~

~~separate property insurance.~~ The Owner, as fiduciary, shall have power to adjust and settle any loss arising out of the Work, with insurers regardless of the purchaser of the insurance policy. The Contractor upon receipt of proceeds shall, as a fiduciary, pay all subcontractors their just shares of insurance proceeds received by the Contractor, and by appropriate agreements shall require subcontractors to make payment to their sub-subcontractors in similar manner. The Owner shall deposit in a separate account proceeds so received, which the Owner shall distribute in accordance with such agreement as the parties in interest may reach. If after such loss no other special agreement is made and unless the Owner terminates the Contract for convenience, replacement of damaged property shall be performed by the Contractor with the insurance proceeds upon issuance of a Notice to Proceed from the Owner.

11.3.3 Partial occupancy or use shall not commence until the insurance company providing this insurance has consented in writing, by endorsement or otherwise. Owner and Contractor shall take reasonable steps to obtain such consent and shall take no action without written mutual consent that would cause cancellation, lapse, or reduction of this insurance.

§ 11.4 Loss of Use, ~~and Business Interruption, and Delay in Completion~~ Insurance

The Owner, at the Owner's option, may purchase and maintain insurance that will protect the Owner against loss of use of the Owner's property, or the inability to conduct normal operations, due to fire or other causes of loss. ~~The Owner waives all rights of action against the Contractor and Architect for loss of use of the Owner's property, due to fire or other hazards however caused.~~

§11.5 Adjustment and Settlement of Insured Loss

§ 11.5.1 A loss insured under the property insurance required by the Agreement shall be adjusted by the Owner as fiduciary and made payable to the Owner as fiduciary for the insureds, as their interests may appear, subject to requirements of ~~any applicable mortgagee clause and of~~ Section 11.5.2. The Owner shall pay the Architect and Contractor their just shares of insurance proceeds received by the Owner, and by appropriate agreements the Architect and Contractor shall make payments to their consultants and Subcontractors in similar manner.

§ 11.5.2 Prior to settlement of an insured loss, the Owner shall notify the Contractor and Architect of the terms of the proposed settlement as well as the proposed allocation of the insurance proceeds. The Contractor and the Architect shall have 14 days from receipt of notice to object to the proposed settlement or allocation of the proceeds. If the Contractor and/or the Architect does not object, the Owner shall settle the loss and the Contractor and Architect shall be bound by the settlement and allocation. Upon receipt, the Owner shall deposit the insurance proceeds in a separate account and make the appropriate distributions. Thereafter, if no other agreement is made or the Owner does not terminate the Contract for convenience, the Owner and Contractor shall execute a Change Order for reconstruction of the damaged or destroyed Work in the amount allocated for that purpose. If the Contractor and/or Architect timely objects to either the terms of the proposed settlement or the allocation of the proceeds, the Owner may proceed to settle the insured loss, and any dispute between the Owner and Contractor arising out of the settlement or allocation of the proceeds shall be resolved pursuant to Article 15. Pending resolution of any dispute, the Owner may issue a Construction Change Directive for the reconstruction of the damaged or destroyed Work.

ARTICLE 12 UNCOVERING AND CORRECTION OF WORK

§ 12.1 Uncovering of Work

§ 12.1.1 If a portion of the Work is covered contrary to the Architect's or Owner's request or to requirements specifically expressed in the Contract Documents, it must, if requested in writing by the Architect or Owner, be uncovered for the Architect's examination and be replaced at the Contractor's expense without change in the Contract Time.

§ 12.1.2 If a portion of the Work has been covered that the Architect has not specifically requested to examine prior to its being covered, the Architect or Owner may request to see such Work and it shall be uncovered by the Contractor. If such Work is in accordance with the Contract Documents, the Contractor ~~shall~~ be entitled to an equitable adjustment to the Contract Sum and Contract Time as may be appropriate. If such Work is not in accordance with the Contract Documents, the costs of uncovering the Work, and the cost of correction, shall be at the Contractor's expense.

§ 12.2 Correction of Work

§ 12.2.1 Before Substantial Completion

The Contractor shall promptly correct Work rejected by the Architect or Work failing to conform to the requirements of the Contract Documents, discovered before Substantial Completion and whether or not fabricated,

installed or completed. Costs of correcting such rejected Work, including additional testing and inspections, the cost of uncovering and replacement, and compensation for the Architect's services and expenses made necessary thereby, shall be at the Contractor's expense.

12.2.1.1 The Owner may make emergency repairs to the Work or take such other measures necessary under the circumstances, if the Contractor does not promptly respond to a notice of defect or nonconforming Work. Contractor shall be responsible to Owner for this cost if the reason for the repairs is attributable to the Contractor. If payments then or thereafter due to the Contractor are not sufficient to cover such costs, then the Contractor shall pay the difference to the Owner on demand.

§ 12.2.2 After Substantial Completion

§ 12.2.2.1 In addition to the Contractor's obligations under Section 3.5, if, within one year after the date of Substantial Completion of the Work or designated portion thereof ~~or after the date for commencement of warranties established under Section 9.9.1,~~ or by terms of any applicable special warranty required by the Contract Documents, any of the Work is found to be not in accordance with the requirements of the Contract Documents, the Contractor shall correct it promptly after receipt of written notice from the Owner to do so, unless the Owner has previously given the Contractor a written acceptance of such condition. The Owner shall give such written notice promptly after discovery of the condition. ~~During the one-year period for correction of Work, if the Owner fails to notify the Contractor and give the Contractor an opportunity to make the correction, the Owner waives the rights to require correction by the Contractor and to make a claim for breach of warranty.~~ If the Contractor fails to correct nonconforming Work within a reasonable time during that period after receipt of written notice from the Owner or Architect, the Owner may correct the Work as provided in 12.2.2.1.1. Nothing contained in this Section 12.2 is intended to limit or modify any obligations under the law or under the Contract Documents, including any warranty obligations, expressed or implied, in accordance with Section 2.5.

12.2.2.1.1 If the Contractor fails to perform the corrective Work, then Owner may perform corrective Work, at Contractor's cost. If Owner performs corrective Work, then Owner may also remove nonconforming Work and store the salvageable materials or equipment at Contractor's expense. If the Contractor does not pay all costs incurred by Owner within ten (10) days after written notice, then Owner may, upon ten (10) additional days' written notice, sell the removed materials and equipment in accordance with Owner's policies, and shall account for the proceeds thereof, after deducting costs and damages that should have been borne by the Contractor, including compensation for the Architect's services and expenses made necessary thereby. If such proceeds of sale do not cover costs which the Contractor should have borne, then the Contractor shall pay the difference to the Owner.

§ 12.2.2.2 The one-year period for correction of Work shall be extended with respect to portions of Work first performed after Substantial Completion by the period of time between Substantial Completion and the actual completion of that portion of the Work.

§ 12.2.2.3 The one-year period for correction of Work shall ~~not~~ be extended by corrective Work performed by the Contractor pursuant to this Section 12.2, but only as to the corrected Work.

§ 12.2.3 The Contractor shall remove from the site portions of the Work that are not in accordance with the requirements of the Contract Documents and are neither corrected by the Contractor nor accepted by the Owner.

§ 12.2.4 The Contractor shall bear the cost of correcting destroyed or damaged construction ~~of~~ by the Owner or Separate Contractors, whether completed or partially completed, caused by the Contractor's correction or removal of Work that is not in accordance with the requirements of the Contract Documents.

§ 12.2.5 Nothing contained in this Section 12.2 shall be construed to establish a period of limitation with respect to other obligations the Contractor has under the Contract Documents. Establishment of the one-year period for correction of Work as described in Section 12.2.2 relates only to the specific obligation of the Contractor to correct the Work, and has no relationship to the time within which the obligation to comply with the Contract Documents may be sought to be enforced, nor to the time within which proceedings may be commenced to establish the Contractor's liability with respect to the Contractor's obligations other than specifically to correct the Work.

12.2.6 Contractor shall replace, repair, or restore any parts of the Project or furniture, fixtures, equipment, or other items placed therein (whether by Owner or another party) that are destroyed or damaged by any such parts of the Work that do not conform to the requirements of the Contract Documents or by defects in the Work.

12.2.7 The provisions of this Section 12.2 apply to Work done by Subcontractor's of the Contractor as well as Work done directly by employees of the Contractor. The provision for this Section 12.2.7 shall not apply to corrective work attributable solely to the acts or omissions of any separate contractor of Owner (unless Contractor is acting in such capacities). The cost to Contractor for performing any of its obligations under this Section 12.2.7 to the extent not covered by insurance shall be borne by Contractor.

12.2.8 If, however, Owner and Contractor deem it inexpedient to require the correction of Work damaged or not done in accordance with the Contract Documents, then an equitable deduction from the Contract Sum shall be made by written agreement between Contractor and Owner. Until such settlement, Owner may withhold such sums as Owner deems just and reasonable from moneys, if any, due Contractor. The settlement shall not be unreasonably delayed by the Owner and the amount of money withheld shall be based on estimated actual cost of the correction to Owner.

§ 12.3 Acceptance of Nonconforming Work

If the Owner prefers to accept Work that is not in accordance with the requirements of the Contract Documents, the Owner may do so instead of requiring its removal and correction, in which case the Contract Sum will be reduced as appropriate and equitable. Such adjustment shall be effected whether or not final payment has been made.

ARTICLE 13 MISCELLANEOUS PROVISIONS

§ 13.1 Governing Law

13.1.1 The Contract shall be governed by the laws of the State of Texas, and any litigation shall be conducted in state district court. Mandatory and exclusive venue for any disputes shall be in _____, county in place where the Project is located, excluding that jurisdiction's choice of law rules. If the parties have selected arbitration as the method of binding dispute resolution, the Federal Arbitration Act shall govern Section 15.4.

§ 13.2 Successors and Assigns

§ 13.2.1 The Owner and Contractor respectively bind themselves, their partners, successors, assigns, and legal representatives to the other party hereto and to partners, successors, assigns, and legal representatives of such other party in respect to covenants, agreements, and obligations contained in the Contract Documents. Except as provided in Section 13.2.2, Neither party to the Contract shall assign the Contract, as a whole or in part, without written consent of the other. If either party attempts to make an assignment without such consent, that party shall nevertheless remain legally responsible for all obligations under the Contract.

§ 13.2.2 The invalidity of any part or provision of the Owner may, without consent of the Contractor, assign the Contract to a lender providing construction financing for the Project, if the lender assumes the Owner's rights and obligations under the Contract Documents shall not impair or affect in any manner whatsoever the validity, enforceability, or effect of the remainder of the Contract Documents. The Contractor shall execute all consents reasonably required to facilitate the assignment.

§ 13.3 Rights and Remedies

§ 13.3.1 Duties and obligations imposed by the Contract Documents and rights and remedies available thereunder shall be in addition to and not a limitation of duties, obligations, rights, and remedies otherwise imposed or available by law.

§ 13.3.2 No action or failure to act by the Owner, or Architect, or Contractor shall constitute a waiver of a right or duty afforded them under the Contract, nor shall such action or failure to act constitute approval of or acquiescence in a breach thereunder, except as may be specifically agreed upon in writing.

§ 13.4 Tests and Inspections

§ 13.4.1 Tests, inspections, and approvals of portions of the Work shall be made at appropriate times as required by the Contract Documents and by applicable laws, statutes, ordinances, codes, rules, and regulations or lawful orders of public authorities having jurisdiction. Unless otherwise provided, the Contractor shall make arrangements for such tests, inspections, and approvals with an independent testing laboratory or entity acceptable to the Owner, or with the appropriate public authority, and shall bear all related costs of tests, inspections, and approvals which shall be included in the Cost of the Work. Provided, however, per Texas Government Code Chapter 2269, Owner shall bear all costs of construction materials, engineering, testing, and inspection services, and the verification testing services necessary for acceptance of the facility by the Owner. The Contractor shall give the Architect timely notice

of when and where tests and inspections are to be made so that the Architect may be present for such procedures. ~~The Owner shall bear costs of tests, inspections, or approvals that do not become requirements until after bids are received or negotiations concluded.~~ The Owner shall directly arrange and pay for tests, inspections, or approvals where building codes or applicable laws or regulations so require.

§ 13.4.2 If the Architect, Owner, or public authorities having jurisdiction determine that portions of the Work require additional testing, inspection, or approval not included under Section 13.4.1, ~~the Owner shall provide or contract the Architect will, upon written authorization from the Owner, instruct the Contractor to make arrangements~~ for such additional testing, inspection, or approval, ~~by an entity acceptable to the Owner, and the Contractor shall give timely notice to the Architect of when and where tests and inspections are to be made so that the Architect may be present for such procedures.~~ Such costs, except as provided in Section 13.4.3, shall be at the Owner's expense. ~~Architect, Owner, and Contractor shall cooperate for the timely scheduling of such tests and inspections.~~

§ 13.4.3 If procedures for testing, inspection, or approval under Sections 13.4.1 and 13.4.2 reveal failure of the portions of the Work to comply with requirements established by the Contract Documents, all costs made necessary by such failure, including, but not limited to, those of repeated procedures and compensation for the Architect's services and expenses, shall be at the Contractor's expense.

§ 13.4.4 Required certificates of testing, inspection, or approval shall, unless otherwise required by the Contract Documents, be secured by the Contractor and promptly delivered to the Architect, with a copy to the Owner.

§ 13.4.5 If the Architect is to observe tests, inspections, or approvals required by the Contract Documents, the Architect will do so promptly and, where practicable, at the normal place of testing.

§ 13.4.6 Tests or inspections conducted pursuant to the Contract Documents shall be made promptly to avoid unreasonable delay in the Work.

§ 13.5 Interest

Undisputed Payments due and unpaid under the Contract Documents shall bear interest from the date payment is overdue at the rate as provided by Texas Government Code Section 2251.025~~the parties agree upon in writing or, in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located.~~ Any such payment shall be deemed overdue on the thirty-first (31st) day after Owner received Architect's invoice or Contractor's completed Application for Payment for the Architect, whichever is later, if Owner's Board of Trustees meet more than once per month. Any such payment shall be deemed overdue on the forty-sixth (46th) day after Owner receives Architect's invoice or Contractor's Certificate for Payment from the Architect, if Owner's Board of Trustees meet once a month or less frequently. No interest shall be due on sums properly retained by Owner, except as provided by law, or on disputed sums unpaid by Owner.

13.6 EQUAL OPPORTUNITY IN EMPLOYMENT

13.6.1 The Contractor and the Contractor's Subcontractors shall not discriminate against any employee or applicant for employment because of race, religion, age, disability, sex, national origin, or any class otherwise protected by District policy or law. The Contractor agrees to post in conspicuous places, available to employees and applicants, notices setting forth the Contractor's nondiscrimination policies.

13.6.2 The Contractor and the Contractor's Subcontractors shall, in all solicitations or advertisements for employees placed by them or on their behalf, state that all qualified applicants will receive consideration for employment without regard to race, religion, age, disability, sex, national origin, or any class otherwise protected by District policy or law.

13.7 RECORDS

13.7.1 Contractor shall at all times through the date of Final Completion, maintain Job Records, including, but not limited to, invoices, Construction Documents, payment records, payroll records, daily reports, diaries, logs, instructions, drawings, receipts, subcontracts, purchase orders, vouchers, memoranda, other financial data and job meeting minutes applicable to the Project, in a manner which maintains the integrity of the documents. Job Records must be retained by Contractor for a least twelve (12) years, after the date of Final Completion of the Project. Within ten (10) days of Owner's request, Contractor shall make such Job Records available for inspection, copying, and auditing by the Owner, Architect, or other respective representatives, at Owner's central office.

13.7.2 If Contractor is a Construction Manager at Risk, then Contractor shall also maintain, in accordance with the provisions of Section 13.7.1, the following: subcontract files, including proposals of successful and unsuccessful bidders, bid recaps, and subcontractor payments; original estimates; estimating work sheets; general ledger entries detailing cash and trade discounts received; insurance rebates and dividends; and any other supporting evidence deemed necessary by the Owner to substantiate charges related to the Contract.

13.7.3 Contractor shall keep a full and detailed financial accounting system and shall exercise such controls as may be necessary for property financial management under this Contract; the accounting and control systems shall be satisfactory to the Owner and shall be subject to the provisions of Section 13.7.1.

13.7.4 Contractor shall keep all Contract Documents related to the Project, subject to the provisions of Section 13.7.1, provided, however, Contractor shall not destroy said documents until Contractor has confirmed with Owner in writing, that Owner has obtained a copy of all as-built drawings.

13.7.5 In the event that an audit by the Owner reveals any errors/overpayments by the Owner, then the Contractor shall refund to the Owner the full amount of such overpayments within thirty (30) days of such audit findings, or the Owner, at its option, reserves the right to deduct such amounts owed to the Owner from any payments due to the Contractor.

13.8 PROPRIETARY INTERESTS AND CONFIDENTIAL INFORMATION

13.8.1 Neither Architect nor Contractor shall use the image or likeness of Owner's Project or Owner's official logo or emblem and any other trademark, service mark, or copyrighted or otherwise protected information of Owner, without Owner's prior written consent. Contractor and Architect shall not have any authority to advertise or claim that Owner endorses Architect or Contractor's services, without Owner's prior written consent.

13.8.2 Neither Architect nor Contractor shall disclose any confidential information of Owner which comes into the possession of Architect or Contractor at any time during the Project, including but not limited to: pending real estate purchases, exchange, lease, or value; information related to litigation; the location and employment of security devices, security access codes; student likenesses; student record information; employee information; or any other information deemed confidential by law.

13.8.3 The parties acknowledge that, as a public entity in the State of Texas, Owner is subject to, and must comply with, the provisions of the Texas Public Information Act, Texas Government Code Section 552.001, *et seq.*, and the Texas Open Meetings Act, Texas Government Code, Section 551.001. *et seq.*

ARTICLE 14 TERMINATION OR SUSPENSION OF THE CONTRACT

§ 14.1 Termination by the Contractor

§ 14.1.1 The Contractor may terminate the Contract if the Work is stopped for a period of ninety (90) consecutive days through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, their agents or employees, or any other persons or entities performing portions of the Work, for any of the following reasons:

- .1** Issuance of an order of a court or other public authority having jurisdiction that requires all Work to be stopped;
- .2** An act of government, such as a declaration of national emergency, that requires all Work to be stopped; or
- .3** Because the Architect has not issued a Certificate for Payment and has not notified the Contractor of the reason for withholding certification as provided in Section 9.4.1, or because the Owner has not made payment of undisputed sums due on an approved Certificate for Payment within the time stated in the Contract Documents; ~~or~~
- .4** ~~The Owner has failed to furnish to the Contractor reasonable evidence as required by Section 2.2.~~

§ 14.1.2 The Contractor may terminate the Contract if, through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, their agents or employees, or any other persons or entities performing portions of the Work, repeated suspensions, delays, or interruptions of the entire Work by the Owner as described in Section 14.3, constitute in the aggregate more than 100 percent of the total number of days scheduled for completion, or 120 days in any 365-day period, whichever is less.

§ 14.1.3 If one of the reasons described in Section 14.1.1 or 14.1.2 exists, then, after the applicable time period, the Contractor may, upon ~~seven~~ (10) days' written notice to the Owner and Architect, terminate the Contract and

recover from the Owner payment for Work executed, and for proven unrecoverable loss with respect to materials, equipment, tools, and construction equipment and machinery incurred to the date of termination as well as reasonable overhead and profit on Work not executed, and costs incurred by reason of such termination.

§ 14.1.4 If the Work is stopped for a period of ninety (90) consecutive days through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, or their agents or employees or any other persons or entities performing portions of the Work because the Owner has repeatedly failed to fulfill the Owner's obligations under the Contract Documents with respect to matters important to the progress of the Work, the Contractor may, upon ~~seventy (20)~~ twenty (20) additional days' written notice to the Owner and the Architect, terminate the Contract and recover from the Owner as provided in Section 14.1.3.

§ 14.2 Termination by the Owner for Cause

§ 14.2.1 The Owner may terminate the Contract if the Contractor

- .1 repeatedly refuses or fails to supply enough properly skilled workers or proper materials;
- .2 fails to make payment to Subcontractors or ~~s~~Suppliers in accordance with the respective agreements between the Contractor and the Subcontractors or ~~s~~Suppliers;
- .3 repeatedly disregards applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of a public authority; ~~or~~
- .4 otherwise is guilty of substantial breach of a provision of the Contract Documents;
- .5 fails to furnish the Owner, upon written request, with assurances satisfactory to the Owner, evidencing the Contractor's ability to complete the Work in compliance with all the requirements of the Contract Documents;
- .6 engages in serious or repeated worker misconduct in violation of Article 3.3.2;
- .7 engages in conduct that would constitute a violation of state or federal criminal law, including but not limited to, the laws prohibiting certain gifts to public servants, or engages in conduct that would constitute a violation of the Owner's ethics or conflict of interest policies; or
- .8 fails to proceed continuously and diligently with the construction and completion of the Work, except as permitted under the Contract Documents.

§ 14.2.2 When any of the reasons described in Section 14.2.1 exist, subject to any prior rights of the surety, and upon certification by the Architect that sufficient cause exists to justify such action, the Owner may, without prejudice to any other rights or remedies of the Owner and after giving the Contractor and the Contractor's surety, if any, seven days' notice, terminate employment of the Contractor and may, subject to any prior rights of the surety:

- .1 Exclude the Contractor from the site and take possession of all materials, equipment, tools, and construction equipment and machinery thereon owned by the Contractor;
- .2 Accept assignment of subcontracts pursuant to Section 5.4; and
- .3 Finish the Work by whatever reasonable method the Owner may deem expedient. Upon written request of the Contractor, the Owner shall furnish to the Contractor a detailed accounting of the costs incurred by the Owner in finishing the Work.

§ 14.2.3 When the Owner terminates the Contract for one of the reasons stated in Section 14.2.1, the Contractor shall not be entitled to receive further payment until the Work is finished. Any further payment shall be limited to amounts earned to the date of termination.

§ 14.2.4 If the ~~unpaid balance of the Contract Sum exceeds~~ costs of finishing the Work, including compensation for the Architect's services and expenses made necessary thereby, and other damages incurred by the Owner and not expressly waived, exceed the unpaid balance of the Contract Sum or Guaranteed Maximum Price (if the Project is a Construction Manager at Risk project), such excess shall be paid to then the Contractor and/or its Surety shall pay the difference to the Owner. If such costs and damages exceed the unpaid balance, the Contractor shall pay the difference to the Owner. The amount to be paid to the ~~Contractor or~~ Owner, ~~as the case may be,~~ shall be certified by ~~Architect the Initial Decision Maker,~~ upon application, ~~and t~~his obligation for payment shall survive termination of the Contract.

14.2.5 The parties hereby agree that: 1) if an order for relief is entered on behalf of the Contractor, pursuant to Chapter 11 of the U.S. Bankruptcy Code; 2) if any other similar order is entered under any debtor relief laws; 3) if Contractor makes assignments for the benefit of one or more of its creditors; 4) if a receiver is appointed for the benefit of its creditors; or 5) if a receiver is appointed on account of its insolvency, any such event could impair or frustrate Contractor's performance of the Contract Documents. Accordingly, it is agreed that upon occurrence of any

such event, Owner shall be entitled to request of Contractor or its successor in interest, adequate assurance of future performance in accordance with the terms and conditions of the Contract Documents. Failure to comply with such request within ten (10) days of delivery of the request shall entitle Owner to terminate the Contract and to the accompanying rights set forth in Subparagraphs 14.2.1 through 14.2.6. In all events, pending receipt of adequate assurance of performance and actual performance in accordance with the Contract Documents, Owner shall be entitled to proceed with the Work with Owner's own forces or with other Contractors on a time and material or other appropriate basis, the cost of which will be charged against the Contract Sum.

14.2.6 As required by Texas Government Code Chapter 2253, if a Performance Bond has been furnished and the Contractor is declared by the Owner to be in default under the Contract, then the Surety shall promptly perform the Work, in full accordance with the plans, specifications, and Contract Documents. Unless otherwise agreed in writing between the Surety and the Owner, the Surety shall complete the Work by the Surety entering into a Contract acceptable to Owner, with a Contractor acceptable to Owners, and shall obtain new Payment and Performance Bonds as required by law.

§ 14.3 Suspension by the Owner for Convenience

§ 14.3.1 The Owner may, without cause, order the Contractor in writing to suspend, delay or interrupt the Work, in whole or in part for such period of time as the Owner may determine.

§ 14.3.2 The Contract Sum, Guaranteed Maximum Price, and Contract Time ~~shall~~ be adjusted, by mutual written agreement, for increases in the cost and time caused by suspension, delay, or interruption under Section 14.3.1-Adjustment of the Contract Sum shall include profit. No adjustment shall be made to the extent

- .1 that performance is, was, or would have been, so suspended, delayed, or interrupted, by another cause for which the Contractor is responsible; or
- .2 that an equitable adjustment is made or denied under another provision of the Contract.

§ 14.4 Termination by the Owner for Convenience

§ 14.4.1 The Owner may, at any time, terminate the Contract for the Owner's convenience and without cause. Furthermore, if this Contract is a multi-year contract funded through Owner's current general funds that are not bond funds, then the Owner's Board of Trustees has the right to not appropriate adequate monies for the next fiscal year and to terminate this Contract at the end of each fiscal year during the term of the Contract, without the Owner incurring any further liability to Contractor as a result of such termination.

§ 14.4.2 Upon receipt of written notice from the Owner of such termination for the Owner's convenience, the Contractor shall

- .1 cease operations as directed by the Owner in the notice;
- .2 take actions necessary, or that the Owner may direct, for the protection and preservation of the Work; and
- .3 except for Work directed to be performed prior to the effective date of termination stated in the notice, terminate all existing subcontracts and purchase orders and enter into no further subcontracts and purchase orders.

§ 14.4.3 In case of such termination for the Owner's convenience, the Owner shall pay the Contractor for Work properly executed; and for proven unrecoverable loss with respect to materials, equipment, tools, and construction equipment and machinery incurred to the date costs incurred by reason of the termination, including costs attributable to termination of Subcontracts; and the termination fee, if any, set forth in the Agreement. Such payment shall not cause the Contract Sum, or Guaranteed Maximum Price, if the Project is a Construction Manager at Risk Project, to be exceeded. Such payment shall not include overhead and profit for Work not executed.

14.4.4 Upon determination by a Court of competent jurisdiction that termination of the Contractor pursuant to Section 14.2 was wrongful, such termination will be deemed converted to a termination for convenience pursuant to Section 14.4, and Contractor's remedy for wrongful termination shall be limited to the recovery of the payments permitted for termination for convenience as set forth in Section 14.4.

ARTICLE 15 CLAIMS AND DISPUTES

§ 15.1 Claims

§ 15.1.1 Definition

A Claim is a demand or assertion by ~~one of the Contractor parties~~ seeking, as a matter of right, payment of ~~additional compensation under the Contract Documents~~ money, interpretation of the Contract Document terms, a change in the Contract Time, or other relief with respect to the terms of the Contract. ~~The term "Claim" also includes other disputes and matters in question between the Owner and Contractor arising out of or relating to the Contract.~~ The responsibility to substantiate Claims shall rest with the ~~party~~ Contractor making the Claim. This Section 15.1.1 does not require the Owner to file a Claim in order to impose liquidated damages in accordance with the Contract Documents.

§ 15.1.2 Time Limits on Litigation Claims

The Owner and Contractor shall commence all ~~Claims litigation and causes of action against the other and arising out of or related to the Contract,~~ whether in contract, tort, breach of warranty or otherwise, in accordance with the requirements of the ~~binding~~ dispute resolution method selected in the Agreement and within the period specified by applicable law, but in ~~any~~ the case ~~of the Owner,~~ not more than ~~120~~ years after the date of ~~Final~~ Substantial Completion of the Work. The Owner and Contractor waive all ~~Claims and~~ causes of action not commenced in accordance with this Section 15.1.2.

§ 15.1.3 Notice of Claims

§ 15.1.3.1 Claims by ~~either the Owner or~~ Contractor, where the condition giving rise to the Claim is first discovered prior to expiration of the period for correction of the Work set forth in Section 12.2.2, shall be initiated by written notice to the ~~other party~~ Owner and to the ~~Initial Decision Maker with a copy sent to the~~ Architect, ~~if the Architect is not serving as the Initial Decision Maker.~~ Claims by ~~Contractor~~ either party under this Section 15.1.3.1 ~~shall~~ must be initiated within 21 calendar days after occurrence of the event giving rise to such Claim or within 21 calendar days after the ~~e~~ Contractor claimant first knew or should have known ~~recognizes~~ the condition giving rise to the Claim, whichever is ~~later~~ earlier. Claims must be initiated by written notice titled: "Notice of Claim" ("Notice") and sent to the Architect and Owner's designated representatives. The Notice shall clearly set out the specific matter of complaint, and the impact which may occur or have occurred as result thereof, to the extent that the impact can be assessed at the time of the Notice. If the impact cannot be assessed as of the date of the Notice, then the Notice shall be amended at the earliest date that is reasonably possible. It is imperative that Owner receive timely specific Notice of any potential problem identified by Contractor in order that the problem can be mitigated or resolved promptly. Claims not filed as required by this Section shall be waived.

§ 15.1.3.2 Claims by ~~either the Owner or~~ Contractor, where the condition giving rise to the Claim is first discovered after expiration of the period for correction of the Work set forth in Section 12.2.2, shall be initiated by written notice to the other party. In such event, no decision by the Initial Decision Maker is required.

15.1.3.3 When Owner has an applicable claim for construction defects, Owner shall comply with the provisions of Texas Government Code Chapter 2272 related to the provision of notice of defects and the Contractor's or Architect's opportunity to cure.

§ 15.1.4 Continuing Contract Performance

§ 15.1.4.1 Pending final resolution of a Claim, except as otherwise agreed in writing or as provided in Section 9.7, as amended, and Article 14, as amended, the Contractor shall proceed diligently with performance of the Contract and the Owner shall continue to make undisputed payments for Work performed in accordance with the Contract Documents.

~~§ 15.1.4.2 The Contract Sum and Contract Time shall be adjusted in accordance with the Initial Decision Maker's decision, subject to the right of either party to proceed in accordance with this Article 15. The Architect will issue Certificates for Payment in accordance with the decision of the Initial Decision Maker.~~

§ 15.1.5 Claims for Additional Cost or An Increase in the Contract Sum or Guaranteed Maximum Price

If the Contractor wishes to make a Claim for additional cost or an increase in the Contract Sum or Guaranteed Maximum Price, written notice as provided in Section 15.1.3 shall be given to Owner and Architect ~~before proceeding to execute the portion of the Work that is the subject of the Claim~~. Prior notice is not required for Claims relating to an emergency endangering life or property arising under Section 10.4. The Architect will promptly investigate such Claim and report findings and a recommended resolution, in writing, to the Owner and Contractor.

If the Claim is approved by Owner's Board of Trustees, or Owner's representative, if provided for herein, then Contractor shall proceed with the execution of the Work that is the subject matter of the Claim. If the Claims is rejected by the Owner, then Contractor may pursue alternative dispute resolution as provided for in the Contract Documents.

§ 15.1.6 Claims for Additional Time

§ 15.1.6.1 If the Contractor wishes to make a Claim for an increase in the Contract Time, notice as provided in Section 15.1.3 shall be given. The Contractor's Claim shall include an estimate of ~~cost and of~~ probable effect of delay on progress of the Work. In the case of a continuing delay, only one Claim is necessary.

§ 15.1.6.2 If adverse weather conditions are the basis for a Claim for additional time, such Claim shall be documented by data substantiating that weather conditions were abnormal for the period of time, could not have been reasonably anticipated, and prevented the execution of major items of work on normal working days ~~had an adverse effect on the scheduled construction.~~ "Adverse weather conditions" means unusually severe weather which is beyond the normal weather recorded and expected for the locality and/or the season or seasons of the year.

15.1.6.3 The Contractor shall anticipate and include in the construction schedule, rain days due to adverse weather conditions in accordance with the rainfall table below. A rain day is defined as a day when rainfall exceeds one-half (.5) inch during a 24-hour period. The number of rain days expected for each month is as follows:

January	calendar days	July	calendar days
February	calendar days	August	calendar days
March	calendar days	September	calendar days
April	calendar days	October	calendar days
May	calendar days	November	calendar days
June	calendar days	December	calendar days

15.1.6.4 Time extensions may be granted for rain days in any month when the cumulative number of rain days during that month exceeds the number scheduled, provided that the rainfall prevented the execution of major items of work on normal working days. No day will be counted as a rain day when substantial Contractor forces are able to perform Work on the Project for more than fifty percent (50%) of the usual workday or when the stage of the Work on the Project is not adversely impacted. The number of rain days shown in the above schedule for the first and last months of the Contract will be prorated in determining the total number of rain days expected during the period of the Contract. No delays or extensions shall be granted for mud conditions.

15.1.6.5 No extension of time shall be made to the Contractor because of hindrances or delays from any cause which is the fault of Contractor or Contractor's Subcontractors or under Contractor's control. Claims for extension of time may only be considered because of rain delays, or because of hindrances or delays which are the fault of Owner and/or under Owner's control, but only to the extent that Substantial Completion of the Project is adjusted beyond the original Substantial Completion date. Only claims for extension of time shall be considered because of hindrances or delays not the fault of either Contractor or Owner, but only to the extent that Substantial Completion of the Project exceeds the Substantial Completion date established for the Work. Board approval shall be required for any extension of time. No damages shall be paid for delays. Contractor shall only be entitled to time extensions per the terms of the Contract Documents.

15.1.6.6 Requests for time extension shall be submitted on a monthly basis and shall specify the time delay, the cause of the delay, and the responsible part for the delay, whether Contractor, Owner, rain day, or other. No claims for damages for delay shall be made by Contractor. Any claim not submitted under the terms of this Section shall be waived.

§ 15.1.7 Waiver of Claims for Consequential Damages

The Contractor ~~and Owner~~ waives all Claims against ~~Ownereach other~~ for consequential damages arising out of or relating to this Contract, including, but not limited to, any amount owed as compensation for the increased cost to perform the Work as a direct result of Owner-caused delays or acceleration. This mutual waiver includes

- .1 damages incurred by the Owner for rental expenses, for losses of use, income, profit, financing, business and reputation, and for loss of management or employee productivity or of the services of such persons; and

- .2 ~~damages incurred by the Contractor for principal office expenses including the compensation of personnel stationed there, for losses of financing, business and reputation, and for loss of profit, except anticipated profit arising directly from the Work.~~

~~This mutual waiver is applicable, without limitation, to all consequential damages due to either party's termination in accordance with Article 14. Nothing contained in this Section 15.1.7 shall be deemed to preclude assessment of liquidated damages, when applicable, in accordance with the requirements of the Contract Documents.~~

~~§ 15.2 Initial Decision Resolution of Claims and Disputes~~

~~§ 15.2.1 Claims by the Contractor against the Owner, including excluding those alleging an error or omission by the Architect, where the condition giving rise to the Claim is first discovered after expiration of the period for correction of the Work set forth in Section 12.2.2 or arising under Sections 10.3, 10.4, and 11.5, shall be referred to the [initial]ly Decision Maker for initial decision. to [The Architect for written recommendation] will serve as the Initial Decision Maker, unless otherwise indicated in the Agreement. Except for those Claims excluded by this Section 15.2.1, an initial decision shall be required as a condition precedent to mediation of any Claim. If ~~A~~an initial recommendation by the Architect shall be required as a condition precedent to mediation or litigation of all Claims by the Contractor arising prior to the date final payment is due, unless decision has not been rendered within 30 days have passed after the Claim has been referred to the Architect with no recommendation having been rendered by the Architect after the Claim has been referred to the Initial Decision Maker, the party asserting the Claim may demand mediation and binding dispute resolution without a decision having been rendered. Unless the Initial Decision Maker and all affected parties agree, the Initial Decision Maker will not decide disputes between the Contractor and persons or entities other than the Owner.~~

~~§ 15.2.2 The Architect shall Initial Decision Maker will review Claims and within ten (10) days of the receipt of a Claim take one or more of the following actions: (1) request additional supporting data from the Contractor claimant or a response with supporting data from the other party, or (2) make a written recommendation to the Owner, with a copy to the Contractor, reject the Claim in whole or in part, (3) approve the Claim, (4) suggest a compromise, or (5) advise the parties that the Initial Decision Maker is unable to resolve the Claim if the Initial Decision Maker lacks sufficient information to evaluate the merits of the Claim or if the Initial Decision Maker concludes that, in the Initial Decision Maker's sole discretion, it would be inappropriate for the Initial Decision Maker to resolve the Claim.~~

~~§ 15.2.3 In evaluating Claims, the Architect Initial Decision Maker may, but shall not be obligated to, consult with or seek information from either party or from persons with special knowledge or expertise who may assist the Architect Initial Decision Maker in making a written recommendation rendering a decision. The Initial Decision Maker may request the Owner to authorize retention of such persons at the Owner's expense.~~

~~§ 15.2.4 If the Architect Initial Decision Maker requests a party to provide a response to a Claim or to furnish additional supporting data, such party shall respond, within ten days after receipt of the request, and shall either (1) provide a response on the requested supporting data, (2) advise the Architect Initial Decision Maker when the response or supporting data will be furnished, or (3) advise the Architect Initial Decision Maker that no supporting data will be furnished. Upon receipt of the response or supporting data, if any, the Initial Decision Maker will either reject or approve the Claim in whole or in part.~~

~~§ 15.2.5 The Initial Decision Maker will render an initial decision approving or rejecting the Claim, or indicating that the Initial Decision Maker is unable to resolve the Claim. This initial decision shall (1) be in writing; (2) state the reasons therefor; and (3) notify the parties and the Architect, if the Architect is not serving as the Initial Decision Maker, of any change in the Contract Sum or Contract Time or both. The initial decision shall be final and binding on the parties but subject to mediation and, if the parties fail to resolve their dispute through mediation, to binding dispute resolution. Following receipt of the Architect's written recommendation regarding a Claim, the Owner and Contractor shall attempt to reach agreement as to any adjustments to the Contract Sum or Guaranteed Maximum Price and/or Contract Time. If no agreement can be reached, then either party may request mediation of the dispute pursuant to Section 15.3.~~

~~§ 15.2.6 Upon receipt of a Claim against the Contractor or at any time thereafter, the Architect or the Owner may, but is not obligated to, notify the surety, if any, of the nature and amount of the Claim. If the Claim relates to a possibility of a Contractor's default, the Architect or the Owner may, but is not obligated to, notify the surety and~~

~~request the surety's assistance in resolving the controversy. Either party may file for mediation of an initial decision at any time, subject to the terms of Section 15.2.6.1.~~

~~§ 15.2.6.1 Either party may, within 30 days from the date of receipt of an initial decision, demand in writing that the other party file for mediation. If such a demand is made and the party receiving the demand fails to file for mediation within 30 days after receipt thereof, then both parties waive their rights to mediate or pursue binding dispute resolution proceedings with respect to the initial decision.~~

~~§ 15.2.7 In the event of a Claim against the Contractor, the Owner may, but is not obligated to, notify the surety, if any, of the nature and amount of the Claim. If the Claim relates to a possibility of a Contractor's default, the Owner may, but is not obligated to, notify the surety and request the surety's assistance in resolving the controversy.~~

~~§ 15.2.8 If a Claim relates to or is the subject of a mechanic's lien, the party asserting such Claim may proceed in accordance with applicable law to comply with the lien notice or filing deadlines.~~

~~§ 15.3 Mediation~~ **Alternative Dispute Resolution**

~~§ 15.3.1 Any Claims, disputes, or other matters in controversy arising out of or related to the Contract, except Claims relating to aesthetic effect and except those waived under the terms of the Contract Documents, as provided for in Sections 9.10.4, 9.10.5, and 15.1.7, shall, after written recommendation by the Architect or 30 days after submission of the Claim to the Architect, be subject to mediation at the request of either party as a condition precedent to binding dispute resolution. Owner and Contractor expressly agree that mediation shall be a condition precedent to the initiation of any litigation out of such Claims. Claims for injunctive relief shall not be subject to this Section.~~

~~§ 15.3.2 The parties shall endeavor to resolve their Claims by mediation, which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Mediation Procedures in effect on the date of the Agreement. A Request for mediation shall be made filed in writing, delivered to with the other party to the Contract, and filed with the person or entity administering the mediation. Mediation shall be subject to and in accordance with Chapter 154 of the Texas Civil Practice & Remedies Code. Mediation shall be conducted by a mutually-agreed-upon mediator. In the event that the parties are unable to agree on a mediator, then the parties shall jointly request the appointment of a neutral mediator by a District Judge in the county in which the Project is located. The request may be made concurrently with the filing of binding dispute resolution proceedings but, in such event, mediation shall proceed in advance of binding dispute resolution proceedings, which shall be stayed pending mediation for a period of 60 days from the date of filing, unless stayed for a longer period by agreement of the parties or court order. If an arbitration is stayed pursuant to this Section 15.3.2, the parties may nonetheless proceed to the selection of the arbitrator(s) and agree upon a schedule for later proceedings.~~

~~§ 15.3.3 Either party may, within 30 days from the date that mediation has been concluded without resolution of the dispute or 60 days after mediation has been demanded without resolution of the dispute, demand in writing that the other party file for binding dispute resolution. If such a demand is made and the party receiving the demand fails to file for binding dispute resolution within 60 days after receipt thereof, then both parties waive their rights to binding dispute resolution proceedings with respect to the initial decision. The parties shall share the mediator's fee equally and, if any filing fee is required, shall share said fee equally. Mediation shall be held within the county where the Owner's main administrative office is located, unless another location is mutually agreed upon by the parties. Agreements reached in mediation shall be reduced to writing, considered for approval by the Owner's Board of Trustees, signed by the parties, if approved by the Board of Trustees, and if signed, shall thereafter be enforceable as provided by the laws of the State of Texas.~~

~~§ 15.3.4 The parties shall share the mediator's fee and any filing fees equally. The mediation shall be held in the place where the Project is located, unless another location is mutually agreed upon. Agreements reached in mediation shall be enforceable as settlement agreements in any court having jurisdiction thereof. Any claim not resolved in mediation shall be subject to litigation pursuant to Section 13.1.~~

~~§ 15.4~~ **No Arbitration**

~~§ 15.4.1 Notwithstanding anything to the contrary in the Contract Documents or in any document forming a part hereof, there shall be no mandatory arbitration for any as the method for binding dispute arising hereunder. resolution in the Agreement, any Claim subject to, but not resolved by, mediation shall be subject~~

to arbitration which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Arbitration Rules in effect on the date of the Agreement. The Arbitration shall be conducted in the place where the Project is located, unless another location is mutually agreed upon. A demand for arbitration shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the arbitration. The party filing a notice of demand for arbitration must assert in the demand all Claims then known to that party on which arbitration is permitted to be demanded.

~~§ 15.4.1.1 A demand for arbitration shall be made no earlier than concurrently with the filing of a request for mediation, but in no event shall it be made after the date when the institution of legal or equitable proceedings based on the Claim would be barred by the applicable statute of limitations. For statute of limitations purposes, receipt of a written demand for arbitration by the person or entity administering the arbitration shall constitute the institution of legal or equitable proceedings based on the Claim.~~

~~§ 15.4.2 The award rendered by the arbitrator or arbitrators shall be final, and judgment may be entered upon it in accordance with applicable law in any court having jurisdiction thereof.~~

~~§ 15.4.3 The foregoing agreement to arbitrate and other agreements to arbitrate with an additional person or entity duly consented to by parties to the Agreement, shall be specifically enforceable under applicable law in any court having jurisdiction thereof.~~

~~§ 15.4.4 Consolidation or Joinder~~

~~§ 15.4.4.1 Subject to the rules of the American Arbitration Association or other applicable arbitration rules, either party may consolidate an arbitration conducted under this Agreement with any other arbitration to which it is a party provided that (1) the arbitration agreement governing the other arbitration permits consolidation, (2) the arbitrations to be consolidated substantially involve common questions of law or fact, and (3) the arbitrations employ materially similar procedural rules and methods for selecting arbitrator(s).~~

~~§ 15.4.4.2 Subject to the rules of the American Arbitration Association or other applicable arbitration rules, either party may include by joinder persons or entities substantially involved in a common question of law or fact whose presence is required if complete relief is to be accorded in arbitration, provided that the party sought to be joined consents in writing to such joinder. Consent to arbitration involving an additional person or entity shall not constitute consent to arbitration of any claim, dispute or other matter in question not described in the written consent.~~

~~§ 15.4.4.3 The Owner and Contractor grant to any person or entity made a party to an arbitration conducted under this Section 15.4, whether by joinder or consolidation, the same rights of joinder and consolidation as those of the Owner and Contractor under this Agreement.~~

15.5 Contractor stipulates that Owner is a political subdivision of the State of Texas, and, as such, enjoys immunities from suit and liability provided by the Constitution and laws of the State of Texas. By entering into this Agreement, Owner does not waive any of its immunities from suit and/or liability, except as otherwise specifically provided herein and as specifically authorized by law.

15.6 In any adjudication under this Agreement, reasonable and necessary attorneys' fees may be awarded to the prevailing party.

Executed this _____ day of _____, _____.

OWNER:

CONTRACTOR:

By: _____

By _____

Title: _____

Title: _____

ATTEST:

By: _____
Title: _____



DOCUMENT 00 73 46

PREVAILING WAGE RATES

North Texas Construction Industry Wage Survey

Classification	Avg. Hrly Rate	Health/ Welfare	Pension	Vacation	Total Package
AC Mechanic	\$26.62	\$3.82	\$2.00	\$1.40	\$33.84
AC Mechanic Helper	\$15.59	\$3.12	\$2.37	\$1.07	\$22.15
Acoustical Ceiling Installer	\$15.90	\$0.53	\$0.54	\$0.53	\$17.50
Bricklayer/Stone Mason	\$23.51	\$1.63	\$0.00	\$0.00	\$25.14
Bricklayer/Stone Mason Trainee	\$16.58	\$1.63	\$0.00	\$0.00	\$18.21
Bricklayer/Stone Mason Helper	\$17.50	\$1.63	\$0.00	\$0.00	\$19.13
Carpenter	\$17.37	\$4.90	\$2.59	\$1.25	\$26.12
Carpenter Helper	\$14.90	\$0.00	\$0.00	\$0.00	\$14.90
Concrete Pump	\$20.00	\$4.93	\$3.00	\$0.00	\$27.93
Concrete Finisher	\$16.14	\$4.93	\$2.59	\$0.00	\$23.66
Concrete Form Builder	\$14.66	\$0.00	\$0.00	\$0.00	\$14.66
Drywall Mechanic	\$17.76	\$0.63	\$0.64	\$0.63	\$19.66
Drywall Helper	\$14.95	\$0.54	\$0.54	\$0.53	\$16.56
Electrician (Journeyman)	\$26.03	\$2.30	\$1.04	\$0.85	\$30.21
Electrician Apprentice (Helper)	\$18.48	\$1.43	\$0.71	\$0.55	\$21.16
Electronic Technician	\$26.68	\$4.99	\$2.23	\$1.57	\$35.47
Electronic Technician Helper	\$26.00	\$0.00	\$0.00	\$0.00	\$26.00
Glazier	\$20.73	\$2.16	\$0.66	\$1.58	\$25.13
Glazier Helper	\$14.72	\$2.14	\$0.59	\$0.70	\$18.15
Laborer Common	\$13.63	\$3.99	\$2.01	\$0.54	\$20.18
Laborer Skilled	\$16.95	\$2.54	\$1.87	\$0.76	\$22.12
Lather	\$17.54	\$0.69	\$0.69	\$0.68	\$19.60
Metal Installer (Miscellaneous)	\$21.50	\$3.41	\$3.23	\$1.08	\$29.22
Metal Installer Helper (Miscellaneous)	\$15.40	\$3.10	\$2.31	\$0.77	\$21.58
Painter	\$15.44	\$0.00	\$0.00	\$0.00	\$15.44
Painter Helper	\$11.45	\$0.00	\$0.00	\$0.00	\$11.45
Pipefitter	\$22.12	\$4.06	\$1.01	\$1.31	\$28.50

Classification	Avg. Hrly Rate	Health/ Welfare	Pension	Vacation	Total Package
Pipefitter Helper	\$16.17	\$2.89	\$0.68	\$1.28	\$21.02
Plasterer	\$18.36	\$0.65	\$0.65	\$0.64	\$20.30
Plasterer Helper	\$18.31	\$3.49	\$0.88	\$0.76	\$23.44
Plumber	\$25.60	\$4.19	\$1.15	\$1.47	\$32.41
Plumber Helper	\$17.56	\$3.00	\$0.68	\$1.75	\$22.99
Reinforcing Steel Setter	\$21.35	\$1.01	\$0.35	\$0.20	\$22.91
Reinforcing Steel Setter Helper	\$18.00	\$1.00	\$0.35	\$0.00	\$19.35
Roofer	\$17.65	\$0.00	\$0.00	\$0.00	\$17.65
Sheet Metal Worker	\$21.54	\$3.63	\$0.89	\$1.08	\$27.15
Sheet Metal Worker Helper	\$16.58	\$3.32	\$0.67	\$1.02	\$21.59
Sprinkler System Installer	\$21.00	\$0.00	\$0.00	\$0.00	\$21.00
Sprinkler System Installer Helper	\$15.00	\$0.00	\$0.00	\$0.00	\$15.00
Steel Worker Structural	\$21.44	\$2.90	\$3.20	\$0.00	\$27.54
Steel Worker Structural Helper	\$13.65	\$0.00	\$0.00	\$0.00	\$13.65
Crane, Clamsheel, Backhoe, Derrick, D'Line Shovel	\$19.76	\$4.01	\$2.67	\$1.03	\$27.47
Forklift	\$16.07	\$3.03	\$0.99	\$0.88	\$20.96
Foundation Drill Operator	\$19.50	\$0.87	\$0.00	\$0.38	\$20.75
Front End Loader	\$17.00	\$1.82	\$0.73	\$1.06	\$20.60
Truck Driver	\$16.52	\$3.55	\$2.23	\$0.73	\$23.02
Waterproofor	\$15.24	\$0.00	\$0.00	\$0.00	\$15.24
Welder	\$21.53	\$3.28	\$0.97	\$1.21	\$26.99

DOCUMENT 00 73 50

WEATHER TABLE

MONTH	AVERAGE DAYS RAIN (1)	INCHES RAINFALL (2)	SNOW/ICE PELLETS (3)
JANUARY	6.5	2.13	0.1
FEBRUARY	6.4	2.67	0.3
MARCH	7.8	3.47	0.1
APRIL	6.7	3.03	0.0
MAY	9.1	4.90	0.0
JUNE	8.0	3.85	0.0
JULY	4.5	2.17	0.0
AUGUST	4.7	1.91	0.0
SEPTEMBER	5.4	2.55	0.0
OCTOBER	7.4	4.21	0.0
NOVEMBER	6.4	2.71	0.0
DECEMBER	6.7	2.58	0.1
ANNUALLY	79.6	36.18	0.6

- (1) Mean number of days rainfall, 0.01" or more.
- (2) Average normal precipitation, in inches.
- (3) Mean number of days 1.0" or more.
- * Less than 0.05".

This table is based on information reported from Dallas/Fort Worth International Airport, Texas. Latitude 32.898° N, longitude 97.019° W, elevation (ground) 560 feet.

Means are based on records covering a period of 30 years. Normals based on record for the 1981-2010 period.

END OF SECTION

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SECTION 01 11 00

SUMMARY OF WORK

PART 1 - GENERAL

1.1 SUMMARY

A. Related Requirements:

1. Document 00 21 16 - Instructions to Proposers.
2. Document 00 72 00 - General Conditions of the Contract for Construction: Provisions for use of site; Owner occupancy; Relations of Contractor - subcontractors.
3. Section 01 32 16 - Construction Progress Schedules: Format of work schedule.
4. Section 01 45 23 - Testing and Inspection Services.
5. Section 01 50 00 - Temporary Facilities and Controls.

1.2 DESCRIPTION

- A. The work comprises the construction of New Central Administration Building for Eagle Mountain-Saginaw Independent School District, Fort Worth, Texas, as shown on the drawings and described in the specifications. The work will be done under one lump sum contract.
- B. Indication on the drawings or mention in the specifications of articles, materials, operations or methods requires that the Contractor provide each item indicated or mentioned of the quality or subject to the qualifications noted, and perform according to the conditions stated each operation described and provide therefor all necessary labor, equipment, services and incidentals.
1. Subcontractors are responsible for examining the architectural drawings for structural, mechanical, electrical, and plumbing items. Items shown on these drawings shall be furnished by the appropriate subcontractor.

1.3 CONDITIONS OF THE CONTRACT

- A. The General Conditions (Modified), bound herewith as preceding portions of these specifications, form a part thereof and shall govern the work under each section.

1.4 EXISTING SITE CONDITIONS

- A. Contractor shall visit and examine the site. Upon award of the Contract, the Contractor shall accept the condition of the site before beginning the work required.

1.5 SPECIAL REQUIREMENTS

- A. Execute Certificate of Substantial Completion for each designated portion of work prior to Owner occupancy. Following execution of a Substantial Completion Certificate for a designated portion of the work, the Contractor shall permit:
1. Access for Owner personnel.
 2. Use of parking facilities for the benefit of the Owner.
 3. Operation of HVAC and electrical systems for the benefit of the Owner.

Despite partial Owner occupancy, the Contractor shall remain responsible for portions of the work which have not attained Substantial Completion and for which a Substantial Completion Certificate, which shall designate the date on which the Owner shall become responsible for utilities, maintenance, security, damage to the work and insurance, has not been executed.

- B. The loop fire lane and fire hydrants are required by the City to be in place and operational prior to steel erection.

1.6 SEQUENCE OF CONSTRUCTION

- A. Substantial Completion date shall be established as the number of consecutive calendar days as set out on the proposal form from the "Notice-to-proceed" date issued by the Owner.

- B. The Contractor agrees that, from the compensation otherwise to be paid, the Owner may retain the sum of \$1,500.00 for each calendar day after the Substantial Completion date that the Work remains incomplete and the sum of \$1,500.00 for each calendar day after the Final Completion date that the Work remains incomplete, which sum is agreed upon as the proper measure of liquidated damages which the Owner will sustain per diem by the failure of the undersigned to complete the Work at the time stipulated in the contract. Damages for failure to achieve Substantial Completion and failure to achieve Final Completion may run concurrently. These sums are not to be construed in any sense a penalty.

1.7 CONTRACTOR USE OF PREMISES

- A. Limit use of premises for work, for storage and for access, to allow for Owner occupancy.
- B. Assume full responsibility for protection and safekeeping of products under this contract.
- C. Obtain and pay for use of additional storage or work areas needed when required for operations under this Contract.
- D. There shall be no fires on the site or in the building. There shall be no dumping on Owner's property.
- E. Worker Identity Badging Requirements: Provide construction personnel (including subcontractors and suppliers regularly visiting the project site) with identification badges, with photograph. Identification badges shall be worn visibly by construction personnel on the construction site or on Owner's property. **NO EMPLOYEE WILL BE PERMITTED ON SITE WITHOUT THIS BADGE DISPLAYED ON THE EMPLOYEE.** Contractor must assure that the Crisis Management contact information is provided on the reverse side of each worker's badge. Temporary or visitor badges will be provided for persons who are identified as having an infrequent or temporary legitimate business need for access to the site.

1.8 WORK RESTRICTIONS

- A. On-Site Work Hours: Work shall be generally performed on the project site during normal business working hours of 6:00 a.m. to sundown, Monday through Friday or City ordinance whichever is more restrictive. If within 300 feet of an occupied residence 7:00 a.m. to 8:00 p.m.
 - 1. Weekend Hours: Comply with City ordinance restrictions for weekend work. **FOR CITY OF FORT WORTH: 9:00 a.m. to 8:00 p.m. on Saturday.** No work shall be performed on Sundays, unless specifically allowed by City and Owner.
 - 2. Early Morning Hours: Comply with City noise ordinances for restriction of early-morning concrete pours and other noisy construction activities. Owner's testing laboratory personnel will be available only during on-site work hours listed above.

1.9 OWNER-FURNISHED PRODUCTS

- A. Contractor Responsibilities
 - 1. Protect products from damage.
 - 2. Repair or replace items damaged by Contractor.
 - 3. Make all necessary electrical and plumbing service connections to Owner supplied Equipment.
- B. Schedule of Owner-furnished items
 - 1. Soap Dispensers
 - 2. Refer to Drawings.

1.10 COORDINATION

- A. Drawing details and other sections of these specifications covering work connected with or relating to that specified under a specific heading shall be examined for conditions which may affect that part of the work. Failure to do so will not relieve those furnishing materials and/or labor under a specification heading from supplying materials or performing work reasonably necessary to properly coordinate their work with that of other trades.

1.11 LAYING OUT WORK, MEASUREMENTS

- A. Employ a competent engineer or surveyor to establish and maintain lines and levels. Establish and maintain at least two elevation bench marks remote from each other and located outside the building area. Set alignment and location stakes.

- B. Verify measurements at the building. No extra compensation will be allowed for differences between actual dimensions and dimensions indicated on the drawings. Figured dimensions and measurements taken at the site shall take precedence over scaled dimensions.

1.12 DISCREPANCIES

- A. In case of discrepancies within the drawings, within the specifications, or between the drawings and specifications, the better quality and greater quantity, in the opinion of the Architect, shall be furnished and installed.

1.13 PIPING

- A. Should active piping or conduit be encountered below grade within the building structure and be found at variance with the known conditions indicated by the drawings and specifications, said piping and/or conduit shall be relocated as required by the Architect, and the contract sum shall be fairly adjusted on the basis of the cost of labor and materials. The Contractor shall provide temporary support of active piping and conduit encountered in the excavations until permanently supported or removed. The Contractor shall cut off and cap or plug abandoned lines at least 3 ft. outside the building lines. Conform to the applicable requirements of the locality or governing agency.

1.14 PROTECTION

- A. General: Limit use of the premises to construction activities in areas indicated.
 - 1. Confine operations to areas within Contract limits indicated.
 - 2. Keep driveways and entrances serving the premises clear of debris. Do not use these areas for parking or storage of materials without prior approval. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on site.
 - 3. Do not dispose of organic and hazardous material on site, either by burial or by burning. Disposable material and trash must be removed properly.
- B. Assume responsibility for the premises and provide and maintain protections required by the governing laws, regulations and ordinances. The Contractor shall be responsible for loss or damage caused by him or his workmen to the property of the Owner or to the work or materials installed, and shall make good loss, damage or injury without cost to the Owner.
- C. The protection of adjacent property shall include but will not necessarily be limited to the erection and maintenance of shoring, underpinning and fences as necessary to protect and support existing work to be left in place.
- D. Finished floors shall be protected against damage by workmen and equipment during the work. Where materials are carried into the building, the building floors shall be covered to protect the work against dirt or grit being ground in.
- E. Trees and shrubs on the site which do not have to be removed for the new work shall be protected against damage. No Contractor shall remove or trim trees and shrubs in the area without the express approval of the Architect.
- F. Send proper notices, make necessary arrangements and perform other services required for the care, protection and maintenance of Public Utilities, including fire plugs and wires and other items of this character on and around the building site.
- G. Maintain accessible building exits required by the City during construction. Protection of these exits shall include dust-proof enclosures, illumination and exit lighting required.

1.15 RECORD DRAWINGS

- A. Maintain a complete clean set of drawings and Project Manual in the project field office for the sole purpose of recording "installed" conditions. Installed conditions shall include addendum items, change orders, or other items which come up during the construction phase which deviate from the Construction Documents. Changes made in these drawings and Project manual in connection with the final construction and installation shall be neatly made in red ink. Upon completion of the project, the marked set of drawings and Project Manual shall be delivered to the Architect for subsequent transmittal to the Owner. These drawings shall be maintained to reflect the current conditions of the work and changes shall be reviewed on a monthly basis with the Architect's representative. The Contractor's updating of the "installed" condition drawings and Project Manual shall be a prerequisite to the monthly review of the Contractor's payment request by the Architect's representative.

1.16 INSTRUCTIONS CONCERNING ASBESTOS

- A. In the event the Contractor encounters on the site material reasonably believed to be asbestos which has not been rendered harmless, the Contractor shall immediately stop work in the area affected and report the condition to the Owner in writing. If, in fact the material is asbestos and has not been rendered harmless, the work in the affected area shall not thereafter be resumed until the asbestos has been removed or rendered harmless by the Owner. The work in the affected area shall be resumed in the absence of asbestos, or when it has been rendered harmless, by written agreement of the Owner and Contractor.
- B. The Contractor will not be required to perform without consent work relating to asbestos.

PART 2 - PRODUCTS

Not used

PART 3 - EXECUTION

Not used

END OF SECTION

SECTION 01 21 00

ALLOWANCES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Administrative and procedural requirements governing allowances.
 - 1. Certain materials and equipment are specified in the contract documents by allowances. Allowances have been established in lieu of additional requirements and to defer selection of actual materials and equipment to a later date when additional information is available for evaluation. If necessary, additional requirements will be issued by change order.
- B. Related Requirements:
 - 1. General Conditions of the Contract for Construction.
 - 2. Section 01 22 00 - Unit Prices; procedures for using unit prices.
 - 3. Section 01 32 16 - Construction Progress Schedules: Product delivery and installation dates.
 - 4. Individual Specifications Sections Listed Under Schedule of Allowances: Specification of products and installation under allowances.

1.2 COSTS INCLUDED IN ALLOWANCES

- A. Cost of product to Contractor or subcontractor, less applicable trade discounts.
- B. Delivery to site.
- C. Applicable taxes.

1.3 CONTRACTOR COSTS INCLUDED IN CONTRACT SUM

- A. Products handling at site, including unloading, uncrating and storage.
- B. Protection of products from elements and from damage.
- C. Labor for installation and finishing.
- D. Other expenses required to complete installation.
- E. Contractor overhead and profit.

1.4 ADJUSTMENT OF COSTS

- A. Should the net cost be more or less than the specified amount of the allowance, the contract sum will be adjusted accordingly by change order.
- B. Submit any claims for anticipated additional costs at the site, or other expenses caused by the selection under the allowance, prior to execution of the work.
- C. Submit documentation for actual additional costs at the site, or other expenses caused by the selection under the allowance, prior to execution of the work.
- D. Failure to submit claims within the designated time will constitute a waiver of claims for additional costs.

1.5 ARCHITECT RESPONSIBILITIES

- A. Consult with Contractor in consideration of products, suppliers and installers.
- B. Select products, obtain Owner's written decision, and transmit full information to Contractor as follows
 - 1. Manufacturer, product, model or catalog number, accessories, attachments and finishes.
 - 2. Supplier and installer as applicable.

3. Cost to Contractor, delivered to site (and installed, if so specified).

1.6 CONTRACTOR RESPONSIBILITIES

- A. At the earliest practical date after award of the contract, advise Architect of the date when final selection and purchase of each product or system described by an allowance must be completed to avoid delaying the work.
- B. Assist Architect in determining suppliers; and installers; obtain proposals when requested.
- C. Make recommendations for Architect consideration.
- D. Promptly notify Architect of any reasonable objections against supplier or installer.
- E. On notification of selection execute purchase agreement with designated supplier and installer.
- F. Arrange for and process shop drawings, product data and samples.
- G. Arrange for delivery. Promptly inspect products upon delivery for completeness, damage and defects. Submit claims for transportation damage.
- H. Install, adjust and finish products.
- I. Provide warranties for products and installation.

1.7 CORRELATION WITH CONTRACTOR SUBMITTALS

- A. Schedule shop drawings, product data, samples and delivery dates, in progress schedule for products selected under allowances.

PART 2 - PRODUCTS – Not used.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine products covered by an allowance promptly on delivery for damage or defects. Return damaged or defective products to manufacturer for replacement.

3.2 PREPARATION

- A. Coordinate allowance work with related work to ensure proper integration and interface.

3.3 SCHEDULE OF ALLOWANCES

- A. Allowance No. 1: Allow the lump sum of \$2,500.00 for purchase and delivery of building dedication plaque.
- B. Allowance No. 2: Allow the lump sum of \$20,000.00 for post-construction Texas Accessibility Standards (TAS) inspection compliance and Building Code compliance per jurisdiction review and approval.
- C. Allowance No. 3: Allow the lump sum of \$800,000.00 Owner's Betterment for the changes requested by the Owner.
- D. Allowance No. 4: Allow the lump sum of \$200,000.00 for a new traffic signal on Marine Creek Parkway at Mustang Rock Road.
- E. Allowance No. 5: Allow the lump sum of \$140,000.00 for extending the electrical line underground in front of Marine Creek Middle School to the north across the length of the entire east property line, including restoration of landscaping.

END OF SECTION

SECTION 01 22 00

UNIT PRICES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Administrative and procedural requirements for unit prices.
- B. Related Requirements:
 - 1. Document 00 42 00 - Part "A" Proposal Form - Base Proposal
 - 2. Section 01 29 00 - Payment Procedures: Procedures for submitting and handling Change Orders.
 - 3. Section 31 32 00 - Soil Stabilization
 - 4. Section 31 63 29 - Drilled Concrete Piers.

1.2 DEFINITIONS

- A. Unit price is an amount proposed by bidders as a price per unit of measurement for materials or services added to or deducted from the contract sum by appropriate modification, if the estimated quantities of work required by the contract documents are increased or decreased.

1.3 PROCEDURES

- A. Unit prices include all necessary material, plus cost for delivery, installation, insurance, overhead, profit and applicable taxes.
- B. Measurement and Payment: Refer to individual specification sections for work that requires establishment of unit prices. Methods of measurement and payment for unit prices are specified in those sections.
- C. The Owner reserves the right to reject the Contractor's measurement of work-in-place that involves use of established unit prices, and to have this work measured, at the Owner's expense, by an independent surveyor acceptable to the Contractor.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

Not used.

END OF SECTION

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SECTION 01 29 00

PAYMENT PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Applications and Certificates for Payment.
 - 2. Change Order Procedures.
 - 3. Schedule of Values: Submit to the Architect the Schedule of Values allocated to various portions of the work within five days after "Notice-to-Proceed". Upon request of Architect, support values with data which will substantiate their correctness.
- B. Related Requirements:
 - 1. Conditions of the Contract for Construction.
 - 2. Section 01 32 16 - Construction Progress Schedules.
 - 3. Section 01 77 00 - Closeout Procedures.
 - 4. Section 01 78 39 - Project Record Documents.

1.2 APPLICATIONS AND CERTIFICATES FOR PAYMENT

- A. Progress payments shall be made as the work proceeds at intervals stated in the Contract.
- B. Work covered by progress payments shall, at the time of payment, become the property of the Owner.
- C. Form of Application and Certificate for Payment shall be notarized AIA Document G702 - Application and Certification for Payment, supported by AIA document G703 - Continuation Sheet., submitted in quintuplicate.
- D. Conditions governing regular schedule for applications, payment and retainage are as stated in the Contract.
- E. With each Application for Payment, Contractor shall certify that such Application for Payment represents a just estimate of cost reimbursable to Contractor under terms of Contract.

1.3 CONSTRUCTION CHANGE ORDER PROCEDURES

- A. Contractor to submit to Architect within five days of execution of Owner/Contractor Agreement name of individual authorized to accept changes on behalf of Contractor, and to be responsible for informing others in Contractor's employ of changes in the work.
- B. Change Order forms will be furnished and issued by Architect.
- C. Contractor Documentation of Changes:
 - 1. Maintain detailed records of work done on an accounting basis acceptable to Architect and Owner. Provide full information required for evaluation of proposed changes.
 - 2. Document each quotation for a change in cost or time with sufficient data to allow evaluation of quotation.
 - 3. On request, provide additional data to support computations:
 - a. Quantities of products, labor and equipment.
 - b. Insurance and bonds.
 - c. Overhead and profit.
 - d. Justification for any change in Contract Time.
 - e. Credit for deletions from Contract, similarly documented.
 - 4. Support each request for additional costs, and for work proposed on a time and material basis, with description of products, equipment, cost of labor and subcontracts, completely documented.
 - 5. Computation for changes in work will be computed in one of the manners described in the Conditions of the Contract.
- D. Initiation of Changes:
 - 1. Architect may submit Proposal Request which includes detailed description of change with supplementary or revised drawings and specifications.

2. Contractor may initiate a proposed change by submittal of a request to Architect describing proposed change with statement of reason for change, and proposed effect on Contract Sum and Contract Time with full documentation and a statement of the effect on work of separate contractors. Document any requested substitutions in accordance with SECTION 01 62 00 - PRODUCT OPTIONS. Submission of such requests and receipt of same by Architect does not mean acceptance, or approval of proposed change.
- E. Authorization:
1. The Owner may request, through the Architect, a Construction Change Directive, in writing, instructing Contractor to proceed with changes of all or in part of work, for subsequent inclusion in a Change Order that is pending. Directive will propose basis for necessary adjustments, if any, to Contract Sum or Time.
 2. Changes that affect Contract Sum and/or Contract Time will require a Change Order signed by the Owner and the Architect. Contractor's signature indicates agreement. Other orders, written or oral, by the Owner through the Architect or by the Architect shall be treated as a Change Order only if Contractor gives Owner proper written notice as described in Conditions of Contract.
 3. Promptly execute the change in work only upon receipt of approved Change Order or Owner's written Construction Change Directive.
- F. Execution:
1. Architect will issue Change Orders for signatures of parties as provided in Conditions of Contract.
 2. Promptly revise Schedule of Values and Application for Payment forms to record each authorized Change Order as a separate line item and adjust Contract Sum as shown on Change Order.
 3. Promptly revise Progress Schedules to reflect change in Contract Time, revise sub-schedules to adjust times for other items of work affected by Change, and resubmit Schedule.
 4. Promptly enter Changes in Project Record Documents.

1.4 SCHEDULE OF VALUES FORM AND CONTENT

- A. Type schedule on 8-1/2" x 11" white paper; Contractor's standard forms and automated printout will be considered for approval by Architect upon Contractor's request. Identify schedule with:
1. Title of project and location.
 2. Architect and Architect's project number.
 3. Name and address of Contractor.
 4. Contract designation.
 5. Date of submission.
- B. Follow the table of contents of this project manual as the format for listing component items.
1. Identify each line item with the number and title of the respective major section of the specifications.
- C. For each major line item list sub-values of major products or operations under the item.
- D. For the various portions of the work:
1. Each item shall include a directly proportional amount of the Contractor's overhead and profit.
 2. For items on which progress payments will be requested for stored materials, break down the value into:
 - a. Cost of the materials, delivered and unloaded, with taxes paid.
 - b. Total installed value.
- E. The sum of values listed in the schedule shall equal the total contract sum.
- F. Indicate separate value associated with materials and labor.
- G. Re-submittal: After review by Architect, revise and resubmit schedule as necessary.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

Not used.

END OF SECTION

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SECTION 01 31 00

PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Coordination of work of the contract.
- B. Related Requirements:
 - 1. Section 01 11 00 - Summary of Work: Sequence of construction and Owner occupancy.
 - 2. Section 01 31 19 - Project Meetings.
 - 3. Section 01 62 00 - Product Options.
 - 4. Section 01 73 29 - Cutting and Patching.
 - 5. Section 01 77 00 - Closeout Procedures: Closeout submittals.

1.2 DESCRIPTION

- A. Coordinate scheduling, submittals and work of the various sections of specifications to ensure efficient and orderly sequence of installation of construction elements, with provisions for accommodating items to be installed later.
- B. Coordinate sequence of work to accommodate Owner occupancy as specified in SECTION 01 11 00 - SUMMARY OF WORK.

1.3 MEETINGS

- A. In addition to progress meetings specified in SECTION 01 31 19 - PROJECT MEETINGS, hold coordination meetings and pre-installation conferences with personnel and subcontractors to ensure coordination of work.

1.4 COORDINATION OF SUBMITTALS

- A. Schedule and coordinate submittals specified in SECTION 01 33 23 - SHOP DRAWINGS, PRODUCT DATA AND SAMPLES.
- B. Coordinate work of various sections having interdependent responsibilities for equipment, such as installing, connecting to and placing in service.
- C. Coordinate requests for substitutions to ensure compatibility of space, of operating elements and effect on work of other sections.

1.5 REQUEST FOR INFORMATION (RFI)

- A. General: Immediately on discovery of the need for additional information, clarification, or interpretation of the Contract Documents, Contractor shall prepare and submit an RFI in the form specified.
 - 1. Architect will return without response those RFIs submitted to Architect by other entities controlled by Contractor.
 - 2. Coordinate and submit RFIs in a prompt manner to avoid delays in Contractor's work or work of subcontractors.
 - 3. Contractor shall always include a proposed solution along with the RFI.
 - 4. RFI's submitted to the Contractor by subcontractors, vendors, suppliers, or other parties to the Work shall be reviewed by the Contractor prior to submission to the Architect. If the Architect deems that such RFI requests have not been adequately reviewed by the Contractor, such requests will be returned to the Contractor for further action.
 - 5. RFI requests are limited to a request for interpretation or clarification of the requirements of the Contract Documents. Interpretations provided by the Architect shall not change the requirements of the Contract or the Contract Documents. If the Contractor determines that the Architect's response to an RFI gives cause for a change in the Contract or the Contract Documents, the Contractor shall promptly, within 5 working days, give written notice to the Architect of request for adjustments. Requests for adjustments to the Contract shall be submitted in a manner consistent with the terms and conditions of the Contract Documents.

- B. Content of the RFI: Include a detailed, legible description of item needing information or interpretation and the following:
1. Project name.
 2. Owner name.
 3. Owner's Project number.
 4. Name of Architect.
 5. Architect's Project number.
 6. Date.
 7. Name of Contractor.
 8. RFI number, numbered sequentially.
 9. RFI subject.
 10. Specification Section number and title and related paragraphs, as appropriate.
 11. Drawing number and detail references, as appropriate.
 12. Field dimensions and conditions, as appropriate.
 13. Contractor's suggested resolution. If Contractor's suggested resolution impacts the Contract Time or the Contract Sum, Contractor shall state impact in the RFI.
 14. Contractor's signature.
 15. Attachments: Include sketches, descriptions, measurements, photos, Product Data, Shop Drawings, coordination drawings, and other information necessary to fully describe items needing interpretation.
 - a. Include dimensions, thicknesses, structural grid references, and details of affected materials, assemblies, and attachments on attached sketches
- C. Architect's Action: Architect will review each RFI, determine action required, and respond. Allow five working days for Architect's response for each RFI. RFIs received by Architect after 1:00 p.m. will be considered as received the following working day.
1. The following Contractor-generated RFIs will be returned without action:
 - a. Requests for approval of submittals.
 - b. Requests for approval of substitutions.
 - c. Requests for approval of Contractor's means and methods.
 - d. Requests for coordination information already indicated in the Contract Documents.
 - e. Requests for adjustments in the Contract Time or the Contract Sum.
 - f. Requests for interpretation of Architect's actions on submittals.
 - g. Incomplete RFIs or inaccurately prepared RFIs.
 2. Architect's action may include a request for additional information, in which case Architect's time for response will date from time of receipt by Architect of additional information.

1.6 COORDINATION OF SPACE

- A. Coordinate use of project space and sequence of installation of mechanical and electrical work which is indicated diagrammatically on drawings. Follow routings shown for pipes, ducts and conduits as closely as practicable, with due allowance for available physical space; make runs parallel with lines of building. Utilize space efficiently to maximize accessibility for other installations, for maintenance and for repairs.
- B. In finished areas, except as otherwise shown, conceal pipes, ducts and wiring in the construction. Coordinate locations of fixtures and outlets with finish elements.

1.7 COORDINATION OF CONTRACT CLOSEOUT

- A. Coordinate completion and cleanup of work of separate sections in preparation for substantial completion of portions of work designated for Owner partial occupancy.
- B. After Owner occupancy of premises, coordinate access to site by various sections for correction of defective work and work not in accordance with contract documents, to minimize disruption of Owner's activities.
- C. Assemble and coordinate closeout submittals specified in SECTION 01 77 00 - CLOSEOUT PROCEDURES.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

Not used.

END OF SECTION

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SECTION 01 31 19

PROJECT MEETINGS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Scheduling and administration of progress meetings.
 - 2. Pre-installation conferences.
- B. Related Requirements:
 - 1. Section 01 31 00 - Project Management and Coordination.
 - 2. Section 01 31 19.13 - Preconstruction Meetings: Owner's preconstruction conference and pre-mobilization conference.
 - 3. Section 01 32 16 - Construction Progress Schedules.
 - 4. Section 01 33 23 - Shop Drawings, Product Data and Samples.
 - 5. Section 01 45 00 - Quality Control.
 - 6. Section 01 78 23 - Operation and Maintenance Data.
 - 7. Section 01 78 39 - Project Record Documents.

1.2 PROGRESS MEETINGS

- A. The Contractor will schedule monthly construction progress meetings, throughout progress of work and distribute notice of each meeting to participants. The Architect will prepare agenda,
- B. Contractor shall make physical arrangements.
- C. Architect to preside at progress meetings and issue meeting minutes.
- D. Location of Meetings: Contractor's field office.
- E. Attendance: Contractor, job superintendent, and Architect. Owner and professional consultants will attend as appropriate. Subcontractors and suppliers shall attend as Architect or Contractor sees necessary to agenda.
- F. Anticipated Agenda:
 - 1. Review of any outstanding old business from prior meeting minutes.
 - 2. Review of Contractor's updated Construction Schedule, including minimum two-week look ahead schedule.
 - 3. Review of work in-progress.
 - 4. Field observations and decisions.
 - 5. Status of correction of deficient items.
 - 6. Review of outstanding RFI's.
 - 7. Identification of problems which impede planned progress.
 - 8. Review of submittal schedule and status of submittals, including pending submittals and resubmittals.
 - 9. Review of off-site fabrication and delivery schedules.
 - 10. Corrective measures to regain projected schedules if project is behind schedule.
 - 11. Review of quality and work standards.
 - 12. Review of Proposal Request and Change Proposal Logs, including any known pending changes.
 - 13. Effect of proposed changes on progress schedule and coordination.
 - 14. Review of Contractor's updates to Project Record Documents.
 - 15. Review and signing of formal Application for Payment, as applicable.
 - 16. For Construction Manager projects, discuss variances between actual and estimated GMP costs.
 - 17. Other business relating to work.

1.3 PRE-INSTALLATION CONFERENCES

- A. When required in individual specification section, convene a pre-installation conference at work site prior to commencing work of the section.
- B. Require attendance of entities directly affecting, or affected by, work of the section.

- C. Notify Architect four days in advance of meeting date.
- D. Prepare agenda, preside at conference, record minutes and distribute copies within two days after conference to participants, with two copies to Architect.
- E. Review conditions of installation, preparation and installation procedures and coordination with related work.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

Not used.

END OF SECTION

SECTION 01 31 19.13

PRECONSTRUCTION MEETINGS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Contractor participation in preconstruction meetings.
- B. Related Requirements:
 - 1. Section 01 11 00 - Summary of Work: Administrative provisions.
 - 2. Section 01 31 00 - Project Management and Coordination.
 - 3. Section 01 31 19 - Project Meetings.

1.2 PRECONSTRUCTION MEETING

- A. Architect will schedule meeting within 15 days after notice of award.
- B. Attendance: Owner, Architect, General Contractor and representatives of major subcontractors.
- C. Agenda
 - 1. Submittal of executed bonds and insurance certificates.
 - 2. Execution of Owner-Contractor Agreement.
 - 3. Distribution of Contract Documents.
 - 4. Submittal of list of subcontractors, list of products, schedule of values and progress schedule.
 - 5. Designation of responsible personnel.
 - 6. Procedures and processing of field decisions, submittals, substitutions, applications for payments, proposal requests, change orders, allowances and Contract closeout procedures.
 - 7. Scheduling.
 - 8. Use of premises by Owner and Contractor.
 - 9. Owner's requirements and occupancy.
 - 10. Temporary facilities.
 - 11. Survey and building layout.
 - 12. Security and housekeeping procedures.
 - 13. Procedures for testing.
 - 14. Procedures for maintaining record documents.
 - 15. Requirements for startup of equipment.
 - 16. Accessibility Issues.
 - 17. Inspection and acceptance of equipment put into service during construction period.
 - 18. Notice to proceed.
 - 19. Color samples.
 - 20. Procedures for site meetings.
 - 21. Site access and security.
 - 22. Procedures and processing of TEA "Certification of Project Compliance" form.
 - 23. Substantial and final project completion procedures.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

Not used.

END OF SECTION

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SECTION 01 32 16

CONSTRUCTION PROGRESS SCHEDULES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Procedures for preparation and submittal of digital construction progress schedules and periodical updating.
- B. Related Requirements:
 - 1. Section 01 11 00 - Summary of Work: Work sequence.
 - 2. Section 01 21 00 - Allowances.
 - 3. Section 01 29 00 - Payment Procedures: Schedule of Values.
 - 4. Section 01 33 23 - Shop Drawings, Product Data and Samples.

1.2 SUBMITTALS

- A. Within 21 days of the contract date, Contractor shall prepare and submit a digital Critical Path construction schedule for the work. After review, resubmit required revised data within 5 days.
- B. Submit revised digital Critical Path Construction Schedule monthly with each Application for Payment.
- C. Submit under transmittal letter specified in SECTION 01 33 23 - SHOP DRAWINGS, PRODUCT DATA AND SAMPLES.

1.3 WORK SCHEDULE FORMAT

- A. The schedule shall not exceed time limits current under the Contract Documents and shall be subject to the approval of the Architect. The Contractor shall prosecute the work vigorously and make every effort to start and complete each phase of the work on or before the dates stated.
- B. Should actual construction of project vary from the Critical Path schedule, Contractor shall take whatever actions are necessary to improve progress as quickly as possible in order to meet pre-determined milestones. Revise and re-submit schedule not less than every 30 calendar days. Presentation of the existing or updated Critical Path schedule, in three copies, along with the Certificate of Payment Request shall be a prerequisite to the monthly review of the payment request by the Architect's representative.
- C. Sequence of Listings: The chronological order of the start of each item of work.
- D. Scale and Spacing: To provide space for notations and revisions.
- E. Sheet Size: Minimum 11" x 17".

1.4 CONTENT

- A. Show complete sequence of construction by activity, with dates for beginning and completion of each element of construction.
- B. Identify each item by major specification section number.
- C. Identify work of separate stages and other logically grouped activities.
- D. Provide sub-schedules for each stage of work identified in SECTION 01 11 00 - SUMMARY OF WORK.
- E. Provide sub-schedules to define critical portions of entire schedule.
- F. Show accumulated percentage of completion of each item, and total percentage of work completed, as of the first day of each month.

- G. Provide separate schedule of submittal dates for shop drawings, product data and samples, including Owner furnished products and products specified under Allowances, and dates reviewed submittals will be required from Architect. Show decision dates for selection of finishes.
- H. Show delivery dates for Owner furnished products and products specified under Allowances.
- I. Coordinate content with SECTION 01 29 00 - PAYMENT PROCEDURES, Schedule of Values.

1.5 REVISIONS TO SCHEDULES

- A. Indicate progress of each activity to date of submittal, and projected completion date of each activity.
- B. Identify activities modified since previous submittal, major changes in scope and other identifiable changes.
- C. Provide narrative report to define problem areas, anticipated delays and impact on Schedule. Report corrective action taken, or proposed and its effect.

1.6 DISTRIBUTION

- A. Distribute copies of reviewed schedules to job site file, subcontractors, suppliers and other concerned entities.
- B. Instruct recipients to promptly report, in writing, problems anticipated by projections shown in schedules.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

Not used.

END OF SECTION

SECTION 01 33 23

SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Digital submission of shop drawings.
- B. Related Requirements:
 - 1. General Conditions of the Contract for Construction: Definitions and basic responsibilities of entities.
 - 2. Section 01 31 00 - Project Management and Coordination: Coordination of submittals.
 - 3. Section 01 32 16 - Construction Progress Schedules: Schedules for submittals.
 - 4. Section 01 45 00 - Quality Control: Mockups and samples for testing.
 - 5. Section 01 50 00 - Temporary Facilities and Controls: Project management software.
 - 6. Section 01 62 00 - Product Options.
 - 7. Section 01 78 23 - Operation and Maintenance Data.
 - 8. Section 01 78 39 - Project Record Documents.

1.2 GENERAL

- A. Refer to General Conditions, Paragraph 3.12 (Shop Drawings, Product Data and Samples).
- B. Digital Submittals: Submit to the Architect, or applicable consultant, shop drawings, product data, and samples required by specification sections. Do not submit illegible fax copies nor carbon copies of shop drawings and product data.
 - 1. Submit using the Architect's web-based project management program (Projectmates). Prepare submittals as .pdf files, with a single file for each submittal, and upload to the Architect's project management program (Projectmates). Enter required data in program to fully identify submittal in accordance with the required submittal numbering format.
- C. Within 30 of the contract date Contractor shall prepare and submit with the Schedule of Values a comprehensive schedule of shop drawings, product data and samples. This schedule shall include products which are proposed for substitution. Also include the estimated date of each submittal and anticipated date of submittal return. Allow the Architect reasonable time to review submittals.
 - 1. The schedule shall be compiled and submitted using the "Submittal" feature in the Architect's project management program (Projectmates).
- D. Prepare schedule on basis of each specification section.
- E. For products specified under reference standards, include with listing of each product:
 - 1. Name and address of manufacturer.
 - 2. Trade name.
 - 3. Model or catalog designation.
 - 4. Manufacturer's data, including performance and test data, reference standards.

1.3 SHOP DRAWINGS

- A. Prepared by a qualified detailer. Prepare project-specific information, drawn accurately to scale. Do not base shop drawings on reproductions of the contract documents or standard printed data. Include supplier's / detailer's / manufacturer's title block.
- B. Identify details by reference to sheet and detail numbers shown on Contract Documents.
- C. Present in a clear and thorough manner original drawings which illustrate the portion of the work showing fabrication, layout, setting, or erection details, prepared by a qualified detailer. Title each drawing with Project and Contract name and number; identify each element of drawings by reference to sheet number and detail, schedule, or room number of Contract Documents.

1.4 PRODUCT DATA

- A. Manufacturer's standard schematic drawings and diagrams:
 - 1. Modify drawings to delete information which is not applicable to the work.
 - 2. Supplement standard information to provide additional information specifically applicable to the work.
- B. Manufacturer's catalog sheets, brochures, diagrams, schedules, performance charts, illustrations and other standard descriptive data:
 - 1. Clearly mark each copy to identify pertinent materials, products or models.
 - 2. Show dimensions and clearances required.
 - 3. Show performance characteristics and capacities.
 - 4. Show wiring or piping diagrams and controls.
- C. Submit only pages which are pertinent; mark each copy of standard printed data to identify pertinent products, referenced to specification section and Article number. Show reference standards, performance characteristics and capacities; wiring and piping diagrams and controls; component parts; finishes; dimensions; and required clearances.
- D. Modify manufacturer's standard schematic drawings and diagrams to supplement standard information and to provide information specifically applicable to the work. Delete information not applicable.

1.5 SAMPLES

- A. Office samples shall be of sufficient size and quantity to clearly illustrate:
 - 1. Functional characteristics of product or material, with integrally related parts and attachment devices.
 - 2. Full range of color samples.
- B. Color Selections & Samples: Provide two (2) samples for the Architect's review and record. Provide cut sheet when applicable.
 - 1. Samples for Initial Selection: Submit one (1) full set of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Architect will return submittal with options selected. In addition to the physical samples required above, submit a .pdf file of photographs of the actual color samples and identifying labels.
 - 2. Samples for Verification: Submit two (2) full-size units or Sample of size indicated, prepared from same material to be used for the Work, cured and finished in manner specified, and physically identical with material or product proposed for use, and that show full range of color and texture variations expected. Samples include, but are not limited to, the following: partial sections of manufactured or fabricated components; small cuts or containers of materials; complete units of repetitively used materials; swatches showing color, texture, and pattern; color range sets; and components used for independent testing and inspection. In addition to the physical samples required above, submit a .pdf file of photographs of the actual color samples and identifying labels. Architect will retain physical samples.
 - a. After Color Board has been delivered to the project site, submit one (1) sample for verification in lieu of two (2). One will be retained by Contractor for mounting on Color Board after approval by Architect.
- C. Field Samples and Mock-ups:
 - 1. Erect at project site at location acceptable to Architect.
 - 2. Construct each sample or mock-up complete, including work of all trades required in finish work.
 - 3. Install each sample complete and finished. Acceptable finishes in place may be retained in completed work.
- D. Digital Samples: In addition to the physical Office Samples and Field Samples/Mock-ups, submit a .pdf file of photographs of the actual samples/mock-ups.
- E. Submit full range of manufacturer's standard finishes except when more restrictive requirements are specified, indicating colors, textures and patterns, for Architect selection.
- F. Submit samples to illustrate functional characteristics of products, including parts and attachments.
- G. Approved samples which may be used in the work are indicated in the specification section.
- H. Label each sample with identification required for transmittal letter.

1.6 CONTRACTOR REVIEW

- A. Review submittals prior to transmittal; determine and verify field measurements, field construction criteria, quantities and details, manufacturer's catalog numbers and conformance of submittal with requirements of Contract Documents.
- B. Coordinate submittals with requirements of work and of Contract Documents.
- C. Sign or initial in a rubber-stamped review block format, each sheet of shop drawings and product data and each sample label to certify compliance with requirements of Contract Documents. Notify Architect in writing at time of submittal, of any deviations from requirements of Contract Documents.
- D. Do not fabricate products or begin work which requires submittals until return of submittal with Architect acceptance.
- E. Contractor's responsibility for errors and omissions in submittals is not relieved by Architect's review of submittals.
- F. Contractor's responsibility for deviations in submittals from requirements of contract documents is not relieved by Architect's review of submittals, unless Architect gives specific written acceptance of deviations. Architect will review submittals for general conformance to design intent only.

1.7 SUBMISSION REQUIREMENTS

- A. Submit Shop Drawings and Product Data as soon as practicable after award of contract but not later than 30 calendar days before dates reviewed submittals will be needed.
- B. Processing Time: Allow time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Architect's receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.
 - 1. Initial Review: Allow 10 working days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Architect will advise Contractor when a submittal being processed must be delayed for coordination.
 - 2. Resubmittal Review: Allow 10 working days for review of each resubmittal.
- C. Submit all office samples as soon as practicable but not later than 60 days after award of contract in order to facilitate color selections and coordination of the various materials. Final color selections and release of shop drawings contingent upon color selection will not be made until all office samples have been submitted, coordinated and approved.
 - 1. Color Board shall be delivered to the project site after 60 days. Contractor is responsible for updating color board with samples submitted by Contractor and approved by Architect after 60 days.
- D. Digital Submittals: Submit to the Architect, or applicable consultant, shop drawings, product data, and samples required by specification sections. Do not submit illegible fax copies nor carbon copies of shop drawings and product data.
 - 1. The submittals shall be logged in by the General Contractor and tracked using the "Submittal" feature in the Architect's project management program (Projectmates). All submittals shall be submitted in .pdf format.
 - a. Submittals 8-1/2" x 11" and/or 11" x 17" and greater than 50 pages: Provide digital copy for the Architect's records.
 - b. Large Format Drawings (larger than 11 x 17): Provide digital copy for the Architect's records.
 - 2. Architect will indicate, via markup on each digital submittal, the appropriate action, then return submittal via the Architect's project management program (Projectmates).
 - 3. Submittals to be reviewed by consultants shall be submitted directly to the applicable consultant via ProjectMates with a copy simultaneously sent to the Architect. Submittals will be reviewed by the consultant and then delivered/transmitted to the Architect for his review prior to transmitting them to the contractor. Submittals to be reviewed by the testing lab shall be handled in the same manner.
 - 4. Color Selections & Samples: Reference "Samples" Article within this specification section.
 - 5. Submittals to be reviewed by consultants shall be submitted directly to the applicable consultant with a copy of only the digital transmittal simultaneously copied to the Architect. Submittals will be reviewed by the consultant and then delivered/transmitted to the Architect for his review prior to transmitting them to the contractor. Submittals to be reviewed by the testing lab shall be handled in the same manner.

- E. Contractor is responsible for the costs associated with the digital delivery of all submittals, and hard copy where required, to the Architect and the Architect's consultants and retrieval of all submittals from the Architect, when necessary.
- F. Accompany submittals with transmittal letter containing:
 - 1. Date.
 - 2. Project title and number.
 - 3. Contractor's name and address.
 - 4. Identification of specification section and submittal numbers.
 - 5. The number of each shop drawing, product data and sample submitted.
 - 6. Notification of deviations from contract documents.
 - 7. Other pertinent data.
- G. Submittals shall include:
 - 1. Date and revision dates.
 - 2. Project title and number.
 - 3. Names of Architect, Contractor, subcontractor, supplier and manufacturer.
 - 4. Identification of product or material and specification section number.
 - 5. Relation to adjacent structure, materials or other critical features.
 - 6. Field dimensions, clearly identified as such.
 - 7. Applicable reference standards.
 - 8. A blank space 3" x 4" for Architect's stamp.
 - 9. Identification of deviations from contract documents.
 - 10. Contractor's stamp, initialed or signed, certifying to review of submittal, verification of field measurements, compliance with contract documents and coordination with requirements of the work.
Note: Absence of the Contractor's stamp shall constitute grounds for rejection of the submittal until such time as the submittal has been processed in accordance with this requirement.
 - 11. Other pertinent data required by specifications.

1.8 RE-SUBMISSION REQUIREMENTS

- A. Re-submission: For shop drawings and product data not approved by Architect, make corrections and changes in submittals required by Architect and re-submit until approved.
 - 1. The digital re-submission shall be logged in using the "Resubmit" feature in the Architect's project management program (Projectmates).
- B. Shop Drawings:
 - 1. Revise initial drawings and re-submit as specified for initial submittal.
 - 2. Indicate on drawings any changes which have been made, other than those requested by Architect.
- C. Product Data and Samples: Submit new data and samples as specified for initial submittal

1.9 DISTRIBUTION OF SUBMITTALS AFTER REVIEW

- A. Distribute reviewed submittal of shop drawings and product data which carry Architect's stamp as follows: Contractor's file, project site file, record documents file, other prime contractors.
- B. Keep and maintain a full set of submittals throughout the construction phase to be submitted to the Architect with other Close-out documents for delivery to the Owner for his permanent record. Set of submittals shall be delivered to the Architect in cardboard file boxes with string and button type closures. Organize submittals by CSI divisions, utilizing neatly labeled pressboard dividers to separate the sections. Neatly label short end of box with project name, contents and duration of construction.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

Not used.

END OF SECTION

SECTION 01 41 00

REGULATORY REQUIREMENTS

PART 1 - GENERAL

1.1 CODES

- A. Where references are made on drawings or specifications to codes, they shall be considered an integral part of the contract documents as minimum standards. Nothing contained in the contract documents shall be so construed as to be in conflict with any law, bylaw or regulation of the municipal, state, federal or other authorities having jurisdiction.
- B. Perform work in compliance with all City of Fort Worth ordinances and requirements.

1.2 GOVERNING LAWS

- A. Additional information with legal implications regarding applicable governing laws and jurisdictions can be found in the conditions of the contract.

1.3 PERMITTING

- A. Contractor shall, without additional expense to Owner, obtain necessary licenses and permits, and be responsible for complying with any federal, state, county and municipal laws, codes and regulations applicable to the performance of the work, including, but not limited to, any laws or regulations requiring the use of licensed contractors to perform parts of the work.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

Not used.

END OF SECTION

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SECTION 01 42 00

REFERENCES

PART 1 - GENERAL

1.1 INDUSTRY STANDARDS

- A. Applicability of Standards: Unless the contract documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the contract documents to the extent referenced. Such standards are made a part of the contract documents by reference.
- B. Publication Dates: Comply with standards in effect as of date of the contract documents.
- C. Copies of Standards: Each entity engaged in construction on project must be familiar with industry standards applicable to its construction activity. Copies of applicable standards are not bound with the contract documents.
 - 1. Where copies of standards are needed to perform a required construction activity, obtain copies directly from publication source.

- D. Abbreviations and Acronyms for Standards and Regulations: Where abbreviations and acronyms are used in specifications or other contract documents, they shall mean the recognized name of the standards and regulations in the following list. Names, telephone numbers, and web-site addresses are subject to change and are believed to be accurate and up-to-date as of the date of the contract documents.

ADAAG	Americans with Disabilities Act (ADA) Accessibility Guidelines for Buildings and Facilities Available from Access Board www.access-board.gov	800.872.2253 202.272.0080
CRD	Handbook for Concrete and Cement Available from Army Corps of Engineers Waterway Experiment Station http://www.erdc.usace.army.mil/	601.634.2355
DOD	Department of Defense Military Specifications and Standards Available from Department of Defense Single Stock Point www.dodssp.daps.dla.mil	215.697.6257
FED-STD	Federal Standard (See FS)	
FS	Federal Specification Available from Department of Defense Single Stock Point www.dodssp.daps.dla.mil	215.697.6257
	Available from General Services Administration www.gsa.gov	202.501.1021
	Available from National Institute of Building Sciences www.nibs.org	202.289.7800
ICC-ES	ICC Evaluation Services, Inc. www.icc-es.org	800.423.6587 562.699.0543
MIL	See MILSPEC	
MIL-STD	See MILSPEC	
MILSPEC	Military Specification and Standards Available from Department of Defense Single Stock Point www.dodssp.daps.dla.mil	215.697.6257

TAS	Texas Accessibility Standards P.O. Box 12157 Austin, TX 78711 www.license.state.tx.us/ab/abtas.htm	512.463.3211
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1.2 ABBREVIATIONS AND ACRONYMS

- A. Industry Organizations: Where abbreviations and acronyms are used in specifications or other contract documents, they shall mean the recognized name of the entities in the following list. Names, telephone numbers, and web-site addresses are subject to change and are believed to be accurate and up-to-date as of the date of the contract documents.

AA	Aluminum Association, Inc. (The) www.aluminum.org	703.358.2960
AAMA	American Architectural Manufacturers Association www.aamanet.org	847.303.5664
AASHTO	American Association of State Highway and Transportation Officials www.transportation.org	202.624.5800
ACI	ACI International (American Concrete Institute) www.aci-int.org (www.concrete.org)	248.848.3700
AGA	American Gas Association www.aga.org	202.824.7000
AISC	American Institute of Steel Construction www.aisc.org	800.644.2400 312.670.2400
AISI	American Iron and Steel Institute www.steel.org	202.452.7100
ANSI	American National Standards Institute www.ansi.org	202.293.8020
APA	APA-The Engineered Wood Association www.apawood.org	253.565.6600
ASHRAE	American Society of Heating, Refrigerating and Air Conditioning Engineers www.ashrae.org	404.636.8400
ASTM	ASTM International (American Society for Testing and Materials International) www.astm.org	610.832.9585
AWI	Architectural Woodwork Institute www.awinet.org	571.323.3636
AWPA	American Wood Protection Association www.awpa.com	205.733.4077
AWS	American Welding Society www.aws.org	800.443.9353 305.443.9353
BHMA	Builders Hardware Manufacturers Association www.buildershardware.com	212.297.2122
BIA	Brick Industry Association (The) www.gobrick.com	703.620.0010

CISCA	Ceilings & Interior Systems Construction Association www.cisca.org	630.584.1919
CLFMI	Chain Link Fence Manufacturers Institute www.chainlinkinfo.org	301.596.2583
CRSI	Concrete Reinforcing Steel Institute www.crsi.org	847.517.1200
DHI	Door and Hardware Institute www.dhi.org	703.222.2010
FM	Factory Mutual System (See FMG)	
FMG	FM Global (Formerly: FM - Factory Mutual System) www.fmglobal.com	401.275.3000
GA	Gypsum Association www.gypsum.org	301.277.8686
GANA	Glass Association of North America www.glasswebsite.com	785.271.0208
HMMA	Hollow Metal Manufacturers Association (See NAAMM)	
HPVA	Hardwood Plywood & Veneer Association www.hpva.org	703.435.2900
IGCC	Insulating Glass Certification Council www.igcc.org	315.646.2234
IGMA	Insulating Glass Manufacturers Alliance (The) www.igmaonline.org	613.233.1510
MBMA	Metal Building Manufacturers Association www.mbma.com	216.241.7333
MFMA	Maple Flooring Manufacturers Association, Inc. www.maplefloor.org	888.480.9138
MFMA	Metal Framing Manufacturers Association www.metalframingmfg.org	312.644.6610
MIA	Marble Institute of America www.marble-institute.com	440.250.9222
NAAMM	National Association of Architectural Metal Manufacturers www.naamm.org	630.942.6591
NCMA	National Concrete Masonry Association www.ncma.org	703.713.1900
NeLMA	Northeastern Lumber Manufacturers' Association www.nelma.org	207.829.6901
NEMA	National Electrical Manufacturers Association www.nema.org	703.841.3200

NFPA	NFPA (National Fire Protection Association) www.nfpa.org	800.344-3555 617.770-3000
NFRC	National Fenestration Rating Council www.nfrc.org	301.589.1776
NHLA	National Hardwood Lumber Association www.nhla.com	800.933.0318 901.377.1818
NLGA	National Lumber Grades Authority www.nlga.org	604.524.2393
NOFMA	National Oak Flooring Manufacturers Association (The Wood Flooring Manufacturers Association) www.nofma.org	901.526.5016
NRCA	National Roofing Contractors Association www.nrca.net	800.323.9545 847.299.9070
NTMA	National Terrazzo & Mosaic Association, Inc. www.ntma.com	800.323.9736 540.751.0930
NWWDA	National Wood Window and Door Association (See WDMA)	
PCI	Precast/Prestressed Concrete Institute www.pci.org	312.786.0300
PDCA	Painting and Decorating Contractors of America www.pdca.org	800.332.7322 314.514.7322
SDI	Steel Deck Institute www.sdi.org	847.458.4647
SDI	Steel Door Institute www.steeldoor.org	440.899.0010
SEFA	Scientific Equipment and Furniture Association www.sefalabs.com	516.294.5424
SGCC	Safety Glazing Certification Council www.sgcc.org	315.646.2234
SIGMA	Sealed Insulating Glass Manufacturers Association (See IGMA)	
SJI	Steel Joist Institute www.steeljoist.org	843.626.1995
SMACNA	Sheet Metal and Air Conditioning Contractors' National Association www.smacna.org	703.803.2980
SPIB	Southern Pine Inspection Bureau (The) www.spib.org	850.434.2611
TCNA	Tile Council of America, Inc. www.tileusa.com	864.646.8453
TPI	Truss Plate Institute, Inc. www.tpinst.org	703.683.1010

UL	Underwriters Laboratories Inc. www.ul.com	800.285.4476 847.272.8800
USGBC	U.S. Green Building Council www.usgbc.org	800.795.1747 202.828.7422
WCLIB	West Coast Lumber Inspection Bureau www.wclib.org	800.283.1486 503.639.0651
WDMA	Window & Door Manufacturers Association (Formerly: NWWA - National Wood Window and Door Association) www.wdma.com	800.223.2301 312.321.6802
WI	Woodwork Institute www.woodworkinstitute.com	916.372.9943
WWPA	Western Wood Products Association www.wwpa.org	503.224.3930

- B. Code Agencies: Where abbreviations and acronyms are used in specifications or other contract documents, they shall mean the recognized name of the entities in the following list. Names, telephone numbers, and web-site addresses are subject to change and are believed to be accurate and up-to-date as of the date of the contract documents.

BOCA	BOCA International, Inc. (See ICC)	
CABO	Council of American Building Officials (See ICC)	
IAPMO	International Association of Plumbing and Mechanical Officials www.iapmo.org	909.472.4100
ICBO	International Conference of Building Officials (See ICC)	
ICC	International Code Council (Formerly: CABO - Council of American Building Officials) www.iccsafe.org	888.422.7233 703.931.4533
SBCCI	Southern Building Code Congress International, Inc. (See ICC)	

- C. Federal Government Agencies: Where abbreviations and acronyms are used in specifications or other contract documents, they shall mean the recognized name of the entities in the following list. Names, telephone numbers, and web-site addresses are subject to change and are believed to be accurate and up-to-date as of the date of the contract documents.

CE	Army Corps of Engineers www.usace.army.mil	
CPSC	Consumer Product Safety Commission www.cpsc.gov	800.638.2772 301.504.6816
EPA	Environmental Protection Agency www.epa.gov	202.272.0167
OSHA	Occupational Safety & Health Administration www.osha.gov	800.321.6742 202.693.1999

New Central Administration Building
Eagle Mountain-Saginaw ISD
Fort Worth, Texas

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

Not used.

END OF SECTION

SECTION 01 42 16

DEFINITIONS

PART 1 - GENERAL

1.1 DEFINITIONS

- A. "Furnish": Supply and deliver to project site, ready for unloading, unpacking, assembly, installation, and similar operations.
- B. "Install": Operations at project site including unloading, temporarily storing, unpacking, assembling, erecting, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations.
- C. "Product": Materials, systems and equipment.
- D. "Project Manual": Volume assembled for the Work which may include the bidding requirements, sample forms, conditions of the contract, and specifications.
- E. "Provide": Furnish and install, complete and ready for the intended use.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

Not used.

END OF SECTION

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SECTION 01 43 39

MOCK-UP SUBMITTALS

PART 1 - GENERAL

1.1 DESCRIPTION

- A. An Envelope Pre-construction meeting shall be held with all of the subcontractors responsible for erecting the envelope related materials.
- B. Work includes: Constructing mock-up, including all reviewed submittals required by the Contract Documents, to establish compliance with the design intent as well as the specified requirements to provide a complete and watertight facility.
- C. Providing a photo manifest of as-built conditions as the mock-up is being constructed. Photos shall be kept at the job site during construction for reference.
- D. Mock-up fabrication must be completed and reviewed and approved by the Owner and Architect prior to starting installation of envelope material.

1.2 QUALITY ASSURANCE

- A. Coordination of product submittals and construction installation:
 - 1. Prior to each submittal, carefully review and coordinate all aspects of each item being submitted.
 - 2. Verify that each item being submitted is in conformance in all respects with the specified requirements.
 - 3. By affixing the Contractor's signature to each submittal for the mock-up, the contractor certifies that this coordination has been performed.
 - 4. Contractor shall construct the site built mock-up with the same manner of specified construction as the new construction.
 - 5. Contractor shall construct the site built mock-up with the same workmanship and quality as being implemented on the new construction.
 - 6. All material to be installed shall be reviewed by architect and consultants for conformance.

PART 2 - PRODUCTS

2.1 MOCK-UP REQUIREMENTS

- A. Build mock-ups to verify selections made under sample submittals and to demonstrate aesthetic effects and qualities of materials and execution. Mock-ups construction shall be coordinated by the General Contractor and constructed by the subcontractor responsible for the actual construction work. All conditions and materials to be used on the job shall be included in the mock-up. Build mock-ups to comply with the following requirements, using materials indicated for the completed Work.
- B. Contractor shall start the construction of the mock-up based on, but not limited to, the following list:
 - 1. Foundation if subgrade is present
 - 2. Waterproofing membrane
 - 3. Air Barrier systems.
 - 4. Flexible Through-Wall Flashing Membrane
 - 5. Metal Through-Wall Flashing
 - 6. Preformed Flashing Pieces
 - 7. Face Brick and or stone with mortar and weeps
 - 8. CMU with mortar and weeps
 - 9. Wall Ties
 - 10. Rainscreen Attachment System (MFI)
 - 11. Semi Rigid Insulation
 - 12. Metal Panels, Wall and Soffit
 - 13. Fiber-Cement Siding and Wall Panels
 - 14. Metal Roof Panels
 - 15. Low Slope Roof System
 - 16. Weeps
 - 17. Window Unit (curtainwall and storefront)
 - 18. Louver Unit

- C. Samples and Manufacturer's Submittals: Submit prior to delivery or installation.
 - 1. Samples of all building system components including all specified accessories.
 - 2. Submit samples of proposed warranties complete with any addenda necessary to meet the warranty requirements as specified.
 - 3. Submit latest edition of manufacturer's specifications and installation procedures. Submit only those items applicable to this project.
 - 4. A written statement from the materials manufacturer approving the installer, specifications and drawings as described and/or shown for this project and stating the intent to guarantee the completed project.
 - 5. Follow submitted shop drawings, product data of all sheet metal.
- D. Scale and Measurements: Make Shop Drawings accurately to a scale sufficiently large enough to show all pertinent aspects of the item and its method of connection to the work.
- E. Shop Drawings and Product Data: Provide manufacturer's approved details of all conditions, projection conditions, and any additional special job conditions which require details other than indicated in the drawings.
 - 1. Manufacturer's Details: All termination details and other details normally required by the manufacturer's Technical Specifications, including both standard details and special details, shall be furnished by the Contractor and shall be approved in writing by the manufacturer, the company project manager, and the Owner's representative prior to final installation.
- F. Provide manufacturer's approved details, of all perimeter conditions, project conditions, and any additional special job conditions which require details other than indicated in the drawings.

2.2 MANUFACTURER'S LITERATURE

- A. Work provided on the mock-up shall follow all of the submitted literature from manufacturers.
- B. Manufacturer's literature shall be the minimum for basis of design and shall be in conjunction with construction documents. All manufacturers' warranties shall remain in effect as specified.

2.3 SAMPLES

- A. Provide sample or samples identical to the precise article proposed to be provided.

2.4 COLORS AND PATTERNS

- A. Unless the precise color and pattern are specifically called out in the Contract Documents, and whenever a choice of color or pattern is available in the specified products, submit accurate color and pattern charts to the Architect/Project Manager for selection.
- B. Contractor shall coordinate with Architect for exact layout or design of patterns and textures and how they are to be installed on the mock-up.

PART 3 - EXECUTION

3.1 INSTALLATION OF MATERIALS

- A. Contractor shall install all materials on mock-up in same manner required for the main structure. Refer to specification sections for basis of design of all material being installed on this mock-up.
- B. Contractor shall maintain a photo manifest of mock-up construction for Architect and Owner to review.
- C. Quality of installation is of utmost importance and shall be monitored for completeness and conformance.
- D. Once mock-up is complete, it shall be reviewed by the Architect and Owner's Representative for conformance to construction documents.
- E. Contractor shall install material in same sequencing as required by industry standards.

3.2 INSTALLATION OF WINDOWS AND ASSOCIATED FLASHING

- A. Installer shall coordinate the installation of the window with associated trades to maintain proper compatibility of material.
- B. Installation shall be in accordance with referencing specifications.
- C. Install all perimeters flashing as detailed to create a sealed and watertight condition.
- D. Once window and flashing has been installed, Contractor shall notify Architect, Owner and Consultants for review for conformance and shall provide a water test of all wall flashing. Contractor shall notify Architect, Owner and Consultants to observe the testing. All tests shall be in accordance with referencing specifications.

3.3 INSTALLATION OF FLASHING AT THROUGH-WALL LOCATION

- A. Installer shall coordinate the installation of the wall flashing with associated trades to maintain proper compatibility of material.
- B. Installation shall be in accordance with referencing specifications.
- C. Once flashing has been installed, Contractor shall notify Architect, Owner and Consultants for review for conformance and shall provide a water test of all wall flashing. Contractor shall notify Architect, Owner and Consultants to observe the testing. All tests shall be in accordance with referencing specifications.

END OF SECTION

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SECTION 01 45 00
QUALITY CONTROL

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Quality control of products and workmanship.
 - 2. Manufacturer's instructions.
 - 3. Manufacturer's certificates and field services.
 - 4. Mockups.

- B. Related Requirements:
 - 1. Section 01 33 23 - Shop Drawings, Product Data, and Samples: Field samples. Submittal of manufacturer's instructions.
 - 2. Section 01 42 00 - References.
 - 3. Section 01 45 23 - Testing and Inspection Services.
 - 4. Section 01 62 00 - Product Options.
 - 5. Individual Specifications Sections: Mockups required.

1.2 DESCRIPTION

- A. Maintain quality control over supervision, subcontractors, suppliers, manufacturers, products, services, workmanship, and site conditions, to produce work in accordance with contract documents.

1.3 WORKMANSHIP

- A. Comply with industry standards of the region except when more restrictive tolerances or specified requirements indicate more rigid standards or more precise workmanship.
- B. Provide suitably qualified personnel to produce work of specified quality.
- C. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, and racking.
- D. Provide finishes to match approved samples.

1.4 MANUFACTURER'S INSTRUCTIONS

- A. Require compliance with instructions in full detail, including each step in sequence.
- B. Should instruction conflict with contract documents, request clarification from Architect/Engineer before proceeding.

1.5 MANUFACTURER'S CERTIFICATES

- A. When required in individual Specifications section, submit manufacturer's certificate, in duplicate, certifying that products meet or exceed specified requirements, executed by responsible officer.

1.6 MANUFACTURER'S FIELD SERVICES

- A. When required in individual Specifications section, have manufacturer or his authorized representative provide qualified representative to observe field conditions, conditions of surfaces and installation, quality of workmanship, start-up of equipment test, adjust, and balance of equipment as applicable, and to make written report of observations and recommendations to Architect.
- B. Individuals to report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturers' written instructions.
- C. Submit report in duplicate within 30 days of observation to Architect/Engineer for review.

1.7 MOCKUPS

- A. Tests will be performed under provisions of SECTION 01 45 23 - TESTING AND INSPECTION SERVICES.
- B. Assemble and erect complete, with specified attachment and anchorage devices, flashings, seals, and finishes.
- C. Acceptable mockups in place may be retained in completed work.

1.8 FIELD SAMPLES

- A. Install field samples at the site as required by individual specification sections for review.
- B. Acceptable samples represent a quality level for the work.
- C. Where field sample is specified in individual sections to be removed, clear area after field sample has been accepted by Architect/Engineer.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

Not used.

END OF SECTION

SECTION 01 45 23

TESTING AND INSPECTION SERVICES (BY OWNER)

PART 1 - GENERAL

1.1 SUMMARY

- A. Requirements Included: Owner provided materials testing laboratory services.
- B. Related Requirements:
 - 1. Document 00 31 32 - Geotechnical Data.
 - 2. Terms and Conditions: Inspections, testing, and approvals required by public authorities.
 - 3. Section 01 45 00 - Contract Quality Control: Manufacturer's certificates.
 - 4. Section 01 78 39 - Project Record Documents.
 - 5. Individual Specifications Sections: Inspections and tests required, and standards for testing.

1.2 SELECTION AND PAYMENT

- A. Owner will employ services of an independent materials testing laboratory to perform specified inspection and testing and will pay for these services directly to the testing laboratory.
- B. Employment of testing laboratory shall in no way relieve Contractor of obligation to perform work in accordance with requirements of contract documents. Contractor will pay all testing required by local authorities having jurisdiction.

1.3 QUALITY ASSURANCE

- A. Laboratory shall comply with requirements of ASTM E 329 and ASTM D 3740 and provide certifications to this effect.
- B. Laboratory shall maintain a full-time registered Engineer on staff to review specific tests required by this specification.
- C. Laboratory shall be authorized to operate in State in which project is located.
- D. Testing equipment shall be calibrated to ensure accurate results and values in order to ensure that test results are true and valid, and at intervals with devices of an accuracy traceable to either NBS Standards or accepted values of natural physical constants.

1.4 LABORATORY RESPONSIBILITIES

- A. Provide qualified personnel at site after due notice from the contractor; cooperate with Architect, Contractor, and appropriate public authorities having jurisdiction in performance of services.
- B. Perform specified inspection, sampling, and testing of products in accordance with latest, up-to-date standards.
- C. Ascertain compliance of materials and mixes with requirements of contract documents.
- D. Promptly notify Architect, appropriate consultants, Contractor, Owner, and authority having jurisdiction of observed irregularities or non-conformance of work or products.
- E. Perform additional inspections and tests required by Architect, Owner, Contractor, or authority having jurisdiction.

1.5 LABORATORY REPORTS

- A. After each inspection and test, promptly submit two copies of laboratory report to Architect, one to applicable consultant, one to Owner, one to Contractor, and one to City. Include: Date issued, project title and number, name of inspector, date and time of sampling or inspection, weather conditions, identification of product and specifications section, location in the project, type of inspection or test, date of test, results of tests, and specific indication of conformance, or lack of such, with contract documents. When requested by Architect/Engineer, provide interpretation of test results.

1.6 LIMITS ON TESTING LABORATORY AUTHORITY

- A. Laboratory may not release, revoke, alter, or enlarge on requirements of contract documents.
- B. Laboratory may not approve or accept any portion of the work.
- C. Laboratory may not assume any duties of Contractor.
- D. Laboratory has no authority to stop work.

1.7 CONTRACTOR RESPONSIBILITIES

- A. Deliver to laboratory at designated location adequate samples of materials proposed to be used which require testing, together with proposed mix designs.
- B. Cooperate with laboratory personnel, and ensure ready access to work and to manufacturer's facilities, if requested by testing lab.
- C. Provide incidental labor and facilities for access to work to be tested, to obtain and handle samples at the site, or at source of products to be tested, in order to facilitate tests and inspections, and for storage and curing of test samples.
- D. Notify laboratory of material sources and furnish lab-determined necessary quantities of representative samples of materials proposed for use which are required to be tested.
- E. Notify Architect and laboratory 24 hours prior to expected time for operations requiring inspection and testing services. Cancel notifications in a timely manner if items or systems are not ready for inspection as intended. Reimburse Owner for trip charges when cancellation notifications are not made in a timely fashion.
- F. Advise laboratory in a timely fashion to complete required inspection and testing prior to subsequent work being performed.
- G. Reimburse Owner for all subsequent re-testing of products or systems found to be defective or otherwise not in accordance with specification requirements, and for any overtime pay required as a result of any inspection requirements that may fall outside of normal job-site weekday work schedule. Remove rejected products or work and replace with products or work of specified quality.
- H. Notification of Source Change: The Contractor shall be responsible for notifying the Owner, Architect, Engineer, and testing laboratory when the source of any material is changed after the original tests or inspections have been made.

PART 2 - PRODUCTS – Not used.

PART 3 - EXECUTION

3.1 EARTHWORK (SITE GENERAL)

- A. Make necessary soil tests (Atterberg Limit Series ASTM D 4318 and ASTM D 698 Standard Proctor) to determine moisture content and density of existing subgrade. Perform necessary soil tests (Atterberg Limit Series and ASTM D 698 Standard Proctor for each type of imported fill) to determine the moisture content and to inspect and test the placement of additional fill lifts to verify that all fill materials used are in accordance with the specifications for that use. Perform one field density test (ASTM D 2922 and ASTM D 3017) per 5,000 sq. ft. of site area in the area affected on each lift prior to placement of additional fill material.
- B. Imported Topsoil Tests: Testing for topsoil quality compliance shall be performed by the Testing Laboratory.

3.2 RAMMED EARTH

- A. Three test cylinders will be taken and tested for every 75 cu m of rammed earth placed.
 - 1. Minimum one test per day.

3.3 PAVING OR SPECIAL SURFACE SUBGRADE PREPARATION

- A. Perform one subgrade in-place density test per 7,500 sq. ft. of subgrade, after subgrade preparation, in accordance with ASTM D 2922 and ASTM D 3017. Perform tests within 48 hours of pavement construction.
- B. Pulverization tests on lime subgrade, TEX101E, Part III, at same frequency as density tests.

3.4 BUILDING SUBGRADE PREPARATION

- A. Make necessary soil tests (Atterberg Limit Series and ASTM D 698 Standard Proctor for each type of fill) to determine the moisture content and density of existing subgrade and inspect and test the placement of additional fill lifts to verify that all fill materials used are in accordance with the specifications for that use. Perform one field density test (ASTM D 2922 and ASTM D 3017) for each 5,000 sq.ft. of area within the building footprint on each lift prior to placement of additional fill material.

3.5 DRILLED CONCRETE PIERS

- A. The independent testing laboratory shall provide the services of their registered geotechnical engineer at the initiation of the on-site pier drilling operations to determine the appropriate bearing material into which the piers are to be founded. Written documentation of the "determination" shall be prepared and forwarded to the Owner, Architect, and Contractor.
- B. Make on-site full-time inspections of the pier drilling operation for each pier drilled and placed to verify that the proper strata and penetration, or depth, has been attained, and determine that shafts are properly clean and dry before placing concrete.
- C. Maintain a pier log for each pier showing design requirements and actual in place size and depth, in accordance with example noted in Specification SECTION 31 63 29 - DRILLED CONCRETE PIERS.
- D. Verify that the excavation is of the proper size and adequately clean and dry.
- E. Verify that each shaft is founded at a depth in accordance with the geotechnical report, existing on-site conditions that may be encountered, and at the proper bearing strata.
- F. Verify that the reinforcing steel and concrete are properly placed in accordance with other testing provisions specified herein.
- G. Notify the Architect and Contractor if soil or water conditions may require casing of piers.

- H. Inspection reports of pier drilling shall contain the following:
 - 1. Pier Mark.
 - 2. Pier Depth.
 - 3. Depth of penetration into bearing strata.
 - 4. Plumbness deviation.
 - 5. Description of unusual conditions encountered, including groundwater.
 - 6. Record of deviations from contract document requirements.
 - 7. Other requirements, as defined in SECTION 31 63 29 - DRILLED CONCRETE PIERS.

3.6 FORMWORK, REINFORCING STEEL AND INSERTS

- A. Make general inspection of formwork.
- B. Prior to each concrete pour, inspect fabrication and bending of bars, bar sizes, spacing, placement and tying in accordance with ACI 315.
- C. Prior to each concrete pour, inspect positioning of steel inserts and assemblies, sizes, and spacing, and inspect fusion-welded anchors and sheer connectors.

3.7 CAST-IN-PLACE CONCRETE

- A. Design Mixes:
 - 1. At the beginning of the work, Contractor shall submit proposed concrete mixes for review by the Architect, structural engineering consultant, and testing laboratory, including the sieve analysis of fine and coarse aggregate ASTM C 136, dry rodded weight of coarse aggregate - ASTM C 29, and the specific gravity (bulk saturated surface dry), of fine and coarse aggregates ASTM C 127 and C 128.
 - 2. The testing laboratory will submit their findings to the structural consultant, who will subsequently forward this information, with their review of the submittals, to the Architect.
 - 3. Contractor shall not mix concrete for placing in the work until confirmation laboratory reports are supplied to reflect that each proposed mix will develop the strength required. Successful past history in accordance with ACI 318 will be satisfactory.
- B. Test Cylinders: Make at least one test of each day's pouring of concrete or each 100 cubic yards, whichever is the least, on each different portion or section of the work. Mold and cure specimens in accordance with ASTM C 31, and test in accordance with ASTM C 39. Test cylinders shall be made and tested by the laboratory. Footings, walls, and floor systems constitute different sections. Each test shall consist of four specimens, one of which shall be broken at seven days, two at 28 days and one held in reserve. Determine temperature and air content for each set of test cylinders in accordance with ASTM C 231.
- C. Field Quality Control:
 - 1. Determine slump for each concrete strength test and whenever consistency of concrete varies, in accordance with ASTM C 143.
 - 2. Monitor and record addition of water to concrete and length of time concrete is allowed to remain in truck.
 - 3. Verify delivery tickets indicating class of concrete, amount of water added during initial batching, and time initial batching occurred.
 - 4. Monitor work being performed in accordance with ACI (American Concrete Institute) recommendations as a standard of quality.
 - 5. Reference SECTION 03 30 00 - CAST-IN-PLACE CONCRETE for additional requirements.
- D. Source Quality Control: An independent testing laboratory representative shall periodically inspect and control concrete mixing and loading of transit mix trucks at batch plant at intervals appropriate to monitor quality of material issued on job.

3.8 MORTAR, GROUT, AND MASONRY REINFORCEMENT

- A. Coordinate with Owner's testing laboratory to provide periodic inspection of the following task:
 - 1. As masonry construction begins, the following shall be verified to ensure compliance:
 - a. Proportions of site prepared mortar.
 - b. Construction of mortar joints.
 - c. Location of reinforcement and connectors.

2. The inspection program shall verify:
 - a. Size and location of structural elements.
 - b. Type, size, and location of anchors, including other details of anchorage of masonry to structural members, frames, or other construction.
 - c. Specified size, grade, and type of reinforcement.
 - d. Protection of masonry during cold weather (temperature below 40°F.) or hot weather (temperature above 90°F.).
 3. Prior to grouting, the following shall be verified to ensure compliance:
 - a. Grout space is clean.
 - b. Placement of reinforcement and connectors.
 - c. Proportions of site-prepared grout.
 - d. Construction of mortar joints.
- B. Coordinate with Owner's testing laboratory to provide continuous inspection of the following task:
1. Grout placement shall be verified to ensure compliance with code and construction document provisions.

3.9 STRUCTURAL STEEL

- A. Fabrication of, erection of, and connections between, structural steel members, including welding and tension in high strength bolts, will be accomplished under and subject to the inspection of an independent testing agency. The general contractor, structural steel fabricator, and erector shall afford full cooperation to the laboratory.
- B. Perform the following testing and inspection: (Prior to placement of steel deck)
1. Check location of condition of anchor bolts.
 2. Check plumbness and tolerance of steel frame.
 3. Qualification of welders and welding techniques (at Contractor's expense).
 4. Visually inspect common bolts.
 5. Inspection of high-strength bolting:
 - a. Visually inspect connections.
 - b. Check tightness of at least 33% of connections.
 - c. Check at least two bolts of each girder to column connection.
 6. Visually inspect field and shop welds.
 7. Ultrasonic or X-ray testing of full penetration welds.
 8. Re-inspect corrective measures required at expense of Contractor.
 9. Verify that no members are damaged.
 10. Verify that materials and installation are according to contract documents and industry standards.
- C. Gas Cutting: Do not use gas cutting torches for correcting fabrication errors in the structural framing. Cutting will not be permitted on any member, unless specifically approved by the structural engineer. Finish gas-cut sections equal to a sheared appearance when gas finish cutting is permitted. Do not flame cut holes or enlarge holes by burning.
- D. Correction: The fabricator or erector shall correct deficiencies in structural steel work which inspection and test reports have indicated to be not in compliance with the specified requirements. Perform all additional tests required to reconfirm non-compliance of the original work and to show compliance of corrected work. Retesting of non-conforming work shall be paid by the Contractor.
- E. All welders employed during erection of structural steel must be certified by The American Welding Society for type of base materials and positions encountered. Certification testing to be performed at Contractor's expense and copies of Certifications shall be submitted for review upon request and maintained at the project site by the Contractor.

3.10 STEEL JOISTS

- A. All steel joists and connections to structural steel members shall be inspected.
- B. Quality Assurance: All welding performed during the manufacture and erection of steel joists shall comply with the requirements of AWS D1.1.
- C. Inspect condition of joists after erection; check method of attachment to structures and details of bridging and accessories to verify compliance with required standards.

3.11 METAL DECKING

- A. Qualification of Welders: Qualify the welding process and all welders (at Contractor expense), and periodically monitor the work in accordance with the requirements of AWS D1.3.
- B. Testing Laboratory shall inspect steel decking to ensure the material and installation is in accordance with the specifications and shop drawings.

3.12 METAL DECK AND FIELD WELDED SHEAR STUDS:

- A. The erection of metal deck and field welded shear studs shall be subject to inspection by the testing agency.
- B. Shear Studs:
 - 1. Test minimum of two shear studs welded at start of each production period in order to determine generator, control unit and stud welder setting. Studs shall be capable of being bent 45° from vertical without weld failure. If, after welding, visual inspection reveals that sound weld or a full 360° fillet has not been attained for a particular stud, such stud shall be struck with hammer and bent 15° off perpendicular to nearest end of beam. Studs failing under this test shall be replaced.
 - 2. When the temperature is below 32°F., two studs from each group of 100 studs (or one stud if less than 100 studs are present) should be tested after cooling. Studs shall not be welded below 0°F. or when surfaces are wet with rain or snow. If stud fails in weld, two new studs shall pass test before resumption of welding.

3.13 CEMENTITIOUS FIREPROOFING

- A. Application inspection to ensure the material and installation is in accordance with the specifications.
- B. Sample and verify the thickness and density of spray applied fireproofing in accordance with ASTM E 605 for each days application.

3.14 SMOKE TEST OF DRAINAGE AND VENT PIPING

- A. Test to check for joint leakage in the sanitary sewer system and vent system.

3.15 OTHER WORK REQUIRING TESTS

- A. Refer to individual sections covered under Divisions 22, 23, and 26 for other work requiring tests by independent testing laboratory.
- B. Other Tests:
 - 1. Moisture content in face brick.

END OF SECTION

SECTION 01 50 00

TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 GENERAL

- A. Provide temporary facilities and controls needed for the work including, but not limited to those described in the Articles below.
- B. Maintain temporary facilities and controls as long as needed for safe and proper completion of the work.

1.2 ACCESS

- A. Provide adequate access to and temporary roads to the site of the building if required for the prosecution of the work.
- B. Provide and maintain access to fire hydrants, free of obstructions.

1.3 FIELD OFFICE

- A. Provide and maintain a weathertight temporary field office equipped with adequate illumination; with glazed operable windows; with smooth tables for perusal of drawings and specifications; and metal legal size four-drawer filing cabinet. During cold weather the field offices shall be equipped with a heating device to maintain 65°F. temperature during the work day. During hot weather the offices shall be equipped with an air conditioning device to maintain temperature below 80°F. Provide and pay for fuel and electric energy. In addition to the above listed equipment, provide a space to accommodate the site meetings and have a layout/conference table at 28" height and chairs for 12 people. Upon completion of the project, remove offices from the premises.

1.4 TELEPHONES AND ELECTRONIC COMMUNICATION SERVICE

- A. Provide telephones/mobile phones in the field office. Telephone shall be in operation from the commencement of work until the acceptance of the building. Contractor shall pay for installation, maintenance, and removal of telephones, lines and for all use charges.
- B. Electronic Communication Service: Provide a computer, printer, high-speed data connection, and internet service as required for the Contractor to maintain internet access and e-mail correspondence.
 - 1. The Architect's project management system is Projectmates by Systemates, which can be accessed by logging in at the following website: www.vlkprojects.com. Contractor shall utilize this system for all formal and informal correspondence with the Architect and Architect's Consultants, including E-Mails, Requests for Information, Proposals, Submittals, Submittal Transmittals, Meeting Minutes (for regularly scheduled meetings), and Warranty Responses (if warranty items are submitted in the system). In addition, Subcontractor Lists, Project Schedules, Schedule of Values and other documents requiring submission shall be uploaded in pdf, Word, or Excel format by the Contractor to the appropriate location in Projectmates. At the Contractor's option, Pay Applications, Project Schedules, and Transmittals, may be created or imported into the system, as well.
 - 2. While the project management system is very user friendly and easy to learn, Architect will provide informal training for the Contractor as necessary to expedite the Contractor's familiarity with the program.
 - 3. Contractor shall pay for installation, maintenance, and removal of high-speed data connection and for all use charges.

1.5 TEMPORARY ELECTRICAL SERVICE

- A. The contractor shall provide, install, and maintain separate temporary electrical service, including a separate temporary electric meter and temporary pole, if required. The contractor shall be responsible for contacting and coordinating with the local utility company for the installation, maintenance and removal of the temporary service. The contractor shall pay for all costs associated with this separate temporary electrical service.

- B. Provide and maintain temporary electric power to points in the building convenient for and available to all trades, including mechanical and other contracts, so that power can be secured anywhere in the building with no more than a 100 ft. extension cord. Energy charges shall be paid by the Contractor.

1.6 TEMPORARY LIGHTING

- A. Provide and maintain temporary lighting inside the building for safe and adequate working conditions throughout all areas where work of any kind is being performed. Provide at least 1/2 watt of incandescent lighting for each square foot of space. Where practical, place temporary lights in the locations where the permanent lighting fixtures are to be installed.

1.7 TEMPORARY HEAT

- A. Provide necessary heat during the course of construction, including equipment, fuel and attendance where required. Equipment for temporary heating shall be of a non-smudging type. The permanent heating system may be used for temporary heat, when installed. Upon completion and before acceptance of the building, Contractor shall repair all damage caused by such temporary use and shall clean all filters.
- B. When the outside temperature is below freezing, inside of the building shall be kept at or above 40°F. at all times. While painting and finishing are in progress, the temperature shall be kept at or above 60°F. Contractor shall make good all damage caused by insufficient heat.

1.8 TEMPORARY VENTILATION

- A. Ventilate enclosed areas to assist cure of materials, to dissipate humidity, and to prevent accumulation of dust, fumes, vapors, or gases.
- B. Utilize existing ventilation equipment. Extend and supplement equipment with temporary fan units as required to maintain clean air for construction operations.

1.9 TEMPORARY WATER SERVICE

- A. Provide and maintain a temporary water supply during the course of construction and pay water bill and meter installation or "tap" fee, if any. Include necessary piping and hose connections. Take precautions to avoid spattering and spilling water in the building.

1.10 TEMPORARY SANITARY FACILITIES

- A. Provide and maintain adequate sanitary toilet facilities on the project site. The toilet facilities shall meet the requirements of the public authorities having jurisdiction and their use strictly enforced. Sanitary sewer "tap" fee and monthly use fees, if any, shall be paid by Contractor if temporary facilities are connected to city sanitary sewer.

1.11 REFUSE

- A. The Contractor shall provide refuse removal service at all times.

1.12 PROTECTIVE FACILITIES

- A. Provide and maintain temporary guardrails, handrails and covers for floor, roof and wall openings, vertical shafts and stairways. If movement of the protective facilities is required by a subcontractor to perform his work, it will be the responsibility of that subcontractor to give prior notification to the Contractor and to replace the protective facilities in a satisfactory manner.
- B. Provide and maintain, as per City of Fort Worth requirements, fire lane(s) and other required fire protection at the appropriate time and sequence of construction.

1.13 BARRICADES

- A. Provide and maintain lighted barricades and fences for the public protection in accordance with requirements of the local city ordinances.

1.14 TEMPORARY FENCING

- A. Provide and maintain for the duration of construction a temporary fence of design and type needed to prevent entry onto the work by the public.

1.15 TEMPORARY FIRE PROTECTION

- A. Contractor shall provide adequate fire extinguishers on the premises during the course of construction, of the type and size recommended to control fires, which may result from the particular work being performed in accordance with the local fire marshal and fire codes.
- B. Provide supervision of welding operations, combustion type temporary heating units, and similar sources of ignition for possible fires.
 - 1. Keep work area free of combustible material.
 - 2. A fire watch consisting of at least one man furnished by Contractor with a fire extinguisher in hand and with no other assigned duties, shall be posted to stand by and observe for potential hazards while welding or cutting is being done. Equip fire watch with suitable personal eye protection and fire extinguishers.
 - 3. At completion of work operations, immediately inspect work and adjacent area for hazards. Re-inspect work for hazards at 1/2 hour and at one hour after completion of welding and cutting operations.
- C. No smoking shall be allowed within the building or on the site. Post NO SMOKING signs in areas where work is in progress.

1.16 ENCLOSURES

- A. Provide temporary weathertight closures of openings in exterior surfaces to provide acceptable working conditions and protection for materials, to allow for temporary heating, and to prevent entry of unauthorized persons. Provide doors with self-closing hardware and locks.
- B. Provide temporary partitions and ceilings as required to separate work areas from Owner occupied areas, to prevent penetration of dust and moisture into Owner occupied areas, to prevent damage to existing areas and equipment. Construction: Framing and sheet materials with closed joints and sealed edges at intersections with existing surfaces; STC rating 35 in accordance with ASTM E 90; flame spread rating of 25 in accordance with ASTM E 84; paint surfaces exposed to view in Owner occupied areas.

1.17 WATER CONTROL

- A. Grade site to drain. Maintain excavations free of water. Provide and operate pumping equipment.
- B. Protect site from puddling or running water.

1.18 CLEANING DURING CONSTRUCTION

- A. Control accumulation of waste materials and rubbish; periodically dispose of off site.
- B. Clean interior areas prior to start of finish work, maintain areas free of dust and other contaminants during finishing operations.
- C. Refer to SECTION 01 74 13 - PROGRESS CLEANING for additional cleaning requirements.

1.19 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS

- A. Remove temporary materials, equipment, services, and construction prior to substantial completion inspection.
- B. Clean and repair damage caused by installation or use of temporary facilities. Remove underground installations to a depth of 2'; grade site as indicated. Restore existing facilities used during construction to specified, or to original, condition.

1.20 PROJECT IDENTIFICATION SIGNS

- A. Furnish and erect a project sign, approximately 4' high by 8' long of 3/4" thick exterior grade plywood, in conformance with sign detail supplied by the Architect. Support on posts of framing of treated wood or steel.
- B. Erect sign within 30 days of start of construction and maintain in good condition until completion of project. Sign shall be located as directed by the Architect.
- C. No other signs or advertising of any kind, except precautionary warning signs, will be permitted.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

Not used.

END OF SECTION

SECTION 01 57 23

TEMPORARY STORM WATER POLLUTION CONTROL

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes: Storm Water Pollution Prevention and Pollution Control Plan as required by the Texas Commission on Environmental Quality (TCEQ), effective March 2018.
- B. Related Sections:
Section 31 00 00 - Earthwork

1.02 QUALITY ASSURANCE

- A. State Standards: Execution of the Pollution Prevention and the Pollution Control Plan shall meet all requirements set forth by TCEQ under the Texas Pollution Discharge Elimination System (TPDES) regulations.

PART 2 - PRODUCTS

NOT APPLICABLE.

PART 3 - EXECUTION

3.01 PERFORMANCE

- A. General: Implement all the requirements detailed in the Erosion Control Plan and any additional pollution prevention and control measures required by the TCEQ.
- B. The Erosion Control Plan is included as part of the construction plans. The erosion control measures shown on the plans are the minimum required for this project. The contractor shall implement additional erosion control devices as construction sequence and activities dictate.
- C. The SWPPP document (including N.O.I. and N.O.T.) that makes up the balance of the SWPPP shall be prepared by the contractor at his expense. The contractor shall be the Owner/Operator of the SWPPP and responsible for executing and filing the N.O.I. and N.O.T. and paying all fees required by TCEQ.

END OF SECTION

SECTION 01 62 00

PRODUCT OPTIONS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Administrative and procedural requirements for product options and substitutions.
- B. Related Requirements:
 - 1. Section 01 31 00 - Project Management and Coordination: Coordination of construction.
 - 2. Section 01 33 23 - Shop Drawings, Product Data, and Samples: Product data submittals.
 - 3. Section 01 42 00 - References: Applicability of specified reference standards.
 - 4. Section 01 78 23 - Operation and Maintenance Data.
 - 5. Section 01 78 39 - Project Record Documents.

1.2 PRODUCT LIST

- A. Within 30 days after date of contract, submit to the Architect a list of products and materials which are proposed for substitution per SECTION 01 33 23 - SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.

1.3 CONTRACTOR'S OPTIONS

- A. For products specified only by reference standards, select any product meeting standards, by any manufacturer.
- B. For products specified by naming several products or manufacturers, followed by the words "NO SUBSTITUTIONS", select one of the products/manufacturers named.
- C. For products specified by naming only one product and manufacturer, there is no option unless a substitution is approved as specified below.
- D. For products specified by naming only one product and manufacturer, followed by the words "NO SUBSTITUTIONS", there is no option.

1.4 SUBSTITUTIONS

- A. Requests for substitution to material, products, or equipment instead of those specified will be considered if received at least 10 days prior to the bid date. Substitution request received within 10 days of the bid date will be returned without review. Refer to Substitution Request (During the Bidding Phase) form attached to this section.
- B. Within 30 days after Notice to Proceed, Architect will consider additional formal requests from the Contractor for substitutions of products in place of those specified. Refer to Substitution Request (After the Bidding Phase) form attached to this section.
- C. Submit a separate request for each substitution on a copy of the "SUBSTITUTION REQUEST" form, attached to this section. Include in request:
 - 1. Complete data substantiating compliance of proposed substitution with contract documents.
 - 2. For products:
 - a. Product identification, including manufacturer's name and address.
 - b. Manufacturer's literature, including product description, performance and test data and reference standards.
 - c. Samples, if applicable.
 - d. Name and address of similar projects on which product was used and date of installation.
 - 3. For construction methods:
 - a. Detailed written descriptions of proposed method.
 - b. Complete drawings illustrating methods or revisions.
 - 4. Itemized Comparison of qualities of proposed substitution with product or method specified.
 - 5. Changes required in other elements of work because of substitution.
 - 6. Effect on construction schedule.

- D. Request for substitution constitutes a representation that General Contractor:
 - 1. Has personally investigated proposed product or method and determined that it is equal to or superior in all respects to that specified.
 - 2. Will provide same warranties for substitution as for product or method specified.
 - 3. Will coordinate installation of accepted substitution into the work, making such changes as may be required for the work to be complete in all respects.
 - 4. Waives all claims for additional cost, under his responsibility and related to substitution, which subsequently become apparent.
- E. Substitutions will not be considered if:
 - 1. They are indicated or implied on shop drawings or product data submittals without formal request submitted in accordance with this section.
 - 2. Acceptance will require substantial revision of contract documents.
- F. If substitution is not approved or accepted, Contractor shall furnish specified product or method at no additional cost to the Owner.
- G. Acceptance of a proposed substitution prior to the bid date will be in the form of an addendum.

1.5 SUBMITTAL PROCEDURES

- A. Submit request for substitution.
- B. Architect will review Contractor's requests for substitutions with reasonable promptness.
- C. For accepted products, submit shop drawings, product data, and samples under provisions of SECTION 01 33 23 - SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

Not used.

END OF SECTION

SUBSTITUTION REQUEST
(During the Bidding Phase)
(Submittal must be received 10 days prior to bid/proposal date)

Project: _____	Substitution Request Number: _____
_____	From: _____
To: _____	Date: _____
_____	A/E Project Number: _____
Re: _____	Contract For: _____

Specification Title: _____	Description: _____
Section: _____ Page: _____	Article/Paragraph: _____

Proposed Substitution: _____

Manufacturer: _____ Address: _____ Phone: _____

Trade Name: _____ Model No.: _____

Attached data includes product description, specifications, drawings, custom color/pre-selected color availability, photographs, and performance and test data adequate for evaluation of the request; applicable portions of the data are clearly identified.

Attached data also includes a description of changes to the Contract Documents that the proposed substitution will require for its proper installation.

The Undersigned certifies:

- Proposed substitution has been fully investigated and determined to be equal or superior in all respects to specified product.
- Same warranty will be furnished for proposed substitution as for specified product.
- Same maintenance service and source of replacement parts, as applicable, is available.
- Proposed substitution will have no adverse effect on other trades and will not affect or delay progress schedule.
- Proposed substitution does not affect dimensions and functional clearances.
- Payment will be made for changes to building design, including A/E/ design, detailing, and construction costs caused by the substitution.

Submitted by: _____

Signed by: _____

Firm: _____

Address: _____

Telephone: _____

A/E REVIEW AND ACTION

- Substitution approved - Submit bid/proposal based on accepted substitution.
- Substitution approved as noted - Submit bid/proposal based on accepted substitution - as noted.
- Substitution rejected - Submit bid/proposal for specified materials.
- Substitution Request received too late - Submit bid/proposal for specified materials.

Signed by: _____ Date: _____

Supporting Data Attached: Drawings Product Data Samples Tests Reports _____

SUBSTITUTION REQUEST
(After the Bidding Phase)
(Submittal must be received not later than 30 days after Notice to Proceed)

Project: _____ Substitution Request Number: _____
From: _____
To: _____ Date: _____
A/E Project Number: _____
Re: _____ Contract For: _____

Specification Title: _____ Description: _____
Section No.: _____ Page: _____ Article/Paragraph: _____

Proposed Substitution: _____
Manufacturer: _____ Address: _____ Phone: _____
Trade Name: _____ Model No.: _____

History: New product 2-5 years old 5-10 years old More than 10 years old

Differences between proposed substitution and specified product: _____

For finish materials and pre-finished equipment, list the colors available for the specified item and the colors available for the proposed substitution.

Point-by-point comparative data attached - REQUIRED BY A/E

Reason for not providing specified item: _____

Similar Installation:

Project: _____ Architect: _____
Address: _____ Owner: _____
Date Installed: _____

Proposed substitution affects other parts of Work: No Yes; explain _____

Savings to Owner for accepting substitution: _____ (\$ _____).

Proposed substitution changes Contract Time: No Yes [Add] [Deduct] _____ days.

Supporting Data Attached: Drawings Product Data Samples Tests Reports _____

SUBSTITUTION REQUEST - Continued

The Undersigned certifies:

- Proposed substitution has been fully investigated and determined to be equal or superior in all respects to specified product.
- Same warranty will be furnished for proposed substitution as for specified product.
- Same maintenance service and source of replacement parts, as applicable, is available.
- Proposed substitution will have no adverse effect on other trades and will not affect or delay progress schedule.
- Cost data as stated above is complete. Claims for additional costs related to accepted substitution which may subsequently become apparent are to be waived.
- Proposed substitution does not affect dimensions and functional clearances.
- Payment will be made for changes to building design, including A/E design, detailing, and construction costs caused by the substitution.
- Coordination, installation, and changes in the Work as necessary for accepted substitution will be complete in all respects.

Submitted by: _____

Signed by: _____

Firm: _____

Address: _____

Telephone: _____

Attachments: _____

A/E REVIEW AND ACTION

- Substitution approved - Make submittals in accordance with Section 01 33 23.
- Substitution approved as noted - Make submittals in accordance with Section 01 33 23.
- Substitution rejected - Use specified materials.
- Substitution Request received too late - Use specified materials.

Signed by: _____ Date _____

Additional Comments: Contractor Subcontractor Supplier Manufacturer A/E _____

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SECTION 01 65 00

PRODUCT DELIVERY REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

- A. Requirements Included:
 - 1. Packaging, Transportation.
 - 2. Delivery and Receiving.
 - 3. Product Handling.

- B. Related Requirements:
 - 1. Section 01 32 16 - Construction Progress Schedules.
 - 2. Section 01 33 23 - Shop Drawings, Product Data and Samples: Manufacturers' Instructions.
 - 3. Section 01 66 00 - Product Storage and Handling Requirements.
 - 4. Individual Sections: Specific requirements for packaging, shipping and handling.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

3.1 PACKAGING, TRANSPORTATION

- A. Require supplier to package products in boxes or crates for protection during shipment, handling and storage. Protect sensitive products against exposure to elements and moisture.

- B. Protect sensitive equipment and finishes against impact, abrasion and other damage.

3.2 DELIVERY AND RECEIVING

- A. Arrange deliveries of products in accordance with construction progress schedules. Allow time for inspection prior to installation.

- B. Coordinate deliveries to avoid conflict with work and conditions at site; limitations on storage space; availability of personnel and handling equipment; and Owner's use of premises.

- C. Deliver products in undamaged, dry condition, in original unopened containers or packaging with identifying labels intact and legible.

- D. Clearly mark partial deliveries of component parts of equipment to identify equipment and contents to permit easy accumulation of parts and to facilitate assembly.

- E. Immediately on delivery, inspect shipment to assure
 - 1. Product complies with requirements of contract documents and reviewed submittals.
 - 2. Quantities are correct.
 - 3. Accessories, and installation hardware are correct.
 - 4. Containers and packages are intact and labels legible.
 - 5. Products are protected and undamaged.

3.3 PRODUCT HANDLING

- A. Provide equipment and personnel to handle products by methods to prevent soiling and damage.

- B. Provide additional protection during handling to prevent marring and otherwise damaging products, packaging and surrounding surfaces.

- C. Handle product by methods to avoid bending or over-stressing. Lift large and heavy components only at designated lift points.

END OF SECTION

SECTION 01 66 00

PRODUCT STORAGE AND HANDLING REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

A. Requirements Included:

1. Storage, General.
2. Enclosed Storage.
3. Exterior Storage.
4. Maintenance of Storage.

B. Related Requirements:

1. Section 01 11 00 - Summary of Work.
2. Section 01 50 00 - Construction Facilities and Temporary Controls: Storage facilities. Protection of installed work.
3. Section 01 65 00 - Product Delivery Requirements.
4. Section 01 78 39 - Project Record Documents.

PART 2 - PRODUCTS - Not used.

PART 3 - EXECUTION

3.1 STORAGE, GENERAL

- A. Store products, immediately on delivery, in accordance with manufacturer's instructions, with seals and labels intact. Protect until installed.
- B. Arrange storage in a manner to provide access for maintenance of stored items and for inspection.

3.2 ENCLOSED STORAGE

- A. Store products, subject to damage by the elements, in substantial weathertight enclosures.
- B. Maintain temperature and humidity within ranges stated in manufacturer's instructions.
- C. Provide humidity control and ventilation for sensitive products as required by manufacturer's instructions.
- D. Store unpacked and loose products on shelves, in bins, or in neat groups of like items.

3.3 EXTERIOR STORAGE

- A. Provide substantial platforms, blocking, or skids, to support fabricated products above ground; slope to provide drainage. Protect products from soiling and staining.
- B. For products subject to discoloration or deterioration from exposure to the elements, cover with impervious sheet material. Provide ventilation to avoid condensation.
- C. Store loose granular materials on clean, solid surfaces such as pavement, or on rigid sheet materials, to prevent mixing with foreign matter.
- D. Provide surface drainage to prevent erosion and ponding of water.
- E. Prevent mixing of refuse or chemically injurious materials or liquids.

3.4 MAINTENANCE OF STORAGE

- A. Periodically inspect stored products on a scheduled basis.

- B. Verify that storage facilities comply with manufacturer's product storage requirements.
- C. Verify that manufacturer required environmental conditions are maintained continually.
- D. Verify that surfaces of products exposed to the elements are not adversely affected; that any weathering of finishes is acceptable under requirements of contract documents.

3.5 MAINTENANCE OF EQUIPMENT STORAGE

- A. For mechanical and electrical equipment in long-term storage, provide manufacturer's service instructions to accompany each item, with notice of enclosed instructions shown on exterior of package.
- B. Service equipment on a regularly scheduled basis, maintaining a log of services; submit as a record document.

END OF SECTION

SECTION 01 73 29

CUTTING AND PATCHING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Requirements and limitations for cutting and patching of work.
- B. Related Requirements:
 - 1. Section 01 11 00 - Summary of Work: Work by Owner or by separate contractors.
 - 2. Section 01 62 00 - Product Options.
 - 3. Individual Specifications Sections:
 - a. Cutting and patching incidental to work of the section.
 - b. Advance notification to other Sections of openings required in work of those sections.
 - c. Limitations on cutting structural members.

1.2 SUBMITTALS

- A. General: Submit in accordance with SECTION 01 33 23 – SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Submit written request in advance of cutting or alteration which affects
 - 1. Structural integrity of any element of the project.
 - 2. Integrity of weather-exposed or moisture-resistant element.
 - 3. Efficiency, maintenance, or safety of any operational element.
 - 4. Visual qualities of sight-exposed elements.
 - 5. Work of Owner or separate contractor.
- C. Include in request
 - 1. Identification of project.
 - 2. Location and description of affected work.
 - 3. Necessity for cutting or alteration.
 - 4. Description of proposed work and products to be used.
 - 5. Alternatives to cutting and patching.
 - 6. Effect on work of Owner or separate contractor.
 - 7. Written permission of affected separate contractor.
 - 8. Date and time work will be executed.

1.3 PAYMENT FOR COSTS

- A. Costs resulting from ill-timed or defective work, or work not conforming to contract documents, including costs for additional services of Architect or other consultants, shall be borne by the Contractor.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Products: Those required for original installation.
- B. For any change in materials, submit request for substitution under provisions of SECTION 01 62 00 - PRODUCT OPTIONS.

PART 3 - EXECUTION

3.1 GENERAL

- A. Execute cutting, fitting and patching including excavation and fill, to complete work, and to
 - 1. Fit the several parts together, to integrate with other work.
 - 2. Uncover work to install ill-timed work.
 - 3. Remove and replace defective and non-conforming work.

4. Remove samples of installed work for testing.
5. Provide openings in elements of work for penetrations of mechanical and electrical work.

3.2 INSPECTION

- A. Inspect existing conditions, including elements subject to damage or movement during cutting and patching.
- B. After uncovering, inspect conditions affecting performance of work.
- C. Beginning of cutting or patching means acceptance of existing conditions.

3.3 PREPARATION

- A. Provide temporary supports to assure structural integrity of surroundings; devices and methods to protect other portions of project from damage.
- B. Provide protection from elements for areas which may be exposed by uncovering work; maintain excavations free of water.
- C. Maintain excavations free of water.

3.4 PERFORMANCE

- A. Execute work by methods to avoid damage to other work, and which will provide proper surfaces to receive patching and finishing.
- B. Employ original installer to perform cutting and patching for weather-exposed and moisture-resistant elements, and sight-exposed surfaces.
- C. Cut rigid materials using masonry saw or core drill. Pneumatic tools not allowed without prior approval.
- D. Restore work with new products in accordance with requirements of contract documents.
- E. Fit work tight to pipes, sleeves, ducts, conduit and other penetrations through surfaces.
- F. At penetrations of fire-rated wall, ceiling, or floor construction, completely seal voids with fire-rated packing material, full thickness of the construction element.
- G. Refinish surfaces to match adjacent finishes. For continuous surfaces, refinish to nearest intersection; for an assembly, refinish entire unit.

END OF SECTION

SECTION 01 74 13

CLEANING

PART 1 - GENERAL

1.1 SUMMARY

- A. Work Included: Throughout the construction period, maintain the building and site in a standard of cleanliness as described in this section.
- B. Related Requirements: In addition to standards described in this section, comply with requirements for cleaning as described in other pertinent sections of these specifications.

1.2 QUALITY ASSURANCE

- A. Conduct a daily inspection, and more often if necessary, to verify that requirements for cleanliness are being met.

PART 2 - PRODUCTS

2.1 CLEANING MATERIALS AND EQUIPMENT

- A. Provide required personnel, equipment, and materials needed to maintain the specified standard of cleanliness.

2.2 COMPATIBILITY

- A. Use only the cleaning materials and equipment which are compatible with the surface being cleaned, as recommended by the manufacturer of the material.

PART 3 - EXECUTION

3.1 PROGRESS CLEANING

- A. General:
 - 1. Retain stored items in an orderly arrangement allowing maximum access, not impeding traffic or drainage, and providing required protection of materials.
 - 2. Do not allow accumulation of scrap, debris waste material, and other items not required for construction of the work.
 - 3. At least twice each month, and more often if necessary, completely remove all scrap, debris, and waste material from the project site.
 - 4. Provide adequate storage for all items awaiting removal from the project site, observing requirements for fire protection and protection of the ecology.
- B. Site:
 - 1. Daily, and more often if necessary, inspect the site and pick up all scrap, debris, and waste material. Remove such items to the place designated for their storage.
 - 2. Weekly, and more often if necessary, inspect all arrangements of materials stored on the site. Restack, tidy, or otherwise service arrangements to meet the requirements of this section.
 - 3. Maintain the site in a neat and orderly condition at all times.
- C. Structure:
 - 1. Weekly, and more often if necessary, inspect the structure and pick up all scrap, debris, and waste material. Remove such items to the place designated for their storage.
 - 2. Weekly, and more often if necessary, sweep interior spaces clean.
 - a. "Clean", for the purpose of this subparagraph, shall be interpreted as meaning free from dust and other material capable of being removed by use of reasonable effort and a hand-held broom.
 - 3. As required preparatory to installation of succeeding materials, clean the structure or pertinent portions thereof to the degree of cleanliness recommended by the manufacturer of the succeeding material, using equipment and materials required to achieve the necessary cleanliness.

4. Following the installation of finish floor materials, clean the finish floor daily (and more often if necessary) at all times while work is being performed in the space in which finish materials are installed.

D. "Clean", for the purpose of this subparagraph shall be interpreted as meaning free from foreign material which, in the opinion of the Architect, may be injurious to the finish floor material.

3.2 FINAL CLEANING

A. "Clean", for the purpose of this Article, and except as may be specifically provided otherwise, shall be interpreted as meaning the level of cleanliness generally provide by skilled cleaners using commercial quality building maintenance equipment and materials.

B. Prior to completion of the work, remove from the project site all tools, surplus materials, equipment, scrap, debris, and waste. Conduct final progress cleaning as described in this section.

C. Site:

1. Unless otherwise specifically directed by Architect, broom clean paved areas on the site and public paved areas adjacent to the site.
2. Completely remove resultant debris.

D. Structure:

1. Exterior:

- a. Visually inspect exterior surfaces and remove all traces of soil, waste materials, smudges, and other foreign matter.
- b. Remove all traces of splashed materials from adjacent surfaces.
- c. If necessary to achieve a uniform degree of cleanliness, hose down the exterior of the structure.
- d. In event of stubborn stains not removable with water, Architect may require light sandblasting or other cleaning at no additional cost to the Owner.

2. Interior:

- a. Visually inspect interior surfaces and remove all traces of soil, waste materials, smudges, and other foreign matter.
- b. Remove all traces of splashed material from adjacent surfaces.
- c. Remove paint droppings, spots, stains, and dirt from finished surfaces.

3. Glass: Clean inside and outside.

4. Polished Surfaces: To surfaces requiring routine application of buffed polish, apply the polish recommended by the manufacturer of the material being polished.

E. Special floor/base final cleaning requirements:

1. Contractor shall coordinate with the Owner's housekeeping department for preparing the surfaces for final cleaning by the Contractor and protective coatings installed by the Owner.
2. Protection after final treatment until date of Substantial Completion shall be the responsibility of the Contractor.
3. All repairs or re-application required as a result of damage caused by the Work shall be the responsibility of the Contractor as directed by the Owner.

F. Schedule final cleaning, as approved by the Architect, to enable the Owner to accept a completely clean work.

3.3 CLEANING DURING OWNER'S OCCUPANCY

A. Should the Owner occupy the work, or any portion thereof, prior to its completion by the Contractor and acceptance by the Owner, responsibilities for interim and final cleaning shall be as determined by the Architect in accordance with the General Conditions of the Contract for Construction.

END OF SECTION

SECTION 01 77 00

CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Administrative and procedural requirements for project closeout, including but not limited to:
 - 1. Inspection procedures.
 - 2. Project record document submittal.
 - 3. Operating and maintenance data submittal, including training sessions for equipment and systems.
 - 4. Submittal of warranties.
 - 5. Submittal of spare parts and maintenance materials.
- B. Related Requirements:
 - 1. Section 01 11 00 - Summary of Work: record drawings.
 - 2. Section 01 33 23 - Shop Drawings, Product Data and Samples.
 - 3. Section 01 74 13 - Progress Cleaning: final cleaning.
 - 4. Section 08 71 00 - Door Hardware: keys and keying schedule.

1.2 SUBSTANTIAL COMPLETION

- A. General: Substantial Completion is defined in Paragraph 9.8.1 of the General Conditions.
- B. Preliminary Procedures: Before requesting inspection for certification of substantial completion, complete the following. List exceptions in the request.
 - 1. In the Application for Payment that coincides with, or first follows, the date Substantial Completion is claimed, show 100% completion for the portion of the work claimed as substantially complete. Include supporting documentation for completion as indicated in these Contract Documents and a statement showing an accounting of changes to the Contract Sum.
 - a. If 100% completion cannot be shown, include a list of incomplete items, the value of incomplete construction and reasons the work is not complete.
 - 2. Advise Owner of pending insurance change-over requirements.
 - 3. Submit specific warranties, maintenance agreements, final certifications and similar documents.
 - 4. Obtain and submit releases enabling the Owner unrestricted use of the work and access to services and utilities; include occupancy permits, operating certificates and similar releases.
 - 5. Submit record drawings, maintenance manuals and similar final record information.
 - 6. Deliver tools, spare parts, extra stock and similar items.
 - 7. Make final change-over of permanent locks and transmit keys and keying schedule to the Owner. Advise the Owner's personnel of change-over in security provisions.
 - 8. Complete start-up testing of systems, and training sessions for Owner's operating and maintenance personnel. Discontinue or change over and remove temporary facilities from the site, along with construction tools, mock-ups and similar elements.
 - 9. Complete final clean-up requirements, including touch-up painting. Touch-up and otherwise repair and restore marred exposed finishes.
- C. Inspection Procedures: On receipt of a request for inspection, the Architect will either proceed with inspection or advise the Contractor of unfulfilled requirements. The Architect will prepare the Certificate of Substantial Completion following inspection, or advise the Contractor of construction that must be completed or corrected before the certificate will be issued.
 - 1. Architect will repeat the inspection when requested and assured that the work has been substantially completed.
- D. Results of the completed inspection will form the basis of requirements for final acceptance.

1.3 FINAL ACCEPTANCE

- A. Preliminary Procedures: Before requesting final inspection for certification of final acceptance and final payment, submit the following. List exceptions in the request.
 - 1. Final payment request with releases and supporting documentation not previously submitted and accepted. Include certificates of insurance for products and completed operations where required.

2. Updated final statement, accounting for final additional changes to the contract sum.
 3. Certified copy of the Architect's final inspection list of items to be completed or corrected, stating that each item has been completed or otherwise resolved for acceptance, and the list has been endorsed and dated by the Architect.
 4. Consent of surety to final payment.
 5. Final Liquidated Damages settlement statement.
 6. Evidence of final, continuing insurance coverage complying with insurance requirements.
 7. Evidence of Compliance with Requirements of Governing Authorities
 - a. Certificate of Occupancy.
 - b. Certificates of Inspection required for mechanical and electrical systems.
 8. Operation and Maintenance Data: Under provisions of SECTION 01 78 23 - OPERATION AND MAINTENANCE DATA.
 9. Warranties and Bonds: Under provisions of SECTION 01 78 30 - WARRANTIES AND BONDS.
 10. Project Record Documents: Under provisions of SECTION 01 78 39 - PROJECT RECORD DOCUMENTS.
 11. Spare Parts and Maintenance Materials: Under provisions of SECTION 01 78 40 - SPARE PARTS, OVERAGES AND MAINTENANCE MATERIALS.
 12. Keys and Keying Schedule: Under provisions of SECTION 08 71 00 - DOOR HARDWARE.
 13. Evidence of Payment and Release of Liens: In accordance with General Conditions of the Contract for Construction.
 14. Evidence of Payment of Debts and Claims: In accordance with General Conditions of the Contract for Construction.
 15. Certificate of Project Compliance: Required under provisions of Texas Administrative Code (TAC), Chapter 61, 1036(c)(3)(F). Form developed by the Texas Education Agency (TEA). See form attached to the end of this Section.
 16. Certification of Asbestos and Lead Free Project: The Contractor shall submit to the Architect a letter addressed to the Owner certifying that no materials used in the construction of this project contain lead nor asbestos materials in excess of amounts allowed by local/state standards, laws, codes, rules and regulations, Federal Environmental Protection Agency (EPA) standards and the Federal Occupational Safety and Health Administration (OSHA) standards, whichever are most restrictive. Certification shall further state that should lead or asbestos fibers be found in this project in concentrations greater than the allowed amounts, that the Contractor shall be responsible for determining which materials contain the lead or asbestos fibers and shall take corrective action to remove those materials from the project at no additional cost to the Owner. Final payment shall not be made until this letter of certification has been received.
- B. Re-inspection Procedures: Architect will re-inspect the work upon receipt of notice that the work, including inspection list items from earlier inspections, has been complete, except items whose completion has been delayed because of circumstances acceptable to the Architect.
1. Upon completion of re-inspection, the Architect will advise the Contractor of work that is incomplete or of obligations that have not been fulfilled but are required for final acceptance.
 2. If necessary, re-inspection will be repeated.
- C. Re-inspection Fees: Should status of completion of work require re-inspection by Architect due to failure of work to comply with Contractor's claims on initial inspection, Owner will deduct the amount of Architect and appropriate consultants compensation for re-inspection services from final payment to Contractor. The reimbursement transaction shall be executed by change order to the contract.

1.4 CLOSEOUT PROCEDURES

- A. Maintenance Manuals: Organize operating and maintenance data into suitable sets of manageable size. Bind properly indexed data in one set of individual heavy-duty 3-1/2", three-ring vinyl-covered binders, with identification on front and spine of each binder. Include the following types of information:
1. Emergency instructions.
 2. Spare parts list.
 3. Copies of warranties.
 4. Wiring diagrams.
 5. Recommended "turn around" cycles.
 6. Inspection procedures.
 7. Shop drawings.
 8. Fixture lamping schedule.

- B. Shop Drawings: Keep and maintain a full set of submittals throughout the construction phase to be submitted to the Architect with other close-out documents for delivery to the Owner for his permanent record. Set of submittals shall be delivered to the Architect in cardboard file boxes with string and button type closures. Organize submittals by CSI divisions, utilizing neatly labeled pressboard dividers to separate the sections. Neatly label short end of box with project name, contents and duration of construction.
- C. Operating and Maintenance Training Sessions: Prepare a written agenda of items to be covered at each training session. Attendance by Owner's operating and maintenance personnel is mandatory. Notify Owner not less than 48 hours prior to scheduled training sessions.
1. Arrange for each installer of equipment and systems that requires regular maintenance to meet with the Owner's personnel to provide instruction in proper operation and maintenance. If installers are not experienced in procedures, provide instruction by manufacturer's representatives. Include a detailed review of the following items:
 - a. Maintenance manuals.
 - b. Record documents.
 - c. Spare parts and materials.
 - d. Tools.
 - e. Lubricants.
 - f. Fuels.
 - g. Identification systems.
 - h. Control sequences.
 - i. Hazards.
 - j. Cleaning.
 - k. Warranties and bonds.
 - l. Maintenance agreements and similar continuing commitments.
 2. Training sessions shall consist of not less than five days of not less than four hours each day. A copy of maintenance manuals for equipment or system being demonstrated shall be on hand during training session. As part of instruction for operating equipment, demonstrate the following procedures:
 - a. Start-up.
 - b. Shutdown.
 - c. Emergency operations.
 - d. Noise and vibration adjustments.
 - e. Safety procedures.
 - f. Economy and efficiency adjustments.
 - g. Effective energy utilization.
 3. Training sessions shall be conducted for:
 - a. Irrigation system.
 - b. Food service equipment.
 - c. Elevator.
 - d. HVAC systems.
 - e. Energy management controls.
 - f. Public address system.
 - g. Fire alarm and smoke detection systems.
 4. Demonstration and Training DVDs
 - a. General: Engage a qualified commercial photographer to record demonstration and training DVDs. Record each training session separately. Include classroom instructions and demonstrations, board diagrams, and other visual aids.
 - b. Digital Format: Provide high-quality DVD color recording.
 - c. Recording: Mount camera on tripod before starting recording, unless otherwise necessary to show area of demonstration and training. Display continuous running time.
 - d. Narration: Describe scenes by audio narration by microphone while being recorded. Include description of items being viewed. Describe vantage point, indicating location, direction (by compass point), and elevation or story of construction.
 - e. Transcript: Provide a typewritten transcript of the narration. Display images and running time captured from recording opposite the corresponding narration segment.

New Central Administration Building
Eagle Mountain-Saginaw ISD
Fort Worth, Texas

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

Not used.

END OF SECTION

**CERTIFICATION
OF PROJECT
COMPLIANCE**

Distribution to:

District	___	Architect/Engineer	___
Contractor	___	Texas Education Agency	___
Other	___	Building Department	___

1. PROJECT INFORMATION:
(name, address)

ARCHITECT/ENGINEER:

CONTRACTOR/CM:

PROJECT NUMBER:

CONTRACT DATE:

DISTRICT:

DATE DISTRICT AUTHORIZES PROJECT:

BRIEF DESCRIPTION OF PROJECT:

2. CERTIFICATION OF DESIGN AND CONSTRUCTION

The intent of this document is to assure that the school district has provided to the architect/engineer the required information and the architect/engineer has reviewed the School Facilities Standards as required by the State of Texas, and used his/her reasonable professional judgment and care in the architectural/engineering design and that the contractor has constructed the project in a quality manner in general conformance with the design requirements and that the school district certifies to project completion.

3. The District certifies that the enrollment projections, educational specifications and objectives of this facility along with the identified building code to be used have been provided to the architect/engineer.

DISTRICT: BY:

DATE:

4. The Architect/Engineer certifies the above information was received from the school district, and that the building(s) were designed in accordance with the applicable building codes. Further, the facility has been designed to meet or exceed the design criteria relating to space (minimum square footage), educational adequacy, and construction quality as contained in the School Facilities Standards as adopted by the State Board of Education, July 1992, and as provided by the district.

ARCHITECT/ENGINEER: BY:

DATE:

5. The Contractor/CM certifies that this project has been constructed in general conformance with the construction documents as prepared by the architect/engineer listed above.

CONTRACTOR/CM: BY:

DATE:

6. The District certifies completion of the project (as defined by the architect/engineer and contractor).

DISTRICT: BY:

DATE:

INSTRUCTIONS FOR COMPLETION OF “CERTIFICATION OF PROJECT COMPLIANCE” FORM

Section 1. Identify the following:

- name and address of the school facility
- the Architect/Engineer and Contractor
- the school district’s project number (if applicable)
- the date of execution of the construction contract
- name, address, and telephone number of the school district
- the date that the school district authorized the superintendent to hire an architect/engineer
- scope of the project.

Section 2. This section outlines the intent of the document. No action required.

Section 3. This section is to be executed by the school district upon transmittal of the information (as listed) to the architect/engineer and is to remain in the custody of the school district throughout the entire project.

Section 4. This section is to be executed by the architect/engineer upon completion of the plans and specifications and in conjunction with the completion of the plan review for code compliance (ref. 19 TAC §61.104, School Facilities Standards) and returned to the school district’s files.

Section 5. This section is to be executed by the contractor upon substantial completion of the project and retained in the school district’s files.

Section 6. This section is to be executed by the school district upon acceptance and occupancy of the project.

NOTE: DO NOT SUBMIT THIS DOCUMENT TO THE TEXAS EDUCATION AGENCY. The school district will retain this document in their files indefinitely until review and/or submittal is required by representatives of the Texas Education Agency.

SECTION 01 78 23

OPERATION AND MAINTENANCE DATA

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Format and content of manuals.
 - 2. Instruction of Owner's personnel.
 - 3. Schedule of submittals.

- B. Related Requirements:
 - 1. Section 01 33 23 - Shop Drawings, Product Data, and Samples.
 - 2. Section 01 45 00 - Quality Control: Manufacturer's instructions.
 - 3. Section 01 77 00 - Closeout Procedures.
 - 4. Section 01 78 30 - Warranties and Bonds.
 - 5. Section 01 78 39 - Project Record Documents.
 - 6. Individual Specifications Sections: Specific requirements for operation and maintenance data.

1.2 QUALITY ASSURANCE

- A. Prepare instructions and data by personnel experienced in maintenance and operation of described products.

1.3 FORMAT

- A. Prepare data in the form of an instructional manual.

- B. Binders: Bind in one set of individual heavy-duty 8-1/2" x 11" black, three-ring binders with hardback, cleanable, plastic covers; 3" maximum ring size. When multiple binders are used, correlate data into related consistent groupings.

- C. Cover: Identify each binder with typed or printed title OPERATION AND MAINTENANCE INSTRUCTIONS; list title of project identify subject matter of contents.

- D. Arrange content by systems, under section numbers and sequence of table of contents of this project manual.

- E. Provide tabbed fly leaf for each separate product and system, with typed description of product and major component parts of equipment.

- F. Text: Manufacturer's printed data, or typewritten data on 20-pound paper.

- G. Drawings: Provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.

1.4 CONTENTS, EACH VOLUME

- A. Table of Contents: Provide title of project; names, addresses, and telephone numbers of Architect/Engineer and Contractor with name of responsible parties; schedule of products and systems, indexed to content of the volume.

- B. For Each Product or System: List names, addresses and telephone numbers of subcontractors and suppliers, including local source of supplies and replacement parts.

- C. Product Data: Mark each sheet to clearly identify specific products and component parts, and data applicable to installation; delete inapplicable information.

- D. Drawings: Supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams. Do not use project record documents as maintenance drawings.

- E. Typed Text: As required to supplement product data. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions specified in SECTION 01 45 00 - QUALITY CONTROL.
- F. Warranties and Bonds: Bind in copy of each.

1.5 MANUAL FOR MATERIALS AND FINISHES

- A. Building Products, Applied Materials, and Finishes: Include product data, with catalog number, size, composition, and color and texture designations. Provide information for re-ordering custom manufactured products.
- B. Instructions for Care and Maintenance: Include manufacturer's recommendations for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.
- C. Moisture-protection and Weather-exposed Products: Include product data listing applicable reference standards, chemical composition, and details of installation. Provide recommendations for inspections, maintenance, and repair.
- D. Additional Requirements: As specified in individual specifications sections.
- E. Provide a listing in table of contents for design data, with tabbed fly sheet and space for insertion of data.

1.6 MANUAL FOR EQUIPMENT AND SYSTEMS

- A. Each Item of Equipment and Each System: Include description of unit or system, and component parts. Give function, normal operating characteristics, and limiting conditions. Include performance curves, with engineering data and tests, and complete nomenclature and commercial number of replaceable parts.
- B. Panelboard Circuit Directories: Provide electrical service characteristics, controls, and communications.
- C. Include as-installed color coded wiring diagrams.
- D. Operating Procedures: Include start-up, break-in, and routine normal operating instructions and sequences. Include regulation, control, stopping, shut-down, and emergency instructions. Include summer, winter, and any special operating instructions.
- E. Maintenance Requirements: Include routine procedures and guide for trouble-shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.
- F. Provide servicing and lubrication schedule, and list of lubricants required.
- G. Include manufacturer's printed operation and maintenance instructions.
- H. Include sequence of operation by controls manufacturer.
- I. Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.
- J. Provide as-installed control diagrams by controls manufacturer.
- K. Provide Contractor's coordination drawings, with as-installed color coded piping diagrams.
- L. Provide charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.
- M. Provide list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.
- N. Additional Requirements: As specified in individual specifications sections.

O. Provide a listing in table of contents for design data, with tabbed fly sheet and space for insertion of data.

1.7 INSTRUCTION OF OWNER PERSONNEL

- A. Before final inspection, instruct Owner's designated personnel in operation, adjustment, and maintenance of products, equipment, and systems, at agreed upon times. For equipment requiring seasonal operation, perform instructions for other seasons within six months.
- B. Use operation and maintenance manuals as basis of instruction. Review contents of manual with personnel in detail to explain all aspects of operation and maintenance.
- C. Prepare and insert additional data in operation and maintenance manual when need for such data becomes apparent during instruction.

1.8 SUBMITTALS

- A. Submit one copy of preliminary draft or proposed formats and outlines of contents before start of work. Architect/Engineer will review draft and return one copy with comments.
- B. For equipment, or component parts of equipment put into service during construction and operated by Owner, submit documents within 10 days after acceptance.
- C. Submit one copy of completed volumes in final form 15 days prior to final inspection. Copy will be returned after final inspection, with Architect/Engineer comments. Revise content of documents as required prior to final submittal.
- D. Submit one copy of revised volumes of data in final form within 10 days after final inspection.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

Not used.

END OF SECTION

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SECTION 01 78 30

WARRANTIES AND BONDS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Preparation and submittal of warranties and bonds.
 - 2. Schedule of submittals.
- B. Related Requirements:
 - 1. Document 00 21 16 - Instructions to Proposers: Proposer bonds.
 - 2. General Conditions of the Contract for Construction: Performance Bond and Labor and Material Payment Bonds, Warranty, and Correction of Work.
 - 3. Section 01 77 00 - Closeout Procedures.
 - 4. Section 01 78 23 - Operation and Maintenance Data.
 - 5. Section 01 78 39 - Project Record Documents.
 - 6. Individual Specifications Sections: Warranties and bonds required for specific products or work.

1.2 FORM OF SUBMITTALS

- A. Bind in one individual heavy-duty 8-1/2" x 11" black, three-ring binders, with hardback, cleanable, plastic covers.
- B. Label cover of each binder with typed or printed title WARRANTIES AND BONDS, with title of project; name, address and telephone number of Contractor; and name of responsible principal.
- C. Table of Contents: Neatly typed, in the sequence of the table of contents of the project manual, with each item identified with the number and title of the specification section in which specified, and the name of product or work item.
- D. Separate each warranty or bond with index tab sheets keyed to the table of contents listing. Provide full information, using separate typed sheets as necessary. List subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal.

1.3 PREPARATION OF SUBMITTALS

- A. Obtain warranties and bonds, executed in duplicate by responsible subcontractors, suppliers, and manufacturers, within ten days after completion of the applicable item of work. Except for items put into use with Owner's permission, leave date of beginning of time of warranty until the date of substantial completion is determined.
- B. Verify that documents are in proper form, contain full information, and are notarized.
- C. Co-execute submittals when required.
- D. Retain warranties and bonds until time specified for submittal.

1.4 TIME OF SUBMITTALS

- A. For equipment or component parts of equipment put into service during construction with Owner's permission, submit documents within ten days after acceptance.
- B. Make other submittals within 10 days after date of substantial completion, prior to final application for payment.
- C. For items of work when acceptance is delayed beyond date of substantial completion, submit within ten days after acceptance, listing the date of acceptance as the beginning of the warranty period.

New Central Administration Building
Eagle Mountain-Saginaw ISD
Fort Worth, Texas

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

Not used.

END OF SECTION

SECTION 01 78 39

PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Maintenance and submittal of record documents and samples.
- B. Related Requirements:
 - 1. General Conditions of the Contract for Construction: Documents at the site.
 - 2. Section 01 33 23 - Shop Drawings, Product Data, and Samples.
 - 3. Section 01 77 00 - Closeout Procedures.
 - 4. Section 01 78 23 - Operation and Maintenance Data.
 - 5. Individual Specifications Sections: Manufacturer's certificates and certificates of inspection.

1.2 MAINTENANCE OF DOCUMENTS AND SAMPLES

- A. In addition to requirements in General Conditions, maintain at the site for Owner one record copy of:
 - 1. Contract drawings.
 - 2. Specifications.
 - 3. Addenda.
 - 4. Change orders and other modifications to the contract.
 - 5. Reviewed shop drawings, product data, and samples.
 - 6. Field test records.
 - 7. Inspection certificates.
 - 8. Manufacturer's certificates.
- B. Store record documents and samples in field office apart from documents used for construction. Provide files, racks, and secure storage for record documents and samples.
- C. Label and file record documents and samples in accordance with section number listings in table of contents of this project manual. Label each document "PROJECT RECORD" in neat, large, printed letters.
- D. Maintain record documents in a clean, dry and legible condition. Do not use record documents for construction purposes.
- E. Keep record documents and samples available for inspection by Architect.

1.3 RECORDING

- A. Record information on a set of opaque drawings, and in a copy of a project manual. All changes made in these drawings in connection with the final construction and installation shall be neatly made in red ink on the prints.
- B. Provide felt tip marking pens, maintaining separate colors for each major system, for recording information.
- C. Contractor shall include with the record documents, all changes and modifications made by addenda, change orders, supplementary instructions, or other forms of documentation, written or verbal, which alter the documents.
- D. Record information concurrently with construction progress. Do not conceal any work until required information is recorded.
- E. Contract drawings and shop drawings: Legibly mark each item on the drawings to record actual construction, including:
 - 1. Measured depths of elements of foundation in relation to finish first floor datum.
 - 2. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
 - 3. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of construction.

4. Field changes of dimension and detail.
 5. Changes made by addenda and modifications.
 6. Details not on original contract drawings.
 7. References to related shop drawings and modifications.
- F. Specifications: Legibly mark each item in the specifications to record actual construction, including:
1. Manufacturer, trade name, and catalog number of each product actually installed particularly optional items and substitute items.
 2. Changes made by addenda and modifications.
- G. Other Documents: Maintain manufacturer's certifications, inspection certifications, field test records, and other documents required by individual specifications sections.
- H. Maintain these documents to reflect the current conditions of the work. Changes shall be reviewed on a monthly basis with the Architect's representative. The Contractor's updating of the "installed condition drawings" shall be a prerequisite to the monthly review of the Contractor's payment request by the Architect's representative.

1.4 SUBMITTALS

- A. At contract closeout, deliver record documents and samples under provisions of SECTION 01 77 00 - CLOSEOUT PROCEDURES.
- B. Transmit with cover letter in duplicate, listing:
1. Date.
 2. Project title and number.
 3. Contractor's name, address, and telephone number.
 4. Number and title of each record document.
 5. Signature of Contractor or authorized representative.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

Not used.

END OF SECTION

SECTION 01 78 40

SPARE PARTS, OVERAGES AND MAINTENANCE MATERIALS

PART 1 - GENERAL

1.1 SUMMARY

- A. Requirements Includes:
 - 1. Products required.
 - 2. Storage and delivery of products.
- B. Related Requirements:
 - 1. Section 01 66 00 - Product Storage and Handling Requirements.
 - 2. Section 01 77 00 - Closeout Procedures.
 - 3. Section 01 78 23 - Operation and Maintenance Data.
 - 4. Individual Specifications Sections: Specific spare parts and materials required.

1.2 PRODUCTS REQUIRED

- A. Provide quantities of products, spare parts, maintenance tools, and maintenance materials specified in individual sections to be provided to Owner, in addition to that required for completion of work.
- B. Products: Identical to those installed in the work. Include quantities in original purchase from manufacturer to avoid variations in manufacture.

1.3 STORAGE, MAINTENANCE

- A. Store products with products to be installed in the work, under provisions of SECTION 01 66 00 - PRODUCT STORAGE AND HANDLING REQUIREMENTS.
- B. When adequate, secure storage facilities are available at site, capable of maintaining conditions required for storage and not required for contract work or storage, or for Owner's needs, spare products may be stored in available space.
- C. Maintain spare products in original containers with labels intact and legible, until delivery to Owner.

1.4 DELIVERY

- A. Coordinate with Owner: Deliver and unload spare products to Owner at Owner's Maintenance Facility and obtain receipt prior to final payment.
- B. For portions of project accepted and occupied by Owner prior to substantial completion, deliver a proportional part of spare products to Owner; obtain receipt.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

Not used.

END OF SECTION

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SECTION 03 11 13

STRUCTURAL CONCRETE FORMING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes:
1. Shoring, formwork and re-shoring of structure.
 2. Furnish, install and removal of concrete formwork.

1.2 REFERENCES

- A. Codes and Specifications
1. American Concrete Institute (ACI)
 - a. ACI 117, Specification for Tolerances for Concrete Construction and Materials
 - b. ACI 301, Specifications for Structural Concrete
 - c. ACI 318, Building Code Requirements for Structural Concrete
 - d. ACI 347R, Guide to Formwork for Concrete
 2. Concrete Reinforcing Steel Institute (CRSI)
 - a. Manual of Standard Practice
 3. American Society for Testing Materials (ASTM)
 - a. ASTM C203, Standard Test Methods for Breaking Load and Flexural Properties of Block-Type Thermal Insulation
 - b. ASTM D1621, Standard Test Method for Compressive Properties of Rigid Cellular Plastics
 - c. ASTM D1751, Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types)

1.3 SUBMITTALS

- A. Shop Drawings:
1. Submit shop drawings for formwork.
 2. Submit description of shoring, re-shoring and backshoring procedures, indicating magnitude of loads assumed, signed and sealed by licensed design engineer
 3. Submit size and layout of sleeves and openings in structural members, required by trades, prior to releasing reinforcing and formwork shop drawings for fabrication.
- B. Construction Joints: Submit diagrams of construction joints.
- C. Form Ties: For Architecturally exposed concrete, submit layout of form tie spacing.
- D. Product Data:
1. Form release agent
 2. Fiberboard void forms
 3. Void retainer panels
 4. Vapor retarder
- E. Samples:
1. Rustication forms
 2. Reglet
 3. Dove-tailed anchor slots

1.4 DELIVERY, STORAGE AND HANDLING

- A. Store materials off ground and protected from weather.
1. Prevent warpage, twisting and excessive moisture gain of wood materials.
 2. Discard damaged or deformed materials.
- B. Protect smooth faces of form liner materials from abrasion, denting or scarring during handling.

PART 2 - PRODUCTS

2.1 GENERAL

- A. Design, erect, shore, brace and maintain formwork according to ACI 301 to withstand vertical, lateral, static, dynamic and construction loads applied prior to concrete structure reaching adequate strength to support such loads.
- B. Limit form deflections to provide smooth, straight surfaces without unsightly bulges and deformations.
- C. Limit form deformations for architecturally exposed surfaces to 0.0025 times the span of each component (facing material, studs and walers).

2.2 MATERIALS

- A. Wood forms for unexposed concrete surfaces: No. 2 Southern Yellow Pine or Douglas Fir dressed to uniform and smooth contact surfaces.
- B. Wood forms for concrete surfaces exposed to view: Commercial Standard Douglas Fir concrete form plywood, moisture resistant, not less than 5 plies, and minimum thickness of 9/16 inch. Line forms with one of the following:
 - 1. Plywood: Commercial Standard Douglas Fir, concrete form, exterior, 3 ply, not less 1/4 inch thick with one smooth face.
 - 2. Fiberboard: Treated, hard pressed fiberboard, moisture resistant, not less than 3/16 inch thick with one smooth side.
- C. Void retainers:
 - 1. Precast Concrete Panels. 1 ½ inches thick, 3000 psi lightweight or normal weight concrete, reinforced with 4x4-W1.4 welded wire mesh.
 - 2. Lightweight, ribbed, high density polyethylene panels specially made to prevent migration of backfill soil under foundation elements. Required minimum panel height: 14 inches for 8 inch void space and smaller; 20 inches for larger than 8 inch and up to 12 inch void space; 26 inches for larger than 12 inch and up to 16 inch void space.
 - a. Example product: SureRetainer by VoidFormProducts, Englewood, CO
 - 3. Extruded polystyrene foam panel: Two inch minimum thickness with square edges. Minimum compressive strength of 25 psi (ASTM D1621) and minimum flexural strength of 60 psi (ASTM C203). Example products:
 - a. Foamular 250 Rigid Foam Insulation by Owens Corning
 - b. Styrofoam Highload 40 Extruded Polystyrene Insulation by Dow

2.3 COMPONENTS

- A. Rustications: steel, polyvinyl chloride or milled and sealed white pine.
- B. Dove-tailed anchor slots: compatible with specified dove-tailed anchors for masonry veneer.

2.4 MANUFACTURED UNITS

- A. Fiberboard void forms (void boxes): manufactured using corrugated paper material with water resistant fiberboard material exterior, capable of supporting weight of wet concrete without crushing but non-durable in long-term (deteriorates over time with absorption of moisture). Void forms to be laminated using moisture resistant adhesive.
 - 1. Provide premanufactured shapes required (rectangular, etc.)
 - 2. Provide special shapes adjacent to round or skewed components.
 - a. Do not cut fiberboard void forms in field.
 - 3. Provide caps at each end of units.
 - 4. Provide a layer of protective cover board over void forms to distribute working load and protect void forms from puncture and other damage during concrete placement.
 - a. Example cover board: ¼ inch minimum thickness hardboard/fiberboard

- B. Vapor retarder:
 - 1. At exterior slab on void: Vapor Retarder membrane must have the following properties:
 - a. Permeance as tested after mandatory conditioning (ASTM E154) less than 0.01 Perms
 - b. Strength: ASTM E1745 Class A
 - c. Thickness: 15 mils minimum
 - d. Example Product: VBC-350 by Barrier-Bac, Inc
 - e. Example Product: Stego Wrap 15 mil Vapor Barrier with Crete Claw Tape by Stego Industries LLC
 - 2. At interior slab on grade: See architectural specifications.
- C. Round column forms: waterproof fiber forms constructed of spiral laminated plies of fiber.
 - 1. Line inside of forms to prevent spiral markings on exposed concrete columns. Consider length of piers above grade as concrete columns.

2.5 ACCESSORIES

- A. Form ties: bolt rods or patented devices of sufficient strength to withstand pressure due to wet concrete (3000 pounds minimum tensile strength); adjustable in length, and removable to depth of at least 1 inch from face of concrete.
 - 1. Equip ties for exposed concrete surfaces with plastic cones 5/8 inch in diameter.
 - 2. Do not use wire ties, or makeshift ties that leave unsightly marks or depressions on face of concrete.
- B. Form release agent:
 - 1. Does not bond with, stain, or adversely affect concrete surfaces.
 - 2. Meets acceptable air quality standards.

PART 3 - EXECUTION

3.1 DESIGN AND CONSTRUCTION

- A. Design formwork for concrete elements to have correct dimension, shape, alignment, elevation, and position with dimensional tolerances conforming to ACI 117. Reference ACI 347R.
- B. Design formwork to safely support vertical and lateral loads until such loads can be supported by concrete structure. Carry vertical and lateral loads to ground by formwork system or by in-place construction of adequate strength.
- C. Form sides of concrete elements unless specifically noted or shown otherwise in the Contract Documents.
 - 1. Dimensional tolerances to conform to ACI 117.
 - 2. Repair bulges, offsets and formwork conditions that would cause beam sides to become skewed or wider than void box bottom forms prior to placing concrete.
- D. Construct forms to required shapes, lines and dimensions; provide necessary studs, walers, ties, centering, molds and supports.
 - 1. Install forms sufficiently tight to prevent leakage of mortar.
 - 2. Construct forms to be easily removable without damage to finished surfaces.
 - 3. Provide forms without unsightly marks or deformations on exposed faces.
 - 4. Thoroughly clean forms of concrete laitance before re-use.
 - 5. Provide clean-outs at base of vertical forms for removal of foreign materials before concrete placement.
- E. Tying of forms: provide sufficient form ties to prevent bulging or collapse of forms under weight of wet concrete.
 - 1. Place ties in uniform and orderly pattern.
 - 2. Lubricate ties to prevent bonding with concrete.
- F. Special features: place in forms any wood strips, blocking, molding, and liners necessary to produce required shapes.
 - 1. Attach feature strips to forms in a manner that will not leave unsightly marks on exposed concrete surfaces.
 - 2. Coat wood strips, blocking and molding with form sealer.

3. Provide 3/4 inch chamfer strips along edges of permanently exposed concrete unless noted otherwise in Contract Documents.
4. Provide dove-tailed anchor slots coordinated with masonry.

G. Coatings:

1. Coat contact surfaces of wood forms with form release agent before each use and before placing reinforcement.
2. Apply form release agent per manufacturer's recommendations.
3. Do not allow excess release agent to accumulate in forms or to contact hardened concrete against which fresh concrete will be placed.
4. Remove release agent from reinforcement before placing concrete.

H. Construction joints:

1. Locate construction joints as shown on approved submittals.
 - a. Do not locate construction joints between lateral bracing elements of walls and columns.
 - b. Locate construction joints in beams and slabs on voids approximately at midspan between supports.
 - c. Locate construction joints in slabs on metal deck at one or both of the following locations:
 - 1) Where construction joint is parallel to deck span, locate at third points of beams spanning perpendicular to deck.
 - 2) Where construction joint is perpendicular to deck span, locate at equal spacing between beams and in middle third of girder spanning parallel to deck span.
 - d. Provide plumb and level construction joints. Avoid irregular lines at horizontal construction joints in exposed concrete faces by tacking a continuous strip of dressed lumber, 1 inch thick, to inside of wall or grade beam form, with its lower edge at line of construction joint. About one hour after placing concrete in lower part of wall or grade beam, remove strip, level off irregularities in joint line with wood float and remove laitance.
 - e. Provide shear keys and waterstops as required in construction joints.

I. Fiberboard Void Boxes:

1. Ensure subgrade is clean and dry before installing void boxes.
2. Place void cartons tightly end-to-end.
3. Place and arrange void cartons so that horizontal concrete surfaces that would otherwise be in contact with soil are protected by void boxes. Protect cartons from rain and mud.
4. Secure void cartons firmly in place so that position will not be altered by activities of workmen or placement of concrete. Secure with waterproof tape.
5. Do not cut fiberboard void box components in field.
6. Replace partially or wholly collapsed cartons.
7. Install vapor retarder in accordance with ASTM E1643
8. Install protective cover board according to manufacturer's instructions.

J. Void Retainers:

1. Prior to installing retainers, inspect void spaces to ensure voids are intact and that concrete or other material has not entered void space.
 - a. Where void space is not intact, remove excess concrete or other material prior to installing void retainers.
2. Install void retainers as shown in Contract Documents or in accordance with manufacturer's written instructions, including overlap on side of beam or wall and penetration into subgrade. Where discrepancies occur, the most stringent shall govern.
3. Cut retainer material for tight fit at corners. Tape corners to ensure panels remain accurately in place during backfilling and that backfill soil does not enter void space.
4. Monitor performance of retainer panels continuously during backfilling. If panels shift, or soil enters void space, stop work and adjust installation to assure satisfactory performance.
5. Void height tolerance: plus 2 inches, minus 0 inches of height shown in Contract Documents.

3.2 REMOVAL OF FORMS

- A. Remove forms completely, unless specifically required otherwise.
- B. Remove forms carefully to avoid damage to concrete surfaces.
- C. Do not remove forms until concrete is adequately set.

1. Clamps and tie rods may be loosened after 24 hours following placement of concrete.
 - a. Maintain sufficient ties to hold forms in place.
 - b. Withdraw through-wall ties toward the inside (or unexposed) face of walls and beams.
 - c. Prevent spalling during tie removal.
 2. Use concrete strength tests as evidence that concrete has adequately set for form removal.
 - a. Minimum strength is 75 percent of design strength.
- D. Remove forms sequentially and in small units to prevent shock, overload or undue eccentricity in structure. Do not store materials or place heavy equipment on structures of which forms have been removed unless concrete strength is equal to design strength, or re-shores are installed. Remove forms in a manner that does not require a large portion of the structure to be self-supporting (i.e. a full bay of framing). Install re-shores immediately as form removal progresses.
- E. Do not remove forms until supporting structures are permanently in place and full strength.

END OF SECTION

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SECTION 03 11 15

EXPANDED POLYSTYRENE FOAM BLOCK FORMWORK

PART 1 - GENERAL

1.1 SUMMARY

- A. Related Sections: 03 11 13 Structural Concrete Forming

1.2 REFERENCES

- A. ASTM D6817 - Standard Specification for Rigid Cellular Polystyrene Geofoam

1.3 SUBMITTALS

- A. Shop Drawings: Show layout and dimensions of Expanded Polystyrene (EPS) foam block fill areas. Indicate location, size, and elevation. Provide cross section of area indicating height and depth. Provide plan view of each layer of foam block with each part identified and dimensioned. Show attachment method and configuration.
- B. Product Data for listed materials including:
 - 1. Physical properties in compliance with ASTM D6817 Type EPS15, unless noted otherwise in Contract Documents.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Deliver EPS foam labeled with material type.
- B. Prior to installation, store above ground and protected from moisture and sunlight.
- C. Do not expose product to open flame or other ignition sources.
- D. Do not deliver product to Project site before installation time.
- E. Complete installation and concealment of product in each area of construction as rapidly as possible.

PART 2 - PRODUCTS

2.1 MANUFACTURED UNITS

- A. Molded, Rigid Cellular Expanded Polystyrene Blocks: Comply with manufacturer's requirements, conform to ASTM D6817.
- B. Adhesive: non-solvent based polyurethane adhesive.
- C. GeoGripper Plates: Use to restrain EPS Geofoam from moving laterally in layer over layer applications.
 - 1. Made of galvanized or stainless steel with two-sided multi-barbed design capable of piercing geofoam.
- D. Treat EPS foam blocks with a tested and proven termite treatment by manufacturer for below grade applications, 3 year minimum field exposure. Use EPA registered treatment meeting requirements of ICC ES EG239 and recognized in an ICC ES report.

2.2 FABRICATION

- A. Fabricate blocks square and true to dimension.
 - 1. Factory cut blocks for delivery to jobsite and installation without need for excessive field cutting.
 - 2. Ramp areas: fabricate block with slope consistent with ramp slope requirements.

- B. Marking and Identification: Mark blocks with Section Layer I.D. letter and part number identification corresponding to shop drawing layout and EPS schedule.

PART 3 - EXECUTION

3.1 MANUFACTURER'S INSTRUCTIONS

- A. Compliance: Comply with manufacturer's EPS foam product data; including technical bulletins.

3.2 STORAGE

- A. Ballast: Ballast EPS foam to prevent displacement by wind or high water conditions during storage and placement.

3.3 GENERAL INSTALLATION

- A. Examine supporting substrate and abutting structural framing for compliance with requirements for elevations, installation tolerances and other conditions affecting performance. Proceed with installation only after unsatisfactory conditions are corrected.
- B. Install system in compliance with Contract Documents and installation/shop drawings as prepared by manufacturer.
- C. Blocks to be adhered to base slab and to one another along horizontal surface with continuous minimum 1 inch wide strip of adhesive. Adhesive to be placed 2 inches from perimeter of each side of each block and at 8 inches on center each way.
- D. Installation to be completed by experienced craftsmen trained to do this type of Work.

3.4 PROTECTION & SAFETY

- A. Protection: Protect installed product and finish surfaces from damage during construction.
- B. Do not weld with torch in same room as installed or stored EPS. Protect EPS against ignition.

END OF SECTION

SECTION 03 11 16

ROUND CONCRETE COLUMN FORMS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Round cast-in-place concrete column forms with smooth interior surface.
- B. Related Sections:
 - 1. Section 03 11 13 -Structural Concrete Forming.
 - 2. Section 03 31 00 - Structural Concrete.
- C. References:
 - 1. ACI 301 - Standard Specification for Structural Concrete.

1.2 SUBMITTALS

- A. General: Submit in accordance with SECTION 01 33 23 - SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Product Data: Submit manufacturer's product data, including erection and removal instructions.
- C. Shop Drawings: Submit manufacturer's shop drawings, indicating locations and dimensions of embedded items.

1.3 QUALITY ASSURANCE

- A. Column Formwork and Form Accessories: ACI 301, unless otherwise specified.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Delivery: Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly identifying product name and manufacturer.
- B. Storage:
 - 1. Store forms in accordance with manufacturer's instructions.
 - 2. Store forms vertically in dry area.
 - 3. If forms stored horizontally, elevate a minimum of 10 inches above ground on supports running length of forms.
 - 4. Protect forms from rain and excess moisture.
 - 5. Do not dent, scratch, or damage interior coating.
 - 6. Do not drop forms.
- C. Handling: Protect forms during handling and erection to prevent damage.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Basis of Design: Provide Sonotube Finish Free concrete forms as manufactured by Sonoco, 1 North Second Street, Hartsville, South Carolina 29550. Toll Free (888) 875-8754. Website www.sonotube.com.

2.2 ROUND CONCRETE COLUMN FORMS

- A. Concrete Column Forms (Smooth Finish): Sonotube Finish Free Concrete Forms with Duraglas Coating.
 - 1. Description: Multiple layers of 100 percent recycled paperboard, spirally wound, and laminated with adhesive.
 - 2. Interior Surface: Duraglas coating. Smooth with no spiral seams or form markings.
 - 3. Exterior Surface: Micryl moisture barrier coating.
 - 4. Forms shall not impart visible seams or form marks on concrete columns.

5. 1-piece, 1-time-use forms.
6. Inside Diameter: As indicated on the Drawings.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas to receive column forms. Notify Architect if areas are not acceptable. Do not begin erection until unacceptable conditions have been corrected.

3.2 ERECTION

- A. Place and brace column forms in accordance with manufacturer's instructions.
- B. Erect forms at locations and to elevations as indicated on the Drawings.
- C. Erect column forms plumb.
- D. Avoid damaging interior surface and coating of forms.
- E. Waterproof and reinforce openings cut into forms.
- F. Do not use forms that are out-of-round, deformed, damaged, or contain defects that could impair concrete surface.
- G. Protect forms from rain and snow if work is delayed and forms have been positioned for placing concrete.
- H. Place waterproof sheeting over top of forms to prevent damage to interior surface by rain or snow.
- I. Do not allow forms to stand in water or snow before placing concrete.

3.3 PLACING CONCRETE

- A. Place concrete as specified in 03 31 00 - STRUCTURAL CONCRETE, unless otherwise specified in this section.
- B. Do not place concrete if column forms are wet.
- C. Apply form release coating to interior surface.
- D. Place concrete at pour rate in accordance with manufacturer's instructions.
- E. Do not touch interior surface of forms with vibrator.
- F. Do not vibrate concrete from exterior of forms.

3.4 REMOVAL

- A. Remove column forms in accordance with manufacturer's instructions.
- B. Remove forms as soon as removal operations will not damage concrete, a minimum of 24 hours and a maximum of 5 days after placing concrete.
- C. Prevent damage to concrete from form removal.

3.5 FINISH

- A. Form-Liner Finish (Smooth Finish): Produce a smooth surface free of seams, pockets, streaks, and honeycombs, and of uniform appearance, color, and texture.

3.6 PROTECTION

- A. Protect concrete columns during remaining construction by placing form halves loosely around columns and securing. Ensure concrete surface is fully dry.

END OF SECTION

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SECTION 03 15 00

CAST-IN ANCHORS AND EMBEDS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
1. Steel assemblies to be embedded
 2. Anchors

1.2 REFERENCES

- A. Codes and Specifications
1. Concrete Reinforcing Steel Institute (CRSI)
 - a. Manual of Standard Practice.
 2. American Institute of Steel Construction (AISC)
 - a. AISC 360, Specification for the Design, Fabrication and Erection of Structural Steel for Buildings.
 3. American Welding Society (AWS)
 - a. AWS D1.1, Structural Welding Code - Steel.
 - b. AWS D1.4, Structural Welding Code - Reinforcing Steel.
 - c. AWS D1.8, Structural Welding Code – Seismic Supplement
 4. American Concrete Institute (ACI)
 - a. ACI 318, Building Code Requirements for Reinforced Concrete.
 - b. SP-066, ACI Detailing Manual
 5. American Society for Testing and Materials (ASTM)
 - a. ASTM A36, Standard Specification for Carbon Structural Steel.
 - b. ASTM A108, Standard Specification for Steel Bar, Carbon and Alloy, Cold-Finished.
 - c. ASTM A153, Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
 - d. ASTM A283, Standard Specification for Low and Intermediate Tensile Strength Carbon Steel Plates.
 - e. ASTM A307, Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60 000 PSI Tensile Strength
 - f. ASTM A615, Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement.
 - g. ASTM A706, Standard Specification for Deformed and Plain Low-Alloy Steel Bars for Concrete Reinforcement.
 - h. ASTM A1064, Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete.
 - i. ASTM A1011, Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High Strength Low-Alloy with Improved Formability, and Ultra-High Strength.
 - j. ASTM F3125, Standard Specification for High Strength Structural Bolts, Steel and Alloy Steel, Heat Treated, 120 ksi (830MPa) and 150 ksi (1040 MPa) Minimum Tensile Strength, Inch and Metric Dimensions.

1.3 SUBMITTALS

- A. Product Data
1. Submit manufacturer's data indicating product compliance for the following:
 - a. Headed stud anchors
 - b. Deformed bar anchors
 - c. Rust inhibitor
 - d. Zinc coating
 - e. Threaded inserts
 - f. Anchor slots
- B. Shop Drawings:
1. Submit shop and installation drawings for review by Architect, including:
 - a. Shop and field connection details
 - b. Material grades and sizes

- c. Details of fabrication
- 2. Do not begin fabrication prior to review of shop drawings.
- 3. Review of shop drawings is for member sizes, spacings, detail, and general compliance with Contract Documents only.
- 4. Material quantities, lengths, fit, verification of job conditions, and coordination with other trades are responsibility of Contractor.

C. When requested by Owner or Architect, submit welders' certifications.

1.4 QUALITY ASSURANCE

A. Qualifications

- 1. Fabricator:
 - a. Minimum of 3 years of experience in related or similar work.
- 2. Welders:
 - a. Certified for type of welding required within previous 6 months.

1.5 DELIVERY, STORAGE AND HANDLING

- A. Store fabricated assemblies and inserts under cover and off ground to protect against corrosion prior to placement.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Steel

- 1. W Shapes and WT's: ASTM A992
- 2. Angles, Channels, Plates and Rods: ASTM A36.
- 3. Steel straps: ASTM A283 or A1011.
- 4. Bolts: ASTM A307, with regular hexagon nuts and carbon steel washers.
- 5. High Strength Bolts: ASTM F3125.

B. Reinforcing Bars

- 1. Deformed Bars: ASTM A615 of grade 60.
- 2. Welded Wire Reinforcement: Conform to ASTM A1064.
- 3. Bars to be welded: ASTM A706 of required grades..

C. Fusion Welded Anchors

- 1. Headed Stud Anchors: Conform to ASTM A108, Grades 1010 through 1020, with sizes and lengths as shown in Contract Documents, and conforming to AWS D1.1, Section 7.
- 2. Deformed Bar Anchors: Low carbon steel, conforming with ASTM A1064, with sizes and lengths as shown in Contract Documents.
 - a. Example product: Type DA, as manufactured by Blue Arc Stud Welding Division of Erico Industries.

D. Welding Electrodes:

- 1. Conform to AISC and AWS Specifications
- 2. Use E70 electrodes unless noted otherwise.
- 3. Use E80 electrodes for welding of ASTM A706 rebar.

E. Coatings

- 1. Rust Inhibitor:
 - a. Example product: Hi-Build Epoxoline as manufactured by Tnemec Co.
- 2. Hot-dip Galvanizing: Conform to ASTM A153.
- 3. Cold Galvanizing:
 - a. Example product: Galvilite as manufactured by ZRC WORLDWIDE

F. Inserts

- 1. Threaded Inserts: Rated for tensile strength of bolt size given in Contract Documents (ultimate strength).

2. Anchor Slots to receive inserts for anchoring masonry units, cast stone, and marble to concrete: One inch wide, 7/8 inch deep, continuous No. 24 gauge, galvanized sheet steel, dovetailed slots, complete with felt lining.
 - a. Example manufacturer: Hohmann & Barnard, Inc., New York, N.Y.
3. Miscellaneous: PVC pipes, or other special inserts as shown in Contract Documents, or as required by other trades.

2.2 FABRICATION

- A. Fabricate and assemble structural steel items in shop. Carefully and accurately shear, flame cut, and chip materials as required. Cut, drill, or punch holes at right angles to surface of metal. Do not enlarge holes by burning. Cut holes cleanly without torn or ragged edges. Weld in accordance with AISC Specifications and with AWS D1.1 and D1.4. Permit only AWS certified welders to perform welds.
- B. Weld deformed bar anchors and headed stud anchors by full-fusion process. Weld in accordance with manufacturer's recommendations regarding equipment, conditions of material, and temperature.
 1. Example processes:
 - a. Nelson Stud Welding Company
 - b. KSM Welding Services Division, Omark Industries.
- C. Hot-dip galvanize steel assemblies and accessories exposed to weather or soil. Hot-dip galvanize steel embeds used within crawl space environments.
- D. Plainly mark and match-mark assemblies and inserts to correspond to placement drawings and diagrams.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Clean assemblies and inserts of corrosion, dirt, oil, grease and laitance before placing in forms.
- B. Place assemblies and inserts in forms and securely anchor in required positions with correct orientations. Use templates, diagrams and instructions provided by Fabricator for proper alignment and positioning.

3.2 FIELD QUALITY CONTROL

- A. Laboratory Testing: provide independent testing laboratory services as follows:
 1. Inspect steel fabrications for sizes, spacings and general quality of fabrication.
 2. Inspect welding of steel fabrications for size, length and quality.
 3. Inspect positioning of assemblies and inserts in forms.
 4. Visually inspect welds at anchors and shear stud connectors. Test studs which do not appear to have full sound 360 degree fillet weld at base. Test by bending 15 degrees. Replace studs which fail this test.
- B. Afford full cooperation and access to Work to testing laboratory and provide adequate notice to laboratory of when Work is ready for testing and inspection so that services can be carried out in full, allowing sufficient time for making corrections without delaying progress of Work.

3.3 ADJUSTING

- A. Field Touch Up
 1. Use cold galvanizing compound in accordance with manufacturer's recommendations for field touch-up.

END OF SECTION

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SECTION 03 20 00

CONCRETE REINFORCING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes
 - 1. Preparation of shop drawings
 - 2. Fabrication and placement of reinforcing
- B. Products Furnished, not Installed Under This Section
 - 1. Pier reinforcing

1.2 REFERENCES

- A. Codes and Specifications
 - 1. American Concrete Institute (ACI)
 - a. ACI 318, Building Code Requirements for Reinforced Concrete
 - b. SP-066, ACI Detailing Manual
 - 2. Concrete Reinforcing Steel Institute (CRSI)
 - a. Manual of Standard Practice
 - b. RB4.1, Supports for Reinforcement Used in Concrete
 - 3. American Welding Society (AWS)
 - a. AWS D1.1, Structural Welding Code - Steel
 - b. AWS D1.4, Structural Welding Code - Reinforcing Steel
 - 4. American Society for Testing Materials (ASTM)
 - a. ASTM A108, Standard Specification for Steel Bar, Carbon and Alloy, Cold-Finished
 - b. ASTM A1044, Standard Specification for Steel Stud Assemblies for Shear Reinforcement of Concrete
 - c. ASTM A1064, Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete
 - d. ASTM A615, Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement
 - e. ASTM A706, Standard Specification for Deformed and Plain Low-Alloy Steel Bars for Concrete Reinforcement
 - f. ASTM A775, Standard Specification for Epoxy-Coated Steel Reinforcing Bars
 - g. ASTM A767, Standard Specification for Zinc-Coated (Galvanized) Steel Bars for Concrete Reinforcement
 - h. ASTM A780, Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings
 - i. ASTM D3963, Standard Specification for Fabrication and Jobsite Handling of Epoxy-Coated Steel Reinforcing Bars

1.3 SUBMITTALS

- A. Shop Drawings
 - 1. Submit shop and installation drawings for review by Architect, including:
 - a. Reinforcing sizes and quantities
 - b. Reinforcing lengths and bending details
 - c. Placement instructions
 - d. Details and spacing of reinforcing supports
 - e. References to reinforcing designations in Contract Documents
 - f. Notes regarding reinforcing placement in Contract Documents
 - g. Material grades
 - h. Submit slab sleeve and penetration shop drawings prior to or concurrently with reinforcement shop drawings.
 - 2. Review of Shop Drawings will be for reinforcing sizes, spacing, and general detail only; excluding quantities, lengths and fit of materials.
 - 3. Do not use reproductions of Contract Documents for shop drawings.

- B. Quality Control Submittals
 - 1. Submit certified mill reports, evidencing compliance with Specification requirements.
 - 2. Submit laboratory testing and inspection reports.

1.4 DELIVERY, STORAGE AND HANDLING

- A. Deliver materials in tagged bundles grouped by reinforcing size and length.
- B. Store reinforcing on skids off ground and stacked to permit drainage. Prevent build-up of rust and dirt on reinforcing. Protect reinforcing from contamination that would prevent bonding of concrete.
- C. Do not bend, twist or warp reinforcing during handling.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Reinforcing Steel
 - 1. Deformed bars: new billet steel conforming to ASTM A615 of grade 60.
 - 2. Smooth bars: conform to ASTM A615
 - 3. Welded wire reinforcement: conform to ASTM A1064.
 - 4. Reinforcing bars to be welded: conform to ASTM A706.

2.2 MANUFACTURED UNITS (IF REQUIRED DURING CONSTRUCTION)

- A. Provide manufactured units conforming to ACI 318 and capable of developing 125 percent of yield strength of bar, unless noted otherwise.
- B. Full-tension sleeve bar splices: sleeve with ferrous filler
 - 1. Example product: Cadweld Rebar Splice C-Series by Erico Products
- C. Compression sleeve splice: sleeve with ferrous filler
 - 1. For use where compression lap splices are not permitted.
 - 2. Example product: Cadweld Rebar Splice Series C-16
- D. Compression bar splice: bolted sleeve
 - 1. For use where compression lap splices are allowed.
 - 2. Example product: Erico Speed Sleeve
- E. Mechanical couplings: taper-threaded hexagonal steel couplers.
 - 1. Provide end caps for future construction applications.
 - 2. Example product:
 - a. Lenton Rebar Splicing System by Erico Products.
 - b. BarGrip XL by BarSplice Products.

2.3 ACCESSORIES

- A. Concrete bricks or chairs with bearing plates: Provide where supports are in contact with soil or vapor barrier.
- B. Plastic-tipped chairs in conformance with CRSI RB4.1. Provide of suitable color where concrete soffits will be exposed to view.

2.4 BAR COATINGS

- A. Epoxy Coating: conform to ASTM A775, ASTM D3963.
- B. Hot-dip galvanizing: conform to ASTM A767.

2.5 FABRICATION

- A. Shop Fabrication
 - 1. Cut reinforcing to required lengths
 - 2. Bend reinforcing cold with suitable equipment. Do not heat or stretch material. Provide bend radii and extensions in conformance with ACI 318.
 - 3. Do not use reinforcing with kinks or unrequired bends.
 - 4. Do not re-straighten reinforcing bent more than 30 degrees.
- B. Tolerances: conform to ACI 318.
- C. Marking: mark reinforcing to correspond with shop drawings.
- D. Provide uncoated bars unless noted otherwise in Contract Documents.

2.6 SOURCE QUALITY CONTROL

- A. Testing Laboratory Services
 - 1. Inspect fabricating and bending procedures
 - 2. Inspect fabricated materials

PART 3 - EXECUTION

3.1 PREPARATION

- A. Clean reinforcing of ice, dirt, loose rust, mill scale, oil, and grease.
- B. Repair of damaged epoxy coating: conform to ASTM D3963
- C. Repair of damaged galvanizing: conform to ASTM A780
 - 1. Example product: Galvilite by ZRC Worldwide

3.2 PLACEMENT

- A. Place reinforcing of required sizes and quantities in proper position within forms. Use supports and spacers to maintain position before and during concrete placement.
 - 1. Do not place reinforcing supports against exposed faces of precast panels, beams, walls or copings.
 - 2. Support concrete reinforcing in conformance with CRSI RB4.1
- B. Secure reinforcing in position with wire ties complying with ACI 318.
 - 1. Clip or bend tails of tie wire away from exposed faces, do not leave tie wire within 1 1/2" of any exposed surface.
- C. Concrete Cover: comply with ACI 318 and Contract Documents.
- D. Maintain position of reinforcing mats in walls with metal spacers between mats.
- E. Tolerances
 - 1. Concrete cover to unformed surfaces
 - a. Members 8 inches deep or less: plus 1/4 inch
 - b. Members more than 8 inches deep: plus 1/2 inch
 - 2. Concrete cover to formed surfaces: plus 1/4 inch
 - 3. Longitudinal location of bends and ends of reinforcement: plus 2 inches
 - 4. Spacing between reinforcing bars: 1/4 inch
- F. Support reinforcing in slabs-on-grade, slabs-on-voids, and slabs-on-deck on bolsters or blocks. Do not lift reinforcing during concrete placement.

3.3 COLD BENDING OF BARS IN FIELD

- A. Dowels connecting concrete of different pour sequences may be bent in field to facilitate form placement and removal with the following conditions:
1. Maximum bar size is #5
 2. Maximum bend angle is 90 degrees
 3. Bars may be bent and straightened one time only

3.4 FIELD QUALITY CONTROL

- A. Testing Laboratory Services
1. Inspect reinforcing sizes, quantities and placement.
 2. Inspect support and securement of reinforcing.
 3. Inspect condition of reinforcing.

END OF SECTION

SECTION 03 31 00

STRUCTURAL CONCRETE

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes
 - 1. Design of concrete mixes
 - 2. Furnishing and placing cast-in-place concrete
 - 3. Curing and finishing of concrete
 - 4. Waterstops
 - 5. Non-shrink grout

- B. Products Furnished, not Installed, under this Section
 - 1. Concrete for drilled piers

1.2 REFERENCES

- A. American Concrete Institute (ACI)
 - 1. ACI 117, Specification for Tolerances for Concrete Construction and Materials
 - 2. ACI 211.1, Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete
 - 3. ACI 213, Guide for Structural Lightweight – Aggregate Concrete
 - 4. ACI 214, Guide to Evaluation of Strength Test Results of Concrete
 - 5. ACI 301, Specifications for Structural Concrete
 - 6. ACI 302.1, Guide to Concrete Floor and Slab Construction
 - 7. ACI 304, Guide for Measuring, Mixing, Transporting, and Placing Concrete
 - 8. ACI 305.1, Specification for Hot Weather Concreting
 - 9. ACI 306.1, Standard Specification for Cold Weather Concreting
 - 10. ACI 308, Guide to External Curing of Concrete
 - 11. ACI 309, Guide for Consolidation of Concrete
 - 12. ACI 318, Building Code Requirements for Structural Concrete and Commentary
 - 13. MNL-15, Field Reference Manual

- B. American Society for Testing and Materials (ASTM)
 - 1. ASTM C31, Standard Method of Making and Curing Concrete Test Specimens in the Field.
 - 2. ASTM C33, Standard Specification for Concrete Aggregates.
 - 3. ASTM C39, Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens.
 - 4. ASTM C42, Obtaining and Testing Drilled Cores and Sawed Beams of Concrete.
 - 5. ASTM C94, Standard Specification for Ready-Mixed Concrete.
 - 6. ASTM C138, Standard Test Method for Density (Unit Weight), Yield, and Air Content (Gravimetric) of Concrete
 - 7. ASTM C143, Standard Test Method for Slump of Portland Cement Concrete.
 - 8. ASTM C150, Standard Specification for Portland Cement.
 - 9. ASTM C156, Standard Test Method for Water Retention by Concrete Curing Materials.
 - 10. ASTM C171, Standard Specification for Sheet Materials for Curing Concrete.
 - 11. ASTM C172, Standard Method of Sampling Fresh Concrete.
 - 12. ASTM C173, Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method.
 - 13. ASTM C231, Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method.
 - 14. ASTM C260, Standard Specification for Air- Entraining Admixtures for Concrete.
 - 15. ASTM C309, Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete.
 - 16. ASTM C330, Standard Specification for Lightweight Aggregates for Structural Concrete.
 - 17. ASTM C494, Standard Specification for Chemical Admixtures for Concrete.
 - 18. ASTM C567, Test for Unit Weight of Structural Lightweight Concrete.
 - 19. ASTM C618, Standard Specification for Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete.
 - 20. ASTM C989, Standard Specification for Slag Cement for Use in Concrete and Mortars.
 - 21. ASTM C1017, Standard Specification for Chemical Admixtures for Use in Producing Flowing Concrete.

22. ASTM C1064, Standard Test Method for Temperature of Freshly Mixed Hydraulic-Cement Concrete.
23. ASTM C1107, Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Non-Shrink).
24. ASTM C1315, Standard Specification for Liquid Membrane-Forming Compounds Having Special Properties for Curing and Sealing Concrete.
25. ASTM C1602, Standard Specification for Mixing Water Used in the Production of Hydraulic Cement Concrete.
26. ASTM E1155, Standard Test Method for Determining Floor Flatness and Levelness Using the "F Number" System (Inch-Pound) Units.
27. ASTM E1745, Standard Specification for Vapor Retarders Used in Contact with Soil or Granular Fill Under Concrete Slabs.

C. Corps of Engineers (CRD)

1. CRD-C13, Standard Specification for Air- Entraining Admixtures for Concrete.
2. CRD-C572, Specifications for Polyvinyl Chloride Water Stops.
3. CRD-C621, Corps of Engineers Specification for Non-Shrink Grout.

1.3 SUBMITTALS

A. Product Data: submit manufacturer's data indicating product compliance for the following:

1. Admixtures
2. Floor hardener
3. Curing compound
4. Curing and Sealing compound
5. Vapor Retarder
6. Reglets
7. Waterstops
8. Non-shrink grout

B. Material Certifications: submit certifications showing compliance for the following:

1. Portland cement
2. Fly ash
3. Slag cement
4. Sieve analyses for structural concrete aggregates:
 - a. Coarse aggregate
 - b. Fine aggregate

C. Structural Concrete Mix Designs for each class of concrete

D. Concrete Delivery Tickets: Submit sample ready-mixed concrete delivery tickets in accordance with ASTM C94 for each class of concrete.

E. Construction Joints: submit drawings indicating proposed construction joint locations.

1.4 QUALITY ASSURANCE

A. Batch Plant Qualifications: Conform to National Ready-Mixed Concrete Association certification requirements.

1.5 DELIVERY, STORAGE AND HANDLING

A. Transporting: Ready-mixed concrete supplier to have sufficient capacity and adequate facilities to provide continuous delivery at rate required for continuous placement throughout sequence of placement.

B. Storage of Materials

1. Store cement in weather tight buildings or bins which prevent intrusion of moisture or contaminants. Store different types of cement in separate facilities.
2. Stockpile aggregates to prevent segregation and contamination with other materials. Thaw frozen aggregates before use.
3. Drain sand to uniform moisture content before use.
4. Store admixtures securely to prevent contamination, evaporation, damage or temperature variation in excess of range recommended by manufacturer.

5. Store waterstops under cover to prevent exposure to sunlight, moisture, soil and other deleterious materials.

C. Delivery: Truck mixers, agitators and non-agitating units: Conform to ASTM C94

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Ardex Americas
- B. Dayton Superior
- C. Euclid Chemical Company
- D. W.R. Grace & Company
- E. SpecChem
- F. BASF
- G. W.R. Meadows
- H. Sika Corporation
- I. Sonneborn

2.2 MATERIALS

- A. Cementitious materials
 1. Portland cement: Conform to ASTM C150, Type I, II or III Portland Cement.
 2. Fly Ash: Conform to ASTM C618, carbon content not greater than 3 percent by volume.
 3. Slag Cement: Conform to ASTM C989.
- B. Fine aggregate: Conform to ASTM C33, natural bank or river sand, washed and screened, consisting of hard, durable, uncoated particles free of deleterious matter, and graded from coarse to fine to produce a minimum percentage of voids.
- C. Coarse aggregate: Conform to ASTM C33, gravel or crushed stone, suitably processed, washed and screened; consisting of hard, durable particles without adherent coatings.
- D. Coarse aggregate for lightweight concrete: Conform to ASTM C330, expanded clay or shale, producing a minimum split cylinder ratio of 5.0.
- E. Water: Conform to ASTM C1602.
- F. Admixtures: Conform to ASTM C494, Type A through G, and used strictly in accordance with manufacturer's recommendations.
- G. Air Entraining Admixtures: Conform to ASTM C260 and CRD-C13.
- H. Calcium chloride thiocyanates or admixture containing more than 0.05 percent chloride ions not permitted in concrete mixtures.
- I. Admixtures containing chlorides not permitted in concrete poured on metal floor deck.

2.3 CURING AND FINISHING PRODUCTS

- A. Liquid Curing Compound
 1. Conform to ASTM C309, Types 1 and 1D, Class B
 2. Meet federal and state VOC/AIM regulations.
 3. Dissipating resin type, which chemically breaks down after approximately 8 weeks.
 4. Does not inhibit bonding of flooring adhesives.
 5. Does not inhibit bond breaker, where applicable.
 6. Sodium silicates prohibited.
 7. Use on interior slabs receiving subsequent floor coverings and parking structures.

- B. Curing and Sealing Compounds:
 1. Conform to ASTM C1315, Type 1, Class A.
 2. Minimum 25 percent solids by volume.
 3. Moisture loss not more than 0.30 Kg/M2 when applied at 300 square feet per gallon.
 4. Meet federal and state VOC/AIM regulations

- C. Evaporation Retardant:
 1. Thin, continuous film which prevents rapid moisture loss from concrete surface.
 2. Use in concrete operations performed in direct sun, wind, or high temperatures.

- D. Waterproof Paper:
 1. Waterproof paper for curing concrete: 2 ply fiber-reinforced, asphaltic kraft paper conforming to ASTM C171.

- E. Abrasive Aggregate: aluminum oxide aggregate

- F. Floor Hardener:
 1. Penetrating liquid for subsequent application
 2. Non-staining
 3. Combination curing compound and hardener not permitted.

- G. Cement Floor Leveling Compound: Free flowing, self-leveling, pumpable, cementitious compound specially formulated for feather-edge application.

- H. Liquid Densifier / Sealer:
 1. Siliconate based sealer that penetrates concrete surfaces, increases abrasion resistance, and provides a "low sheen" surface.
 2. Clear, non-yellowing, fast curing, chemically neutral, without oils, fillers, extenders and stabilizers.
 3. Does not inhibit bonding of flooring adhesives.
 4. Does not inhibit bond breaker, where applicable.

- I. Comply with applicable air-quality and environmental regulations.

2.4 MISCELLANEOUS PRODUCTS

- A. Waterstops:
 1. Adhered Waterstops
 - a. Strip-applied waterstop comprised of a single component, self-sealing mastic. Example product:
 - 1) Greenstreak/Sika Lockstop
 - 2) Southern Metals Stop-Tite
 - 3) Vinylex UltraStop
 - 4) Synko-Flex SF302
 - b. Provide manufacturer's compatible primer adhesive to secure waterstop to concrete
 - c. When required, provide concrete nails in addition to primer adhesive to secure waterstop in vertical applications.

- B. Non-Shrink Grout:
 1. Pre-mixed, non-shrinking, high strength grout
 2. Compressive strength in 28 days: 5000 psi minimum at 28 days, but not less than specified strength of base concrete.

3. Conform to ASTM C1107 and CRD-C621.
4. Non-oxidizing if permanently exposed to view
5. Exhibits positive expansion when testing in accordance with ASTM C1090.
6. Example products:
 - a. Euco N-S Grout, manufactured by Euclid Chemical Co.
 - b. Masterflow 713, manufactured by Master Builders Co.
 - c. SikaGrout 212, manufactured by Sika Corporation.

2.5 CONCRETE MIXES

- A. General: Compose concrete of cementitious materials, fine aggregate, coarse aggregate, water, and admixtures where applicable. Design concrete mixes to be workable and appropriate for each application, to bond readily to reinforcement, without segregation or formation of excessive free water on surfaces.
- B. Strength Gain: design concrete mixes to obtain required strength in 28 days or less from date of placement.
- C. Selection of Proportions
 1. Determine ingredient proportions in accordance with ACI 301 to provide required strength, slump, resistance to weathering, placeability, durability and surface hardness for each class of concrete.
 2. Provide admixtures as required or appropriate to enhance workability, control set or improve strength.
 3. Minimum Cement Content: Cement content not less than 320 pounds per cubic yard
 4. Supplementary cementitious materials (fly ash and slag cement)
 - a. Percentage of supplementary cementitious materials not to exceed 25 percent of total cementitious content by weight
 - b. Fly ash not permitted in architecturally exposed concrete
 - c. Supplementary cementitious materials not permitted in concrete receiving dry shake floor hardeners
- D. Required Average Strength for Mix Design:
 1. Where suitable strength test records for concrete production facility are available, design strength may be based on standard deviation in accordance with ACI 301.
 2. Where strength test records are not available, base design strength on the following:

Specified Strength F'c - psi	Required Average Strength F'cr - psi
-----	-----
F'c < 3000	F'c + 1000
3000 ≤ F'c ≤ 5000	F'c + 1200
F'c > 5000	1.10 F'c + 700

- E. Documentation of Average Strength: provide evidence of average strength for each class of concrete in accordance with ACI 301 by field strength tests, strength test records or trial mixtures.
- F. Concrete Mix Designs: submit mix designs for each class of concrete.
 1. Indicate the following for each mix design:
 - a. Class designation
 - b. Proportions of cement, supplementary cementitious materials, fine and coarse aggregates, and water
 - c. Water-cement ratio, design strength, slump, and air content
 - d. Type of cement, supplementary cementitious materials and aggregates
 - e. Type and dosage of admixtures
 2. Adjust mix designs as required by weather and jobsite conditions to maintain specified strengths throughout course of Work without additional cost to Owner.
 3. As strength data becomes available during progress of Work, mix designs may be adjusted in accordance with ACI 301.
 4. Provide mix with target slump not to exceed 8 inches with no visible signs of segregation.

2.6 PRODUCTION OF CONCRETE

- A. Do not mix concrete for placement until:
 - 1. Mix designs and corresponding strength tests reflect that each proposed mix will develop strengths required
 - 2. Mix designs have been reviewed for compliance.
- B. Batching and Mixing:
 - 1. Batch and mix ready-mixed concrete in accordance with ASTM C94.
 - 2. Batch site-mixed concrete with scales accurate to within 0.4 percent of their total capacities. Consistently measure ingredients within 1 percent for concrete and water, 2 percent for aggregates and 3 percent for admixtures during operation of batching equipment. Mix site-batched concrete in accordance ACI 301.
- C. Admixtures: Charge air-entraining admixtures and other chemical admixtures into mixer as solutions and accurately measure by means of a mechanical dispenser. Consider solution as part of mixing water.

2.7 SOURCE QUALITY CONTROL

- A. Laboratory Inspection
 - 1. Verify required plant certifications
 - 2. Inspect batching equipment periodically
 - 3. Inspect batching and loading of transit-mix trucks at start of each production day.
- B. Materials Testing
 - 1. Sieve analysis of aggregates

PART 3 - EXECUTION

3.1 PREPARATION

- A. Do not begin delivery of concrete materials until formwork, reinforcement, and embedded items are complete, properly positioned and secured in place.
 - 1. Remove snow, ice, debris and excessive water from forms.
 - 2. Pre-wet soil and sand subgrades and surfaces of precast concrete to receive fresh concrete.
 - 3. Position and secure expansion joint materials, anchors, waterstops, screeds, control joint forms, and expansion caps on slip-dowels.
 - 4. Remove hardened concrete and foreign materials from inner surfaces of conveying equipment, formwork and reinforcing.
- B. Prepare and have ready in good working condition chutes, tremies, pumps, buggies, vibrators and other equipment necessary for orderly and continuous concrete placement.
- C. Where carton-form void forms are used, inspect condition before placing concrete. Replace crushed or weakened boxes and tape joints. Repair sides of grade beam and wall excavations so that not more than 3 inches of ground is visible beyond void box edges.
- D. Inspect and repair vapor retarder where applicable.

3.2 INSTALLATION

- A. Conveying:
 - 1. Prevent separation, segregation and loss of ingredients.
 - 2. Convey concrete from mixer to place of final deposit as rapidly as possible.
 - 3. Take special precautions with belt conveyors to prevent segregation of ingredients, drying and rise in temperature during conveying.
 - 4. Use pumps or pneumatic equipment with adequate pumping capacity. Do not exceed 2 inches of slump loss due to pumping. Do not convey concrete through pipes made of aluminum or aluminum alloy.
 - 5. Thoroughly clean conveying equipment at end of each placement sequence.

B. Depositing:

1. Place concrete continuously in horizontal layers not more than 12 inches deep. Exercise care to avoid seams or weakened planes within concrete. Deposit concrete into, not away from, previously deposited concrete.
2. Do not place fresh concrete against concrete that would result in cold joints.
3. Do not place concrete which has partially set or that contains foreign material.
4. Avoid splashing forms and reinforcing with concrete.
5. Place concrete in forms as near as practicable to final position. Do not transport concrete in forms with vibrators or screeds.
6. Do not drop concrete directly into standing water. Use a tremie with outlet near bottom of place of deposit.
7. Use tremies, chutes or hoppers to place concrete where a vertical drop greater than 5 feet is required.
8. Do not place concrete when slump tests indicate plasticity greater than required limits.
9. Continuously monitor condition of void box forms during placement of concrete. Avoid piling concrete on void forms. Replace void boxes that partially or wholly collapse under weight of concrete.
10. Indiscriminate addition of water to increase slump is prohibited. When concrete arrives at jobsite with slump below that suitable for placing, water may be added only if neither maximum permissible water-cement ratio nor maximum slump is exceeded.

C. Consolidating:

1. Conform to ACI 309
2. As soon as concrete is deposited, thoroughly agitate by means of mechanical vibrators and suitable hand tools, to work mixture well into parts and corners of forms, and entirely around reinforcement and inserts.
3. Use mechanical vibrators with minimum frequency of 7000 revolutions per minute.
4. Do not over-vibrate concrete or use vibrators to transport concrete within forms. Insert vibrators vertically at frequent intervals, do not drag vibrators through concrete.
5. Do not insert vibrators into lower courses that have begun to set.
6. Maintain spare vibrators on job site during concrete placing operations.

D. Placement against hardened concrete:

1. Remove laitance and thoroughly clean and dampen surface of hardened concrete before placement of fresh concrete.
2. If bond is required, roughen surface in an acceptable manner that exposes coarse aggregate and does not leave laitance, loose aggregate particles, or damaged concrete at surface.

3.3 APPLICATION

A. Construction Joints

1. Each unit of structure (beam, column, pier, slab, or wall) to be monolithic in construction except where specifically required to be otherwise.
2. Where required, locate construction joints within middle third of span of conventionally reinforced beams and slabs.
3. Where required, locate construction joints in slabs on metal deck at one or both of the following locations:
 - a. Where construction joint is parallel to deck span, locate at third points of beams spanning perpendicular to deck.
 - b. Where construction joint is perpendicular to deck span, locate at equal spacing between beams and in middle third of girder spanning parallel to deck span.
4. Locate construction joints only where shown in structural Contract Documents or approved submittals.

B. Weather Conditions:

1. Cold Weather:
 - a. Conform to ACI 306 when air temperature has fallen, or is expected to fall, below 40 degrees Fahrenheit within 3 days of concrete placement.
 - b. Concrete mixture temperature can be adjusted by adding uniformly heated water and/or aggregates that conform to ACI requirements.
 - c. Maintain temperature of deposited concrete between 50 degrees Fahrenheit and 70 degrees Fahrenheit for a minimum of 7 days after placement.
 - d. Clear surfaces to receive concrete and spaces to be filled with concrete of snow, ice, and standing water before placement.
 - e. Discuss cold weather concreting methods with Architect prior to concrete placement.

2. Hot Weather:
 - a. Conform to ACI 305, when ambient temperature is 80 degrees Fahrenheit or higher.
 - b. Maximum allowable fresh concrete temperature is 95 degrees Fahrenheit, unless one of the following has been submitted to and approved by Architect:
 - 1) Letter written by concrete supplier guaranteeing performance of a higher fresh concrete temperature based on past field experience with similar production conditions, materials, constituent proportions and temperatures, and delivery times.
 - 2) Preconstruction testing of concrete mixture at higher fresh concrete temperature in accordance with ACI 305.1 satisfies project requirements for fresh concrete properties and specified strength.
 - c. Concrete mixture temperature can be adjusted by adding chilled water, substituting portions of mixing water with chipped or shaved ice, or other methods that conform to ACI requirements.
 - d. Control concrete surface bleed-water evaporation with application of evaporation reducers, plastic sheeting, fog spray, or wind breaks.
 - e. Discuss hot weather concreting methods with Architect prior to concrete placement.
- C. Composite Concrete/Steel Construction
 1. Do not place concrete until inspection and measuring requirements of structural steel, composite metal floor deck and field welded shear studs are complete.
 2. Where concrete is to be placed on unshored steel beams, take care to prevent excessive deflection of beams during construction.
 3. For beam spans greater than 40 feet, place concrete from center of beams, working towards both ends simultaneously.
 4. Screed concrete slabs placed on unshored steel beams to required slab thickness above metal deck. Do not level.
- D. Slab Thickness
 1. Allowable deviation from cross sectional dimensions
 - a. Suspended slabs: minus $\frac{1}{4}$ inch
 - b. Slabs on ground:
 - 1) Average of samples: minus $\frac{3}{8}$ inch
 - 2) Individual sample: minus $\frac{3}{4}$ inch
- E. Slab Flatness and Levelness:
 1. General: Gap under straightedge and between support points of a freestanding 10 foot straightedge conform to the following requirements:
 - a. For slabs on grade and slabs on void: plus or minus $\frac{1}{4}$ inch in 10 feet in any direction, maximum 1 inch variation between columns, but not to exceed F_L and F_F limits below. Laser leveling of floor slab surface permitted.
 - b. For unshored suspended slabs: plus or minus $\frac{1}{4}$ inch in 10 feet in any direction, but not to exceed F_F limits below. See Division 5 Sections for steel frame tolerances. Laser leveling of floor slab surface not permitted.
 2. Definitions:
 - a. F_F - maximum variation in floor elevation within any 2-foot length; "flatness"
 - b. F_L - maximum variation in floor elevation between any 2 points separated by 10 feet; "levelness"
 - c. Specified Overall Value - minimum average for Project
 - d. Minimum Local Value - minimum within each column bay
 3. Slab flatness and levelness measurements:
 - a. Measure where requested by Owner or Architect, at Owner's expense.
 - b. Measure in accordance with ASTM E1155 and ACI 117.
 - c. Required minimum flatness and levelness values:
 - 1) Typical Slab
 - a) Slab-on-Grade and Slab-on-Void
 - I) Specified Overall Value – $F_F 25 / F_L 20$
 - II) Minimum Local Value – $F_F 17 / F_L 15$
 - b) Unshored Suspended Slabs
 - I) Specified Overall Value – $F_F 25$
 - II) Minimum Local Value – $F_F 17$
 - 2) Slabs with thin-set tile
 - a) Slab-on-Grade and Slab-on-Void
 - I) Specified Overall Value – $F_F 36 / F_L 25$

- II) Minimum Local Value – F_F 24 / F_L 15
- b) Unshored Suspended Slabs
 - I) Specified Overall Value – F_F 30
 - II) Minimum Local Value – F_F 24
- 3) Mechanical rooms
 - a) Slab-on-Grade and Slab-on-Void
 - I) Specified Overall Value – F_F 20 / F_L 15
 - II) Minimum Local Value – F_F 15 / F_L 10
 - b) Unshored Suspended Slabs
 - I) Specified Overall Value – F_F 20
 - II) Minimum Local Value – F_F 15

3.4 FINISHING EXPOSED CONCRETE SURFACES

A. General

1. Conform to ACI 302.1.
2. Double screed slabs at required elevations.
3. Provide camber as required.
4. Apply finishing products and cure in accordance with manufacturers' recommendations.

B. Slab Surfaces

1. Scratch Finish
 - a. Locations
 - 1) Surfaces receiving topping slabs
 - 2) Final finish where topping slabs, waterproofing membrane or roofing is placed over finished surface.
 - b. Method: Place, consolidate, strike off, and level concrete. Cut high spots and fill low spots. Roughen surface with stiff brushes or rakes before concrete becomes too stiff to brush or rake.
2. Float finish
 - a. Locations -Walks, steps, and surfaces receiving waterproofing, roofing, insulation, or sand-bed terrazzo.
 - b. Method – Place, consolidate, strike off, and level concrete. Cut high spots and fill low spots. Do not perform further finishing operations until concrete is ready for floating. Floating with hand float, bladed power float equipped with float shoes, or powered disk float. Begin floating when bleed water sheen has disappeared and surface has stiffened sufficiently to permit operation of selected float apparatus. Unless otherwise specified, produce finish that will meet tolerance requirements of ACI 117 for conventional surfaces.
3. Trowel Finish
 - a. Locations – Interior floors.
 - b. Method: Float then trowel concrete surface. Unless otherwise specified, conform to tolerances for a flat surface in accordance with ACI 117. Addition of water to surface to facilitate finishing is prohibited. Do not apply hard-troweled finish to concrete with total air content greater than 3 percent.
4. Broom or belt finish:
 - a. Locations: For parking slabs and exterior surfaces including slabs, ramps, walkways, and steps.
 - b. Method: After concrete has received float finish, give concrete surface a coarse-scored texture by drawing a broom or burlap belt across surface.
 - c. Provide mockup of concrete finish for Architect and Owner approval.
5. Dry-shake finish
 - a. Locations: Where specified.
 - b. Method: If specified, blend metallic or mineral aggregate with Portland cement in proportions recommended by aggregate manufacturer. Ensure finishing operations do not seal surface before end of bleeding to minimize potential of delamination or blistering. Float-finish concrete surface. Make initial application of dry material by mechanical spreader or by broadcasting with shovels. Begin final floating after final dry-shake application. Following floating, provide hard-troweled finish. Alternatively, if specified in Contract Documents, use bagged, premixed material applied in accordance with manufacturers recommendations.
 - c. Provide mockup of concrete finish for Architect and Owner approval.
6. Nonslip finish
 - a. Locations: Interior pan type stair treads and platforms, exterior concrete stair treads, ramps, and where specified in Contract Documents.

- b. Method: Broom or belt finish, or dry-shake finish
 - 1) For dry-shake finish, give surface a dry-shake application of crushed aluminum oxide, at a rate of at least 25 pounds per 100 square feet, unless otherwise specified.
 - c. Provide mockup of concrete finish for Architect and Owner approval.
- C. Saw-Cutting Concrete Slabs-on-Grade
- 1. Saw joints as soon as possible after finishing, but only after concrete is hard enough. Concrete is hard enough when saw blade does not dislodge aggregate and when edges of sawcut do not ravel.
 - 2. Provide joints a minimum of 1/4 inch wide and 1/4 of slab thickness deep unless noted otherwise in Contract Documents.
 - 3. Formed strips may be used in lieu of saw-cutting in same locations and to equal depth as sawn joints.
- D. Formed Surfaces
- 1. General: Solidly fill holes resulting from removal of bolts or tie rods with cement grout. Fill holes passing entirely through concrete members from inside face with a plunger-type grease gun or other device to force grout through to outside face.
 - 2. Rough Form Finish
 - a. Locations: For surfaces not exposed to view.
 - b. Remove fins exceeding 1/4 inch in height, and grind bulges that interfere with other trades.
 - c. Fill holes and honeycombs.
 - 3. Smooth Form Finish
 - a. Locations: For surfaces exposed to view.
 - b. Remove fins, bulges and unsightly form marks.
 - c. Fill holes and honeycombs to match surrounding concrete surfaces.
 - d. Provide rubbed finish where satisfactory form finish cannot be achieved.
 - 4. Rubbed Finish
 - a. Locations: For surfaces exposed to view.
 - b. Apply finish as soon as possible after casting concrete, no later than one day following form removal.
 - c. Wet surface and rub with carborundum brick or other abrasive to produce uniform color and texture.
 - d. Patch and dress form tie holes and honeycombs to match color and texture of surrounding concrete.
 - 5. Grout Cleaned Finish
 - a. Locations: For surfaces exposed to view, where specified.
 - b. Thoroughly clean surfaces to be finished.
 - c. Mix 1 part Portland cement and 1 1/2 parts fine sand with sufficient water to produce grout with consistency of thick paint. Use white cement as necessary to match color of surrounding concrete. Wet concrete surfaces to prevent absorption of water from grout. Apply grout uniformly, filling holes and air bubbles. Remove excess grout. After initial set, rub surface with burlap. Wet cure for minimum 36 hours after final rubbing.

3.5 CURING AND PROTECTION

- A. Beginning immediately after placement, protect concrete from premature drying, excessively hot or cold temperatures and mechanical damage. Conform to ACI 308.
- B. Protect surfaces not in contact with forms from moisture loss with one of the following methods immediately after finishing and continuing for a period of at least 7 days:
 - 1. Ponding or continuous sprinkling
 - 2. Application of absorptive mats or fabric kept continuously wet
 - 3. Application of sand kept continuously wet
 - 4. Continuous application of steam or mist
 - 5. Application of waterproof sheet materials
 - 6. Application of curing compound in conformance with ASTM C309. Apply curing compounds in accordance with manufacturer's recommendations.
 - a. Do not use curing compound on any surface against which additional concrete is to be placed or other material is to be bonded, unless it is proven that compound will not inhibit bonding, or positive measures are taken to completely remove compound from areas to received bonded materials.

- C. Protect surfaces cast against forms from moisture loss by keeping forms wet until removed. After form removal, protect exposed surfaces from moisture loss by one of the methods specified for surfaces not in contact with forms
- D. Continue curing for a period of 7 days for Type I cement, 3 days for Type III cement, or until tests indicate that concrete has attained 70 percent of required strength.

3.6 Waterstop Installation

A. Adhered Waterstop Installation

- 1. Inspect waterstop for discontinuity and debris contamination prior to concrete placement. Replace unacceptable waterstop with new product.
- 2. Adhere waterstop to concrete using waterstop manufacturer's recommended adhesive in accordance with manufacturer's recommendations.
- 3. Allow adhesive to cure for 2 hours (or longer if recommended by manufacturer) prior to placing concrete over waterstop.
- 4. Apply waterstop on same day as primer adhesive, within recommended time after applying primer adhesive.
- 5. Splice waterstop by overlapping ends and pressing ends together in a molding action ensuring no separation or air pockets.
- 6. Remove separation paper from waterstop just prior to subsequent placement of concrete.

3.7 FIELD QUALITY CONTROL

A. Laboratory Testing and Inspection

- 1. Concrete Compression Testing: Secure composite samples in accordance with ASTM C172. Take samples for strength tests of each mix design placed each day at the following intervals:
 - a. not less than once daily,
 - b. nor less than once for each 150 cubic yards of concrete,
 - c. nor less than once for each 5,000 square feet of surface area for slabs or walls.
- 2. Mold and cure specimens from each sample in accordance with ASTM C31. Test concrete specimens in accordance with ASTM C39. A single strength test consists of one of the following:
 - a. Four 6 inch by 12 inch cylinders: one cylinder tested at 7 days, two cylinders tested at 28 days, one cylinder held in reserve if needed.
 - b. Five 4 inch by 8 inch cylinders: one cylinder tested at 7 days, three cylinders tested at 28 days, one cylinder held in reserve if needed.
- 3. Determine slump for each strength test and whenever consistency of concrete appears to vary, in accordance with ASTM C143. Ready mix trucks with Verifi Slump Management System, or approved equal, are permitted.
- 4. Determine total air content of concrete sample for each strength test.
 - a. Conform to ASTM C231 for normal weight concrete
 - b. Conform to ASTM C138 or C173 for lightweight concrete.
- 5. Determine concrete temperature by ASTM C1064 for each strength test.
- 6. Inspection and Monitoring:
 - a. Water additions during transit permitted in accordance with ASTM C94, with trucks equipped with automated slump and water management systems, such as Verifi Slump Management System.
 - b. Monitor addition of water to concrete at job site and length of time concrete is allowed to remain in truck during pour.
 - c. Certify each delivery ticket indicating class of concrete delivered or poured, amount of water added, time at which cement and aggregate were discharged into truck, and time at which concrete was discharged from truck.

B. Contractor's Responsibilities

- 1. Furnish necessary labor to assist testing agency in obtaining and handling samples at job-site.
- 2. Advise testing agency 24 hours in advance of operations to allow for assignment of testing personnel and testing.
- 3. Provide and maintain for use of testing agency adequate facilities for proper curing of concrete test specimens on project site in accordance with ASTM C31.
- 4. Burden of proof of structural adequacy where strength tests fail to meet criteria

- C. Evaluation and Acceptance:
1. Strength test is defined as the average of one of the following, made from the same concrete sample tested at 28 days or as determined by Architect:
 - a. Two 6 inch by 12 inch cylinders
 - b. Three 4 inch by 8 inch cylinders
 2. Strength level of a given class of concrete will be considered satisfactory if each of the following requirements are met for that class of concrete:
 - a. Average of any three consecutive strength test results equals or exceeds specified strength.
 - b. No strength test result falls below specified strength by more than 500 psi when specified strength is 5,000 psi or less, or by more than 10 percent of specified strength when specified strength is greater than 5,000 psi.
 3. Concrete strength tests made and tested by testing laboratory are sole criteria of concrete strength unless in-situ tests are made in accordance with Building Code by a qualified independent testing laboratory. Concrete for which strength tests do not meet criteria for acceptance is considered inadequate until proven otherwise.
 4. Where strength tests fail to meet criteria specified herein:
 - a. Architect is sole judge of structural adequacy of concrete
 - b. Additional strength evaluations of hardened concrete:
 - 1) Architect may request core testing in conformance with ACI 301 at no additional cost to Owner
 - 2) Nondestructive testing is not acceptable for determining in-place strength.
 - c. If Architect determines, based on strength evaluation testing, that structure is of inadequate strength: repair or remove and replace portions of structure in question, as directed by Architect, at no additional expense to Owner.
 - d. If strength tests fall below specified strength, but not so low as to cause concern for structural adequacy, Architect may request improved conditions of curing or modification of design mixes to improve strength.

3.8 CLEANING AND REPAIR

- A. Upon completion of work, perform the following cleaning and repair procedure:
1. Remove forms, equipment, protective coverings and resulting rubbish from premises.
 2. Sweep with ordinary broom and remove mortar, concrete droppings, loose dirt, and mud.
 3. Wash concrete floors and platforms with soapsuds and scrub with steel fiber brush.
 4. Mop up suds and flush surfaces with clean water.
 - a. Provide adequate measures during scrubbing, mopping, and flushing operations to keep excessive or injurious amounts of water off floors.
 5. Promptly, effectively and satisfactorily repair any damage occasioned to such floors by or on account of such operations.
 6. Leave finished concrete surfaces in clean condition.
- B. Remove concrete not required by Contract Documents caused by overpour, bulging or collapse of forms or error in form construction.

END OF SECTION

SECTION 03 35 19

COLORED CONCRETE FINISHING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Chemical staining of accessible curb ramps includes furnishing all labor, materials, and equipment necessary for, and pertinent to, the work to be done. Work will be accomplished in a thorough and workmanlike manner. The specified products will be prepared and applied strictly in accordance with the manufacturer's recommendations.
- B. Related Sections:
 - 1. Section 03 31 00 - Structural Concrete.
 - 2. Section 32 13 13 - Concrete Paving.

1.2 SUBMITTALS

- A. Product Data: Submit in accordance with SECTION 01 33 23 - SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES. Submit current specifications and product literature, including color charts, as printed by the manufacturer of the products specified herein. All proposed materials and methods of application are subject to review by the Architect and Owner. The Contractor shall include his qualifications, as required below, in this submittal.

1.3 LIMITS OF THE WORK

- A. The extent of concrete surfaces to be stained shall be as indicated on the drawings and/or as described in the specifications and/or bid proposal.

1.4 OBSERVATION OF EXISTING CONDITIONS

- A. It is essential that prior to submitting a bid, the contractor shall observe existing improvements adjacent to the places of work and places of access to perform the work.

1.5 ACCESS

- A. Access to the work shall be as indicated on the plans.

1.6 TEST PANEL

- A. A test panel as shown on the plan sheet details shall be stained to the Owner's and Architect's satisfaction before work may begin.

1.7 STANDARDS AND WORKMANSHIP

- A. Chemical stain and preparation materials shall perform, be manufactured, and be applied as described in LITHOCHROME CHEMICAL STAIN: Application Instructions A-403.03 (1985) by L. M. Scofield Company, 6533 Bandini Boulevard, Los Angeles, California 90040.

1.8 QUALIFICATIONS

- A. The chemical staining contractor shall submit a list of completed projects in which chemical staining of concrete surfaces was done. The list shall include the name of client, location, completion date, and telephone number of the Owner or of the General Contractor.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Chemical stain for coloring concrete shall be LITHOCHROME, a penetrating, acid stain manufactured by L.M. Scofield Company, or an approved equal.
 - 1. Color: One color shall be selected by the Architect.

2.2 MATERIAL LABELS AND CONTAINERS

- A. Materials specified for application shall be delivered to the site in sealed containers, properly labeled with the manufacturer's labels, and stenciled with the proper batch code numbers. Products packaged or labeled in any other manner will not be accepted.

PART 3 - EXECUTION

3.1 ADVERSE CONDITIONS

- A. Neither preparation materials nor chemical staining materials will be applied when adverse conditions exist. Adverse conditions include air pollutants, blowing sand and other airborne materials, excessive humidity, present or imminent precipitation of all kinds, high and low temperatures, adverse concrete surface conditions, and other conditions and limitations as specified by the product manufacturer(s) that are detrimental to the products' performance and the desired results as specified herein:
 - 1. Protection of Materials: All materials and containers stored on the site will be protected from extremes of heat, solar radiation and cold which adversely affect their performance.

3.2 PROTECTION OF EXISTING IMPROVEMENTS

- A. The contractor shall be responsible to protect existing improvements (such as lawn areas, landscape materials, curbing, pavements, fences, walks, etc.) from damage, coloration, or applications of staining materials. Such areas shall be masked or otherwise protected. Any existing improvements that are damaged or detrimentally affected will be cleaned, repaired, or restored to their original condition by the contractor at his expense.

3.3 SAFETY PRECAUTIONS

- A. Since the chemical stain has corrosive and toxic properties, the contractor shall exercise care in its application to avoid contaminating people, animals, plants, or trees. The contractor will take necessary measures to keep people away from the area where the stain is being applied. Refer to Note 9 of the referenced "Application Instructions A-403.03."

3.4 PREPARATION OF THE SURFACE

- A. Concrete surfaces to be stained will be prepared per the stain manufacturer's recommendations. In general, the concrete shall have cured for at least 30 days, and it shall be dry, clean and free of curing compound, excess dust, paint, mortar, oils, waxes, and other foreign materials that would adversely affect the penetration and subsequent reaction of the stain solution with the concrete surface to be colored. The Owner's representative or Architect shall approve the surface before staining may begin.

3.5 APPLICATION

- A. Stain will be applied per the manufacturer's instructions using either a broom-type medium-stiff bristle brush or spray equipment, as appropriate. Scofield's instructions shall be followed for application on vertical and sloping surfaces.
 - 1. Coverage: One gallon of stain will cover approximately 125-200 square feet with two coats depending on surface texture and porosity of the concrete.
 - 2. Coats: One or two coats will be applied, as selected by the Owner.
 - 3. Drying Time: A minimum of eight hours will elapse between coats.
 - 4. Sealants and Waxes: None are required.

3.6 COLOR RESULTS

- A. Color variations shall not be extreme and shall not vary significantly from the color(s) on the test panel that are judged satisfactory by the Architect.
 - 1. Coats: The Architect will select the number of coats to be applied. If the color variation after application is judged unacceptable by the Architect, the contractor shall apply more stain as necessary to correct the problem.

3.7 CLEANUP

- A. The contractor is responsible for removing and disposing of all containers, surplus material, rubbish, trash, debris or other foreign material resulting from his work. In general, the site shall be left in a clean and orderly condition acceptable to the Owner.

3.8 CURING COMPOUND

- A. Concrete surfaces designated to receive chemical stain must be free of curing compound. Accordingly, finished concrete shall be "water-cured" or shall be completely sandblasted if cured with a curing compound membrane.

END OF SECTION

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SECTION 03 62 14

GROUTING STEEL BASE PLATES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes
1. Grout for steel baseplates

1.2 REFERENCE STANDARDS

- A. American Society for Testing and Materials:
1. ASTM C1090, Standard Test Method for Measuring Changes in Height of Cylindrical Specimens from Hydraulic Cement Grout
 2. ASTM C1107, Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Non-Shrinkable)
- B. Corps of Engineers:
1. CRD-C621, Specification for Non-Shrink Grout.

1.3 SUBMITTALS

- A. Product Data: submit manufacturer's data indicating product compliance for the following:
1. Non-shrink grout.

1.4 DELIVERY, STORAGE AND HANDLING

- A. Store grout materials in dry condition above ground.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Non-Shrink Grout:
1. Pre-mixed non-shrinking, high strength grout.
 2. Compressive strength in 28 days: 5000 psi minimum, but not less than specified strength of base concrete.
 3. Comply with ASTM C1107, and CRD-C621.
 4. Nonoxidizing, if grout will be permanently exposed to view.
 5. Exhibits positive expansion when testing in accordance with ASTM C1090.
 6. Acceptable products:
 - a. Euco N-S Grout, manufactured by Euclid Chemical Co.
 - b. Masterflow 713, manufactured by Master Builders Co.
 - c. SikaGrout 212, manufactured by Sika Corporation.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Surface preparation:
1. Clean slab or foundation of dirt and loose material down to sound concrete.
 2. Remove oil, grease, and paint from areas of base plates or foundations to be grouted.
 3. Roughen adjacent concrete surfaces where possible.
 4. Thoroughly wet concrete contact area at least 4 hours prior to grout placement, or as instructed by grout manufacturer. Keep wet, and remove excess water prior to placement.
- B. Mixing
1. Use mechanical mortar mixer.
 2. Use the minimum amount of mixing water needed for placement.

3. Comply with manufacturer's recommendations for:
 - a. Quantity of water used in mix.
 - b. Length of mixing time.
 - c. Pot life.
 - d. Retempering.

C. Forms

1. Use side forms if grout space is thicker than 1-1/2 inches.
2. When forms are required, use strong, securely anchored forms, sealed to prevent grout leakage.
3. Remove forms only after grout is completely self-supporting.

3.2 APPLICATION

A. Placement and Consolidation

1. Bearing plates shall be fully grouted, without cavities, pockets, or air bubbles.
2. Place grout continuously, and from one side to avoid entrapment of air pockets and to ensure good consolidation.
3. Remove voids by rodding and vibrating during placement.
4. Do not overwork grout.
5. Use grout holes for baseplates larger than 24 inches in width.

B. Curing

1. Comply with manufacturer's recommendations for curing.
2. Do not vibrate or disturb grout during curing period.

END OF SECTION

SECTION 04 22 00

CONCRETE UNIT MASONRY

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Concrete unit masonry construction.
- B. Related Requirements:
 - 1. Section 01 45 23 - Testing and Inspection Services.
 - 2. Section 05 50 00 - Metal Fabrications: steel lintels.
 - 3. Section 07 11 13 - Bituminous Dampproofing
 - 4. Section 07 13 26 - Self-Adhering Sheet Waterproofing.
 - 5. Section 07 27 26 - Fluid-Applied Membrane Air Barriers
 - 6. Section 07 65 00 - Flexible Flashing; through-wall flashing for masonry walls.
 - 7. Section 07 21 00 - Building Insulation: continuous insulation.
 - 8. Section 07 21 19 - Foamed-in-place Insulation.
 - 9. Section 07 92 00 - Joint Sealants.
 - 10. Section 08 11 00 - Hollow Metal Doors and Frames; installation of steel frames.

1.2 SUBMITTALS

- A. General: Submit in accordance with SECTION 01 33 23 - SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Product Data: Submit for each type of product indicated.
 - 1. Include statements of material properties indicating compliance with requirements including compliance with standards and type designations within standards.
- C. Test Reports: Manufacturer of the concrete masonry units shall submit:
 - 1. Certified test reports showing that the units to be furnished meet the requirements of ASTM C 90 and C 129, and have the required minimum compressive strengths.
 - 2. Reports certifying concrete masonry units meet or exceed each of the fire resistive ratings.
- D. Provide a diagram of proposed control joints and expansion joints.
- E. Submit steel reinforcing shop drawings for load-bearing concrete masonry unit walls, including elevations showing reinforcing, control joints, bond beams, dimensions and details.
- F. Mortar Mixture Proportions: ASTM C 270, Submit copies of each proposed mix design for review prior to starting masonry work.
- G. Grout Mixture Proportions: ASTM C 476, Submit copies of each proposed mix design for review prior to any grout placement.
 - 1. Include recent historical grout cylinder strength test reports for each mix design.
- H. Pre-blended Mortar and Grout Certificates: Submit manufacturer's certificates that products meet or exceed specified requirements.
 - 1. Mortar: Submit test reports, per ASTM C 780, for each mortar mix indicating strength of mortar mixes. Submit computer batch-ticket to confirm the mixes meet the project SPEC MIX specifications for every 3,000-pound bulk bag of mortar.
 - 2. Grout: Submit test reports, per ASTM C1019, for each grout mix indicating compressive strengths. Submit computer batch-ticket to confirm the grout mixes meet the project SPEC MIX specifications for every 3,000-pound bulk bag of grout.

1.3 QUALITY ASSURANCE

- A. Manufacturer: Manufacturer shall have a minimum of 5 years' experience manufacturing the specified product.

- B. Installer: Masonry contractor shall have a minimum of 5 years' experience in similar types of work and be able to furnish a list of previous jobs and references if requested by the Architect.
- C. Pre-installation Conference: Contractor shall schedule pre-installation conference at the project site with Architect/Engineer and Owner's Testing Lab. Conference shall be held prior to proceeding with masonry work and shall comply with requirements in Division 01 Section "Project Management and Coordination".

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Store masonry units above ground on wood pallets which allow air circulation under the stacked units.

1.5 PROJECT CONDITIONS

- A. Refer to "Protection" Paragraph for daily activities.
- B. Cold Weather Construction: Do no masonry work when freezing weather is expected. If Contractor elects to lay masonry when air temperature falls or is expected to fall below 40°F., provide construction means and protection of completed masonry as described in BIA Technical Note 1A Cold Weather Masonry Construction -- Construction and Protection Recommendations.
 - 1. The use of admixtures or antifreezes to lower the freezing point of mortar shall not be permitted.
- C. In hot weather (above 99°F. with less than 50% relative humidity) protect masonry construction from direct exposure to sun and wind.
- D. Temporary Bracing: Take adequate precautions to prevent damage to walls during erection by high winds or other forces. Where necessary, provide temporary bracing until the designed lateral strength is reached.

PART 2 - PRODUCTS

2.1 MASONRY MATERIALS

- A. Concrete Masonry Units: ASTM C 90, Grade N-I, moisture controlled, for load-bearing units; ASTM C 129, moisture controlled, Type I, for non-load-bearing units. Provide hollow units made from Portland cement and lightweight mineral aggregate.
 - 1. All units shall be from the same manufacturing plant and shall have the same surface texture.
 - 2. Use load-bearing units for exterior wall backup and load-bearing partitions, non-load-bearing units elsewhere.
 - 3. Provide 1" bullnose units at exposed outside corners and jambs and as noted on drawings.
 - a. Provide square edge starter course corners at all rubber base conditions where preformed base corners are specified to be provided.
 - b. Provide square edges at all furred units and units to be covered with ceramic tile.
 - 4. Provide sash block control joints at all concrete block walls with H&B #VS pre-molded PVC control joint filler.
 - 5. Nominal Size: 8" x 16" face.
 - 6. Unit Compressive Strength: Provide units with minimum average net-area compressive strength of 2000 psi.
- B. Related Materials:
 - 1. Bond Breaker: ASTM D 226, Type I (No. 15), non-perforated asphalt-saturated felt.

2.2 REINFORCING AND TIES

- A. Triangular Ties and Column Anchors: ASTM A 82 galvanized steel wire, 3/16" diameter ties and 1/4" diameter anchors, for tying masonry walls to steel columns.
- B. Dovetail Anchors: 16 gage hot dip galvanized corrugated steel ties 1" wide x 4 1/2" long.

- C. Joint Reinforcement at Single-wythe Concrete Masonry Unit: Provide ladder type with continuous 9 gage ladder side and cross rods spaced not more than 16" o.c. and welded, unless smaller spacing is shown on the drawings. Product/manufacturer; one of the following:
#220 Ladder-Mesh; Hohmann & Barnard, Inc.
Series 200 Ladder Mesh; Wire-Bond
1. Finish shall be Class 1 mill galvanized.
 2. Corners and tees shall be prefabricated.
- D. Joint Reinforcement at Multi-wythe Concrete Masonry Unit at Areas Without Insulation/Unconditioned Space: Provide ladder type with continuous 9 gage sid and cross rods spaced not more than 16" o.c. and welded, unless smaller spacing is shown on the drawings. Product/manufacturer; one of the following:
#270-2X Ladder Eye-Wire; Hohmann & Barnard, Inc.
Series 800 Ladder; Wire-Bond
1. Finish shall be hot-dip galvanized.
 2. Corners and tees shall be prefabricated.
- E. Reinforcing Steel: ASTM A 615, Grade 60, deformed billet steel.

2.3 MORTAR AND GROUT MATERIALS

- A. Portland Cement: ASTM C 150, domestic manufacture, natural Portland cement. Provide white Portland cement for colored mortar and white mortar.
- B. Lime: ASTM C 207, Type S, with not more than 8% unhydrated oxides.
- C. Aggregate for Mortar; Sand: ASTM C 144, well-graded natural sand. Provide white or light color sand for colored mortar and white mortar.
- D. Aggregate for Grout: ASTM C 404.
- E. Water: Clean and free of deleterious amounts of acids, alkalis, or organic materials.
- F. Coloring Pigment: At concrete masonry units that are not painted, provide mortar color as selected by Architect. Provide coloring pigment as manufactured by Lambert Southwest, Inc., (phone 903.657.4680 web site: www.lambertsw.com) or Solomon Colors (phone 800.624.0261 web site www.solomoncolors.com).
- G. Water-repellent Admixture: Provide same integral liquid polymeric water repellent admixture used in split-faced and burnished concrete masonry units for mortar used in laying split-faced and burnished concrete masonry units.

2.4 MORTAR; FIELD PREPARED

- A. Mix proportions: ASTM C 270, mortar proportions by volume:
1. Type N Mortar - Exterior and Interior at masonry veneer construction:
1 part Portland cement
1 part lime
6 parts sand
Coloring Pigment: Add coloring pigment at manufacturer's recommended rate to obtain colors as selected by Architect. No mortar color is required at concealed or painted masonry.
 2. Type M Mortar - Exterior masonry veneer construction below grade or in contact with earth:
1 part Portland cement
1/4 part lime
3-3/4 parts sand
 3. Type S Mortar - Exterior and Interior at load-bearing masonry walls:
1 part Portland cement
1/2 part lime
4-1/2 parts sand
Coloring Pigment: Add coloring pigment at manufacturer's recommended rate to obtain colors as selected by Architect. No mortar color is required at concealed or painted masonry.

4. Bedding Mortar:
1 part Portland cement
1/7 part lime
3 parts sand

B. Mixing:

1. All dry material shall be accurately measured in a leak-proof batching box. Contractor shall have the option of using pre-manufactured cubic foot batching box or fabricating a wood box for measuring dry materials by volume. Box may be a convenient size, but shall be not less than 12" x 12" x 12" inside dimensions. The use of shovels for measuring dry materials is strictly prohibited.
2. Proportion mortar accurately and mix thoroughly with the maximum amount of water to produce a workable consistency for at least 5 minutes in a mechanical batch mixer. Keep tools and mixing equipment clean.
3. Do not use mortar which has begun to set, or if more than 2-1/2 hours have elapsed since initial mixing. Do not re-temper mortar.

- C. Use: Lay exterior and interior masonry veneer construction using Type N mortar. Lay exterior masonry veneer below grade or in contact with earth using Type M mortar. Lay exterior and interior load-bearing masonry using Type S mortar. Where required use bedding mortar to set and fill hollow metal frames.

- D. Masonry cement is not acceptable for mortar.

- E. Do not use calcium chloride in mortar.

- F. Pre-mix, dry or wet, is not acceptable for mortar, except as listed below; i.e. no other pre-mix mortars are acceptable.

2.5 MORTAR; PRE-BLENDED MORTAR MIXES, COLORED MORTAR MIXES, AND INTEGRAL WATER REPELLENT MORTAR MIXES

- A. Contractor's Option: Provide pre-blended mortar mix, colored mortar mix, and integral water repellent mortar mix as manufactured by SPEC MIX, Inc. (phone 888.773-2649 web site: www.specmix.com), instead of field-prepared mortars. SPEC MIX pre-blended mortar option shall include manufacturer's standard silo system for mixing and delivery of mortar mixes.

1. Equivalent products by Quikrete Cement and Concrete Products—Dallas (800.627.6125) will be considered as acceptable.
2. Pre-blended mortar mixes shall be mixed with potable water in strict compliance with manufacturer's written instructions and recommendations.
3. Masonry cement is not acceptable for pre-blended mortar.

B. SPEC MIX PCL Sand Pre-blended Mortar Mix:

1. Material: Pre-blended factory mix of Portland cement, hydrated lime and sand aggregate mixtures.
2. Mortar Type: Property mixture Type S for exterior and Interior at load-bearing and non-load-bearing masonry unit walls and Type N for exterior and Interior masonry veneer construction.

C. SPEC MIX PCL Sand Pre-blended Colored Mortar Mix:

1. Material: Pre-blended factory mix of Portland cement, hydrated lime, sand aggregate, and color pigments.
2. Mortar Type: Property mixture Type S for exterior and Interior at load-bearing and non-load-bearing masonry unit walls Type N for exterior and Interior masonry veneer construction.

D. SPEC MIX PCL Sand Pre-blended IWR Colored Mortar Mix:

1. Material: Pre-blended factory mix of Portland cement, hydrated lime, sand aggregate, color pigments, and incorporating dry SPEC MIX Integral Water-repellent Mortar Admixture.
2. Mortar Type: Property mixture Type S for exterior and Interior at load-bearing and non-load-bearing masonry unit walls and Type N for exterior and Interior masonry veneer construction.

- E. Mixing: Mix mortar using manufacturer's standard mechanical mixer to ensure homogeneity and workability. Observe mixing times of 4-5 minutes, consistent from batch to batch. Use clean, potable water; add the maximum amount consistent with optimum workability.

1. At the end of the day, thoroughly rinse the mixer to avoid contamination of future mortar batches.
2. Discard mortar 2.5 hours after initial mixing.

2.6 GROUT; FIELD PREPARED

- A. Grout shall conform to ASTM C 476. Provide grout for bond beams, masonry lintels, and reinforced masonry.
1. Fine Grout Proportions:
 - 1 part Portland cement
 - 1/10 part lime
 - 3 parts fine aggregate
 2. Coarse Grout Proportions
 - 1 part Portland cement
 - 1/10 part lime
 - 3 parts fine aggregate
 - 2 parts coarse aggregate
- B. When placing grout in masonry, exercise extreme care to prevent grout from staining face of masonry.

2.7 GROUT; PRE-BLENDED

- A. Contractor's Option: Provide pre-blended grout mix as manufactured by SPEC MIX, Inc. (phone 888.773-2649 web site: www.specmix.com), instead of field-prepared grouts. SPEC MIX pre-blended grout option shall include manufacturer's standard silo system for mixing and delivery of grout mixes.
1. Equivalent products by Quikrete Cement and Concrete Products-Dallas (800.627.6125) will be considered as acceptable.
 2. Pre-blended grout mixes shall be mixed with potable water in strict compliance with manufacturer's written instructions and recommendations.
- B. SPEC MIX Core Fill Masonry Grout:
1. Material: Pre-blended factory mix of cementitious materials and dried aggregates meeting ASTM C 476 requirements for reinforced masonry construction.
 2. SPEC MIX Core Fill - Fine Grout: Pre-blended mix containing cementitious materials and fine aggregate designed to fill masonry voids two inches or less.
 3. SPEC MIX Core Fill - Course Grout: Pre-blended mix containing cementitious materials and coarse aggregate designed to fill masonry voids greater than two inches.
- C. Mixing: Mix grout using manufacturer's standard mechanical mixer to ensure homogeneity and workability. Observe mixing time of 5 minutes, consistent from batch to batch. Use clean, potable water; add the maximum amount consistent with optimum workability.
1. Discard unused grout 1.5 hours after initial mixing.

2.8 MASONRY CLEANER

- A. Use "Sure Klean 600" at concrete masonry units which are not adjacent to colored mortar and concrete masonry units which are scheduled to be painted.

2.9 ACCESSORIES

- A. Control Joints: Preformed rubber material; RS-Standard Rubber as manufactured by Hohmann & Barnard, Inc. or comparable products by Heckman. Width slightly less than wall thickness to allow for sealant material.
- B. Joint Sealant: Refer to SECTION 07 92 00 - JOINT SEALANTS.
- C. Cellular Plastic Weeps:
1. One-piece, flexible extrusion made from UV-resistant polypropylene copolymer, full height and width of head joint and depth 1/8" less than depth of outer wythe.
 2. Color shall be selected by Architect from full range of color samples.
 3. Product/manufacturer; one of the following:
 - Mortar Maze weep vent; Advanced Building Products Inc.
 - No. 85 Cell Vent; Heckmann Building Products Inc.
 - Quadro-Vent; Hohmann & Barnard, Inc.
 - Cell Vent; Wire-Bond

- D. Cavity Drainage Material: Free-draining mesh, made from polymer strands that will not degrade within the cavity. Provide strips, full-depth of cavity and 10 inches high, with dovetail shaped notches 7 inches deep that prevent mesh from being clogged with mortar droppings. Product/manufacturer; Mortar Net™ with Insect Barrier, Mortar Net USA, Ltd. (phone 800.664.6638 web site: www.mortarnet.com).
1. Provide single thickness 2" material at 1-3/4" to 2-1/4" wide masonry cavities.
 2. Provide single thickness of 1-1/2" material at 1-1/4" to 1-5/8" wide masonry cavities.
 3. Provide single thickness of 1" material at masonry cavities less than 1-1/4".
- E. Provide "Blok-Flash" as manufactured by Mortar Net USA, Ltd. CMU cell flashing pans with built-in adjoining bridge made from recycled polypropylene with chemical stabilizers that prevent UV degradation. Flashing pans have a sloped design to direct moisture to the integrated weep spout. Designed to be built into mortar bed joints to expel moisture (unimpeded by mortar droppings) to the exterior of CMU walls.
- F. Rebar Positioners: Size and type required to accurately place reinforcing steel in bond beams, concrete masonry unit lintels and vertically in walls.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Cleaning: Beams, slabs, and lintels on which masonry walls and partitions are to be laid shall be brushed thoroughly to remove loose dirt and laitance.

3.2 INSTALLATION

- A. Installation Tolerances:
1. Maximum Variation from Plumb:
 - a. Vertical lines and surfaces of columns and walls:
 - 1) 1/4" in 10'-0".
 - 2) 3/8" in any story or 20'-0" maximum.
 - 3) 1/2" in 40'-0".
 - b. External Corners or Control Joints:
 - 1) 1/4" in any one story or 20'-0" maximum.
 - 2) 1/2" in 40'-0".
 2. Maximum Variation from Unit to Adjacent Unit: 1/32" maximum. Maximum variation is mandatory on walls where only one surface is exposed. Where two surfaces are exposed to view, the more prominent face, per Architect, is to have maximum variation maintained, with the less prominent face allowed to exceed the maximum tolerance.
 3. Maximum Variation from Level or Grades for Exposed Lintels, Sill, Parapets, or Horizontal Grooves:
 - a. 1/4" in any bay or 20'-0" maximum.
 - b. 1/2" in 40'-0".
 4. Maximum Variation from Plan Location or Linear Building Line or Related Portions of Columns, Walls, and Partitions:
 - a. 1/2" in any bay or 20'-0" maximum.
 - b. 3/4" in 40'-0".
 5. Maximum Variation in Cross-sectional Dimension of Columns and Thickness of Walls: ±1/4".
 6. Maximum Variation in Mortar Joint Thickness:
 - a. Bed Joint: ±1/8".
 - b. Head Joint: ±1/8".
- B. Dimensions are based on modular units except for special details. If units other than modular size are used, there shall be no change in story heights or other main dimensions of partition centerlines, and connecting work shall be adjusted to any changes in unit sizes.
- C. Laying Concrete Masonry Units: Spread mortar beds smooth and full to cover all bearing areas. Do not furrow. Butter head joints and shove units into place. Head joints shall be staggered except where stack bond is specifically indicated. Make back joints full against the backing materials as each course is laid.
1. Leave pipe spaces open on one full side until pipe work has been completed and inspected.
 2. Lay concrete masonry walls and partitions level, plumb, straight, and true to line within tolerances specified above.
 3. Fill the cells of exposed concrete masonry units with mortar for a width of 8" at the jambs of all openings in exterior walls.
 4. Exposed ends of units at external corners shall be solid.

5. Units shown to be laid in stack bond shall be laid with such accuracy that a plumb line centered on a vertical joint in an upper course will be entirely within the width of the corresponding vertical joint in every lower course.
 6. Unless shown otherwise, provide vertical control joints not to exceed a length to height ratio of 1-1/2 : 1 or 25 ft., whichever is less.
 7. Maximum pour of grout in vertical cells shall be limited to 5'-0" unless cleanouts are provided at each cell.
 8. At veneer construction, install bond breaker between first course of masonry veneer and concrete foundations and beams. Gaskets at bottom of cavity walls shall not be used as bond breakers unless gasket occurs under the first course of masonry.
- D. Installation of Reinforced Unit Masonry:
1. Temporary Formwork and Shores: Construct formwork and shores to support reinforced masonry elements during construction.
 - a. Construct formwork to conform to shape, line, and dimensions shown. make sufficiently tight to prevent leakage of mortar and grout. Brace, tie, and support forms to maintain position and shape during construction and curing of reinforced masonry.
 - b. Do not remove forms and shores until reinforced masonry members have hardened sufficiently to carry their own weight and other temporary loads that may be placed on them during construction.
 2. Set reinforcing in required position and secure against displacement before grouting is started. Cells requiring vertical reinforcement and grout shall be aligned to provide continuous unobstructed vertical opening. Place vertical reinforcing in cells with enough steel extending to provide proper lap splice. Horizontal steel shall be fully embedded in grout.
 3. Grouting: Do not place grout until entire height of masonry to be grouted has attained sufficient strength to resist grout pressure.
 - a. do not exceed the following pour heights for fine grout.
 - 1) For minimum widths of the grout spaces of 3/4 inch or for minimum grout space of hollow unit cells of 1-1/2 by 2 inches, pour height of 12 inches.
 - 2) For minimum widths of grout spaces of 2 inches or for minimum grout space of hollow unit cells of 2 by 3 inches, pour height of 60 inches.
 - 3) For minimum widths of grout spaces of 2-1/2 inches or for minimum grout space of hollow unit cells of 2-1/2 by 3 inches, pour height of 12 feet.
 - 4) For minimum widths of grout spaces of 3 inches or for minimum grout space of hollow unit cells of 2 by 3 inches, pour height of 24 feet.
 - b. Do not exceed the following pour heights for coarse grout.
 - 1) For minimum widths of the grout spaces of 1-1/2 inches or for minimum grout space of hollow unit cells of 1-1/2 by 3 inches, pour height of 12 inches.
 - 2) For minimum widths of grout spaces of 2 inches or for minimum grout space of hollow unit cells of 2-1/2 by 3 inches, pour height of 60 inches.
 - 3) For minimum widths of grout spaces of 2-1/2 inches or for minimum grout space of hollow unit cells of 3 by 3 inches, pour height of 12 feet.
 - 4) For minimum widths of grout spaces of 3 inches or for minimum grout space of hollow unit cells of 3 by 4 inches, pour height of 24 feet.
 4. Provide cleanout holes at least 3 inches in least dimension for grout pours over 60 inches in height. Cleanouts shall be sealed after inspections before grouting.
 - a. Provide cleanout holes at each vertical reinforcing bar.
 5. Place grout in lifts not exceeding 5 feet.
 6. Consolidate grout at the time of initial placement.
 7. Grouting of a section of wall shall be completed within one day with no interruptions greater than one hour.
- E. Reinforcing Masonry Joints: Reinforce the bed joints of concrete masonry unit walls and partitions with continuous joint reinforcement strips.
1. Furnish strips in long lengths. Width of strips shall be 2" less than nominal overall width of the wall or partition.
 2. Lap strip ends 12" and bed side rods in mortar for complete cover and bond.
 3. Install strips in bed joints spaced 16" o.c. for exterior walls and 24" o.c. for interior partitions. Reinforcement shall extend into and bond the facing wythe in walls.
- F. Bonding: Tie together all masonry unit construction within walls and at intersections of walls by masonry bond and staggered vertical joints. Toothing will not be permitted except where specifically authorized by the Architect. Where walls must be built in advance of adjacent walls, form the stop-off by racking back.
1. Where bond with joint reinforcement cannot be made, use wall ties spaced not more than 16" o.c. horizontally and vertically. Ties shall be laid in the joints, not shoved into wet mortar after setting the next course of masonry.

2. Partitions between rooms without suspended ceilings, and 4" thick partitions with an unsupported length of more than 12 ft. shall be extended to the floor or roof above and wedged and sealed against it. Extend all other partitions above the highest adjacent ceiling, unless indicated to extend up to floor or roof above.
- G. Joints shall be 3/8" wide. Joints shall be straight and uniform.
1. Tool and work exposed joints to a hard, dense surface with a sled runner and leave without any shrinkage cracks. Delay tooling until the mortar has set thumbprint hard. Tool the joints in masonry walls behind chalkboards and tackboards.
 2. Rake out the joints to be caulked and keep them free of mortar as the work progresses.
 3. Provide control joints at inside corners with backer rod and sealant.
- H. Masonry Bearings: Provide bearings of common brick under framing members which bear on masonry walls unless the members bear directly on concrete-filled bond beams.
- I. Chases: Form chases and recesses to the required dimensions and lines, strike joints flush and remove excess mortar. Before closing chases and similar inaccessible spaces with masonry, remove all rubbish and sweep out the area.
- J. Lintels and Beams: Provide lintels and beams for openings in masonry walls. This includes lintels at masonry openings for ducts. Verify duct layouts on the mechanical drawings.
1. Reinforced Masonry Lintels: Construct and reinforce masonry lintels where shown.
 - a. Make concrete masonry lintel units of the same material and by the same process as the other concrete masonry units used in the building.
 - b. Use trough-type units, not regular units with the web knocked out. Fill the troughs with concrete.
 - c. Build lintels in place where possible and cure at least 14 days before subjecting them to load. Provide at least 8" bearing at each jamb.
 - d. Where reinforcing is not specifically called out for masonry lintels, use not less than a #4 bar top and bottom of 8" high masonry units for each 4" thickness of wall.
 2. Bond Beams: Provide bond beams in masonry walls. Bond beams shall be continuous where possible.
- K. Flashing:
1. Build in flashings which enter the masonry, using the materials and following the instructions of the pertinent sections of the specifications.
 2. Create end dams at ends of window heads, at edges of storefronts, and other vertical elements to channel water to nearest weep hole away from window mullions and other items which might allow water to travel vertically.
- L. Weeps: Install weep holes in veneer at 32" o.c. horizontally for clay masonry and 32" o.c. for 16" long concrete masonry, above through-wall flashing, above shelf angles, and at top and bottom of walls. Install cellular plastic weeps in strict accordance with manufacturer's written instructions and recommendations.
- M. Cavity Drainage Material: Install cavity drainage material in cavities to comply with manufacturer's written instructions and recommendations. Provide one or more thickness as required to fill cavity width. Install cavity drainage material with fabric facing to the exterior of the wall.
- N. Built-in work:
1. As work progresses, build-in metal door frames, fabricated metal frames, window frames, wood nailing strips, anchor bolts, plates, and other items to be built in the work supplied by other sections.
 2. Build-in items plumb and level.
 3. Bed anchors of metal door and glazed frames in mortar joints. Fill frame voids solid with mortar. Fill masonry cores with mortar minimum 8" from framed openings.
 4. Do not build-in organic materials subject to deterioration.
- O. Cutting and fitting:
1. Cut and fit for chases, pipes, conduit, sleeves, and grounds. Cooperate with other sections of work to provide correct size, shape, and location.
 2. Obtain approval prior to cutting or fitting any area not indicated or where appearance or strength of masonry work may be impaired.
- P. Miscellaneous Work:
1. Cooperate with other trades in installing their work in masonry. Furnish bedding mortar and set loose lintels. Cooperate in setting bucks and frames, maintain them in position and build them in with anchors properly placed. Do not distort frames by crowding.

2. Cut and form openings for recessed items and for electrical and plumbing installations so that wall plates and escutcheons will completely cover the openings. Cut edges shall be clean, sharp and straight.
 3. Fill solid with mortar the spaces around and behind metal door frames.
 4. Point with mortar the openings around flush-mounted electrical outlet boxes.
- Q. Curing: In dry weather, masonry exposed to wind and sun shall be wet with a fine water spray several times each day for at least 6 days, starting as soon as the mortar has set sufficiently to resist erosion.
- R. Non-Load-Bearing Concrete Masonry Unit Partitions: Partitions which extend up to structure above for fire, acoustical, or security reasons, shall terminate within 2" of structural deck, joists or beams to allow for deflection. Fill 2" gap with sealant and fire safing to achieve proper rating.

3.3 PROTECTION

- A. Remove and replace masonry units that are loose, chipped, broken, stained, or otherwise damaged or that do not match adjoining units. Install new units to match adjoining units; install in fresh mortar, pointed to eliminate evidence of replacement.
- B. Maintain protective boards at exposed external corners which may be damaged by construction activities.
- C. Provide protection without damaging completed work.
- D. At the end of each day's work, cover the tops of masonry walls, window sills and jambs, door jambs, and any other unfinished exposed cavity wall opening with plastic sheeting or other suitable material. Cover shall extend a minimum of 2' down both sides of walls and shall be held securely in place with Hohmann & Barnard, Inc. Masonry Wall Clamp No. HB3000.
- E. Keep expansion joint voids clear of mortar.

3.4 POINT AND CLEAN

- A. Pointing: Upon completion of the masonry work, fill and neatly point line nail holes and other defects. Remove mortar droppings from projecting surfaces.
- B. Cleaning: Clean exposed concrete masonry units by dry brushing at the end of each day's work and after final pointing to remove mortar spots and droppings.

3.5 FIELD QUALITY CONTROL

General: Owner will employ services of an independent materials testing laboratory to perform specified inspections and testing.

- A. Coordinate with Owner's testing laboratory to provide PERIODIC inspection of the following tasks:
 1. As masonry construction begins, and every 5000 sq. ft. during construction, the following shall be verified to ensure compliance:
 - a. Proportions of site prepared mortar.
 - b. Construction of mortar joints.
 - c. Location of reinforcement and connectors.
 2. During construction, the inspection program shall verify:
 - a. Size and location of structural elements.
 - b. Type, size, and location of anchors, including other details of anchorage of masonry to structural members, frames, or other construction.
 - c. Specified size, grade, and type of reinforcement and anchor bolts.
 - d. Protection of masonry during cold weather (temperature below 40°F.) or hot weather (temperature above 90°F.).
 3. Prior to grouting at interior non-load-bearing partitions shown in the Architectural drawings, the following shall be periodically verified to ensure compliance:
 - a. Grout space is clean.
 - b. Placement of reinforcement and connectors.
 - c. Proportions of site-prepared grout.
 - d. Construction of mortar joints.

- B. Coordinate with Owner's testing laboratory to provide CONTINUOUS inspection of the following tasks:
 - 1. Prior to grouting at masonry walls shown on the Structural Drawings, the following shall be continuously verified to ensure compliance:
 - a. Grout space is clean.
 - b. Placement of reinforcement and connectors.
 - c. Proportions of site-prepared grout.
 - d. Construction of mortar joints.
 - e. Grout placement shall be verified to ensure compliance with code and construction document provisions.

END OF SECTION

SECTION 04 43 00

STONE MASONRY

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
1. Chopped and honed stone veneer anchored to unit masonry back-up at interior and exterior walls.
 2. Chopped and honed veneer anchored to cold-formed metal framing and sheathing at interior and exterior walls.
 3. Metal anchors, mortar, and joint pointing.
- B. Related Sections:
1. Section 04 20 00 - Masonry Units.
 2. Section 04 72 00 - Cast Stone Masonry.
 3. Section 05 50 00 - Metal Fabrications: Shelf angles and supports.
 4. Section 06 10 00 - Rough Carpentry: Wood framed supporting wall.
 5. Section 07 62 00 - Sheet Metal Flashing and Trim: Coping and sill flashings.
 6. Section 07 92 00 - Joint Sealers: Sealant for perimeter, and control joints.
- C. Work Installed but Furnished under Other Sections:
1. Section 05 50 00 - Metal Fabrications: Metal fabricated items for building into the work.

1.2 SUBMITTALS

- A. General: Submit shop drawings and product data under provisions of Section 01 33 23 - SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Shop Drawings:
1. Indicate on shop drawings, layout, pertinent dimensions, anchorages, reinforcement, head, jamb, and sill opening details, and control jointing methods.
 2. Submit manufacturer's field erection or setting drawings under provisions of Section 01 33 23 - SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES
 3. Submit Chopping and Setting Drawings:
 - a. The chopped stone supplier shall prepare and submit to the Architect, for approval, complete chopping and setting drawings for all the limestone work under this contract. Such drawings shall show in detail the sizes, sections and dimensions of stone, the arrangement of joints and bonding, anchoring and other necessary details. If the contract drawings do not show the intent of the jointing, it will be the stone fabricator's responsibility to establish the jointing in accordance with industry standards. The contractor shall furnish all field dimensions necessary for fabrication. These drawings shall be based upon and follow the drawings and full-size details prepared by the Architect except where it is agreed in writing that changes be made. Each stone indicated on these drawings shall bear the corresponding number marked on an unexposed surface with a non-staining paint.
 - b. Projecting courses shall have beds in the wall at least 1" greater in depth than the projection, or be specially anchored to the structure as shown on setting drawings.
 - c. Provision for the proper anchoring, dowelling, and cramping of work in keeping with standard practices, also for the support of stone by shelf angles and loose steel, etc. when required, shall be clearly indicated on the setting drawings.
- C. Product Data:
1. Provide product data on stone units, mortar products, and reinforcements.
 2. Submit manufacturer's installation instructions under provisions of Section 01 33 23 - SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- D. Samples: Submit three samples 12 x 12 inch in size illustrating minimum, average, and maximum sizes, color range and texture, markings, surface finish.

- E. Mockup: Before installing stone masonry veneer, construct sample wall panels to verify selections made under Sample submittals and to demonstrate aesthetic effects and qualities of materials and execution. Build mockups to comply with the following requirements, using materials indicated for completed Work.
 - 1. Locate mockups in the locations indicated or, if not indicated, as directed by Architect.
 - 2. Build mockups in sizes approximately 48 inches long by 48 inches high by full thickness, including chopped stone, structural supporting wall, anchors, control joint condition, and include cast stone coping at top of mockup.
 - 3. Notify Architect 7 days in advance of the dates and times when mockups will be constructed.
 - 4. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.
 - a. Approval of mockups does not constitute approval of deviations from Contract Documents contained in mockups, unless such deviations are specifically approved by Architect in writing.
 - b. When directed, demolish and remove mockups from Project site.
 - 5. Provide mockup under provisions of SECTION 01 45 00 - QUALITY CONTROL.

1.3 QUALITY ASSURANCE

- A. Stone Supplier: Company specializing in quarrying chopped stone with minimum of ten years documented experience.
- B. Installer: Company specializing in installing chopped stone with 5 years documented experience.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store and protect products to site under provisions of Section 01 65 00 - PRODUCT DELIVERY REQUIREMENTS and Section 01 66 00 - PRODUCT STORAGE AND HANDLING REQUIREMENTS.
- B. Protect stone from visible discoloration.

1.5 PROJECT CONDITIONS

- A. Maintain materials and surrounding air to a minimum 40 degrees F prior to, during, and 48 hours after completion of work.
- B. During temporary storage on site, at the end of working day, or during rainy weather, cover stonework exposed to weather with non-staining waterproof coverings, securely anchored.
- C. Stain Prevention: Immediately remove grout, mortar, and soil to prevent them from staining the face of stone masonry veneer.
 - 1. Protect base of walls from rain-splashed mud and mortar splatter by coverings spread on the ground and over the wall surface.
 - 2. Protect sills, ledges, and projections from mortar droppings.
 - 3. Protect surfaces of window and door frames, as well as similar products with painted and integral finishes, from mortar droppings.
 - 4. Turn scaffold boards near the wall on edge at the end of each day to prevent rain from splashing mortar and dirt on completed stone masonry veneer.
- D. Hot-Weather Requirements: Protect stone masonry-veneer work when temperature and humidity conditions produce excessive evaporation of water from mortar. Provide artificial shade and wind breaks and use cooled materials as required. Do not apply mortar to substrates with temperatures of 100 deg F and above.

PART 2 - PRODUCTS

2.1 STONE

- A. (4E-1) Natural Stone Masonry: Provide Chopped "Heritage Blend" - as provided by Alliance Materials (817) 379-0727, www.alliancematerials.com
 - 1. Blend and Pattern is to match courtyard stone at Eagle Mountain-Saginaw ISD Chisholm Trail High School. Final will be decided by accepted mock-up.
- B. (4E-2) Natural Stone Masonry: Provide Honed "Cordova" Shell Limestone - as produced by Continental Cut Stone, Inc. (254) 793-2329, Florence, Texas.
 - 1. Random Pattern Heights: 2-1/4" - 8-0", with sawn tops and sawn bottoms. Ends and faces are furnished chopped and honed. Backs of stone are chopped.
 - 2. Random Pattern Lengths: 12" - 24", nominal.
- C. Cap: Provide Boggy Flagstone Cap, 2" thick x widths as shown on drawings. Provide where noted on drawings at exterior screen wall and site walls.
- D. Grade: free of defects.

2.2 MORTAR

- A. Mortar: ASTM C270 Type N using proportion specifications; with Type I Portland cement of custom blended color selected by Architect.
- B. Water: Clean and potable.

2.3 ACCESSORIES

- A. Anchors, Dowels, Ties, Cramps: Stainless Steel Wire: ASTM A580, Type 304, of size and configurations required for support of stone and applicable superimposed loads.
 - 1. Anchors shall be of sufficient size to extend at least halfway, but not less than 1-1/2 inches, through stone masonry and with at least a 5/8-inch cover on exterior face
- B. Supports: Steel, ASTM A36, galvanized after fabrication to ASTM A123, 1.25 oz/sq ft.
- C. Bolts, Washers, and Nuts: Galvanized steel.
- D. Flashings: Furnished under SECTION 07 62 00 - SHEET METAL FLASHING AND TRIM.
- E. Sealant: Type specified in SECTION 07 92 00 - JOINT SEALANTS, not detrimental to stonework.
- F. Cleaning Solution: Type which will not harm stone, joint materials, or adjacent surfaces. Consult stone supplier for recommended type.

2.4 MORTAR MIX

- A. Thoroughly mix mortar ingredients in quantities needed for immediate use.
- B. Add mortar color in accordance with manufacturer's instructions. Ensure uniformity of mix and coloration.
- C. Do not use anti-freeze compounds in mortar.
- D. Use mortar within two hours after mixing.
- E. If necessary, retemper mortar within two hours of mixing to replace water lost by evaporation.

2.5 STONE FABRICATION

- A. Slope exposed top surfaces of stone and horizontal sill surfaces for natural wash.

PART 3 - EXECUTION

3.1 INSPECTION

- A. Examine surfaces to receive stone masonry veneer, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of stone masonry veneer.
 - 1. Examine substrate to verify that inserts, reinforcement, veneer ties, flashing, and other items installed in unit masonry and required for or extending into stone masonry veneer are correctly installed.
 - 2. Examine wall framing, exterior sheathing, and asphalt-saturated felt covering to verify that stud locations are suitable for spacing of veneer anchors and that installation will result in a weatherproof covering.
 - 3. Do not proceed with installation until unsatisfactory conditions have been corrected.
- B. Verify that support work and site conditions are ready to receive work of this Section.
- C. Establish lines, levels, and coursing. Protect from disturbance.
- D. Beginning of installation means acceptance of existing conditions.

3.2 PREPARATION

- A. Verify that items built-in under other Sections are properly located and sized.
- B. Clean stone prior to erection. Do not use wire brushes or implements which will mark or damage exposed surfaces.

3.3 INSTALLATION

- A. Back Checking & Fitting to Structural Frame:
 - 1. Stone coming in contact with structural work shall be back checked as indicated on the general drawings. Stone resting on structural work shall have beds shaped to fit the supports.
 - 2. Where stone facing adjoins columns and spandrel beams the depth of stone shall be such that will allow not less than 1" of clearance between the stone and structural members.
- B. Erect stone in accordance with stone supplier's instructions and erection drawings.
- C. Arrange stone pattern in Random (un-coursed) Pattern, and to provide a consistent joint width of 1/4 inch throughout.
- D. Set stone in full mortar setting bed to support stone over full bearing surface and to establish joint dimensions.
- E. Set stone to comply with requirements indicated on Drawings. Install anchors, supports, fasteners, and other attachments indicated or necessary to secure stone masonry veneer in place. Set stone accurately in locations indicated with edges and faces aligned according to established relationships and indicated tolerances.
- F. Maintain uniform joint widths, except for variations due to stone size variations and minor variations required to maintain bond alignment, if any. Lay walls with joint width of 1/4 to 3/8 inch
- G. Provide expansion, control, and pressure-relieving joints of widths and at locations indicated.
 - 1. Sealing expansion and other joints is specified in SECTION 07 92 00 - JOINTS SEALANTS.
 - 2. Keep expansion joints free of mortar and other rigid materials.
- H. Shore up units for 7 days after setting.
- I. Install sealant and backing rod at joints.
- J. Install flashings of longest practical length and seal watertight to back-up. Lap end joint minimum 6 inches and seal watertight.

3.4 TOLERANCES

- A. Positioning of Elements: Maximum 1/4 inch from true position.
- B. Maximum Variation from Plane of Wall: 1/4 inch in 10 feet; 1/2 inch in 50 feet.
- C. Maximum Variation from Plumb: 1/4 inch per story non- cumulative; 1/2 inch in any two stories.
- D. Maximum Variation from Level Coursing: 1/8 inch in 3 feet; 1/4 inch in 10 feet; 1/2 inch maximum.
- E. Maximum Variation of Joint Thickness: 1/8 inch in 3 feet.

3.5 CUTTING AND FITTING

- A. Obtain approval prior to cutting or fitting any item not so indicated on Drawings.
- B. Do not impair appearance or strength of stone work by cutting.

3.6 CLEANING

- A. Remove excess mortar and sealant upon completion of work.
- B. Clean soiled surfaces with cleaning solution.
- C. Use non-metallic tools in cleaning operations.

END OF SECTION

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SECTION 04 72 00

CAST STONE MASONRY

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
1. Labor, materials and equipment to provide the cast stone as indicated on the drawings and specified herein.
 2. The manufacturer shall furnish and deliver all cast stone covered by this specification.
 3. Contractor shall unload, store and set all cast stone covered by this specification and shall provide and install all anchors for same.
- B. Related Sections:
1. Section 04 20 00 - Masonry Units.
 2. Section 04 43 00 - Stone Masonry.
 3. Section 07 92 00 - Joint Sealants.

1.2 SUBMITTALS

- A. General: Submit in accordance with SECTION 01 33 23 - SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Samples:
1. Initial Selection:
 - a. Submit samples for color selection by Architect.
 - b. Submit samples for colored mortar, showing the full range of colors available.
 2. Following color selection by Architect, re-submit 3 samples approximately 8" x 8", finished to show the variation in color and texture which will occur in the material delivered to the project site.
- C. Product data:
1. Provide construction details, material descriptions, dimensions of individual components and profiles, and finishes for cast stone units.
 2. Test results of cast stone stone previously made by the manufacturer.
 3. Qualification Data: Provide lists of completed projects with project names and addresses, names and address of architects and owners, and other information necessary.
- D. Shop Drawings:
1. Drawings shall show the sizes, profiles, cross-sections, and dimensions of stone, the arrangement of joints, bonding, connections to adjoining walls or materials, anchoring methods, anchors, reinforcing, method of installation and anchoring.
 2. Provide suitable wash on all exterior sills, copings, projecting courses and pieces with exposed top surfaces.
 3. Windowsills, when provided, shall have raised fillets at the back.
 4. All projecting pieces and soffit stones shall have drips under the outer edge.
 5. The shop drawings shall show the setting mark of each stone and its location on the structure. The stone when delivered shall bear the same corresponding setting mark on an unexposed surface.

1.3 QUALITY ASSURANCE

- A. Manufacturer Qualifications:
1. Firm with not less than five years of continuous operation, having successful experience, adequate facilities, and capacity to furnish the quality, sizes, and quantity of cast stone required without delaying the progress of work.
 2. Manufacturer shall be responsible for reinforcement and anchorage design.
 3. Firm shall be a current producer member of the Cast Stone Institute.
- B. The average water absorption of cast stone shall not exceed 6% by dry weight when tested in accordance with the requirements of ASTM C 642 or ASTM C 1195.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. All cast stone shall be carefully loaded and packed for transportation exercising customary and reasonable precaution against damage while in transit.
- B. All cast stone shall be received and unloaded at the project site by competent workmen with the necessary care and handling to avoid damage and soiling.
- C. Cast stone units delivered to the site shall be inspected for damage, unloaded, and stored with a minimum of handling. Damaged stone will be rejected and shall be removed from the project site.
- D. Protect cast stone during storage and construction against wetting, soiling, staining, and damage.
- E. The cast stone material shall be stored clear of the ground on non-staining planking or pallets in such a manner as to be protected from damage while in storage. Should cast stone be stored for an extended period, cover with polyethylene or other non-staining waterproof material.

1.5 PROJECT CONDITIONS

- A. Environmental Requirements: No stone shall be set when freezing weather is expected.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

- A. Provide cast stone units as manufactured by one of the following:
 - Advanced Architectural Stone; Fort Worth, Texas
 - CSCS/Stone Legends; Dallas, Texas
 - Dallas Cast Stone, Inc.; Dallas, Texas

2.2 CAST STONE MATERIALS

- A. Raw Materials:
 - 1. Portland Cement: ASTM C 150, Type I or Type III, white, domestic manufacture.
 - 2. Fine Aggregate: Carefully graded and washed natural sands, or manufactured granite, quartz or limestone sands meeting ASTM C 33 except that gradation may vary to achieve desired finish and texture.
 - 3. Coarse Aggregate: Carefully graded and washed natural gravels, or crushed, graded stone such as granite, quartz, limestone or other durable stone meeting ASTM C 33 except that gradation may vary to achieve desired finish and texture.
 - 4. Color and Finish:
 - a. Color shall be as selected by Architect.
 - b. Coloring Agent: Inorganic (natural or synthetic) iron oxide pigments complying with ASTM C 979, excluding the use of a cement grade of carbon black pigment, and shall be guaranteed by the pigment manufacturer to be non-fading and limeproof. The amount of pigment shall not exceed 10% by weight of the cement used.
 - c. The samples shall be approved by the Architect before the manufacturer shall be permitted to proceed with the work.
 - d. Match sample on file in Architect's office. Color and texture of cast stone shall be generally equal to the approved sample when viewed in direct daylight at a 10-foot distance.
 - e. Exposed surfaces, unless shown otherwise, shall exhibit a fine grained texture similar to natural stone. No bug holes or air voids will be permitted.
 - f. Variation: Must match color and finish of approved sample subjected to similar aging and weathering conditions when viewed in direct daylight at a 10 foot distance.
 - 5. Admixtures - ASTM C 494.
 - 6. Water: Clean, potable and free of deleterious amounts of acids, alkalies, or organic materials.
- B. Physical Properties:
 - 1. Cast stone shall have a minimum compressive strength of 6,500 psi at 28 days when tested in accordance with ASTM C 1194.
 - 2. Multiply requirements of field cut or core drilled specimens by 80% to determine minimum compressive strength requirements.

- C. Curing and Finishing:
 - 1. Cure units in a warm, moist curing chamber at 95% relative humidity for 24 hours, or yard cure for 350 degree-days (i.e. 7 days @ 50°F. or 5 days @ 70°F.) prior to shipment.
 - 2. Acid-etch exposed surfaces to remove cement film prior to packaging for shipment.

2.3 REINFORCING AND ANCHORS

- A. Reinforcing Bars: ASTM A 615, Grade 60. Bars shall be hot-dipped zinc coated after fabrication in accordance with ASTM A 123.
- B. Reinforcing Mesh: ASTM A 185, No. 3 gage zinc-coated wire rods electrically welded on 4" centers each way.
- C. Anchors, inserts, and dowels shall be corrosive resistant, galvanized, brass or stainless steel Type 304.
- D. Cast stone panels shall be reinforced as may be required for handling, and to allow for temperature changes and structural stress.
- E. There shall be a minimum steel reinforcement amounting to ¼ percent of the cross-section area of the panel and should the panel be greater than 12" in any sectional dimension, the temperature steel shall be placed in both directions.
- F. Reinforcement shall be galvanized or epoxy coating when covered with less than 1-1/2" of material.

2.4 MORTAR MATERIALS

- A. Portland Cement: ASTM C 150, white, domestic manufacture.
- B. Lime: ASTM C 207, Type S.
- C. Sand: ASTM C 144, clean, washed, masonry natural sand.
- D. Color: ASTM C979, Non-fading, iron oxide, limeproof pigment to produce mortar custom color as selected by Architect to match cast stone. The Architect shall approve the actual color sample of mortar before proceeding with grouting or pointing.
- E. Water: Clean and free of deleterious amounts of acids, alkalies, or organic materials.

2.5 MORTAR MIXES

- A. Setting Mortar: Proportions by volume:
 - 1 part Portland cement
 - 1 part lime
 - 6 parts white silica sand
- B. Pointing Mortar: Proportions by volume:
 - 1 part Portland cement
 - 1 part lime
 - 6 parts white silica sand
- C. Coloring agent as required to provide consistent custom color.

2.6 FABRICATION

- A. General: Cast stone shall be Type I complying with ASTM C 1364, color as selected by Architect. Cast units shall be free from defects such as cracks, loose aggregate, broken edges, and marred finish surfaces which may affect appearance or serviceability. All units shall be equal in color and surface texture to approved samples.
- B. The manufacturer shall be responsible to design a mix which achieves both the strength and the surface finish desired.

- C. The average water absorption of cast stone shall not exceed 6% by dry weight when tested in accordance with the requirements of this specification.
- D. All casting shall be done in accurate molds designed to withstand high frequency vibration. Steel reinforcement units shall be accurately placed. Vibration shall be continuous during the casting process until full specified thickness is reached and all excess water brought to the surface.
- E. Curing: No cast stone shall be shipped to the project site until after it has been properly cured at the manufacturer's plant as specified.
- F. Fabrication Tolerances: Comply with Cast Stone Institute Technical Manual (current edition).
 - 1. Height and Width: Plus 1/16", minus 1/8"
 - 2. Length:
 - a. Up to 2'-0": Plus 1/16", minus 1/8"
 - b. 2'-0" to 5'-0": Plus 1/8", minus 1/8"
 - c. 5'-0" to 10'-0": Plus 1/8", minus 3/16"
 - 3. Setting tolerances: Plus or minus 1/8" allowable out of plane from adjacent unit.
 - 4. Joints: +1/16", -1/8".

PART 3 - EXECUTION

3.1 JOINTING

- A. Joint Size:
 - 1. At stone/brick joints - 3/8".
 - 2. At stone/stone joints in vertical position - 1/4"
 - 3. Stone/stone joints exposed on top side - 3/8".
- B. Joint Material:
 - 1. Use a full bed of mortar at all bed joints.
 - 2. Sealant: Head joints in copings, and joints at column covers, cornices, platforms, soffits, window sills, and in general, all stone sections with projecting profiles, exposed top joints or rigid suspension connections to the supporting structure should be set with unfilled joints. After setting, prime the ends of stones, insert properly sized foam back-up rod to proper depth, and gun-in sealant.
 - 3. Mortar: Masonry-bound trim such as belt courses, lintels, window surrounds, date stones, inscription blocks, quoins, keystones, similar applications, and vertical joints shall be mortar joints.
 - 4. Rake all mortar joints 3/4" for either pointing mortar or sealant **as selected by Architect**.
- C. Location of joints:
 - 1. As shown on approved shop drawings.
 - 2. Unless otherwise shown, at control and expansion joints per plan.

3.2 ERECTION

- A. Stone shall be clean. Before setting, sponge or drench with clean water.
- B. Set stone units level, square, and true with uniform mortar joints as specified.
- C. All cast stone shall be set by experienced masons, accurately and in accordance with the shop and setting drawings.
- D. Unless otherwise noted, every stone shall be set in a full bed of mortar.
- E. Reference "Joint Materials" paragraph in the "Jointing" Article above for direction on erection/installation at the different joint areas.
- F. All anchors and dowels shall be firmly placed and all anchor holes and dowel holes and similar holes filled completely with mortar or non-shrink grout.
- G. All anchors, dowels and other anchoring devices shall be furnished by the setting contractor as shown on approved shop drawings using, whenever possible, standard building stone anchors commercially available in a non-corrosive material such as galvanized steel, brass or Type 304 stainless steel.

- H. When setting with mortar, all stones not thoroughly wet shall be drenched with clear water just prior to setting.
- I. After each stone has been set, all joints shall be raked to a depth of 3/4" from the face for pointing. The face of each stone shall then be sponged off to remove any splashed mortar or mortar smears.
- J. Only the ends of lugged sills and similar stones shall be embedded in mortar. The balance of joint to be left open until pointing of stonework, then tuck points on face only to a depth of 3/4". Tuck point stone joints to a slight concave.
- K. All stone shall be protected from splashing mortar or damage by other trades.
- L. Form weep holes at the bottom of every vertical joint. Form weep holes with 1/4" oiled sash cord or plastic tubing and remove when the mortar has set.
- M. Installation tolerances shall be in accordance with requirements of SECTION 04 20 00 - MASONRY UNITS.

3.3 TESTING

- A. Testing shall be performed in accordance with ASTM C 31, ASTM C 39, ASTM C 642, and ASTM C 1194, except that 2" cube specimens shall be used, oven-dried in accordance with ASTM C 97.
- B. Test three specimens per 500 cubic feet at random from plant production in accordance with referenced standards.
- C. The results of compression tests shall be divided by a factor of 0.8 when saw-cut or core-drilled specimens are used.

3.4 PATCHING AND CLEANING

- A. The repair of chipped or damaged cast stone shall be done only by mechanics skilled in this class of work, with materials furnished by the manufacturer and according to this direction.
- B. Before pointing, the face of all cast stone shall be scrubbed with a fiber brush, using soap powder and water and shall then be thoroughly rinsed with clean running water. Any mortar on the face of the cast stone shall be removed. No acids or prepared cleaners shall be used without the approval of the cast stone manufacturer.

3.5 POINTING AND CAULKING

- A. When ready for pointing, the joints shall be dampened and carefully pointed to a slight concave unless otherwise specified by the Architect. No pointing shall be done in freezing weather nor in locations exposed to hot sun, unless properly protected. The Architect shall approve color of pointing mortar before proceeding with pointing.
- B. Head joints in copings and similar stones shall be caulked with a joint sealant used in accordance with the manufacturer's instructions.

3.6 INSPECTION AND ACCEPTANCE

- A. Applicable standards for inspection and quality control shall be ACI Committee 311 Manual of Concrete Inspection and PCI MNL-117 Manual for Quality Control for Plants and Production of Architectural Precast Concrete Products.
- B. Cast stone shall show no obvious repairs or imperfections other than minimal color variations when viewed with the unaided eye at a 20 ft. distance in good typical daylight illumination.

3.7 PROTECTION

- A. Cast stone shall be protected after erection and until final cleaning by non-staining rosin sized paper or polyethylene film of not less than 4-mil thickness.

- B. Cast stone at entrances shall be protected until substantial completion is achieved.

END OF SECTION

SECTION 05 12 00

STRUCTURAL STEEL FRAMING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Steel columns
2. Steel beams
3. Steel trusses
4. Fusion welded anchors
5. Miscellaneous angles and plates
6. Manufactured Bearing Assemblies
7. Bolts
8. Steel assemblies to be embedded in concrete
9. Laboratory testing and inspection
10. Shop painting
11. Supplementary parts and members necessary to complete and erect structural steel frame

1.2 REFERENCE STANDARDS (Latest Edition)

A. American Institute of Steel Construction, AISC:

1. AISC Manual of Steel Construction.
2. Specification for the Design, Fabrication and Erection of Structural Steel for Buildings.
3. Code of Standard Practice for Steel Buildings and Bridges.
4. Specification for Structural Joints Using ASTM A325 or A490 Bolts.

B. American Society for Testing and Materials:

1. ASTM A36, Standard Specification for Structural Steel.
2. ASTM A53, Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.
3. ASTM A108, Standard Specification for Steel Bars, Carbon, Cold Finished, Standard Quality.
4. ASTM A123, Standard Specification for Zinc (Hot- Galvanizing) Coatings on Products Fabricated from Rolled, Pressed, and Forged Steel Shapes, Plates, bars and strip.
5. ASTM A143, Recommended Practice for Safeguarding Against Embrittlement of Hot-Dip Galvanized Structural Steel Products and Procedure for Detecting Embrittlement.
6. ASTM A153, Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
7. ASTM A193, Standard Specification for Alloy-Steel and Stainless Steel Bolting Materials for High-Temperature Service.
8. ASTM A307, Standard Specification for Carbon Steel Externally Threaded Standard Fasteners.
9. ASTM A325, Standard Specification for High-Strength Bolts for Structural Steel Joints.
10. ASTM A449, Standard Specification for Quenched and Tempered Steel Bolts and Studs.
11. ASTM A490, Standard Specification for Quenched and Tempered Alloy Steel Bolts for Structural Steel Joints.
12. ASTM A500, Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes.
13. ASTM A501, Standard Specification for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing.
14. ASTM A572, Standard Specification for High-Strength Low-Alloy Columbium-Vanadium Steels of Structural Quality.
15. ASTM A786, Standard Specification for Hot-Rolled Carbon, Low Alloy, High Strength Low Alloy, and Alloy Steel Floor Plates
16. ASTM A992, Standard Specification for Steel for Structural Shapes for Use in Building Framing.
17. ASTM F1554, Standard Specification for Anchor Bolts
18. ASTM B117, Standard Salt Spray (Fog) Testing.
19. ASTM D522, Standard Test for Elongation of Attached Organic Coatings with Conical Mandrel Apparatus.

C. American Welding Society:

1. AWS D1.1, Structural Welding Code - Steel.

2. AWS D1.3, Structural Welding Code - Sheet Steel.
- D. Industrial Fasteners Institute:
1. Handbook on Bolt, Nut and Rivet Standards.
- E. American National Standards Institute:
1. ANSI B18.2, Fasteners.
 2. ANSI B27.2, Plain Washers.
- F. The Society for Protective Coatings, SSPC:
1. SSPC Painting Manual, Volume 1, Good Painting Practice.
 2. SSPC Painting Manual, Volume 2, Systems and Specifications.

1.3 SUBMITTALS

- A. Shop Drawings: Submit detailed shop and installation drawings showing shop and erection details including member sizes, grades of materials, details of fabrication and erection, and end connections.
1. Do not begin fabrication of materials prior to review of shop drawings.
 2. Review of shop drawings is for member sizes, spacings, detail, and general compliance with Contract Documents only.
 3. Material quantities, lengths, fit, verification of job conditions and coordination with other trades are responsibility of Contractor.
 4. Calculations: Submit calculations for connections as required, signed and sealed by a Professional Engineer experienced in such design and registered in the State of the Project.
 5. Reproductions of Contract Drawings shall not be used for shop drawings.
- B. Erection Procedure: Submit descriptive data illustrating general procedure for erection of structural steel including sequence of work, proposed schedule and details of temporary staying and bracing.
- C. Submit Mill Certifications showing compliance of materials with ASTM and AISC Specifications.
- D. Submit Mill Certifications (Manufacturer's Inspection Certificates) for bolts, nuts and washers.
- E. Submit manufacturer's data sheets or certified test results indicating compliance with requirements for manufactured components.

1.4 QUALIFICATIONS

- A. Arc-Welding: Welding procedures and techniques, welders and tackers shall be qualified in accordance with AWS D1.1.
1. Welders to be employed on Work shall maintain current AWS certification throughout duration of Project.
 2. If requested by Architect, submit identifying stenciled test coupons made by operator whose workmanship is subject to question, and if reasonable doubt of proficiency exists, welder shall be re-qualified and certified by independent testing laboratory at no additional expense to Owner.
 3. Work suspected of deficient quality may be subject to removal of coupons from any location on any joint for testing. Remove sections of welds found defective and properly rewelded before proceeding with work.
- B. Steel Fabricator: not less than 5 years of experience in fabrication of structural steel.
- C. Steel Erector: not less than 5 years of experience in erection of structural steel.

1.5 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Coordinate delivery of anchor bolts and other anchorage assemblies to be embedded in concrete or masonry construction. Provide setting drawings, instructions and templates required for proper placement of anchor bolts and embeds.
- B. Sequence shipments of fabricated steel to expedite erection and minimize field handling of material.

- C. Store structural steel above ground on skids or platforms, and protect from corrosion. Store packaged materials in unbroken containers.
- D. Do not bend or damage materials during shipment, handling and erection.
- E. Take precautions in the removal of packaging or bundling devices to prevent damage to materials.
- F. Certification numbers for fasteners shall appear on product containers and shall correspond to identification numbers on mill test reports.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Structural Steel, normal grade: ASTM A36.
- B. High Strength Structural Steel: ASTM A572 - Grade 50.
- C. High Strength Structural Steel (W-Sections): ASTM A992 – Grade 50.
- D. Steel Pipes: ASTM A53 - Grade B (35,000 psi yield).
- E. Hollow Structural Sections (HSS) – Round or Rectangular: ASTM A500 - Grade B.
- F. Erection Bolts: ASTM A307, ANSI B18.2.1, and ANSI B18.2.2.
- G. High Strength Bolts: ASTM A325N, ANSI B18.2.1, ANSI B18.2.2.
 - 1. Manufacturer's symbol and grade markings shall appear on bolts and nuts.
- H. High Strength Bolts: ASTM A490N.
 - 1. Manufacturer's symbol and grade markings shall appear on bolts and nuts.
- I. Anchor Bolts: ASTM F1554 Grade 36
- J. High Strength Anchor Bolts: ASTM F1554 Grade 105.
- K. Washers: ANSI B27.2 Type A.
- L. Welding Electrodes:
 - 1. Welding electrodes shall conform to AISC Specifications. Use E70 electrodes for ASTM A36 and ASTM A572 Grade 50 Steel. Use E8018 for ASTM A441 steel.
 - 2. Coatings of low-hydrogen electrodes shall be thoroughly dry when used. Electrodes taken from hermetically sealed packages shall be used within 4 hours, or shall be dried in accordance with AWS D1.1 before use.
 - 3. Do not use electrodes of any type that have been wet.
- M. Coatings for structural steel
 - 1. Shop Primer:
 - a. Rust-inhibiting primer
 - b. Paint and methods of paint application shall comply with applicable air-quality and environmental regulations.
 - c. Paint shall be compatible with welding procedures and shall produce no significant difference in strength of weld material.
 - d. Paint shall meet or exceed requirements for abrasion - Fed. Test No. 141; elongation - ASTM D522; and salt spray - ASTM B117.
 - 2. Primer for Architecturally Exposed Structural Steel
 - a. Acceptable Products:
 - 1) Tnemec 10-09
 - 2) Valspar 13-R-29
 - 3) Carboline Phenoline 818

- 4) Sherwin-Williams Kem Kromik Universal B50 Series
3. Paint for steel exposed in the crawl space shall be equal to Tnemec 10-09 Alkyd Rust-Inhibitive Primer.
4. Zinc-Coating: Where galvanizing steel is required, zinc coating shall conform to ASTM A123 and A143. Zinc coating for threaded products shall conform to ASTM A153. Do not galvanize ASTM A490 bolts.
5. Cold Galvanizing: Galvilite as manufactured by ZRC WORLDWIDE, Marshfield, MA (phone 800.831.3275; web site www.zrcworldwide.com), and used for repair only.

N. Shear Studs

1. Headed fusion welded shear connectors with proper ferrules and accessories especially designed to create composite deck action by mating of shear connectors, concrete deck, and supporting beam.
2. Steel shall conform to ASTM A108 grades C1010-1020, minimum tensile strength of 60,000 psi.
3. Studs shall be of uniform diameter, heads concentric and normal to shaft, and weld end chamfered and solid flux.

2.2 DESIGN OF CONNECTIONS

- A. Design connections to resist required forces, where not detailed on Drawings.
- B. Design connections for simple beams (except where end reactions are otherwise scheduled) for 55 percent of total uniform load capacity shown in Maximum Total Uniform Load Tables, Part 3, of AISC Manual, for given beam, span and grade of steel specified.
- C. Note slip critical connection requirements clearly on shop drawings.
- D. Complete penetration butt weld moment connections to develop 100% of flexural capacity of member.
- E. Except as specifically noted otherwise, detail bolted connections using bolts conforming to ASTM A325N, Bearing Type Connections with threads allowed in shear plane. Details shall be in accordance with AISC Specification for Structural Joints.
- F. Except as specifically noted otherwise, detail bolted connections using bolts conforming to ASTM A490, Bearing Type Connections with threads allowed in shear plane. Details shall be in accordance with AISC Specification for Structural Joints.
- G. Design welded truss connections for 1.15 times required forces.
- H. Diagonal Bracing: Where forces are indicated on the drawings, design connections for 1.15 times the indicated force. Where forces are not indicated, design connections for full strength of member in tension.
- I. Do not use welds in combination with bolts in the same face of any connection.

2.3 FABRICATION

- A. Fabricate materials in accordance with applicable AISC Specifications and Standards.
- B. Pre-assemble work as much as possible and deliver to site ready for erection. Mark and match-mark pieces where field assembly is required.
- C. Prior to fabrication; straighten materials, remove twists and bends and clean faying surfaces of scale and rust.
- D. Clean members to be painted with power tools in accordance with SSPC standards.
- E. Camber beams to within 1/8th inch per 15 feet of beam length. Mark beams indicating direction of fabricated or natural camber.
- F. Provide members of required sizes, weights, shapes and lengths. Do not splice members to achieve required lengths except where specifically allowed by the Architect. Do not alter member shapes or lengths

or enlarge bolt holes in the field for proper fit; return materials to the fabrication shop for correction where required. Member splices allowed for the convenience of the fabricator or erector shall not result in additional cost to the Owner.

- G. Punch or drill holes for bolts. Hole sizes shall conform to AISC Specifications.
- H. Compression joints shall have both contact surfaces milled for precision fit. Other joints shall be cut or dressed straight and true, and prepared as required for welding. Components of assemblies and built-up members shall be pinned and rigidly maintained in accurate position during final assembly.

2.4 WELDED CONSTRUCTION

- A. Comply with AWS D1.1.
- B. Clean surfaces of loose scale, rust, paint, grease and dirt. Remove oil with benzine. Wire brush welds after depositing for visual inspection. Welds shall be smooth and uniform in cross section, shall be free of porosity and clinkers, and shall have required fusion and penetration into base metal.
- C. Secure members in proper position for welding.
- D. Take proper precautions to minimize residual stresses and distortions in members being welded.
- E. Preheat and interpass temperatures shall conform to Table 3.2, AWS D1.1.
- F. Prepare members to be butt-welded in accordance with AISC recommendations for pre-qualified welds, and provide required clearances and back-up bars. Remove back-up bars after completing welds.
- G. Lay fillet welds of required sizes in proper position and with gaps not exceeding AISC recommendations.
- H. Tack welding shall not affect quality of finished welds.

2.5 BOLTED CONSTRUCTION

- A. Provide holes at right angles to members of sizes recommended by AISC Specifications. Short-slotted holes shall not be used for primary frame connections (members connecting to columns), trusses and wind bracing unless specifically allowed by the Architect. Where used, short-slotted holes shall be oriented normal to the direction of load.
- B. Provide beveled washers for surfaces out of parallel more than 1:20.
- C. Provide bolts of sufficient length to extend entirely through nuts.
- D. Protect fasteners from dirt and moisture at job site. Only as many fasteners as are anticipated to be installed and tightened during a work shift shall be taken from protective storage. Fasteners not used shall be returned to protected storage at end of shift. Fasteners shall not be cleaned of lubricant that is present in as-delivered condition. Fasteners for slip critical connections which must be cleaned of accumulated rust or dirt resulting from job site conditions, shall be cleaned and relubricated prior to installation.
- E. Anchor bolts and erection bolts: tighten with a suitable wrench not less than 15 inches long. Tap bolt heads with a hammer while tightening.
- F. High Strength Bolts (typical, except as noted otherwise): install bolts in properly aligned holes, and tighten to snug tight condition. Snug tight condition is defined as the tightness that exists when all plies in a joint are in firm contact.
- G. High Strength Bolts (Slip-Critical Connections): Install bolts in properly aligned holes, tightened in accordance with Section 8 of AISC Specifications for Structural Joints. Use either calibrated wrench or turn-of-the-nut method. Provide hardened washers when calibrated wrench method is to be used.
- H. Hand tighten and tack weld (nut-to-bolt shank) bolts required to be "finger-tight".

- I. Holes for anchor bolts in base plates may be oversized in accordance with AISC Specifications. Provide washers as indicated on Drawings.

2.6 COATINGS

A. SHOP PAINTING

1. Apply one coat of rust-inhibitive primer to surfaces of structural steel members except: surfaces required to be field welded, to be encased in concrete, to be spray fireproofed, and top flanges of beams with shear connectors to support metal deck.
2. Thoroughly clean surfaces to be painted of all loose mill scale, dirt, rust, and other foreign matter with steel scrapers, wire brushes, or sandblasting in accordance with SSPC SP-3. Use SSPC-SP6 for Architecturally Exposed Steel (AESS). Remove oil and grease with solvents.
3. Mix paint in accordance with manufacturer's recommendations, continuously stir during application, and do not add thinner after initial mixing.
4. Apply paint in accordance with manufacturer's recommendations, thoroughly work over surfaces and into corners. Minimum dry thickness of coating shall be 2 mils.
5. Repair damage to coating prior to delivery.

B. GALVANIZING

1. Galvanize exposed steel members and other members as noted on Drawings.
2. Shelf angles supporting masonry or stone shall be galvanized.

2.7 PRODUCTS

A. FUSION WELDED ANCHORS

1. Comply with AWS D1.1, Section 7.
2. Clean surfaces to be welded of rust, oil, grease, paint and dirt. Remove mill scale by scraping or sandblasting.
3. Weld headed studs with appropriate equipment properly adjusted for climactic conditions.
4. Remove ceramic ferrules after welding.

2.8 RE-USE OF EXISTING MATERIALS

- A. Materials removed from existing construction may be re-used in the work provided that such materials conform in all respects to the requirements for new materials. Members larger than required shall not be used without approval of the Architect.
- B. Deliver materials to the fabrication shop, and fabricate in accordance with the requirements for new members.
- C. Members damaged or bent in removal shall not be used.

2.9 SOURCE QUALITY CONTROL

A. Testing of Shear Studs:

1. When temperature is below 32 degrees F, one stud in each 100 shall be tested.
2. Minimum of 2 shear studs shall be tested at start of each production period in order to determine proper generator, control unit and stud welder setting. Studs shall be capable of being bent 45 degrees from vertical without weld failure. If, after welding, visual inspection reveals that sound weld or full 360 degree fillet has not been obtained for a particular stud, stud shall be struck with hammer and bent 15 degrees off perpendicular toward nearest end of beam. Studs failing this test shall be replaced.

B. Pre-Erection Testing of High Strength Bolts

1. Test at least three bolt, nut and washer assemblies from each lot of bolts supplied to job site.
2. Test assemblies in a tension measuring device at site to verify that assemblies can develop tension listed in Table 4 of AISC Specification for Structural Joints.
3. Bolt tension shall be developed by tightening of nut.

C. Inspection of Structural Steel:

1. Provide access to materials in fabrication and full cooperation to testing laboratory.

2. Following testing services shall be performed:
 - a. Inspect fabrications in shop.
 - b. Check temporary bracing of steel frame.
 - c. Check location and condition of anchor bolts.
 - d. Check plumbness and tolerance of steel frame.
 - e. Qualification of welders and welding techniques.
 - f. Visually inspect erection bolts.
 - g. Inspection of high-strength bolting:
 - 1) In accordance with Section 9 of AISC Specifications for Structural Joints.
 - 2) Confirm that fasteners meet project specification and are properly stored and handled.
 - 3) Confirm that faying surfaces have been properly prepared before connections are assembled.
 - 4) Observe testing and calibration and confirm that procedures used result in the required fastener tension.
 - 5) Visually inspect connections.
 - 6) Check tightness of at least 33% of slip-critical connections.
 - 7) Check tightness of at least 2 bolts of each slip-critical girder to column connection.
 - h. Visually inspect all field and shop welds.
 - i. Complete-penetration welds.
 - 1) Ultrasonic or X-ray testing per AWS Standards.
 - 2) Testing shall be performed on 100% of shop and field complete-penetration welds.
 - j. Re-inspect corrective measures required at expense of Contractor.
- D. Remove and replace Connections found to be faulty at no additional cost to the contract.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify condition and position of anchor bolts and embeds in concrete prior to commencing erection.
- B. Correct misaligned or missing components required for connections to steel framework before commencing erection.
- C. Measure camber of erected steel beams and report deviations from required camber before placing concrete slabs. Do not place concrete on beams that have inadequate or negative camber.

3.2 SPECIAL REQUIREMENTS FOR ARCHITECTURALLY EXPOSED STRUCTURAL STEEL (AESS)

- A. AESS is defined as steel that is exposed to view in the final construction.
- B. Section 10 of the AISC Code of Standard Practice shall apply to all steel identified as AESS.
- C. Tube-to-tube and pipe-to-pipe connections shall be full welded connections with no exposed bolts, fasteners, clips, or plates. Erection clips and bolts may be used but shall be removed and ground smooth following final erection.
- D. For exposed welds in AESS, all plug, slot, V, groove, bevel, flare V and flare bevel welds shall be ground smooth. All fillet welds shall be smooth and uniform, visually acceptable to the Architect.
- E. When exposed fillet welds are not required to be continuous, spaces between intermittent welds shall be filled with metal filler or weld to provide a continuous uniform appearance.
 1. Welds on exterior AESS and within six feet of any floor shall be continuous. Metal filler is not permitted in these locations.
- F. Edges of exposed plates shall be sawn or sheared to provide a uniform edge. Thermal cutting to be used only with acceptance of the Architect if uniform edges can be maintained.
- G. Exposed fasteners may be used only as indicated on Drawings or required for field connections. Exposed fasteners are not permitted for shop connections unless specifically approved by Architect. When exposed fasteners are permitted, the connections shall be uniform and consistent, with the connections of adjacent

beams matching in size and arrangement to provide a consistent, uniform appearance. When exposed fasteners are permitted, galvanized bolts shall be used.

- H. Within seven days following erection, field touch up all AESS. Field touch up paint shall be the same as shop primer, applied by spraying on exposed surfaces only after proper preparation including grinding, smoothing and cleaning.
- I. AESS that is mishandled or stored in such a way that the steel and/or primer has been damaged will be subject to rejection upon review of the Architect.

3.3 ERECTION AND FIELD ASSEMBLY

- A. Erect structural steel in accordance with AISC Specifications. Work shall be plumb, square, true to line, level and in proper position and orientation.
- B. Provide temporary bracing and guys to maintain stability of framework during erection for stresses and loads due to erection equipment and its operation, weight of structure, wind, and temporary loads imposed during erection. Check and adjust bracing frequently during progress of erection and assembly. Maintain temporary bracing until all components of the structure required for lateral stability are in place and final connections made.
- C. Do not stack materials on partially completed framework, or in a manner to cause damage or overloading of the structure.
- D. Tolerances shall be in accordance with AISC Code of Standard Practice and as follows:
 - 1. Displacement of columns adjacent to elevator shafts not to exceed 1 inch at any point.
 - 2. Individual members plumb or level to within 1:750.
 - 3. Vertical dimensions: 1/4 inch per story, exclusive of elastic shortening of columns.
 - 4. Floor framing members: +-1/4 inch from column splice next above.
 - 5. Horizontal dimensions: +- 1:2000 for overall length or width.
- E. Field Assembly:
 - 1. Assemble steel framework accurately to lines and elevations indicated and within specified tolerances. Align and adjust members forming parts of a completed frame before fastening.
 - 2. Erect structural steel in proper sequence with work of other trades.
 - 3. Tie anchor bolts securely in position before concrete is placed.
 - 4. Thoroughly clean bearing surfaces and surfaces to be in permanent contact before assembly.
 - 5. Adjust bolt holes requiring enlargement only by reaming, not by drifting or burning.
 - 6. Erection bolts may be tightened and left in place, except in architecturally exposed work. Fill holes left from removed bolts by plug welding. Grind welds smooth where architecturally exposed.
 - 7. Straighten and correct members damaged during handling, or replace without additional cost to the Owner.
 - 8. Install slide bearing assemblies in accordance with manufacturer's instructions.
 - 9. Where shoring of beams and girders is required, provide positive support at midpoint of spans under 25 feet and at third points of spans over 25 feet. Locate temporary supports directly above beams at the supporting floor, or transfer load to beams with load spreaders. Re-shore where construction loading exceeds live load capacity of supporting floor.
- F. Field Connections:
 - 1. After frame is aligned and plumb, make final welded and bolted connections in accordance with AISC Specifications.
 - 2. Properly sequence welding to prevent distortion, and misalignment of the framework.
 - 3. Maintain temporary bracing of the structure until connections are complete and other required components of the structure (e.g. floor slabs and metal roof decks) are in place.

3.4 ADJUSTING

- A. Touch-up field welds, abrasions and scarred areas of structural steel with same paint used for shop coating after erection of frame and final connections are completed.

3.5 FIELD PAINTING

- A. Refer to Section 09 90 00 for field painting of exposed steel.

END OF SECTION

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SECTION 05 12 10

STRUCTURAL CAST STEEL COMPONENTS

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Structural cast steel components including:
 - 1. Universal pin connectors.

1.2 RELATED SECTIONS

- A. Section 03300 - Cast-In-Place Concrete.
- B. Section 05120 - Structural Steel.
- C. Section 09900 - Painting and Coating.

1.3 REFERENCES

- A. American Institute of Steel Construction (AISC):
 - 1. AISC 360 - Specification for Structural Steel Buildings.
- B. American Welding Society (AWS):
 - 1. AWS D1.1 - Structural Welding Code - Steel.

1.4 SUBMITTALS

- A. Submit under provisions of Section 013000.
- B. Product Data: Casting material test reports and non-destructive test reports.
- C. Welding Procedure Specifications (WPS) prepared in accordance with AISC 360 Chapter N shall be developed by the Steel Fabricator for the welded joints between the steel castings and the attaching structural steel elements.

1.5 QUALITY ASSURANCE

- A. Casting Inspector Qualifications: in accordance with American Society for Nondestructive Testing, Inc. (ASNT), TC-1A, or equivalent independent qualified agency.
- B. Manufacturer Qualifications: Specializing in structural cast steel components and having demonstrable experience in engineering, detailing, and supplying structural steel castings of a similar size as required for this project and for use in architecturally exposed structural steel. Member of the following organizations:
 - 1. Associate Member of the American Institute of Steel Construction.
 - 2. Affiliate Member of the National Council of Structural Engineers Associations.
 - 3. Associate Supplier Member of the Canadian Institute of Steel Construction.

1.6 DELIVERY, STORAGE AND HANDLING

- A. Deliver, store and handle materials to avoid damage. Protect materials from corrosion, deterioration, and damage.

1.7 SEQUENCING

- A. Ensure that products of this section are supplied to affected trades in time to prevent interruption of construction progress.

1.8 COORDINATION OF TOLERANCES BETWEEN CASTINGS AND STRUCTURAL FRAMING

- A. The steel fabricator shall assume responsibility for the final coordination between cast steel product tolerances and the overall structural geometry, including allowances for fabrication and erection tolerances.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturer: Cast Connex Corporation; 366 Adelaide Street East, Suite 425, Toronto ON. Tel: (416) 806-3521. Email: info@castconnex.com. Web: www.castconnex.com.

2.2 STRUCTURAL CAST STEEL COMPONENTS

- A. Universal Pin Connectors (UPC): Provide as shown on the drawings, as manufactured by Cast Connex Corporation, including:
 - 1. Materials shall comply with manufacturer's current published data for dimensions.
 - 2. Connectors shall be supplied with hot-dip galvanized carbon steel pins, carbon steel spacers, and electropolished stainless steel cap plates, countersunk retaining screws, and washers.
 - 3. Carbon steel spacers shall be tack welded to and coated with the gusset plate to which the connector is pin connected.
 - 4. Welds between the connectors and the attaching structural member shall be ground flush and smooth to the exterior of the connector or, if loading allows and the steel assembly incorporating the connectors will be within the building envelope, the welded joints may be prepared with a concave finish and an automotive body filler material that is compatible with the steel coating system may be used to mask the welded joint.

PART 3 - EXECUTION

3.1 RELATED STEEL FABRICATION

- A. Cast steel products are to be delivered to the shop of the steel fabricator and incorporated into the structural steelwork by the steel fabricator.
- B. Base material joint preparation and cleaning:
 - 1. Prior to welding, steel casting surfaces for welding shall be prepared by the steel fabricator and shall be clean and free from paint, oil, rust, scale, slag, grease, and other foreign materials that are detrimental to welding.
- C. Unless otherwise noted on the drawings, cast steel products are to be coated along with and using the same coating system as applied to the attaching structural steel elements.
 - 1. Do not apply coatings to any stainless steel pin accessories supplied by Cast Connex Corporation.

END OF SECTION

SECTION 05 12 13

ARCHITECTURALLY EXPOSED STRUCTURAL STEEL

PART 1 - GENERAL

1.1 GENERAL REQUIREMENTS

- A. Requirements of Division 1 apply to all work of this Section.

1.2 SCOPE

- A. This Section includes requirements regarding the appearance and surface preparation of Architecturally Exposed Structural Steel (AESS). Refer to Division 5, Section "Structural Steel" for all other requirements regarding steel work not included in this section. This section applies to any members noted on Architectural or Structural drawings as AESS.

1.3 QUALITY ASSURANCE

- A. Fabricator Qualifications: In addition to those qualifications listed in Division 5 Section "Structural Steel," engage a firm experienced in fabricating AESS similar to that indicated for this Project with a record of successful in-service performance, as well as sufficient production capacity to fabricate AESS without delaying the Work.
- B. Erector Qualifications: In addition to those qualifications listed in Division 5 Section "Structural Steel," engage an experienced Erector who has completed AESS work similar in material, design, and extent to that indicated for this Project and with a record of successful in- service performance.
- C. Comply with applicable provisions of the following specifications and documents:
1. AISC Code of Standard Practice, latest edition, Section 10 as amended herein.
- D. Mock-ups: At least four weeks prior to fabricating AESS, the contractor shall construct mock-ups to demonstrate aesthetic effects as well as qualities of materials and execution. A mock-up shall be provided for each element as requested by Architect.
- E. Build mock-ups to comply with the following requirements, using materials indicated for final unit of Work.
1. Locate mock-ups on-site or in the fabricator's shop as directed by Architect. Mock-ups shall be full-size pieces unless the Architect approves smaller models.
 2. Notify the Architect two weeks in advance of the dates and times when mock-ups will be available for review.
 3. Demonstrate the proposed range of aesthetic effects regarding each element listed under the fabrication heading below.
 4. Mock-up will have finished surface (including surface preparation and paint system).
 5. Obtain Architect's approval of mock-ups before starting fabrication of final units.
 6. Retain and maintain mock-ups during construction in an undisturbed condition as a standard for judging the completed work.
 - a. Approved mock-ups in an undisturbed condition at the time of Substantial completion may become part of the completed work.

1.4 SUBMITTALS

- A. Product Data for each type of product specified.
- B. Shop Drawings detailing fabrication of AESS components.
1. Provide erection drawings clearly indicating which members are considered as AESS members.
 2. Include details that clearly identify all of the requirements listed in sections 2.2 "Fabrication" and 3.3 "Erection" of this specification. Provide connections for exposed AESS consistent with concepts shown on the architectural or structural drawings.
 3. Indicate welds by standard AWS symbols, distinguishing between shop and field welds, and show size, length and type of each weld. Identify grinding, finish and profile of welds as defined herein.

4. Indicate type, size, finish and length of bolts, distinguishing between shop and field bolts. Identify high-strength bolted slip-critical, direct-tensioned shear/bearing connections. [Indicate to which direction bolt heads should be oriented.]
 5. Clearly indicate which surfaces or edges are exposed and what class of surface preparation is being used.
 6. Indicate special tolerances and erection requirements as noted on the drawings or defined herein.
- C. Qualification data for firms and persons specified in the "Quality Assurance" Article to demonstrate their capabilities and experience. Include lists of completed projects names and address, names and addresses of architects and owners, and other information specified.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver AESS to Project site in such quantities and at such times to ensure continuity of installation.
- B. Store materials to permit easy access for inspection and identification. Keep steel members off ground by using pallets, platforms, or other supports. Protect steel members and packaged materials from erosion and deterioration. Use special care in handling to prevent twisting or warping of AESS members.
- C. Erect pre-painted finish pieces using padded slings or other methods such that they are not damaged. Provide padding as required to protect while rigging and aligning member's frames. Weld tabs for temporary bracing and safety cabling only at points concealed from view in the completed structure or where approved by the Architect during the pre-installation meeting. Methods of removing temporary erection devices and finishing the AESS members shall be approved by the Architect prior to erection.

1.6 PROJECT CONDITIONS

- A. Field Measurements: Where AESS is indicated to fit against walls and other construction, verify dimensions by field measurements before fabrication and indicate measurements on shop drawings. Coordinate fabrication schedule with construction progress to avoid delaying the work.

1.7 COORDINATION

- A. Coordinate installation of anchors for AESS members that connect to the work of other trades. Furnish setting drawings, templates, and directions for installing anchors, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to the project site in time for installation. Anchorage concepts shall be as indicated on drawings and approved on final shop drawings.

PART 2 - PRODUCTS

2.1 PRIMERS

- A. Compatibility: The General Contractor shall submit all components/procedures of the paint system for AESS as a single coordinated submittal. As a minimum, identify required surface preparation, primer, intermediate coat (if applicable) and finish coat. All of the items shall be coordinated with the finish coat specified in Division 9.
- B. Primer: Fast curing, universal modified alkyd, rust inhibiting shop coat with good resistance to normal atmospheric corrosion. Primer shall comply with all federal standards for VOC, lead and chromate levels.
- C. Galvanizing Repair Paint: High-zinc-dust-content paint for galvanizing welds and repair- painting galvanized steel, with dry-film coating not less than 90-percent zinc dust by weight.

2.2 FABRICATION

- A. Fabricate and assemble AESS in the shop to the greatest extent possible. Locate field joints in AESS assemblies at concealed locations or as approved by the Architect. Detail AESS assemblies to minimize field handling and expedite erection.

- B. Fabricate AESS with exposed surfaces smooth, square and of surface quality consistent with the approved mock-up. Use special care in handling and shipping of AESS both before and after shop painting.
- C. In addition to special care used to handle and fabricate AESS, employ the following fabrication techniques as indicated on Architectural or Structural drawings.
1. Fabrication Tolerance: Fabricate steel to one half the normal tolerance as specified in the Code of Standard Practice Section 10.
 2. Welds ground smooth: Fabricator shall grind welds of AESS smooth. For groove welds, the weld shall be made flush to the surfaces each side and be within $+1/16"$, $-0"$ of plate thickness.
 3. Contouring and blending of welds: Where fillet welds are indicated to be ground contoured, or blended, oversize welds as required and grind to provide a smooth transition and to match profile on approved mock-up.
 4. Continuous Welds: Where welding is noted on the drawings, provide continuous welds of a uniform size and profile.
 5. Minimize Weld Show Through: At locations where welding on the far side of an exposed connection occurs, grind distortion and marking of the steel to a smooth profile with adjacent material.
 6. Coping and Blocking Tolerance: Maintain a uniform gap of $1/8" \pm 1/32"$ at all copes and blocks.
 7. Joint Gap Tolerance: Maintain a uniform gap of $1/8" \pm 1/32"$.
 8. Piece Marks Hidden: Fabricate such that piece marks are fully hidden in the final structure or made with such media to permit full removal after erection.
 9. Surface Defects Minimized: Remove deformities and scars in edges that occur in the process of handling materials
 10. Mill Marks: Fabricator shall endeavor to deliver steel with no mill marks (stenciled, stamped, raised etc) in exposed locations. Mill marks shall be omitted by cutting of mill material to appropriate lengths where possible or orienting material where mill mark is not exposed to view.
 11. Grinding of sheared edges: Fabricator shall grind all edges of sheared, punched or flame-cut steel to match approved mock-up
 12. Rolled Members: Member specified to be rolled to a final curved shape shall be fully shaped in the shop and tied during shipping to prevent stress relieving. Distortion of the web or stem, and of outstanding flanges or legs of angles shall be visibly acceptable to the Architect from a distance of 20' under any lighting condition determined by the Architect. Tolerances for the vertical and horizontal walls of rectangular HSS members after rolling shall be the specified dimension $\pm 1/2"$.
 13. Seal weld open ends of round and rectangular hollow structural section with $3/8"$ closure plates. Provide continuous, sealed welds at angle to gusset-plate connections and similar locations where AESS is exposed to weather.

2.3 SHOP CONNECTIONS

- A. Bolted Connections: Make in accordance with Section 05 12 00. Provide bolt type and finish as noted herein and align bolt heads as indicated on the approved shop erection drawings.
- B. Welded Connections: Comply with AWS D1.1 and Section 05 12 00. Appearance and quality of welds shall be consistent with the mock-up. Assemble and weld built-up sections by methods that will maintain alignment of members without warp exceeding the tolerance of this section.

2.4 SHOP PRIMING

- A. Shop-prime steel surfaces, except the following:
1. Surfaces embedded in concrete or mortar. Extend priming of partially embedded members to a depth of 2".
 2. Surfaces to be field welded.
 3. Surfaces to be high-strength bolted with slip-critical connections, if primer does not meet the specified AISC slip coefficient.
- B. Surface Preparation: Clean surfaces to be painted. Remove loose rust, loose mill scale, and spatter, slag, or flux deposits. Prepare surfaces according to SSPC Specifications as follows:
1. SSPC-SP 3 "Power Tool Cleaning." Minimum level of surface preparation for all AESS.
 2. SSPC-SP 6 "Commercial Blast Cleaning." To be used for all AESS surfaces exposed to exterior.
 3. Coordinate the required blast profile with the approved paint submittal prior to beginning surface preparation.

- C. Priming: Immediately after surface preparation, apply primer according to manufacturer's instructions to provide a dry film thickness of not less than 1.5 mils (0.038 mm). Use priming methods that result in full coverage of joints, corners, edges, and exposed surfaces.
 - 1. Stripe paint corners, crevices, bolts, welds, and sharp edges.
 - 2. Apply two coats of shop primer to surfaces that are inaccessible after assembly or erection.

2.5 GALVANIZING

- A. Hot-Dip Galvanized Finish: Apply zinc coating by the hot-dip process to AESS indicated galvanizing according to ASTM A 123. Fabricate such that all connections of assemblies are made in the field with bolted connections. Provide galvanized finish on members and assemblies within the range of color and surface textures presented in the mock ups.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. The erector shall check all AESS members upon delivery for twist, kinks, gouges or other imperfections which might result in rejection of the appearance of the member. Coordinate remedial action with fabricator prior to erecting steel.

3.2 PREPARATION

- A. Provide connections for temporary shoring, bracing and supports only where noted on the approved shop drawings. Temporary connections not shown shall be made at locations not exposed to view in the final structure or as approved by the Architect. Handle, lift and align pieces using padded slings and/or other protection required to maintain the appearance of the AESS through the process of erection.

3.3 ERECTION

- A. Set AESS accurately in locations and to elevations indicated, and according to AISC specifications referenced in this Section.
- B. In addition to the special care used to handle and erect AESS, employ the following erection techniques as indicated on Architectural or Structural drawings:
 - 1. AESS erection tolerances: Erection tolerances shall meet the requirements of Chapter 10 of the AISC Code of Standard Practice.
 - 2. Welds ground smooth: Erector shall grind welds smooth in the connections of AESS members. For groove welds, the weld shall be made flush to the surfaces of each side and be within + 1/16", 0" of plate thickness.
 - 3. Contouring and blending of welds: Where fillet welds are indicated to be ground contoured, or blended, oversize welds as required; grind to provide a smooth transition and to match profile on approved mock-up.
 - 4. Continuous welds: Where noted on the drawings, provide continuous welds of a uniform size and profile.
 - 5. Minimize weld show-through: At locations where welding on the far side of an exposed connection occurs, grind distortion and marking of the steel to a smooth profile with adjacent material.
 - 6. Surface Defects Minimized: Remove deformities and scars in edges that occur in the process of handling materials
 - 7. Bolt head orientation: All bolt heads shall be oriented as indicated on the contract documents. Where bolt-head alignment is specified, the orientation shall be noted for each connection on the erection drawings. Where not noted, the bolt heads in a given connection shall be oriented to one side.
 - 8. Removal of field connection aids: Run-out tabs, erection bolts and other steel members added to connections to allow for alignment, fit-up, and welding in the field shall be removed from the structure. Field groove welds shall be selected to eliminate the need for backing bars or to permit their removal after welding. Welds at run-out tabs shall be removed to match adjacent surfaces and ground smooth. Holes for erection bolts shall be plug welded and ground smooth.
 - 9. Filling of weld access holes: Where holes must be cut in the web at the intersection with flanges on W shapes and structural tees to permit field welding of the flanges, they shall be filled. Filling shall be executed with proper procedures to minimize restraint and address thermal stresses in group 4 and 5

shapes. Note: this requirement does not apply to weld access holes in Reduce Beam Section moment connections.

- C. Field welding: Weld profile, quality, and finish shall be consistent with mock-ups approved prior to fabrication.
- D. Splice members only where indicated.
- E. Obtain permission for any torch cutting or field fabrication from the Architect. Finish sections thermally cut during erection to a surface appearance consistent with the mock up.
- F. Do not enlarge unfair holes in members by burning or by using drift pins. Ream holes that must be enlarged to admit bolts. Replace connection plates that are misaligned where holes cannot be aligned with acceptable final appearance.

3.4 FIELD CONNECTIONS

- A. Bolted Connections: Install bolts of the specified type and finish in accordance with Division 5 section "Structural Steel."
- B. Welded Connections: Comply with AWS D1.1 for procedures, and appearance. Refer to Division 5 section "Structural Steel" for other requirements.
 - 1. Assemble and weld built-up sections by methods that will maintain true alignment of axes without warp. Verify that weld sizes, fabrication sequence, and equipment used for AESS will limit distortions to allowable tolerances.
 - 2. Obtain Architect's approval for appearance of welds in repaired or field modified work.

3.5 FIELD QUALITY CONTROL

- A. Structural requirements: The Owner will engage an independent testing and inspecting agency to perform field inspections and tests and to prepare test reports. Refer to Division 5 section "Structural Steel" for detailed bolt and weld testing requirements.
- B. AESS acceptance: The Architect shall observe the AESS steel in place and determine acceptability based on the mock-up. The Testing Agency shall have no responsibility for enforcing the requirements of this section.

3.6 ADJUSTING AND CLEANING

- A. Touch-up Painting: Cleaning and Touch-up painting of field welds, bolted connections, and abraded areas of shop paint shall be completed to blend with the adjacent surfaces of AESS.
- B. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing to comply with ASTM A780.

END OF SECTION

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SECTION 05 21 00

STEEL JOISTS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Pre-engineered steel joists
 - 2. Bridging
 - 3. Ceiling extensions
 - 4. Bearing plates
 - 5. Side wall anchors
 - 6. Extended ends

1.2 REFERENCES

- A. Steel Joist Institute, SJI:
 - 1. Standard Specifications for Open Web Steel Joists, K-Series; and Standard Load Table, Open Web Steel Joists, K-Series.
 - 2. Recommended Code of Standard Practice for Steel Joists and Joist Girders.
- B. American Society for Testing and Materials:
 - 1. ASTM A36, Standard Specification for Structural Steel.
 - 2. ASTM A307, Standard Specification for Carbon Steel Externally Threaded Standard Fasteners.
- C. American Welding Society:
 - 1. AWS A5.5, Specification for Steel, Low-Alloy, Covered Arc Welding Electrodes.
 - 2. AWS D1.1, Structural Welding Code - Steel.

1.3 SUBMITTALS

- A. Shop Drawings: Submit shop and erection drawings to include member marks, number, type, location, and spacing of members; details of bridging, extended ends and attachment at supports.
 - 1. Reproduction of Contract Drawings shall not be used for drawings.
- B. Design: Indicate on shop drawings where special designs have been provided, including a detailed, written description of magnitudes and locations of loads for each special design loading condition.
- C. Submit Certified mill test reports showing compliance with requirements of ASTM and SJI Specifications.

1.4 QUALITY ASSURANCE

- A. Manufacturer Qualifications:
 - 1. Member of Steel Joist Institute
 - 2. Fabrications, handling, erection and connections of steel joists shall be in accordance with latest editions of SJI Specifications.
- B. Welding Operator Qualifications:
 - 1. Certified within 6 months previous

1.5 DELIVERY, STORAGE AND HANDLING

- A. Mark pieces for identification during erection.
- B. Deliver to site in proper sequence for erection.
- C. Store materials above ground; prevent corrosion, warpage and twisting.

- D. Do not bend or damage members during handling.
- E. Take precautions breaking bundles to prevent damage to materials and injury to workmen.

1.6 DESIGN

- A. Joists shall be designed by the fabricator in accordance with the specifications of the Steel Joist Institute.
- B. Where loads are shown or specified, members shall be designed for the specific loading conditions required.
- C. Where loadings are not shown, members shall be designed for the maximum allowable load indicated in the standard load tables published by the Steel Joist Institute for the member designation and spans required.
- D. Fabricator shall determine and include in the work any and all special bridging or temporary bracing required for proper erection or final assembly of the work.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Steel bridging, bearing plates and wall anchors: comply with ASTM A36.
- B. Bolts: comply with ASTM A307.
- C. Welding Electrodes: comply with AWS A5.5, E70 or submerged arc Grade SAW-2.
- D. Steel Joists: comply with SJI Specifications.
 - 1. Provide double angle bottom chords.
 - 2. Provide extended ends where required.
- E. Paint: rust-inhibiting primer; comply with SJI Specifications; paint and methods of paint application shall comply with applicable air-quality and environmental regulations.

2.2 FABRICATION

- A. Design and fabricate joists in accordance with SJI Specifications.
- B. Accessories: Provide required sag rods, bridging, extended bottom chords and top chords, side wall anchors, wall connectors, headers, and ceiling extensions.
- C. Shop Paint: After fabrication, clean joists, bridging, and anchors of rust, mill scale, dirt and other foreign material. Remove grease and oil with solvents. Apply one coat of paint, minimum thickness of 1 mil.
 - 1. Paint coat for steel exposed in crawl space not less than 3.0 mils thick.
- D. Extended Ends: Design to cantilever from the main span of the joist, provide load capacity at least equal to that of joist.
- E. Provide horizontal and X-bridging as required, minimum bridging requirements in accordance with SJI Specifications.

2.3 SOURCE QUALITY CONTROL

- A. Laboratory Testing and Inspection
 - 1. Inspect fabricating and welding procedures in shop.
 - 2. Visually inspect shop welds.
 - 3. Inspect painting procedures.
 - 4. Check material certifications in shop.

PART 3 - EXECUTION

3.1 ERECTION

- A. Replace joists damaged by bending or warping during handling and erection.
- B. Bridging shall comply with SJI Specifications and with details on Drawings.
- C. Minimum bearing and anchorage shall comply with SJI Specifications and Drawings as related to particular type of support.
- D. Provide erection bolts for joists located on column centerlines.
- E. Set joists to lines, levels, and spacing as indicated. Provide bearing plates as indicated or required to carry out structural requirements. Execute general handling and erection in accordance with SJI Specifications.
- F. Permanently fasten joists to supports and install bridging and anchorage before any construction loads, other than workmen, are placed on joists.
- G. Perform welding in accordance with AWS D1.1.
- H. Properly store and protect electrodes to prevent deterioration or damage by moisture and climate.
- I. After erection, touch up field connections and abraded places of shop paint with same kind of paint as shop coat.
- J. Do not weld bottom chords of joists to supports until full dead load of roof is applied. Brace joists and supporting structure for safety and stability until permanent bracing structures are in place.
- K. Do not use bridging to support conduit, piping, duct work, or other equipment.
- L. Do not attach hangers supporting loads in excess of 100 pounds directly to joist chords. See details on Structural Drawings for methods of supporting loads in excess of 100 pounds on joists.

3.2 ADJUSTING

- A. Touch-up abrasions and welds with shop paint.
- B. Correct or replace damaged materials at no additional cost to the Owner.

3.3 FIELD QUALITY CONTROL

- A. Laboratory Testing and Inspection
 - 1. Inspect condition of materials after erection.
 - 2. Inspect connections to supporting structure.

END OF SECTION

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SECTION 05 31 14

STEEL COMPOSITE FLOOR DECKING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes
1. Composite metal floor deck
 2. Shear studs

1.2 REFERENCES

- A. American Institute of Steel Construction:
1. AISC Specification for the Design, Fabrication and Erection of Structural Steel for Buildings.
- B. American Society for Testing and Materials:
1. ASTM A108, Standard Specification for Steel Bars, Carbon, Cold-Finished, Standard Quality.
 2. ASTM A653, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
 3. ASTM A924, Standard Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process
- C. American Welding Society:
1. AWS A2.4, Standard Symbols for Welding, Brazing and Nondestructive Examination.
 2. AWS D1.1, Structural Welding Code, Steel.
 3. AWS D9.1, Specification for Welding of Sheet Metal.
- D. Steel Deck Institute:
1. SDI Specifications for Composite Steel Floor Deck.
- E. Underwriters Laboratories Building Materials Directory.
- F. Underwriters Laboratories Electrical Construction Materials Directory:
1. U.L. 209, Cellular Metal Floor Electrical Raceways and Fittings.

1.3 SUBMITTALS

- A. Product Data: submit manufacturer's data indicating product compliance for the following:
1. Composite Metal Floor Deck
 - a. Submit certification that decking meets requirements for working platform and form for concrete placement.
 - b. Submit certification that slab and deck system meets requirements for superimposed load capacity.
 2. Shear Studs
- B. Shop Drawings: submit shop and installation drawings for review, including:
1. Composite Metal Form Deck drawings
 - a. Metal deck erection layouts, details, dimensions, and installation instructions. Indicate where shoring of deck is required for concrete placement.
 - b. Show framing, locations, lengths, and markings of deck to correspond with sequence and procedure to be followed in installing and fastening steel deck.
 - c. Show methods of fastening deck and installing accessories.
 - d. Show locations, types, and sequence of welded connections for deck units, using standard AWS weld symbols.
 - e. Show size and number of holes to be cut in deck.
 2. Shear studs: show sizes, locations, and layout of shear studs to be field welded to top flanges of steel beams.

1.4 QUALITY ASSURANCE

A. Welding:

1. Use welding procedures and techniques, welders, and tackers that are qualified in accordance with AWS D1.1.
2. Maintain current AWS certification throughout duration of Project for welders employed on Work.

1.5 DELIVERY, STORAGE AND HANDLING

A. Deck:

1. Deliver, store, handle and install steel deck and accessories so as not to damage or deform.
2. Stack deck, stored at site before erection, on platforms or pallets and cover with tarpaulins or other suitable covering to provide weathertight enclosure and to afford proper air circulation.
3. Do not use deck for storage or as a working platform until sheets have been securely fastened in position. Do not damage or overload deck during construction period.
4. Do not use damaged deck. Replace damaged deck with new material at no additional cost to Owner.
5. Wirebrush and re-coat rusted areas on deck within 24 hours of detection.

B. Shear Studs:

1. Store in dry condition, above ground.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Shear Studs:

1. Provide shear stud connectors with proper ferrules and accessories especially designed to create composite deck action by mating of shear connectors, concrete deck and supporting beam, and capable of providing shear forces shown on Drawings when welded through deck used on Project.
2. Comply with ASTM A108, Grades C1010-1020, with minimum tensile strength of 65,000 psi.
3. Diameter: uniform, sizes shown on drawings.
4. Head: concentric with and normal to shaft.
5. Weld Ends: chamfered and solid flux.
6. Height: at least 1-1/2 inches above top of deck after installation, with at least 1/2 inch clear concrete cover above top of stud.

- B. Cold Galvanizing Compound: Galviline by ZRC Worldwide, Marshfield, MA. Tel: (800) 831-3275 (www.zrcworldwide.com).

2.2 MANUFACTURED UNITS

A. Composite Metal Deck

1. Sheet metal for deck: ASTM A653, Grade A.
2. Cellular floor deck units: U.L. 209.
3. Coating on deck and accessories: ASTM A924, G60.
4. Provide deck having integral locking lugs or embossments that provide mechanical lock between deck and concrete slab. Minimum lug depth: 0.005 inches.
5. Deck units:
 - a. Capable of supporting weight of wet concrete, plus 20 psf uniform live load or 150 pound concentrated load per foot of deck width without intermediate shoring on all span conditions, and without exceeding SDI Specifications limits on deck stress and deflection.
 - b. Classified by U.L. Building Materials Directory.
 - c. Each unit or bundle labeled and marked in accordance with U.L. requirements, indicating manufacturer, testing, and inspection.
6. Deck ribs: spaced no more than 12 inches on center, and designed to provide efficiency factor of 1.0 for development of headed shear studs in concrete in accordance with AISC Specifications.

2.3 ACCESSORIES

- A. Sheet metal closures and fillers: ASTM A653.

- B. Ceiling hanger inserts: compatible with deck used.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Do not begin laying of deck units until supporting members are secured in place and their end connections completed.
- B. Provide shoring where indicated on shop drawings. Shoring must be supported on adjacent beams if the beams are not shored to construction below.
- C. Where shoring of beams and girders is required, provide positive support at midpoint of spans under 25 feet and at third points of spans over 25 feet. Temporary supports must rest directly above beams at the supporting floor, or load must be transferred to beams with load spreaders. Supporting construction must be re-shored where construction loading exceeds live load capacity of supporting floor.
- D. Clean rust, oil, grease, paint, and debris away from areas to which anchors are to be welded. Remove mill scale by grinding or by sandblasting.

3.2 DECK INSTALLATION

- A. Lay and align units as follows:
 - 1. Maintain required number of units shown on shop drawings.
 - 2. Prevent stretching or contracting of sidelaps.
 - 3. Abut, do not lap, ends of units.
 - 4. Align flutes in deck at butt joints.
 - 5. Do not use deck units that are bent or kinked or otherwise damaged such as to prevent proper interlocking and connection of edges to adjacent units.
- B. Openings in deck:
 - 1. Deck erector: cut framed openings indicated on Drawings.
 - 2. Holes 12 inches in diameter or less may be cut by trades requiring holes.
 - 3. Where openings greater than 12 inches in diameter not shown on Drawings are required, notify Architect. Do not proceed to cut deck until Architect accepts proposed openings.
- C. Weld deck to supporting steel using 5/8" diameter puddle welds or headed shear studs at not more than 12 inches on center.
- D. Coordinate welding sequence and procedure with placing of units.
- E. Fasten side laps and connect perimeter edges to supports at spacing not to exceed three feet.
 - 1. Fasten side laps using welds, screws or button punching as indicated on approved shop drawings.
- F. Weld metal fillers and closure pieces in place.
- G. Replace defective deck connections before concrete slab is placed.
- H. Install inserts to support ceiling hangers. Provide minimum of one ceiling insert for every 4 square feet of ceiling.

3.3 SHEAR STUD INSTALLATION

- A. Automatically end weld shear studs in accordance with AWS D1.1, Section 7.
- B. Remove ceramic ferrules from anchors after welding.
- C. Do not weld studs when temperature is below zero degrees F.
- D. Do not weld studs when surface is wet with rain or snow.

3.4 FIELD QUALITY CONTROL

- A. Deck: Inspect deck at welded connections. Reject connections where deck is not intact after welding and where blow holes occurred.

- B. Shear Studs:
 - 1. Weld at least 2 shear studs at start of each work period to determine proper generator, control unit, and stud welder settings. Bend studs 45 degrees from vertical by striking with hammer. Inspect weld. Do not include these 2 studs in required total number of studs on Project.
 - 2. Visually inspect welds at shear studs. Test studs which do not appear to have full sound 360 degree fillet weld at base. Test by bending 15 degrees from vertical toward nearest end of beam by striking with hammer. Replace studs which fail this test.
 - 3. When temperature is below 32 degrees F, test one stud in each 100 studs after weld cools. If stud fails in weld, test 2 additional studs. Do not resume welding unless 2 additional studs pass test.

3.5 ADJUSTING

- A. Field Touch Up of Deck: After erection, use cold galvanizing compound to touch up both sides of deck at welds, weld scars, bruises, and rust spots.

END OF SECTION

SECTION 05 31 23

STEEL ROOF DECKING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
1. Metal Roof Deck
 2. Sheet Metal Accessories

1.2 REFERENCES (Latest Edition Available)

- A. Steel Deck Institute (SDI), Specifications and Commentary for Steel Roof Deck.
- B. American Iron and Steel Institute (AISI), Specification for the Design of Cold-Formed Steel Structural Members.
- C. American Welding Society:
1. AWS A5.1, Specification for Steel, Carbon, Covered Arc Welding Electrodes.
 2. AWS D1.3, Structural Welding Code - Sheet Steel.
- D. American Society for Testing and Materials:
1. ASTM A90, Standard Tests for Weight of Coating on Zinc-Coated (Galvanized) Iron or Steel Articles.
 2. ASTM A653, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
 3. ASTM A924, Standard Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process
 4. ASTM A1008, Standard Specification for Steel Sheet, Cold-Rolled Sheet, Carbon, Structural.
 5. ASTM B117, Standard Salt Spray (Fog) Test.
 6. ASTM D714, Evaluating Degree of Blistering of Paints.
 7. ASTM D1654, Evaluation of Painted or Coated Specimens Subjected to Corrosive Environments.
- E. Underwriters Laboratories, Inc.:
1. Bulletin of Research No. 52, Development of Apparatus and Test Method for Determining Wind Uplift Resistance of Roof Assemblies.
 2. Standard UL580, Tests for Wind Uplift Resistance of Roof Assemblies.

1.3 SUBMITTALS

- A. Shop Drawings: Submit shop drawings for review prior to fabrication or installation of materials.
1. Indicate erection layouts, details, steel deck dimensions and section properties, and installation instructions. Show supporting framing, lengths and markings of deck to correspond with sequence and procedure to be followed in installing and fastening deck. Show methods of fastening deck and installing accessories. Show locations, types and sequence of welded connections for deck units.
 2. Indicate welds using standard AWS welding symbols. Show size and number of holes to be cut in deck.
 3. Indicate allowable diaphragm shear capacity corresponding to pattern and type of connections provided.

1.4 QUALITY ASSURANCE

- A. Manufacturer Qualifications
1. Member Steel Deck Institute.
 2. Minimum 5 years of experience.
- B. Erector Qualifications
1. Minimum 5 years of experience.
 2. Welders certified within previous 6 months.

1.5 DELIVERY, STORAGE AND HANDLING

- A. Deliver deck in bundles and store on pallets above the ground, protect from corrosion and damage. Rusted, crimped or bent deck shall not be installed in the work.
- B. Do not store materials on installed deck before connecting to supporting structure.
- C. Do not overload deck during construction by workmen or storage of materials.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Steel Grades:
 - 1. ASTM A1008, Grade C for painted deck.
 - 2. ASTM A653, Grade A for galvanized deck.
- B. Miscellaneous steel plates at vents, sump pans, and closures: 20 gage material.
- C. Welding Rods: AWS A5.1, E70
- D. Weld Washers: 14 gage, with 3/8ths diameter hole at center.
- E. Galvanizing:
 - 1. Wiped zinc coating, 0.2 to 0.5 ounces per square foot, complying with ASTM A924.
 - 2. Comply with ASTM A90 and A239 for weight and uniformity.
- F. Paint:
 - 1. Resistant to solvents used to clean deck.
 - 2. Resistant to solvents in foamed-in-place insulation.
 - 3. Resistant to corrosion and blistering in accordance with ASTM B117, D714 and D1654.

2.2 MANUFACTURED UNITS

- A. Metal deck units shall comply with the Specifications of the Steel Deck Institute.
- B. Design units for required spans and conditions of continuity, generally for 3 continuous spans, except as required by layout.
- C. Stresses under construction loads, gravity loads and wind loading shall not exceed recommendations of the Steel Deck Institute.

2.3 FABRICATION

- A. Fabricate in lengths as long as practical and piece-mark bundles for identification during erection.
- B. Painting:
 - 1. Thoroughly clean deck and coat both sides with phosphate prior to painting.
 - 2. Apply paint .30 mils minimum thickness to both sides of deck and heat cure for tough, abrasion-resistant finish.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Do not lay deck units in place until supporting structure is secured in place and final connections are complete.
- B. Layout deck units in accordance with shop drawings, do not stretch or bend units.

- C. Overlap ends a minimum of 2 inches. Interlock side laps as shown on shop drawings.
- D. Connections:
 - 1. Anchor deck to supporting steel with full-fusion puddle welds. Use weld washers where required.
 - 2. Connect side laps with screws or welds.
 - 3. Side lap connections of interlocking edges shall be made by button-punching with a specially designed crimping tool.
- E. Weld metal fillers and closure pieces in place.

3.2 FIELD QUALITY CONTROL

- A. Laboratory Testing and Inspection:
 - 1. Inspect condition of deck units for damage and corrosion.
 - 2. Inspect connections of deck to structure and at side laps.

3.3 ADJUSTING

- A. Touch-up scarred areas on both sides of deck including welds, rust spots and abrasions by wire-brushing and painting with shop paint.
- B. Repair blow-holes at welds with 18 gage plates welded in place. Replace entire sections of deck where holes cannot be satisfactorily repaired.

3.4 HANGERS FOR MISCELLANEOUS EQUIPMENT

- A. Do not attach hangers for ceilings, ductwork, or piping directly to metal roof deck.

END OF SECTION

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SECTION 05 40 00

COLD-FORMED METAL FRAMING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Lightgauge structural metal studs in exterior wall systems used as masonry veneer back-up, steel joists for ceiling framing, and steel joists for observation deck framing.
- B. Related Sections:
 - 1. Section 05 12 00 - Structural Steel Framing.
 - 2. Section 05 50 00 - Metal Fabrications: steel angles.
 - 3. Section 06 16 56 - Air- and Water-Resistive Sheathing Board System.
 - 4. Section 07 42 13 - Metal Wall Panels.
 - 5. Section 07 48 00 - Rainscreen Attachment System (MFI)
 - 6. Section 09 21 16 - Gypsum Board Assemblies: non-loadbearing partition studs.

1.2 REFERENCE STANDARDS

- A. American Society for Testing and Materials (ASTM):
 - 1. ASTM A653/A653M-06, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot Dip Process.
- B. American Iron and Steel Institute (AISI):
 - 1. Specification for the Design of Cold-Formed Steel Structural Members.

1.3 SYSTEM DESCRIPTION

- A. Masonry Veneer: The exterior non-load-bearing curtain wall system shall be designed to withstand both positive and negative pressure with a maximum deflection of $L/600$ of stud span. If stud span for 6" and 8" 18 gage stud exceed $L/600$, either increase stud gage, decrease stud spacing, or add light-gage bracing to control deflection to $L/600$.
- B. Plaster: The exterior non-load-bearing curtain wall system shall be designed to withstand both positive and negative pressure with a maximum deflection of $L/360$ of stud span. If stud span for 6" and 8" 18 gage stud exceed $L/360$, either increase stud gage, decrease stud spacing, or add light-gage bracing to control deflection to $L/360$.
- C. All Other Veneer/Cladding: The exterior non-load-bearing curtain wall system shall be designed to withstand both positive and negative pressure with a maximum deflection of $L/240$ of stud span. If stud span for 6" and 8" 18 gage stud exceed $L/240$, either increase stud gage, decrease stud spacing, or add light-gage bracing to control deflection to $L/240$.
- D. Steel Joists for Observation Deck Framing:
 - 1. Design framing members for gravity loadings and spacings given in the Contract Documents and for exterior wind forces and seismic forces in accordance with governing building code.
 - 2. In addition to loads noted in Contract Documents, design floor joist framing for a minimum live load of 300 lb applied at any location.
 - 3. Determine required bridging and lateral bracing. Observation decking system does not brace the top flange of cold formed framing members,
 - 4. Conform to requirements of all applicable codes.
 - 5. Maximum Allowable Deflection: $1/240$ of span, under total design loads and $1/360$ of span, under design live loads.

1.4 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site prior to commencing Work. Attendees shall include Architect's Structural Engineer, Cold-Formed Metal Framing Engineer, Cold-Formed Metal Framing Installer, and Owner's Testing Lab.

1.5 SUBMITTALS

- A. Product Data: Submit in accordance with SECTION 01 33 23 - SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES. Include manufacturer's specifications, load tables, dimension diagrams, anchor details, installation instructions for products to be used in lightgauge framing work, and type and location of fasteners. Describe materials and finish, product criteria, and limitations.
- B. Structural Calculations: Submit structural calculations prepared by manufacturer for review by project engineer.
 - 1. Description of design criteria.
 - 2. Engineering analysis depicting stress and deflection (stiffness) requirements for each framing application. This shall include cold-formed steel angles around exterior glazing system openings, exterior door openings, and exterior louver openings as detailed.
 - 3. Selection of framing components and accessories.
 - 4. Verification of attachments to structure and adjacent framing components.
 - 5. Sealed by a professional engineer registered in the state where the project is located.
 - 6. Engineer shall have a minimum of 5-years' experience with projects of similar scope.
- C. Shop Drawings: Submit in accordance with SECTION 01 33 23 - SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
 - 1. Drawings shall incorporate fabrication and erection details, including, but not limited to, layout drawings, dimensioned profiles, member sizes and gauges, connection designs, bridging, and continuous lateral bracing.
 - 2. Submit layout drawings indicating locations and spacings of framing members shown in the fabrication drawings.
- D. Evaluation Reports: For post-installed anchors, from ICC-ES or other qualified testing agency acceptable to authorities having jurisdiction.

1.6 QUALITY ASSURANCE

- A. All structural members shall be designed in accordance with AISI "Specifications for the Design of Cold-Formed Steel Structural Members", latest edition.
- B. Qualifications: Welders and welding procedures shall comply with the requirements of ANSI/AWS D1.3 Structural Welding Code.
- C. Fabricator Qualifications: Fabrication shall be performed by a fabricator with experience in the design and fabrication of lightgauge framing systems equal in material, design, and extent to the systems required for this project.
- D. Installer Qualifications: Steel framing member installation shall be performed by an installer with experience equal or greater to systems required for this project.

1.7 DELIVERY AND STORAGE

- A. Protect metal members from rusting and damage. Deliver to project site in manufacturer's containers or bundles, fully identified with name, brand, type and grade. Store off the ground in a dry, ventilated space.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Lightgauge Steel Framing: Basis of Design ClarkDietrich Building Systems (phone 800.543.7140 web site: www.clarkdietrich.com). ASTM A 1003, Provide Metal Framing, 18 gage minimum with 1-5/8" flange minimum, structural stud framing members. Refer to structural drawings for specific size, type, and locations of framing which may be used on the project.
- B. Substitutions: Under provisions of SECTION 01 62 00 - PRODUCT OPTIONS. Other acceptable manufacturer's with products of equal substance and function include:
 - CEMCO Steel
 - MarinoWare
 - The Steel Network

- C. Joist framing shall be manufacturer's standard C-shaped of maximum depths indicated, formed from steel conforming to ASTM 446 and a G-60 galvanized coating.
- D. Furnish bridging, bracing, blocking, reinforcements, fasteners, and accessories as required for a complete and structurally sound installation.
- E. Track: Formed steel; channel shaped; same width and finish as studs, tight fit; 18 gage thick, solid web.
- F. Steel Joist Track: Manufacturer's standard U-shaped steel joist track, of maximum web depths indicated.

2.2 ACCESSORIES

- A. Slide Clips: ASTM A 653, Grade A, galvanized metal clip.
 - 1. ASTM A 653, Grade C, galvanized metal clip.
 - 2. Designed and manufactured for attachment of metal stud framing to edge of structural steel framing.
 - 3. Permits differential vertical movement between stud and floor or roof structure. See structural drawings for live load deflection.
 - 4. Clip and its connection to structure shall be adequate to safely brace metal studs to resist design lateral load of at least 330 pounds (allowable stress increase permitted by Building Code already taken into account).
- B. Bracing and Furring: Formed sheet steel, thickness determined for conditions encountered, manufacturer's standard shapes, same finish as framing members.
- C. Bridging: 1-1/2" C.R. channels, 16 ga; same finish as framing members.
- D. Plates, Gussets, Clips: Formed sheet steel, thickness determined for conditions encountered, manufacturer's standard shapes, same finish as framing members.
- E. Galvanizing Repair Paint: Organic Zinc-Rich coating containing 95% metallic zinc, by weight in the dried film; recognized under the Component Program of Underwriter's Laboratories, Inc. as an equivalent to hot-dip galvanizing; conforming to Federal Specification DOD P-21035A for repair of hot-dip galvanizing; as manufactured by ZRC Worldwide (phone 800.831.3275 web site: www.zrcworldwide.com). Provide Z.R.C. Cold Galvanizing Compound.
- F. Sealer Gaskets: Closed-cell neoprene foam, 1/4 inch thick, selected from manufacturer's standard widths to match width of bottom track or rim track members as required.
- G. Slotted Top Track: Sliptrack Systems, SLP-TRK®, (phone 888.475.7875 web site: www.sliptrack.com).
 - 1. 16 gage, ASTM A 653, Grade 50 with a minimum yield point of 50,000 psi.
 - 2. 2-1/2" down-standing legs with 1/4" wide by 2" high slots spaced at 1" on center.
 - 3. Track width shall match stud size by manufacturer's standard length.
 - 4. Fasteners: ASTM C 1002, self-drilling, self-tapping screws.

2.3 FASTENERS

- A. Self-drilling, Self-tapping Screws, Bolts, Nuts and Washers: ASTM A 90, hot dip galvanized.
- B. Anchorage Devices: Power driven as recommended by manufacturer for size and spacing.
- C. Welding Electrodes: Comply with AWS standards D1.1 and D1.3.
- D. Post-Installed Anchors (for securing perimeter angle to masonry or concrete structure): Fastener systems with bolts of same basic metal as fastened metal, if visible, unless otherwise indicated; with working capacity greater than or equal to the design load, according to an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC01, ICC-ES AC193, ICC-ES AC58 or ICC-ES AC308 as appropriate for the substrate; zinc coated by hot-dip process according to ASTM A 153, Class C.

2.4 FABRICATION

- A. General: Framing components may be prefabricated into panels prior to erection. Cut framing components accurately to fit squarely against abutting members. Hold members firmly in position until properly fastened. Prefabricated panels shall be square and braced against racking. Attach similar components by welding.
- B. Protective Finishing: Paint abraded surfaces and welds after fabrication, using galvanizing repair paint for galvanized surfaces.

2.5 FINISHES

- A. All framing members shall be formed from hot-dip galvanized steel, G60 (Z180) coating, conforming to the requirements of ASTM A 1003, Structural Grade, Type H.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Erector and manufacturer shall inspect field conditions and tolerances affecting installation and coordinate any necessary corrections with Contractor.

3.2 INSTALLATION

- A. General: Install steel framing members and accessories in accordance with the manufacturer's instructions and the erection drawings. Spacing of studs shall not exceed 16" o.c.
- B. Install sealer gaskets at the underside of wall bottom track or rim track and at the top of foundation wall or slab at stud or joist locations.
- C. Securely anchor track to floor and overhead structure or member. Seat studs squarely in the track with the stud flange securely attached to the flanges of both upper and lower track.
 - 1. Attach structural components by welding, bolting or with self-drilling screws.
 - 2. Wire tying of framing components in structural applications will not be permitted.
- D. Touch-up Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas of shop paint and paint exposed areas with same material used for shop painting. Apply by brush or spray to provide a minimum dry film thickness of 2.0 mils. For galvanized surfaces, apply galvanizing repair paint.
- E. Construct corners using minimum three studs. Double stud at wall opening, door, and window jambs.
- F. Provide vertical stud within 12 inches of jamb for brick anchor attachment at openings. Reference BIA Technical Note 28B.
- G. Provide rows of horizontal bridging welded in place at spacing recommended by stud manufacturer to resist lateral forces and stud rotation.
- H. Slotted Top Track: Install slotted track in strict accordance with manufacturer's written instructions and recommendations.
 - 1. Secure studs to slotted top track with #8 wafer-head screws.
 - 2. Maintain minimum deflection gap of 0.65 inch between top of stud and top of slotted track.
 - 3. Limit vertical movement to 2 inch, plus or minus 1 inch.
- I. Install joists and connections to support frame, level, straight, and plumb; adjust to final position, brace, and reinforce. Fasten joists to both flanges of joist track.
- J. Space joists as indicated in Contract Documents and shop drawings.
- K. Install joist reinforcement and web stiffeners, bridging, and miscellaneous framing at connections, as indicated on shop drawings.

3.3 TOLERANCES

- A. Maximum Variation from True Position: $\pm 1/8$ " from plan location.
- B. Maximum Variation of any Member from Plane: $1/8$ " in 10 feet.

3.4 CONNECTIONS

- A. Metal framing may be attached with sheet metal screws at joints per manufacturer's recommendations except where noted to be welded on the details.
- B. Where welding is required, special low amperage welding equipment and small diameter rods shall be used to prevent blow holes in the material.
- C. Welds shall be $1/8$ -inch fillet continuous across the contact joint except where noted otherwise.
- D. Puddle welds shall be $3/4$ " diameter full fusion. Weld washers shall be used where welds are made to material $3/16$ " or more in thickness.
- E. Connections to concrete shall be made with self-tapping screws specially designed for that purpose (e.g. Tapcon system or equal.)
- F. Erection bracing shall hold framing system members straight and plumb and in safe condition until permanent bracing have been installed.
- G. Materials used in bracing shall be furnished by erection subcontractor.

3.5 ADJUSTING

- A. Lightgauge framing systems damaged during or after erection shall be repaired or replaced at no cost to Owner. A repair detail drawing from the fabricator's engineer, with P.E. seal, shall be submitted for Architect's review before proceeding with repair.
- B. Repair damage galvanized coatings with galvanized repair paint in accordance with manufacturer's recommendation.

END OF SECTION

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SECTION 05 50 00

METAL FABRICATIONS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Miscellaneous metal work and related items.
- B. Related Sections:
 - 1. Section 05 12 00 - Structural Steel Framing.
 - 2. Section 05 73 00 - Decorative Metal Railings

1.2 PERFORMANCE REQUIREMENTS

- A. Structural Performance of Stairs: Provide metal stairs and support connections capable of withstanding the effects of gravity loads and the following loads and stresses within limits and under conditions indicated:
 - 1. Uniform Load: 100 lbf/sq. ft.
 - 2. Concentrated Live Load: 300 lbf applied on an area of 4 sq. in.
 - 3. Uniform and concentrated loads need not be assumed to act concurrently.
 - 4. Stair Framing: Capable of withstanding stresses resulting from railing loads in addition to loads specified above.
 - 5. Limit deflection of treads, platforms, and framing members to L/360 or 1/4 inch, whichever is less.

1.3 SUBMITTALS

- A. Shop Drawings: Submit in accordance with SECTION 01 33 23 - SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES. Include details of each metal fabrication, including setting drawings for anchor bolts and other required anchors.
- B. Submit structural calculations prepared by manufacturer for review by project engineer. Shop drawings and calculations shall be sealed by a professional engineer registered in the State of Texas.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Steel: ASTM A 36, shapes, plates and bars.
- B. Threaded Fasteners: ASTM A 307, Grade A, bolts and nuts.
- C. Stud Anchors: Provide headed stud anchors with a smooth shank of carbon steel with a minimum tensile strength of 60,000 psi, as manufactured by Nelson Stud Welding Div. or KSM Welding Systems Div.
- D. Expansion Bolts: Fed. Spec. FF-S-325, Group II, Type A, Class 1. Provide Hilti Kwik-bolt or Ramset Trubolt stud anchors.
- E. Galvanizing Repair Paint: Organic Zinc-Rich coating containing 95% metallic zinc, by weight in the dried film; recognized under the Component Program of Underwriter's Laboratories, Inc. as an equivalent to hot-dip galvanizing; conforming to Federal Specification DOD P-21035A for repair of hot-dip galvanizing; as manufactured by ZRC Worldwide, Marshfield, MA (phone 800.831.3275 web site: www.zrcworldwide.com). Provide Z.R.C. Cold Galvanizing Compound.
- F. Stainless Steel: Grade and type designated below for each form required:
 - 1. Castings: ASTM A 743, Grade CF 8 or CF 20.
 - 2. Plate and Sheet: ASTM A 240 or ASTM A 666, Type 304.

2.2 FABRICATION

- A. Fabricate and assemble metal work in the shop to the greatest extent possible.
 - 1. Metal surfaces shall be clean and free of mill scale and rust pitting, well-formed to shape and size with sharp lines and angles. Shearing and punching shall leave clean true lines and surfaces. Exposed ends and edges shall be milled smooth with corners slightly rounded.
 - 2. Weld shop connections to the extent practical; finish exposed welds smooth. Weld joints shall be flush.
 - 3. Cut, drill or punch holes; do not make or enlarge by burning. Provide holes where required for connecting the work of other trades.
 - 4. Conceal fastenings where practical. Thickness of metal and method of assembly and support shall give ample strength and rigidity.
 - 5. Assemble parts so that joints are tight, members are in good alignment, and the finished work reproduces the drawing details as intended.
 - 6. Stud Anchors: Weld stud anchors to miscellaneous shapes using welding equipment and procedures recommended by the manufacturer of the stud anchors used.
- B. Punching: At hollow structural sections located in the exterior building envelope, provide shop-punched holes in steel sections as indicated on drawings, for installation of sprayed foam insulation to completely fill hollow structural section cavity.
- C. Shop Painting:
 - 1. Carbon steel surfaces shall be cleaned, degreased, and shop coated with a straight alkyd, zinc chromate, rust inhibitive paint applied by brush or spray. Steel to be encased in concrete need not be painted.
 - 2. Aluminum surfaces to be in direct contact with concrete and masonry shall be shop coated with zinc chromate primer.
- D. Galvanizing: Provide a zinc coating for those items indicated or specified to be galvanized, as follows:
 - 1. ASTM A 153 for galvanizing iron and steel hardware.
 - 2. ASTM A 123 for galvanizing rolled, pressed and forged steel shapes, plates, bars and strip 1/8" thick and heavier, and for galvanizing assembled steel products.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Deliver, store and erect metal work in such manner that the parts are not damaged or deformed. Install the work true to line, plumb, level, in proper alignment with other work, and free of sags, buckles and other objectionable defects. Anchorage shall be adequate to safely resist all stresses to which the work will normally be subjected.
- B. Touch-Up Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas of shop paint and paint exposed areas with same material used for shop painting. Apply by brush or spray to provide a minimum dry film thickness of 2.0 mils. For galvanized surfaces, apply galvanizing repair paint.

3.2 MISCELLANEOUS METAL SCHEDULE

- A. General: The following is a general list of the metal work to be furnished under this section of the specifications. Other items of miscellaneous metal work shown and noted on the drawings and not mentioned elsewhere in the specifications shall be furnished as though specifically described herein.
- B. Loose Lintels: Lintels of steel shapes and plates where required at exterior brick veneer and as detailed.
 - 1. End bearing shall be at least 8".
 - 2. Where steel lintels are not specifically called out, furnish at least one steel angle for each 4" thickness of masonry in the wall.
 - 3. Wrap bearing ends of lintels with flashing to achieve a bond breaker between the lintel and the masonry.
 - 4. Galvanize steel lintels located in exterior walls.
- C. Roof Curbs: Fabricate curbs of steel angles, channels and plates at roof openings for ducts, exhaust fans and other set-on items.
 - 1. Miter and weld corners.
 - 2. Bolt or weld curbs to roof framing members.

- D. Storefront Bracing: Provide braces of steel angles, channels and plates to reinforce and stiffen the head of the aluminum storefront framing.
- E. Track Supports: Provide framing and brackets of steel shapes as detailed to support folding panel partition.
1. Erect to be level, straight and rigid.
 2. Punch for mounting bolts as required.
- F. Ladders: Fabricate ladders of steel bars and shapes.
1. Weld all connections.
 2. Bolt ladders to floor and wall with steel brackets and clips.
 3. Ladder Rungs: Provide SlipNOT®, grit-free, mill finish steel Grade #2 – Medium rungs as manufactured by the W.S. Molnar Company (1-800-SlipNOT) or approved equivalent. Reference drawings for dimensions. Steel shall incorporate an anti-slip primarily martensitic steel surface covering 100% of the substrate consisting of a random hatch matrix with a surface hardness between 55 – 63 on the Rockwell “C” scale and a surface to substrate bond strength of at least 4,000 psi. The non-slip surface shall have a minimum coefficient of friction of 0.8 and be listed as slip resistant by Underwriters Laboratories.
 4. Galvanize exterior ladders after fabrication. Reference Manufacturer’s galvanizing guidelines, as to not damage the anti-slip surface.
 5. Fall Arrest System: Provide 3M™ DBI-SALA® Lad-Saf™ Cable Vertical Safety System as manufactured/provided by Rooftop Anchor, Inc.
 - a. Provide on ladders 24 feet in length or longer. Also provide at ladders where any portion occurs a minimum of 24 feet above finish floor, surface, or grade.
 - b. This system is a 2-user, stainless steel vertical safety system (vertical lifeline) that meets the new ANSI Z359.16 standard, along with OSHA 1910.140 and 1926.502, when used with the Lad-Saf X3 Detachable Cable Sleeve (6160054) and Lad-Saf X2 Detachable Cable Sleeve (6160030). It includes the top and bottom brackets and 20’ of swaged 3/8 inch 1×7 galvanized steel cable.
- G. Bollards: Provide bollards of size indicated, extend 3’ below grade and 4’ above grade, fabricated of Schedule 40 steel pipe, galvanized with G90 coating. Fill bollards with 3000 psi concrete, finish with domed top.
1. At existing slabs, fabricate bollards with 3/8-inch-thick steel baseplates for bolting to concrete slab. Drill baseplates at all four corners for 3/4-inch anchor bolts.
 2. Removable or Lighted Embedded: Reference Civil and MEP.
- H. Roof Edge Angles: Provide steel angles along roof edges to support wood nailers.
1. Weld angles to steel framing unless otherwise indicated.
- I. Safety Nosings: Wooster Type 610-Supergrit abrasive extruded aluminum safety tread as detailed for concrete steps.
1. Nosings shall be 1-3/8" wide by no more than 4" from ends of steps on which installed.
 2. Furnish nosings with anchors for casting into the concrete as it is placed.
- J. Steel Pan Stairs: Fabricate stairs of sheet metal and steel shapes.
1. Fabricate tread pans, risers and landing pans of 14-gage sheet steel. Reinforce bottom of landing pans with angle or hat shaped stiffeners.
 2. Spot weld wire mesh reinforcement in the tread and landing pans to receive concrete stair fill.
 3. Assemble stairs with welded connections. Weld exposed joints continuously. Close exposed ends of channel stringers.
 4. Furnish clips, brackets and accessories for a complete installation.
 5. Erect stairs by welding to steel members and bolting to concrete. The completed stairs shall be rigid and in good alignment.
- K. Downspouts: 3/16" thick steel tubing fabricated per details.
1. Hot-dip galvanized, paint grip G90, entire assembly per ASTM A 123 Class B-1, with a minimum of 0.2 oz. per sq. ft. surface.
- L. Miscellaneous Steel Shapes: Channels, wide flange shapes, angles, plates, tubing, connections, and bolts where shown and detailed on Drawings. Hot-dip galvanize where exposed to weather or touching exterior masonry after fabrication. Set mechanical unit frames directly on joists, not on deck. Provide an angle frame supported by structure around all roof penetrations including hatches and ductwork.

END OF SECTION

METAL FABRICATIONS

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SECTION 05 58 13

COLUMN COVERS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Formed metal column covers.
- B. Related Sections:
 - 1. Section 05 12 00 - Steel Framing: supports for formed metal column covers.
 - 2. Section 05 40 00 - Cold-Formed Metal Framing: supports for formed metal column covers.
 - 3. Section 09 21 16 - Gypsum Board Assemblies: Non-Structural Metal Framing for supports for formed metal column covers.

1.2 QUALITY ASSURANCE

- A. Manufacturer/Source: Provide formed metal column covers and accessories from a single manufacturer.
- B. Manufacturer Qualifications: Approved manufacturer with minimum five years' experience in manufacture of similar products in successful use in similar applications.
- C. Installer Qualifications: Experienced Installer with minimum of five years' experience with successfully completed projects of a similar nature and scope.
- D. Welding Standards: Comply with applicable provisions of AWS D1.2 and AWS D1.6.

1.3 SUBMITTALS

- A. Product Data:
 - 1. Manufacturer's data sheets for specified products.
 - 2. Sample copy of manufacturer's warranty
- B. Shop Drawings: Provide shop drawings prepared by manufacturer or manufacturer's authorized dealer. Include elevations and sections showing openings and penetrations and interface with adjacent work. Include details of each condition of installation and attachment. Provide details at a minimum scale 1-1/2-inch per foot of all required trim and extrusions needed for a complete installation.
 - 1. Include data indicating compliance with performance requirements.
 - 2. Indicate points of supporting structure that must coordinate with formed metal column cover installation.
 - 3. Distinguish between factory assembled and field assembled work.
- C. Samples: Provide 12-inch section of column showing finishes, horizontal joinery, vertical joint return, column stiffener and anchoring details, with gaskets and sealants installed. Provide 12-inch long pieces of each trim.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Protect products during shipping, handling, and storage to prevent staining, denting, deterioration of components or other damage.
 - 1. Deliver, unload, store, and erect column covers and accessory items without misshaping products or exposing products to surface damage from weather or construction operations.
 - 2. Store in accordance with Manufacturer's written instructions.

1.5 WARRANTY

- A. Special Manufacturer's Warranty: On manufacturer's standard form, in which manufacturer agrees to repair or replace column covers that fail in materials and workmanship within one years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Basis of Design: Moz Designs, Inc., Column Covers. Provide basis of design product, or comparable product approved by Architect.
1. Moz Designs, Inc.; Oakland, CA. Tel: (510) 632-0853. Web: www.mozdesigns.com

2.2 MATERIALS

- A. Stainless-Steel Face Sheet: ASTM A 789, Type 304 architectural grade alloy.
1. Face Sheet Thickness: 18 gauge.
 2. Finish: Brushed, No. 4.

2.3 FORMED METAL COLUMN COVERS

- A. Butt Joint and Reveal Type Column Covers: Form column covers from metal substrate indicated, with vertical edges formed with return leg stiffener configured with tight butt joint. Form vertical and horizontal joints as specified, in locations indicated on drawings.
1. Basis of Design Product: Moz Designs, Column Covers Series CC100.
 2. Column Cover Shape: Circular.
 3. Substrate: Stainless steel sheet.
 4. Horizontal Joints: Horizontal butt joint.
 5. Vertical Joints: Vertical butt joint.
 6. Exposed Trim and Fastener Finish: Match column cover finish.

2.4 ACCESSORIES

- A. Provide manufacturer's recommended fasteners, shims, sealants, and gaskets required for a complete installation.
- B. Stiffeners: Manufacturer's standard stiffeners and joint backing as required for installation.
- C. Sealants: Type recommended by column cover manufacturer for application, meeting requirements of SECTION 07 92 00 - JOINT SEALANTS.

2.5 FABRICATION

- A. Column manufacturer to pre-form column covers to specified dimensions and diameters as indicated on shop drawings.
1. Provide column covers in sections a maximum 12' 0" tall per section.
 2. Provide additional sections to achieve finished heights above 12' 0".
 3. Columns shall have no exposed fasteners unless specified.
 4. Provide additional bracing components as necessary to stiffen substructure and insure solid mid-span bracings and connections.

2.6 FINISHES

- A. Finishes, General: Comply with NAAMM MFM recommendations for application of finishes and finish designations.
1. Protect finishes by applying strippable temporary protective covering.
- B. Stainless Steel Sheet Finishes: Prepare surfaces by removing tool and die marks and stretch lines. Following finishing, passivate, rinse, and leave surfaces clean. Provide the following finish:
1. Directional Satin Finish: No. 4.

PART 3 - EXECUTION

3.1 INSPECTION

- A. Examine column cover substrate and supports with Installer present. Inspect for erection tolerances and other conditions that would adversely affect installation of column covers.
 - 1. Confirm presence of acceptable framing members at recommended spacing to match installation requirements of column covers.
 - 2. Inspect framing that will support column covers to determine if support components are installed as indicated on approved shop drawings and are within tolerances acceptable to column cover manufacturer.
 - 3. Verify that penetrations and adjacent work match layout on shop drawings.
- B. Correct out-of-tolerance work and other deficient conditions prior to proceeding with column cover installation.

3.2 PREPARATION

- A. Coordinate setting drawings, diagrams, templates, instructions, and directions for installation of anchorages that are to be embedded in concrete or masonry construction.
 - 1. Coordinate installation of anchors and clips on structural steel to receive application of sprayed fire resistive material.

3.3 COLUMN COVER INSTALLATION

- A. General: Install column covers in accordance with approved shop drawings, manufacturer's written instructions, and project drawings.
- B. Installation: Attach column covers securely to supports using recommended clips, screws, fasteners, bolts and anchors, sealants, and adhesives indicated on approved shop drawings and as required to comply with performance requirements.
 - 1. Install column covers using concealed fasteners.
 - 2. Form tight joints with exposed connections accurately fitted together. Provide uniform reveals and openings for sealants and joint fillers as indicated.
 - 3. Horizontal Joinery: Provide joint type specified.
 - 4. Vertical Joinery: Provide joint type specified.
 - 5. Galvanic Action: Where elements of column covers and accessories will come into contact with dissimilar materials, treat faces and edges in contact with dissimilar materials as recommended by manufacturer.

3.4 CLEANING AND PROTECTION

- A. Remove temporary protective films. Clean finished surfaces as recommended by column cover manufacturer. Maintain in a clean and protected condition during construction.
 - 1. For stainless steel, use a glass cleaner and a soft cloth.
- B. Replace damaged column covers that cannot be repaired by field repair.

END OF SECTION

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SECTION 05 73 00

DECORATIVE METAL RAILINGS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
1. Interior and exterior stainless steel handrails and guardrails with associated fasteners.
 2. Stainless steel cable and cable fittings infill.
 3. Exterior illuminated railings.
 4. Miscellaneous materials.

1.2 SUBMITTALS

- A. Shop Drawings: Submit in accordance with SECTION 01 33 23 - SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Railing System:
1. System components: Pre-engineered drawings, designed and sealed by Professional Structural Engineer licensed in State of Texas.
 2. Attachments to building structure: Designed and sealed by Professional Structural Engineer licensed in State of Texas.
- C. Product Data: Manufacturer's product lines of mechanically connected railings.
- D. Shop Drawings:
1. Include plans, elevations, sections, details and attachments to other work of each metal fabrication, including setting drawings for anchor bolts and other required anchors.
 2. For installed products indicated to comply with design loads, include structural analysis data signed and sealed by the qualified professional engineer responsible for their preparation and licensed in State of Texas.
 3. For illuminated railings, include wiring diagrams and roughing-in details.
- E. Samples for Initial Selection: For products involving selection of color, texture, or design.
- F. Qualification Data: For professional engineer licensed in State of Texas.
- G. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, according to ASTM E 894 and ASTM E 935.

1.3 PERFORMANCE REQUIREMENTS

- A. Structural Performance of Railings: Provide railings capable of withstanding the effects of gravity loads and the following loads and stresses within limits and under conditions indicated:
1. Handrails:
 - a. Uniform load of 50 lb/ft. applied in any direction.
 - b. Concentrated load of 250 lb applied in any direction.
 - c. Uniform and concentrated loads need not be assumed to act concurrently.
 2. Top Rails of Guards:
 - a. Uniform load of 50 lb/ft. applied in any direction.
 - b. Concentrated load of 250 lb applied in any direction.
 - c. Uniform and concentrated loads need not be assumed to act concurrently.
 3. Infill of Guards:
 - a. Horizontal concentrated load of 50 lb/ft applied to one s.f. at any point in system, including panels, intermediate rails, balusters, or other elements composing infill area. Load on infill area need not be assumed to act concurrently with loads on top rails.
- B. Control of Corrosion: Prevent galvanic action and other forms of corrosion by insulating metals and other materials from direct contact with incompatible materials.

1.4 QUALITY ASSURANCE

- A. Source Limitations: Obtain each type of railing through one source from a single manufacturer.
- B. Mock-up Panel: One section of railing system for verification.
 - 1. Approximate size: 60" long x full height
 - 2. Approved mockups may become part of the completed work if undamaged at time of Substantial Completion.
 - 3. Approval of mockups does not constitute approval of deviations from the Contract Documents unless such deviations are specifically approved by Architect in writing.
- C. Installer Requirements: Installed by manufacturer or manufacturer-certified Installer.
- D. Welding Qualifications: Qualify procedures and personnel in accordance with the following:
 - 1. AWS D1.6/D1.6M, "Structural Welding Code - Stainless Steel."

1.5 PROJECT CONDITIONS

- A. Field Measurements: Verify actual locations of walls and other construction contiguous with railings by field measurements before fabrication and indicate measurements on Shop Drawings.

1.6 COORDINATION AND SCHEDULING

- A. Coordinate installation of anchorages for railings. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.
- B. Schedule installation so wall attachments are made only to completed walls. Do not support railings temporarily by any means that do not satisfy structural performance requirements.

PART 2 - PRODUCTS

2.1 MANUFACTURER/PRODUCT

- A. Basis-of-Design Railing Product: Subject to compliance with requirements, provide stainless steel Railing Systems by VIVA Railings, 650 East SH 121 Business, Suite 204, Lewisville, TX 75057, 972-353-VIVA (8482), website: www.vivarailings.com. Single source manufacturer is required.
 - 1. Provide the following railing systems in locations shown.
 - a. Interior: CIRCA Railing System
 - b. Interior: FSR Railing System.
 - c. Exterior S.S. Lighted Guardrail System: CIRCA with iRAIL Railing System.
 - d. Exterior S.S. Lighted Handrail System: FSR with iRAIL Handrail System.

2.2 MATERIALS - METALS

- A. Metal Surfaces, General: Provide materials with smooth surfaces, without seam marks, roller marks, rolled trade names, stains, discolorations, or blemishes.
- B. Brackets, Flanges, and Anchors: Same metal and finish as supported rails unless otherwise indicated.
 - 1. Provide stainless steel wall brackets with flange tapped for concealed anchorage with vertical and horizontal adjustment capability.
- C. Stainless Steel:
 - 1. Tube: ASTM A554, Type MT 304.
 - 2. Pipe: ASTM A312, Grade TP 304.
 - 3. Castings: ASTM A743, Grade CF 8 or CF 20.
 - 4. Sheet, Strip, Plate, and Flat Bar: ASTM A666, Type 304.
 - 5. Bars and Shapes: ASTM A276, Type 304.
 - 6. Posts: Tube, made from stainless steel.

- D. Top Rails and Handrails:
 - 1. Tubular stainless steel pipe.
 - 2. Exterior of building Top Rails and FSR Handrails will be illuminated with round cross-section shape.
- E. Stainless Steel Cable and Cable Fitting Infill at CIRCA Railing System:
 - 1. Cable: 1-by-19 wire cable made from wire complying with ASTM A492, Type 316.
 - 2. Cable Diameter: 3/16 inch (5 mm).
 - 3. Cable Fittings: Swageless hardware fabricated from stainless steel, with capability to sustain, without failure, a load equal to minimum breaking strength of cable with which they are used.
- F. Mounting Method:
 - 1. Interior Railings: Welded Top Mount
 - 2. Exterior Railings: Fastened and Welded Side Mount and core mounted where shown.

2.3 ILLUMINATED RAILINGS

- A. General: Comply with requirements in this Section for metal railings with welded connections.
- B. Illuminated Units: Provide internal illumination using concealed, internally wired, 1-1/2 inch diameter stainless steel rail with integral LED-strip fixture system to illuminate walking surfaces adjacent to railings without light leaks. Make provisions for servicing and for concealed connection to electric service. Coordinate electrical characteristics with those of the power supply provided.
 - 1. Light Color: Warm white; 3000 K.
 - 2. Light Output: 185 lumens/ft.
 - 3. Light Angle: 120 degrees.
 - 4. LED Lens: Translucent Clear Lens.
 - 5. Power Supply: 277 V ac input, 12 V dc output.
 - a. Driver: 100 W.
 - b. Power Consumption: 3.0 W/ft. (medium output)
 - 6. IP Rating: IP67.

2.4 FASTENERS

- A. Fabricate railings with joints tightly fitted and secured. Furnish fittings to accommodate site assembly and installation.
- B. Supply components required for anchorage of railings. Fabricate anchors and related components of same material and finish as railing.
- C. Conceal fastenings where possible.
- D. Use welds for permanent connections where possible.
 - 1. Grind exposed welds smooth.
 - 2. Tack welds prohibited on exposed surfaces.
- E. Accommodate for expansion and contraction of members and building movement without damage to connections or members.
- F. Nonshrink, Nonmetallic Grout: Factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C1107. Provide grout specifically recommended by manufacturer for exterior applications.

2.5 FABRICATION

- A. Fabricate railings in accordance with approved Shop Drawings.
- B. Fabricate railings with joints located symmetrically.
- C. Fit and shop assemble railings in largest practical sizes for delivery to site.
- D. Fabricate railings with joints tightly fitted and secured. Furnish fittings to accommodate site assembly and installation.

- E. Supply components required for anchorage of railings. Fabricate anchors and related components of same material and finish as railing.
- F. Conceal fastenings where possible.
- G. Fabricate connections that will be exposed to weather in a manner to exclude water.
 - 1. Provide weep holes where water may accumulate.
 - 2. Locate weep holes in inconspicuous locations.
- H. Use welds for permanent connections where possible. Cope components at connections to provide close fit, or use fittings designed for this purpose. Weld all around at connections, including at fittings.
 - 1. Grind exposed welds smooth.
 - 2. Tack welds prohibited on exposed surfaces.
 - 3. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
 - 4. Obtain fusion without undercut or overlap.
 - 5. Remove flux immediately.
 - 6. At exposed connections, finish exposed welds to comply with NOMMA's "Voluntary Joint Finish Standards" for Finish #1 welds; ornamental quality with no evidence of a welded joint.
- I. Accommodate for expansion and contraction of members and building movement without damage to connections or members.
- J. For railing posts set in concrete, provide stainless steel sleeves not less than 6 inches long with inside dimensions not less than 1/2 inch greater than outside dimensions of post, with metal plate forming bottom closure.
- K. Stainless Steel Cable Guard Infill: Fabricate cable guard infill assemblies in the shop to field-measured dimensions with fittings machine swaged.
 - 1. Minimize amount of turnbuckle take-up used for dimensional adjustment, so maximum amount is available for tensioning cable.
 - 2. Tag cable assemblies and fittings to identify installation locations and orientations for coordinated installation.

2.6 FINISHES, GENERAL

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
- B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- C. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved samples and are assembled or installed to minimize contrast.
- D. Where concealed fasteners are not possible, provide exposed fasteners with finish matching appearance, including color and texture, of railings.

2.7 FINISHES

- A. Stainless Steel: ASTM A480; No. 6 satin.
- B. For exterior rails: When polishing is completed, passivate and rinse surfaces. Remove embedded foreign matter and leave surfaces chemically clean.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine plaster and gypsum board assemblies, where reinforced to receive anchors, to verify that locations of concealed reinforcements have been clearly marked for Installer. Locate reinforcements and mark locations if not already done.
- B. Installation Tolerances: Structural steel and concrete slabs to be within 1/8 inch in 10 ft. horizontally and 1/8 inch vertically. Correct out-of-tolerance conditions to meet railing manufacturer's requirements.

3.2 INSTALLATION, GENERAL

- A. Fit exposed connections together to form tight, hairline joints.
- B. Perform cutting, drilling, and fitting required for installing railings.
 - 1. Fit exposed connections together to form tight, hairline joints.
 - 2. Install railings level, plumb, square, true to line; without distortion, warp, or rack.
 - 3. Set railings accurately in location, alignment, and elevation; measured from established lines and levels.
 - 4. Do not weld, cut, or abrade surfaces of railing components that have been coated or finished after fabrication and that are intended for field connection by mechanical or other means without further cutting or fitting.
 - 5. Set posts plumb within a tolerance of 1/16" in 3 feet.
 - 6. Align rails so variations from level for horizontal members and variations from parallel with rake of steps and ramps for sloping members do not exceed 1/4" in 12 feet.
- C. Corrosion Protection: Coat concealed surfaces of steel that will be in contact with grout, concrete, masonry, wood, or dissimilar metals, with a heavy coat of bituminous paint, or provide protective gaskets.
- D. Adjust railings before anchoring to ensure matching alignment at abutting joints.
- E. Fastening to In-Place Construction: Use anchorage devices and fasteners where necessary for securing railings and for properly transferring loads to in-place construction.

3.3 RAILING CONNECTIONS

- A. Nonwelded Connections: Use mechanical joints for permanently connecting railing components. Use wood blocks and padding to prevent damage to railing members and fittings.
- B. Welded Connections: Use fully welded joints for permanently connecting railing components. Comply with requirements for welded connections in "Fabrication" Article, whether welding is performed in the shop or in the field.
- C. Expansion Joints: Install expansion joints at locations indicated but not farther apart than required to accommodate thermal movement. Provide slip-joint internal sleeve extending 2" beyond joint on either side, fasten internal sleeve securely to 1 side, and locate joint within 6" of post.

3.4 ANCHORING METAL POSTS

- A. Use stainless steel pipe sleeves preset and anchored into concrete for installing posts. After posts have been inserted into sleeves, fill annular space between post and sleeve with nonshrink, nonmetallic grout, mixed and placed to comply with anchoring material manufacturer's written instructions.
- B. Cover anchorage joint with flange of same metal as post..

3.5 ATTACHING HANDRAILS TO WALLS

- A. Attach handrails to wall with wall brackets. Provide brackets with 1 1/2" clearance from inside face of handrail and finished wall surface.
- B. Locate brackets as indicated or, if not indicated, at spacing required to support structural loads.

- C. Secure wall brackets to building construction as indicated, or if not indicated, as follows:
 - 1. For concrete and solid masonry anchorage, use drilled-in expansion shields and hanger or lag bolts.
 - 2. For hollow masonry anchorage, use toggle bolts.
 - 3. Provide blocking between studs in stud wall construction.

3.6 ADJUSTING AND CLEANING

- A. Clean steel and stainless steel by washing thoroughly with clean water and soap and rinsing with clean water.
- B. Installation Tolerances:
 - 1. Maximum variation from level or from indicated slopes: 1/4 inch in 10 feet, noncumulative.
 - 2. Maximum offset from true alignment of abutting members: 1/16 inch.

3.7 PROTECTION

- A. Protect finishes of railings from damage during construction period with temporary protective coverings approved by railing manufacturer. Remove protective coverings at time of Substantial Completion.
- B. Restore finishes damaged during installation and construction period so no evidence remains of correction work. Return items that cannot be refinished in the field to the shop; make required alterations and refinish entire unit, or provide new units.

END OF SECTION

SECTION 06 10 00

ROUGH CARPENTRY

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Wood blocking and nailers, wood furring and grounds, plywood sheathing and plywood backing panels.
- B. Related Sections:
 - 1. Section 06 40 00 - Architectural Woodwork.

1.2 SUBMITTALS

- A. General: Submit in accordance with SECTION 01 33 23 - SHOP DRAWINGS, PRODUCT DATA AND SAMPLES.
- B. Product Data:
 - 1. Include all data for rough carpentry products required for installation.
 - 2. Fire-retardant-treated wood product data, including certification by treating plant that treated materials comply with specified standard and other requirements as well as data relative to bending strength, stiffness, and fastener-holding capacities of treated materials.
- C. Warranty: Provide warranty of chemical treatment manufacturer for each type of treatment.

1.3 QUALITY ASSURANCE

- A. Lumber Grading: Lumber Grading Rules and Wood Species in accordance with Voluntary Product Standards. Grading rules of following associations apply to materials furnished.
 - 1. Southern Pine Inspection Bureau (SPIB).
 - 2. West Coast Lumber Inspection Bureau (WCLIBB).
 - 3. Western Wood Products Association (WWPA).
- B. Grade Marks: Identify lumber and plywood by official grade mark.
 - 1. Lumber: Include symbol of grading agency, mill name, grade, species, grading rules and condition of seasoning at time of manufacturer.
 - 2. Plywood: Include type, span rating or group number, exposure durability classification, and agency mark of APA.

1.4 QUALIFICATIONS

- A. Design structural site fabricated items under direct supervision of a professional structural engineer experienced in design of this work and licensed in the State of Texas.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, handle, and protect products in accordance with SECTION 01 65 00 - PRODUCT DELIVERY REQUIREMENTS and 01 66 00 - PRODUCT STORAGE AND HANDLING REQUIREMENTS.
- B. Store products above ground, on platforms or skids, and covered with waterproof coverings. Provide for adequate air circulation.
- C. Do not store seasoned materials in damp or wet locations.
- D. Support products in such a way as to prevent warping and distortion.

1.6 WARRANTY

- A. Provide a 20-year warranty for each type of chemical treatment.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Wood: Lumber for framing and general carpentry work shall be sound, well manufactured, surfaced S4S material with a moisture content limit of 19%.
 - 1. Dimension: SPIB grade marked No.2 Dimension Southern Pine or WCLB grade marked No. 2 Dimension Douglas Fir.
 - 2. Boards: SPIB grade marked No. 2 Boards Southern Pine.
 - 3. Redwood: RIS grade marked Construction Heart California Redwood.
- B. Plywood: Plywood for general carpentry work shall be APA trademarked, 23/32" minimum thickness, Tongue & Groove.
 - 1. Interior: B - D, Group 2, Exposure 1, fire-retardant treated.
 - 2. Exterior: C - C plugged grade, Group 2, Exterior type, fire-retardant treated.
- C. Rough Hardware:
 - 1. Anchors, bolts, screws, and spikes shall be of proper types and sizes to support the work, to draw the members into place, and to hold them securely. Bolt heads and nuts bearing on wood shall have standard washers.
 - 2. Metal fasteners to secure wood grounds and blocking to masonry and concrete shall be of the type best suited to the conditions and spaced no more than 16" o.c. Wood plugs and nailing blocks are not acceptable.
 - 3. Nails shall be of the sizes and types intended for the particular use.
 - 4. Rough hardware exposed to the weather or embedded in exterior masonry and concrete walls or slabs shall be hot-dipped galvanized.
 - 5. Nails and bolts used with preservative treated lumber shall be hot-dipped galvanized.

2.2 WOOD TREATMENT

- A. Preservative Treatment:
 - 1. Comply with applicable requirements of AWPA U1; Category UC2 for interior construction not in contact with ground, Category UC3b for exterior construction not in contact with ground, and Category UC4a for items in contact with ground.
 - a. Preservative Chemicals: Acceptable to authorities having jurisdiction and containing no arsenic or chromium.
 - b. For exposed items indicated to receive a stained or natural finish, chemical formulations shall not require incising, contain colorants, bleed through, or otherwise adversely affect finishes.
 - 2. Kiln-dry lumber and plywood after treatment to a maximum moisture content of 19% for lumber and 15% for plywood. Do not use material that is warped or that does not comply with requirements for untreated material
 - 3. Mark lumber with treatment quality mark of an inspection agency approved by the ALSC Board of Review. For exposed lumber indicated to receive a stained or natural finish, mark end or back of each piece.
- B. Fire-Retardant Treatment:
 - 1. General: Where fire-retardant-treated materials are indicated, materials shall comply with requirements in this article, that are acceptable to authorities having jurisdiction, and with fire-test-response characteristics specified as determined by testing identical products per test method indicated by a qualified testing agency.
 - 2. Wood shall be fire-retardant chemically treated and pressure impregnated; with a flame spread index of 25 or less and a smoke development of 0-450 when tested according to ASTM E 84, and with no evidence of significant progressive combustion when the test is extended an additional 20 minutes, and with the flame front not extending more than 10.5 feet beyond the centerline of the burners at any time during the test.
 - 3. Treatment shall not promote corrosion of metal fasteners.
 - 4. Exterior Type: Treated materials shall comply with requirements specified above for fire-retardant-treated lumber and plywood by pressure process after being subjected to accelerated weathering according to ASTM D 2898. Use for exterior locations and where indicated.
 - 5. Interior Type A: Treated materials shall have a moisture content of 28 percent or less when tested according to ASTM D 3201 at 92 percent relative humidity. Use where exterior type is not indicated.
 - 6. Design Value Adjustment Factors: Treated lumber shall be tested according to ASTM D 5664 and design value adjustment factors shall be calculated according to ASTM D 6841

7. Kiln-dry lumber and plywood after treatment to maximum moisture content of 19% for lumber and 15% for plywood.
 8. Identify fire-retardant-treated wood with appropriate classification marking of qualified testing agency. For exposed lumber indicated to receive a stained or natural finish, mark end or back of each piece.
- C. If cut after treatment, coat cut surfaces with heavy brush coat of same chemical used for treatment. Inspect each piece of lumber or plywood after drying; discard damaged or defective pieces.

PART 3 - EXECUTION

3.1 INSTALLATION

A. General

1. Discard units of material with defects which might impair quality of work, and units which are too small to fabricate work with minimum joints or optimum joint arrangement.
2. Set carpentry work accurately to required levels and lines, with members plumb and true and accurately cut and fitted. Scribe and cope as required.
3. Securely attach carpentry work to substrates by anchoring and fastening as required by recognized standards and as required to draw members into place and securely hold same unless otherwise indicated. Use washers under all bolt heads.
4. Select fasteners of size that will not penetrate members where opposite side will be exposed to view or will receive finish materials.
5. Make tight connections between members to develop full strength of members.
6. Install fasteners without splitting of wood.
7. Pre-drill as necessary.
8. Comply with APA E30 requirements for plywood.
9. Install fasteners at spacings recommended by AFPA National Design Specifications for Stress Grade Lumber and Its Fastening - 1973 for lumber and APA Guide E30 for Plywood, unless more restrictive code requirements dictate tighter spacing or heavier fasteners.
10. Locate members as indicated on the drawings. Size, spacing or spans shall not be changed without specific approval of Architect. Take care to place proper grades and species of members where indicated in accordance with the lumber schedule herein.
11. Temporary brace framing at the end of each days' work until all framing is completed and securely anchored. Leave temporary bracing in place as long as required for safety. As work progresses, securely connect work to compensate for dead load, wind and erection stresses.

B. Plywood Paneling: Arrange in uniform width.

1. Install in full lengths without end joints.
2. Install with uniform end joints. Locate end joints only over furring or blocking.
3. Fasten paneling with trim screws, set below face and filled.

C. Shoring: Construct shoring for masonry where required. Brace and maintain it until the mortar has set sufficiently to permit removal.

D. Blocking: Install 2x6 wood blocking between studs to stiffen the structure and for the support of other work. Provide 2x6 blocking for installation of wall-mounted objects.

E. Nailers: Install nailers of adequate size where detailed. Nailers shall be bolted in place. Where bolt sizes and spacing are not specifically noted, use not less than $\frac{3}{8}$ " bolts at 32" o.c., staggered.

F. Roof Curbs: Construct wood curbs as detailed to frame openings and support flashings in roof decks.

G. Bucks: Install wood bucks for frames as required. Members shall be at least 2 x 4 material. Spike securely together. In masonry, provide 16 ga. corrugated metal jamb anchors screwed to the back and spaced to work masonry bed joints, not more than 32" apart.

H. Plywood Backing Panels: Screw attach through gypsum board to supports.

3.2 PROTECTION

- A. Protect products from moisture absorption and subsequent warping or deterioration until subsequent construction can proceed.

END OF SECTION

SECTION 06 16 56

AIR- AND WATER-RESISTIVE SHEATHING BOARD SYSTEM

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Vapor-permeable, air- and water-resistive wall sheathing.
2. Site-fluid-applied, vapor-permeable air barrier flashing.
3. Accessories.

B. Related Sections:

1. Section 01 45 00 - Quality Control: for general mockup requirements.
2. Section 05 40 00 - Cold-Formed Metal Framing: for structural framing support of panels.
3. Section 06 10 00 - Rough Carpentry: wood blocking and nailers.
4. Section 07 11 13 - Bituminous Dampproofing; behind below-grade masonry veneer and at non-conditioned buildings.
5. Section 07 27 26 - Fluid-Applied Membrane Air Barriers: air barrier on masonry backup.
6. Section 07 65 00 - Flexible Flashing: for flexible flashing components integrating with transition materials specified in this Section.
7. Section 07 92 00 - Joint Sealants: for backing materials.
8. Division 07 roofing Sections for roof assembly air barriers and interface coordination.

1.2 DEFINITIONS

A. Air barrier Accessory: A transitional component of the air barrier that provides continuity.

B. Air barrier Assembly: The collection of ABs and accessories applied to an opaque wall, including joints and junctions to abutting construction, to control air movement through the wall.

C. Air barrier Material (AB): Air tight barrier made of material that is relatively air impermeable but moisture vapor permeable, with sealed joints and penetrations, and with terminations sealed to adjacent surfaces.

D. Material Transitions: Areas where the WRB/AB fiberglass-mat gypsum sheathing connects to beams, columns, slabs, parapets, foundation walls, roofing systems, and at the interface of dissimilar materials.

E. Rough Openings: Openings in the wall to accommodate windows and doors.

F. Water-Resistive Barrier (WRB): Water-shedding barrier made of material that is moisture-resistant, and installed to shed water, with sealed joints and penetrations, and with terminations sealed to adjacent surfaces.

1.3 ADMINISTRATIVE REQUIREMENTS

A. Coordination:

1. Coordinate installation of board product air barriers with framing installation and subsequent operations that impact finished envelope air barrier work.
2. Coordinate installation of joint sealants with cleaning of joint sealant substrates and other operations that may impact installation or finished joint sealant work.

B. Preinstallation Conference: Conduct conference at Project site.

1. Review board product air barrier accessory materials installation, including joints between sheathing boards and transitions to abutting construction including air barriers work of other Sections. Review requirements for forming and sealing penetrations of air barrier by other trades.
2. Review requirements for each type of air barrier product and installation, project and manufacturer's details, mockups, testing and inspection requirements, and coordination and sequencing of air barrier work with work of other Sections.
3. Review manufacturer's written instructions for meeting Project requirements for substrates specified, including three-dimensional video model demonstrating proper application of components at wall openings.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of air barrier product assembly and accessory. Indicate assembly component materials and dimensions and include construction and application details.
 - 1. Include data for framing preparation instructions and recommendations.
 - 2. Include data for substrate preparation instructions and recommendations.
 - 3. Include data for air- and water-resistive sheathing board assembly product data.
 - 4. Include standard drawings illustrating manufacturer's written installation and finishing instructions applicable to Project, including details for joints, counterflashings, penetrations, terminations, and tie-ins to adjacent construction.
- B. Shop Drawings: For locations and extent of WRB/AB system.
 - 1. Include details of typical conditions, special joint conditions, and intersections with other building envelope systems and materials.
 - 2. Include counter flashings and details showing bridging of envelope at substrate changes.
 - 3. Detail sealing penetrations, and flashing around windows and doors.

1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer and manufacturer.
- B. Manufacturer Product Certificates: Indicate compliance with requirements of specified products under Performance Requirements or indicated on Drawings.
- C. Fire-Propagation Characteristics Certificate: From a qualified testing agency, documentation that air barrier system as a component of a wall assembly has been tested or engineered to pass NFPA 285. Include system classification number of testing agency on Shop Drawings.
- D. Product Certificates: Indicate compliance with requirements of specified products in "Performance Requirements" Article or as indicated on Drawings.
- E. Product Test Reports: For each air barrier product, and air- and water-resistive sheathing board assembly, for tests performed by a qualified testing agency.
- F. Sample Warranties: For manufacturer's warranties.

1.6 QUALITY ASSURANCE

- A. Manufacturer Qualifications: A qualified air barrier manufacturer experienced in manufacture of air barrier as one of its principal products.
- B. Installer Qualifications: An experienced entity that employs applicators trained in application of specified products.
- C. Mockups: Provide air barrier mockup application within mockups required in other Sections, or if not specified, in an area of not less than 64 sq. ft. of wall surface where directed by Architect for each type of backup wall construction. Include examples of surface preparation, crack and joint treatment, air barrier application, and flashing, transition and termination conditions. Build mockups to set quality standards for materials and execution.
 - 1. Include air barrier system tie-in details between walls and roof, and with wall and foundation wall. Include penetrations and openings.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials in original, unopened packaging and store in an enclosed shelter providing protection from damage and exposure to the elements.
 - 1. Store within temperature limits required by manufacturer.
 - 2. Store air- and water-resistive sheathing board supported on risers on a flat platform.
 - 3. Comply with manufacturer's written instructions requirements for safety and handling.
- B. Discard liquid materials that cannot be applied within their stated shelf life.
- C. Store accessory materials in a location with constant ambient temperatures of 40 to 80 deg F.

1.8 FIELD CONDITIONS

- A. Cold Weather Conditions:
 - 1. Site Fluid-Applied, Vapor-Permeable Joint Flashing: Comply with manufacturer's cold weather application written instructions when atmospheric temperatures or substrate surface temperatures are less than 40 deg F.
 - 2. Accessories and Sealants: Comply with manufacturer's cold weather application instructions when atmospheric temperatures or substrate surface temperatures are less than 40 deg F.
- B. Exposure: Comply with manufacturer's limitations on exposure of applied product.
 - 1. Do not apply air barrier joint flashing to sheathing surface that is frozen or has frost.
- C. Protect adjacent substrates from environmental conditions that affect air barrier performance
- D. Coordinate installation of membrane air barrier with completion of roofing, below grade, factory fluid-applied membrane portion to site fluid-applied membrane portion and other work requiring interface with air barrier.
- E. Schedule work for inspection of air barrier applications prior to concealment.
- F. Ensure ABs are cured before covering with other materials.

1.9 WARRANTY

- A. Manufacturer's Warranty for Air Barrier Products: See manufacturer's published limited warranty.
 - 1. Warranty Period for Air- and Water-Resistive Sheathing Board Assembly: Five years from date of Substantial Completion.
- B. Manufacturer's Warranty for Site Fluid-Applied Air Barrier Products: Manufacturer agrees to furnish and install AB to repair or replace those materials installed according to manufacturer's written instructions that exhibit material defects or otherwise fail to perform as a water-resistive barrier and air barrier, as defined in the 2015 IBC and the IECC, under normal use within specified warranty period.
 - 1. Manufacturer will, at its option, replace nonconforming Product or refund the purchase price of quantity of product shown to be nonconforming.
 - 2. Access for Repair: Provide air barrier system manufacturer with unimpeded pre- and post-occupancy access to Project facility and air barrier system for purposes of testing, leak investigation, and repair, and to reinstall removed cladding materials upon completion of repair.
 - 3. Warranty Period: Five years from date of Substantial Completion.
- C. Manufacturer warranties specified in this article exclude deterioration or failure of ABs from the following:
 - 1. Movement of the structure caused by structural settlement or stresses on the air barrier exceeding manufacturer's written instructions for elongation.
 - 2. Mechanical damage caused by outside agents.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Source Limitations: Obtain fluid-applied flashing materials and air barrier accessories from single source from single manufacturer.
- B. Low-Emitting Materials: Fluid-applied flashing and accessories shall comply with testing and product requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."

2.2 PERFORMANCE REQUIREMENTS

- A. Air- and Water-Resistive Performance: Air- and water-resistive board assembly and seals with adjacent construction shall be capable of performing as a continuous air barrier system and as a water resistive barrier flashed to direct incidental water to wall exterior, and interface with adjacent building air barrier system components.
 - 1. Air- and Water-Resistive Board Assemblies: Capable of accommodating substrate movement and of sealing substrate expansion and control joints, construction material changes, penetrations and transitions at perimeter conditions without deterioration and air-leakage exceeding specified limits.

- B. Air Permeance of Sheathing: Maximum 0.04 cfm/sq. ft of surface area at 1.57 lbf/sq. ft., when tested according to ASTM E 2178.
- C. Air- and Water-Resistive Board Assembly Air Leakage: Maximum 0.04 cfm/sq. ft. of surface area at 1.57 lbf/sq. ft., when tested according to ASTM E 2357.
- D. Water Penetration under Static Pressure: Test according to ASTM E 331, as follows:
 - 1. No evidence of water penetration through air barrier board assembly when tested according to a minimum static-air-pressure differential of 20 percent of positive wind-load design pressure, but not less than 2.86 lbf/sq. ft.
- E. Water Vapor Permeance; Panel Assembly: Minimum 10 perms (580 ng/Pa x s x sq. m) as tested according to ASTM E 96/E 96M, Procedure B.
- F. Fire-Resistance-Rated Assemblies: For fire-resistance-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E 119 by a qualified testing agency.
- G. Surface-Burning Characteristics: Comply with ASTM E 84; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
 - 1. Flame-Spread Index: 25 or less.
 - 2. Smoke-Developed Index: 450 or less.
- H. Fire Propagation Characteristics: Provide air- and water-resistive board assembly qualified as a component of a comparable wall assembly that has been tested or engineered to pass NFPA 285.

2.3 WALL SHEATHING

- A. Air- and Water-Resistive Sheathing Board: ASTM C 1177/C 1177M, glass-mat-faced gypsum sheathing board.
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide **Georgia-Pacific Gypsum LLC and PROSOCO, Inc.**; DensElement™ Barrier System or a comparable product by one of the following:
 - USG Corporation and Tremco; Securock ExoAir 430 System.
 - NO SUBSTITUTIONS.
 - 2. Board Thickness: 5/8 inch thick.
 - 3. Board Type: Type X.
 - 4. Board Size: 48 by 96 inches for vertical and horizontal installations.
 - 5. Air- and water-resistive Flashing Thickness: Minimum 16 mils wet film thickness.
 - 6. Physical and Performance Properties:
 - a. Air Permeance; ASTM E 2178: Maximum 0.04 cfm/sq. ft. of surface area at 1.57-lbf/sq. ft. pressure difference.
 - b. Water Vapor Permeance: Minimum 10 perms (580 ng/Pa x s x sq. m) when tested according to ASTM E 96/E 96M, Procedure B.
 - c. Combustion Characteristics; ASTM E 84: Class A.
 - d. Board Product Antifungal Properties; ASTM D 3273: 10; zero defacement.
 - e. VOC Content - Fluid-Applied Flashing: 50 g/L or less.
 - f. UV and Weathering Resistance: Maximum 12-month exposure.

2.4 AIR BARRIER ACCESSORY MATERIALS

- A. General: Provide compatible air barrier accessory materials furnished or recommended by air barrier manufacturer as required by Project conditions to produce a complete air barrier assembly identical to tested assemblies meeting performance requirements.
- B. Joint Backing: See SECTION 07 92 00 - JOINT SEALANTS for backing materials.
- C. Primer: Liquid primer recommended by air barrier manufacturer for exposed gypsum core edges.
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide PROSOCO, Inc.; PorousPrep Sealer.
 - 2. Color: Blue.

- D. Fluid-Applied Air Barrier Flashing: Site-applied for application to joints, fasteners, penetrations, openings and material transitions.
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide PROSOCO, Inc.; FastFlash Fluid-applied Flashing.
 - 2. Color: Red.
- E. Flashing and Transition Strip: Preformed silicone extrusion, 24 mils thick.
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide PROSOCO, Inc.; SureSpan EX.

2.5 FASTENERS

- A. Screws for Fastening Board Product Air barriers to Cold-Formed Metal Framing: Steel drill screws, ASTM C 1002, in length recommended by sheathing manufacturer for sheathing thickness.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Framing Examination: Examine framing to determine if work is ready to receive board product air barriers.
 - 1. Verify that surface flatness tolerances and framing spacing comply with Project requirements.
 - 2. Verify that adequate support is provided for sheathing board edges.
 - 3. Proceed with work once conditions comply with manufacturer's written instructions.
- B. Adjacent Substrate Examination: Prior to installation of accessory materials, examine adjacent substrates to receive transition treatment.
 - 1. Verify that substrates are sound and free of contaminants, adequately cured or aged, compatible with proposed transition materials, and free of obstructions or impediments that would result in failure of transition adhesion and failure of air barrier assembly to perform according to Project requirements.
 - 2. Verify that concrete and masonry surfaces are visibly dry, cured, and free from release agents, curing agents, and other contaminates.
 - a. Test for capillary moisture by plastic sheet method according to ASTM D 4263.
 - 3. Verify that masonry joints are filled with mortar and struck flush.
- C. Proceed with installation once conditions comply with manufacturer's written instructions and only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Clean, prepare, and treat portions of work not requiring sheathing board substrate according to air barrier manufacturer's written instructions.
 - 1. Mask adjacent finished surfaces.
 - 2. Remove contaminants and film-forming coatings from substrates.
 - 3. Remove projections and excess materials; fill voids with substrate patching material.
 - 4. Prepare and treat joints and cracks in substrate according to air barrier manufacturer's written instructions.
- B. Joints: Fill gaps from 1/8 to 1/4 inch with a backer rod prior to applying fluid-applied flashing. Seal gaps greater than 1/4 inch with fluid-applied flashing approved by sheathing manufacturer.

3.3 INSTALLATION OF AIR- AND WATER-RESISTIVE SHEATHING BOARDS

- A. Discard each air- and water-resistive sheathing board with damage that compromises continuity or impairs performance as an air barrier, and is unable to be repaired according to manufacturer's written repair instructions.
 - 1. Do not use materials with defects that impair quality of sheathing or pieces that are too small to use with minimum number of joints or optimum joint arrangement.
- B. Comply with ASTM C 1280, GA-253, and manufacturer's written instructions.
 - 1. Fasten sheathing boards to **[cold-formed metal]** framing with specified screws in pattern indicated.
 - 2. Install sheathing boards with a 1/4-inch gap where they abut masonry or similar materials that might retain and transmit moisture to them.

- C. Cut sheathing boards at penetrations, edges, and other obstructions of work to allow for application of air barrier accessory materials. Fit sheathing boards closely against abutting construction.
- D. Install sheathing boards with long dimension perpendicular or parallel to framing. Abut ends and edges of sheathing boards centered over face of framing members. Offset sheathing boards joints by not less than one stud spacing.
 - 1. Apply sheathing boards in pieces sized to provide minimum number of joints and optimum sheathing board arrangement. Arrange joints so that pieces do not span between fewer than three support members.
 - 2. Do not bridge building expansion joints; cut and space edges of sheathing boards to match spacing of structural support elements.
- E. Space fasteners maximum 8 inches o.c. and set back a minimum of 3/8 inch from edges and ends of sheathing boards and as required in indicated fire-resistance-rated designs.
 - 1. Apply fasteners so heads are seated flush to board product air barrier membrane surface without breaking or punching through the surface.
 - a. Treat all fasteners with specified fluid-applied flashing used for sealing joints.
 - b. Misplaced fasteners shall be left in place and treated. If fasteners must be removed, patch and treat resulting hole per system manufacturer's written instructions.
 - 2. Securely attach sheathing boards to substrate by fastening as indicated, complying with the following:
 - a. Table 2304.9.1, "Fastening Schedule," in the IBC.
 - b. ICC-ES evaluation report for fastener.
 - 3. Use corrosion resistant sheet metal screw fasteners. Select fasteners of size that will not fully penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections.
- F. Coordinate wall sheathing boards installation with flashing and air barrier accessory material installation so these materials are installed in sequence and manner that prevent exterior moisture from passing through completed assembly.

3.4 INSTALLATION OF SITE FLUID-APPLIED AIR BARRIER FLASHING

- A. General: Apply site fluid-applied AB at joints, fasteners, penetrations, openings, and material transitions to achieve a continuous air barrier according to air barrier manufacturer's written instructions. Apply site fluid-applied AB within manufacturer's recommended application temperature ranges.
- B. Apply extrusion flashing material in full contact with substrate to produce a continuous seal according to air barrier manufacturer's written instructions.
 - 1. Vapor-Permeable Air barrier: Total wet film thickness as recommended in writing by manufacturer to meet performance requirements, but not less than 16 mils wet film thickness, applied in one or more equal coats by roller, spray, trowel, or knife.
- C. Do not cover air barrier until it has been inspected and approved by the Authority Having Jurisdiction for compliance with the 2015 IBC and IECC. Components and systems subject to inspections include, but are not necessarily limited to, the following:
 - 1. Inspections at framing and rough-in shall be made before application of exterior and interior finishes and shall verify compliance with the code as to air leakage controls.
- D. Correct deficiencies in or remove air barrier that does not comply with requirements; repair substrates and reapply air barrier components.

3.5 INSTALLATION OF AIR BARRIER ACCESSORY MATERIALS

- A. General: Install accessory materials according to air barrier manufacturer's written instructions and AAMA 714. Install AB to adjacent components of building air barrier system, including, but not limited to, roofing system air barrier, exterior fenestration systems, door framing, and other openings.
- B. Apply primer according to manufacturer's written installation instructions.
- C. Seal punctures, voids, and seams. Patch with fluid-applied flashing extending 6 inches beyond repaired areas.
- D. Seal wall penetrations according to manufacturer's written installation instructions and recommendations.

- E. Connect and seal exterior wall air barrier continuously to subsequently-installed roofing-membrane air barrier, concrete below-grade structures, floor-to-floor construction, exterior glazing and window systems, glazed curtain-wall systems, storefront systems, exterior louvers, exterior door framing, and other construction used in exterior wall openings, using accessory materials.
- F. Rough Openings: Apply bead of fluid-applied flashing to inside corners first, followed by application to jambs, header, sill, and adjacent sheathing.
- G. Flashings: Seal top of through-wall flashings to air barrier with fluid-applied flashing.

3.6 FIELD QUALITY CONTROL

- A. Testing Agency: Owner may engage a qualified testing agency to perform tests and inspections.
 - 1. Inspections: ABs, accessories, and installation are subject to inspection for compliance with requirements and photograph documentation of conditions to be concealed by subsequent Work.
- B. Tests: As determined by Owner's testing agency from among the following tests:
 - 1. Qualitative Air-Leakage Testing: Test air barrier assemblies for air leakage according to ASTM E 1186, smoke pencil with pressurization or depressurization or ASTM E 1186, chamber pressurization or depressurization with smoke tracers.
 - 2. Quantitative Air-Leakage Testing: Test air barrier assemblies for air leakage according to ASTM E 783.
- C. Air- and water-resistive sheathing board will be considered defective if it does not pass tests and inspections.
- D. Prepare test and inspection reports.

3.7 CLEANING AND PROTECTING

- A. Clean spills, stains, and overspray resulting application using cleaning agents recommended by manufacturers of affected construction. Remove masking materials.
- B. Protect air barrier from damage from subsequent work. Protect materials from exposure to UV light for period in excess of that acceptable to air barrier manufacturer; replace overexposed materials and retest.

END OF SECTION

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SECTION 06 40 00

ARCHITECTURAL WOODWORK

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Standing and running trim, millwork, panelwork, base, and locker benches.
- B. Related Sections:
 - 1. Section 06 10 00 - Rough Carpentry.
 - 2. Section 08 14 23 - Plastic-Laminate-Faced Wood Doors.
 - 3. Section 08 71 00 - Door Hardware: masterkey cabinet locks.
 - 4. Section 09 91 00 - Painting: applied finishes.
 - 5. Section 12 32 16 - Manufactured Plastic-Laminate-Clad Casework.
 - 6. Section 11 31 00 - Appliances.
 - 7. Section 22 40 00 - Plumbing Fixtures.

1.2 SUBMITTALS

- A. General: Submit following items in accordance with SECTION 01 33 23 - SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Product Data: Manufacturer's technical literature for factory fabricated items and components.
- C. Shop Drawings
 - 1. Indicate profiles, sections, and views of stock items as well as specially fabricated items for the work, at scale large enough to permit checking for design conformity.
 - 2. Indicate sizes, quantities, markings, materials, wood species, finishes and accessories.
 - 3. Include assembly and installation drawings to show methods of blocking, fastening, bracing, jointing, and connecting to work of other trades.
- D. Samples
 - 1. Two samples of each type and species of plywood, particle board, and finish lumber specified, complete with applied finish.
 - 2. Each type of hardware and fastening device required in the construction of the work specified herein.
- E. Certificate: Submit certification by testing plant stating chemicals and process used, conformance with referenced standards and governing ordinances, and non-bleeding quality of treatment.

1.3 QUALITY ASSURANCE

- A. AWI Quality Standard: Comply with grades of interior architectural woodwork, construction, finishes and other requirements of the "Architectural Woodwork Standards", 2nd Edition, 2014, adopted and published jointly by Architectural Woodwork Institute (AWI), Architectural Woodwork Manufacturers Association of Canada (AWMAC), and Woodwork Institute (WI), except as otherwise indicated.
 - 1. Use Premium Grade, except use Economy Grade for millwork in custodian closets and storage rooms. Items not given a specific quality grade shall be Premium Grade.
- B. Mock-up: Construct the mock-up cabinet as designated on the drawings using materials and hardware proposed for the project. The cabinet shall duplicate the typical construction and quality grade specified. Deliver the mock-up cabinet to the project site for approval by Architect. Notify the Architect in writing one week in advance of the mock-up's on-site arrival. Mock-up cabinet shall be made fully acceptable to the Architect through re-manufacture at the millwork shop or through acceptable field corrections prior to commencing construction of other cabinets. Mock-up cabinet shall be properly identified, and, if acceptable to Architect may be installed in the project. Once installed, do not alter or move the mock-up cabinet.
- C. Lumber and Plywood Material Grading: As defined in AWI Section 4 - Sheet Products, and as defined by the rules of the recognized associations of lumber and plywood manufacturers producing the materials specified.

- D. Fabrication Standards: Fabricate items in accordance with AWI standards listed below using Premium Grade except at millwork scheduled to be installed in Custodian's Closets and storage rooms, which shall be Economy Grade.
 - 1. Lumber grades: AWI Section 3 - Lumber.
 - 2. Miscellaneous Work: AWI Section 6 - Interior & Exterior Millwork.
 - 3. Painted Millwork: AWI Section 10 - Casework.
 - 4. Countertops: AWI Section 11 - Countertops.
- E. Regulatory Requirements: Conform to applicable code for fire retardant requirements.
- F. Accessibility Standards: Meet Texas Accessibility Standards (TAS) special requirements for the following:
 - 1. Countertop height with or without cabinet below
 - 2. Kneespace clearance to be minimum clearance
 - 3. 12 inch deep shelving, adjustable and fixed
 - 4. Wardrobe cabinets, furnished with rod/shelf adjustable to 48 inches above finished floor, with a maximum 21 inch shelf depth.
 - 5. Sink cabinet clearances
 - 6. Cabinet locks, latches, and other operating mechanisms, except locked bottom drawers at base cabinets.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Deliver woodwork to the project site only when dry and product storage space is available at or in the building so that it can be kept dry and protected from injury.

1.5 PROJECT CONDITIONS

- A. Protection: Protect finish woodwork surfaces from soiling and damage during handling and installation. Keep covered with polyethylene film or other protective covering. Woodwork damaged through neglect of the above requirements shall be repaired or replaced without additional cost to the Owner.

1.6 ENVIRONMENTAL REQUIREMENTS

- A. Install finish carpentry products only when temperature and humidity conditions have been stabilized and will be maintained.
- B. Maintain temperature and moisture conditions as recommended by woodwork fabricator from date of installation through remainder of construction period.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. General:
 - 1. Comply with quality and grading standards contained herein for each material.
 - 2. Sizes noted on drawings or indicated herein for lumber are nominal unless detailed by specific dimensions of actual size.
 - 3. Plywood and particleboard $\frac{3}{4}$ " thickness unless noted or detailed otherwise.
 - 4. Products surfaced four sides, unless noted otherwise.
- B. Softwood Lumber
 - 1. Quality standard: PS 20.
 - 2. Grading Standard: AWI Premium grade.
 - 3. Maximum moisture content: 6% for interior work; 10% for exterior work.
 - 4. Species: Douglas fir.
 - 5. Grain: Plain sliced.
- C. Softwood Plywood
 - 1. Quality standard: PS 1.
 - 2. Grading standard: AWI Premium grade.
 - 3. Core material: C-D Plugged INT-APA.
 - 4. Face quality: A-B INT-APA.
 - 5. Species: Douglas fir.

6. Ply construction: 3 ply - 3/8-inch; 5 ply - 1/2-inch; 7 ply - 3/4-inch.

D. (12C and other trim areas) Hardwood Lumber

1. Quality standard: FS MM-L-736C.
2. Grading standard: AWI Custom grade.
3. Maximum moisture content: 6%.
4. Species: Red Oak.
5. Grain: Rift Cut.

E. (12A) Hardwood Plywood

1. Quality standard: PS51.
2. Grading standard: AWI Custom grade.
3. Core material: Fir Veneer.
4. Face veneer:
 - a. Reference SECTION 09 99 00 - COLOR SCHEDULE.
 - b. Panel grain to run horizontal on wall and millwork.
 - c. Micro perforated where shown on drawings and color schedule. Provide black insulation behind perforated panels for sound.
5. Ply construction: 3 ply - 3/8-inch; 5 ply - 1/2-inch; 7 ply - 3/4-inch.

F. Hardboard

1. Quality standard: PS 58.
2. Grade: Tempered.
3. Face: Both faces sanded.
4. Thickness: 1/4-inch.

2.2 ACCESSORIES AND TREATMENT

- A. Contact Adhesive: FS MMM-A-130B, of type recommended by millwork manufacturer to suit application.
- B. Wall Adhesive: Solvent release cartridge type, compatible with substrate, capable of achieving durable bond.
- C. Glass: clear tempered, 1/4-inch thick.
- D. Bolts, Nuts, Washers, Lags, Pins, Nails, and Screws: Size and type to suit application.
- E. Nails: Size and type to suit application, plain finish.

2.3 CABINETS AND COUNTERTOPS

- A. General: If practical, cabinets not dependent upon job conditions shall be shop assembled.
- B. Identification of Cabinet Parts by Surface Visibility:
 1. Exposed Surfaces: Surfaces visible when:
 - a. Drawers and opaque doors (if any) are closed.
 - b. Behind clear glass doors.
 - c. Bottoms of cabinets 42 inches or more above finish floor.
 - d. Tops of cabinets below 78 inches above finish floor.
 - e. Tops of cabinets or millwork are visible from an adjacent higher elevation.
 2. Semi-exposed Surfaces: Surfaces which become visible when:
 - a. Opaque doors are open or drawers are extended.
 - b. Bottoms of cabinets are more than 30 inches and less than 42 inches above finish floor.
 3. Concealed Surfaces: Surfaces considered concealed when:
 - a. Surfaces not visible after installation.
 - b. Bottoms of cabinets less than 30 inches above finish floor.
 - c. Tops of cabinets over 78 inches above finish floor and not visible from an upper level.
 - d. Stretchers, blocking, and components concealed by drawers.
- C. Millwork for Opaque Finish:
 1. AWI Custom Grade.
 2. Construction of Millwork: Flush overlay design.
 3. Exposed Solid Lumber Parts and Semi-exposed Parts: As governed by selected AWI quality grade unless shown otherwise.

- D. Millwork for Transparent Finish:
1. AWI Premium Grade
 2. Construction of Millwork: Reference details.
 3. Exposed Parts: Reference SECTION 09 99 00 - COLOR SCHEDULE.
 - a. Grain Matching: Run and match grain horizontally.
 4. Semi-exposed parts: As governed by selected AWI quality grade unless shown otherwise.
 5. Special Trim: Final Forms I and II, special trim pieces as detailed on drawings as manufactured by Gordon.
- E. Laminate Clad Cabinets:
1. Quality Standard: AWI Section 10 - Casework, Laminate Clad Cabinets, Premium Grade.
 2. AWI Type of Cabinet Construction: Flush overlay design.
 3. Laminate Grade for Exposed Surfaces:
 - a. Horizontal Surfaces other than Tops: HGS (0.048-inch nominal thickness).
 - b. Vertical Surfaces: VGS (0.028 inch nominal thickness).
 - c. Edges: HGS (0.048-inch nominal thickness).
 4. Semi-Exposed Surfaces: Provide high pressure laminate, VGS 0.028, including backs of doors and drawers. Other interior surfaces of drawers may be sealed wood; reference SECTION 09 91 00 - PAINTING.
 5. Shop joints will be allowed only when the required lengths exceed the lengths of plastic regularly available. Field joints shall be shop prepared and pre-fitted with bolt-up type fasteners.
 6. PVC edging banding will not be acceptable.
 7. The use of LPDL (Melamine) will not be acceptable.
 8. Plastic Laminate: General purpose grade, high pressure decorative laminate meeting the physical requirements of NEMA LD 3 and with a suede finish. Colors shall be as selected by Architect from manufacturer's full color and pattern range. Architect reserves the right to select one color for the exposed surfaces of the basic components of cabinets and a different color for the following components of cabinets: door and drawer fronts (including edges of door and drawer fronts), backs of open shelving, and countertop and backsplash, unless shown otherwise. Product/manufacturer; one of the following:
Formica Brand Laminate; Formica Corp.
Pionite or Nevamar; Panolam Industries
Wilsonart; Wilsonart International; Div. of Premark International, Inc.
- F. Countertops:
1. Quality Standard: AWI Section 11 - Countertops.
 2. Type of Top: High pressure decorative laminate complying with Premium Grade.
 3. Laminate Cladding for Horizontal Surfaces: High pressure decorative laminate, HGS (0.048-inch nominal thickness) Grade. Laminate shall be selected from one of the manufacturers listed above.
 4. Edge Treatment: Same as laminate cladding on horizontal surfaces. Plastic laminate edges shall return across open ends of cabinets.
 5. Countertops containing sinks and countertops over dishwashers shall be exterior-grade veneer core plywood or moisture resistant medium density fiberboard, no substitutions.
 6. Joints between tops and backsplash shall be square.
 7. Joint between backsplash and countertops containing sinks shall be sealed with sanitary, silicone sealant to ensure a tight seal.
 8. No joints shall be closer than 24 inches either side of sink cutout.
 9. No joints shall occur within kneespace.
 10. Seal substrate at sink cutouts with sanitary, silicone sealant.
 11. PVC edging will not be acceptable.
 12. The use of LPDL (Melamine) will not be acceptable.
- G. Solid Surfacing Countertops and Other Surfaces: Basis of Design shall be as scheduled in SECTION 09 99 00 - COLOR SCHEDULE.
1. AWI Premium Grade.
 2. Substrate: Marine grade plywood.
 3. Fabricate to detail using 1/2-inch thick solid surfacing.
 4. Use seam adhesive and color-matched sealant by manufacturer
 5. Color shall be as selected by Architect from full range of manufacturer colors.
 6. Edge Treatment: PVC edging will not be acceptable. Reference installation for edge treatment required.
- H. Quartz Countertops: Reference SECTION 12 36 61.19 - QUARTZ AGGLOMERATE COUNTERTOPS.

2.4 SHELVING

- A. Exposed shelving shall be of the same AWI quality grade and finish as the cabinets in which installed.
 - 1. Set fixed shelves on cleats where so detailed, and house other fixed shelves into supports.
 - 2. Adjustable Shelf Supports: Provide twin pin design with anti tip-up shelf restraints for both 3/4-inch and 1 inch shelves. Design to include keel to retard shelf slide-off, and slot for ability to mechanically attach shelf to clip. Load rating to be minimum 300 lbs each support without failure. Cabinet interior sides shall be flush, without shelf system permanent projection. Product/manufacturer; one of the following, no substitutions:
 - a. #3206 Shelf Support; Bainbridge Manufacturing
 - b. SC240 Plastic Shelf Clip; Case Systems, Inc.
 - c. Cat. No. 282.47.402; Häfele
 - d. Clear Polycarbonate Shelf Clip; TMI System Design Corp.

2.5 SLATWALL

- A. Provide AHF-3-96 MegaWall Slatwall System, 3" on-center, aluminum extrusion, single sided hidden fastener with no visible screws, including J-Cap for both top and bottom trim where needed. Include side trim where shown in same finish as slatwall.
 - 1. Provide Stellix metallic polyester powder coating with iron glimmer finish as manufactured by Tiger Drylac U.S.A., Inc. or approved equivalent. Color as scheduled in SECTION 09 99 00 - COLOR SCHEDULE.

2.6 SPECIAL GLASS DISPLAY

- A. Provide 3/8-inch tempered Starphire glass with polished eased edges:
 - 1. Mount glass panels on 3/4" stainless standoffs. Length as shown on drawings.
 - 2. Self-adhering vinyl lettering shall be applied to back of glass. Wording, font, type size, and color as selected and provided by Architect.

2.7 WOOD BASE

- A. (12B) Wood Base: Fabricate wood members to detail. Wood shall be Red Oak solid lumber. Sand surfaces smooth. Joints shall be accurately cut to provide a close, flush fit. No end grain shall be visible.

2.8 LOCKER BENCHES

- A. Fabricate locker benches of solid phenolic, in dimensions as shown on drawings, with rounded corners and edges. Furnish in not less than 6-foot lengths.

2.9 TRANSPARENT FINISH

- A. AWI Premium quality. Refer TO SECTION 09 91 00 - PAINTING with stain and sheen to be Custom Color as selected by Architect.

2.10 SHOP FABRICATION

- A. Fabricate millwork to AWI Premium standards for flush overlay construction as detailed (or as indicated in AWI Section 6 Millwork if details are not present).
- B. Sanding/Filling
 - 1. Perform work according to AWI requirements.
 - 2. Sand work smooth and set exposed nails and screws.
 - 3. Apply wood filler in exposed nail and screw indentations and leave ready to receive applied finishes.
 - 4. On items to receive transparent finishes, use wood filler which matches surrounding surfaces and of types recommended for applied finishes.
- C. Prime seal concealed and semi-concealed surfaces. Brush apply only.
- D. Provide cutouts for plumbing fixtures, inserts, appliances, outlet boxes, and other fixtures. Verify locations of cutouts from site dimensions. Seal edge surfaces of cutouts.

- E. Before proceeding with millwork required to be fitted to other construction, field-verify applicable measurements and include on shop drawing details.
- F. Fabricate millwork to dimensions, profiles, and details shown.
- G. Route and groove back of flat trim members, kerf backs of other wide flat members except plywood or veneered members.
- H. Assemble millwork in mill in as large of units as practicable to minimize field cutting and fitting.
- I. Miter trim joints, where required, by joining, splining, and gluing to complying with requirements for specified grade.
- J. Band exposed plywood and particleboard edges with hardwood trim, 3/8-inch x width of sheet unless otherwise noted or shown to be trimmed with plastic or aluminum.
- K. High Pressure Laminate Work:
 - 1. Apply laminate finish in full, uninterrupted sheets of maximum practical lengths. Apply backing sheets to reverse side of items receiving laminate surfacing. Use decorative vertical grade laminate for cabinet interiors.
 - 2. Form corners and butt joints with hairline joints.
 - 3. Do not locate joints within 2 feet' of sink cut-out.
 - 4. Cap exposed edges with laminate.
- L. Construction
 - 1. General
 - a. Unless otherwise indicated, construct millwork bodies, bottoms, dividers, sides, tops, shelves, doors, drawer fronts and countertops of 3/4-inch sheet material.
 - b. Use 1/2-inch thick solid lumber material for drawer sides, back and sub-front.
 - c. Use 1/4-inch veneer core panel product for drawer bottoms and cabinet backs, unless noted otherwise.
 - 2. Flush Overlay Reveals
 - a. Unless shown or noted otherwise, allow 1/8-inch between adjacent drawers and doors and 1/16-inch at vertical edges.
 - b. Allow 1/8-inch reveal at top and bottom of wall cabinets and at bottom of base cabinets.
 - 3. Methods of Joinery
 - a. Provide face plates, paneled ends, and construction, glued under pressure.
 - b. Provide body web frames of stile plowed and stub tenoned construction.
 - c. Join case body members by dado or concealed dowel joints.
 - d. Do not use mechanical fasteners or metal clips for attachment of body members to other body members or to web frames.
 - 4. Base cabinets
 - a. Use finished end panels unless condition will be fully concealed.
 - b. Provide unfinished toe space, prepared to receive base by others.
 - c. Construct drawers with Lock Shoulder rabbited (tongue-and-groove) construction.
 - 5. Wall cabinets
 - a. Use finished end panels unless condition will be fully concealed.
 - b. Provide continuous 1x3 inch anchor cleat at top and bottom of cabinet interior full width of unit. Secure cleat in rabbit over back, then glue and spot pin.
 - 6. Countertops
 - a. Provide with 1-1/2 inch deep face edge, faced with high pressure laminate unless noted or shown otherwise.
 - b. Provide loose 4 inch high pressure laminate covered splashes typically at countertops unless taller splashes shown or noted.
 - c. Regardless of drawing indications, provide a 1/2-inch thick wood strip on back side of splash to increase the splash top thickness for coping the splash to the wall.
 - d. Countertops containing sinks shall be medium density overlay plywood.

2.11 FINISH

- A. Sand work smooth and set exposed nails.
- B. Apply wood filler in exposed nail indentations.

- C. On items to receive transparent finishes, use wood filler which matches surrounding surfaces and of types recommended for applied finishes.
- D. Refer to SECTION 09 91 00 - PAINTING for field applied finish descriptions.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Verify location of wood blocking prior to installation of finish carpentry.

3.2 INSTALLATION

- A. Installation of Standing and Running Trim and Millwork: Comply with applicable AWI Section installation requirements.
- B. Workmanship: Exposed woodwork shall have a smooth finish, free from machine and tool marks, abrasions, and raised grain on exposed surfaces. Joints shall be tight and formed so as to conceal shrinkage.
- C. Interior Woodwork Installation:
 - 1. Accurately scribe and closely fit face plates, filler strips and trim strips to abutting walls and to irregularities of adjacent surfaces.
 - 2. Set wood finish straight, plumb, and level, in true alignment, and rigidly fastened in place. Nailing and fastening shall be concealed where possible. Set exposed nail heads for puttying.
 - 3. Anchor base and wall cabinets to walls with fully threaded oval head wood screws with finishing washers set at a minimum of 12 inches on center.
- D. Solid Surfacing Installation:
 - 1. Substrate shall be plywood.
 - 2. Provide 1/8-inch radius at outside corners and edges, unless otherwise recommended by manufacturer.
 - 3. Provide 1/4-inch radius at inside corners, where required to prevent cracking.
 - 4. Provide manufacturer's "best result" recommendations for sanding.
 - 5. Provide a semi-gloss finish. Notify Architect before finishing, if manufacturer's finish recommendations for material color selected differ from semi-gloss.
- E. Slat Wall Installation:
 - 1. Start at the bottom. If studs are concealed under a substrate, you must first locate and mark stud locations. Attach to studs every 16" on-center.
 - 2. Laser or snap a level reference line at the bottom of your entire slatwall area.
 - 3. Double check to make sure the total number of slatwall pieces will fit your desired slatwall area, including J-Cap top & bottom. (i.e. 6 pieces x 6" + 1" = 37")
 - 4. Place the hidden fastener J-Cap with the bottom aligned to your level line and attach with screws.
 - 5. J-Cap must be straight and level.
 - 6. Do not space screws greater than 16" apart and use maximum size #10 pan head screw.
 - 7. Screws should be centered in small groove on trim. Pre-drill if necessary.
 - 8. Place the first slatwall piece onto the J-Cap making sure it is level and seated.
 - 9. Once seated correctly, attach each piece with screws at the top. Do not space screws greater than 16" apart.
 - 10. Repeat the procedure with additional pieces, making sure each is seated and secured at the top with screws.
 - 11. Continue to the top of your slatwall area until all pieces are installed.
 - 12. Always check level and fit of each piece.
 - 13. At top of slatwall, attach a piece of hidden fastener J-Cap onto the topmost piece.
 - 14. A small amount of adhesive may be used on the top flange to secure the J-Cap in place.

3.3 CABINET HARDWARE SCHEDULE

- A. In addition to the items of hardware specifically noted and shown on the drawing details, furnish and install the following hardware for cabinets. This schedule is intended to include hardware needed to completely equip cabinets specified in this Section. Verify cabinets shown and detailed on the drawings with cabinets listed in this schedule. In the event of omissions in the schedule, furnish hardware of the kind and quality scheduled for similar cabinets.
1. Each 3/4-inch overlay cabinet door more than 3 feet high:
 - 1-1/2 pair Interleaf design hinges HT1592-4 (Stanley).
 - 1 wire pull 4484 satin aluminum (Stanley).
 - 1 pair Magnetic Catches: 325 (Ives).
 2. Each 3/4-inch overlay cabinet door less than 3 feet high:
 - 1 pair Interleaf design hinges HT1592-4 (Stanley).
 - 1 wire pull 4484 satin aluminum (Stanley).
 - 1 pair Magnetic Catches: 325 (Ives).
 3. Each 1-1/2 inch overlay cabinet door more than 3 feet high:
 - 2-1/2 inch Interleaf design hinges HT1592-4 (Stanley).
 - 1 wire pull 4484 satin aluminum (Stanley).
 - 1 flap stay No. 499.050.02.0215 or 499.050.03.0215 (Mepla)
 - 1 pair Magnetic Catches: 327 (Ives).
 4. Piano Hinge: Stainless Steel, one piece, full width of cabinet.
 5. Cabinet Doors with Piano Hinge: Magnetic Catch Ives No. 327.
 6. Each cabinet drawer:
 - KV #1300 Extension Drawer Slides.
 - KV #8400 Extension Drawer Slides at File Drawers.
 - 1 wire pull 4484 satin aluminum (Stanley)
 7. Cabinets indicated to be locked:
 - a. Each cabinet door: C8055-14A x C2004 US26D (CompX National)
 - b. Each drawer: C8055-14A x C2004 US26D (CompX National)
 - c. Cabinet locks in each room shall be keyed alike.
 8. Caster at Dias: Millwork Heavy Duty Steel Drop in Ball Transfer. 308 lbs ball unit bearing, ball is chrome plated with plated steel cover. Ball support cup is machined of solid steel and Chrome plated. Reference details on drawings. (NationSkander, www.VXB.com)
 9. Grommets:
 - a. Grommets: Max2/A-94 as manufactured by Doug Mockett & Co., Inc.
 - b. Trash Grommets: 6" x 2" Trash Grommet Model No. TM1B SSS Satin Stainless as manufactured by Doug Mockett & Co., Inc.
 10. Coat Hooks: Model No. 580-A26 Wardrobe Hooks (Ives)
 11. Steel Support Brackets (for countertops): Provide one of the following:
 - a. Work Station Brackets formed of 1/8-inch steel with powder coat finish as manufactured by A & M Hardware, Inc. (phone 888.647.0200 web site: www.aandmhardware.com). Color as selected by Architect from manufacturer's full color line.
 - b. Rakks Counter Support Brackets fabricated of minimum 0.25-inch gauge 6063-T6 extruded aluminum as manufactured by Rangine Corp. (phone 800.826.6006 web site: www.rakks.com). Brackets shall be TIG welded along both 45° mitered sides and across the back. Sharp edges shall be ground and deburred. Color and finish shall be as selected by Architect.

END OF SECTION

SECTION 06 80 00

COMPOSITE FABRICATIONS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Composite planks.
 - 2. Deck leveling system.
- B. Related Sections:
 - 1. Section 05 40 00 - Cold-Formed Metal Framing.

1.2 REFERENCES

- A. ASTM D-7032-04: Standard Specification for Establishing Performance Ratings for Wood-Plastic Composite Deck Boards and Guardrail Systems (Guards or Handrails), ASTM International.
- B. ASTM D-7031-04: Standard Guide for Evaluating Mechanical and Physical Properties of Wood-Plastic Composite Products, ASTM International.
- C. ASTM E-84-01: Test Method for Surface Burning Characteristics of Building Materials, ASTM International.
- D. ASTM D 570: Water Absorption of Plastics.
- E. ASTM D 1761: Mechanical Fasteners in Wood.
- F. ASTM D -1413-99: Test method for Wood Preservatives by Laboratory Soilblock Cultures.
- G. ASTM C177: Standard Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Guarded-Hot-Plate Apparatus.

1.3 DESIGN/PERFORMANCE REQUIREMENTS

- A. Structural Performance: Uniform Load - 100lbf/sq.ft.
- B. Stair Treads: Concentrated Load: 750 lbf/sq.ft., and 1/8" max. deflection with a concentrated load of 300 lbf on area of 4 sq. in.
- C. Fire-Test Response Characteristics per ASTM E-84.

1.4 SUBMITTALS

- A. Product Data:
 - 1. Composite Deck: Indicate sizes, profiles, surface style, and performance characteristics.
 - 2. Adjustable Pedestals: Manufacturer's data sheets on each product to be used, including:
 - a. Preparation instructions and recommendations.
 - b. Storage and handling requirements and recommendations.
 - c. Installation methods
- B. Shop Drawings: Submit shop drawings detailing installation methods.
 - 1. Adjustable Pedestals: Coordinate placement with locations noted.
- C. Samples: For each product specified, one sample representing actual product color, size, and finish.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Store products on a flat and level surface. Adjust support blocks accordingly.
- B. Support bundles on supplied dunnage.

- C. When stacking bundles, supports should start at each end and be spaced 2' on center. Supports should align vertically.
- D. Do not stack higher than 6 bundles on 12' high.
- E. Keep material covered using the manufacturer-provided bundle cover until time of installation.

1.6 WARRANTY

- A. Provide manufactures warranty against rot, decay, splitting, checking, splintering, fungal damage, and termite damage for a period of 10 years. In addition, provide fade and stain warranty against staining and fading beyond 5 Delta E (CIE units) for a period of 10 years.
- B. Adjustable Pedestals:
 - 1. Provide manufacturer's standard document outlining the terms, conditions and limitations of their limited warranty against manufacturing defect for a period of five (5) years.
 - 2. The Contractor warrants that his work will remain free from defects of labor and materials used in conjunction with his work in accordance with the General Conditions for this project or a minimum of five (5) years from Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Deck Basis of Design: Provide decking as manufactured by Trex Company, Inc., 160 Exeter Dr., Winchester, VA 22603.
- B. Deck Leveling Basis of Design: Provide products supplied by Bison Innovative Products; 701 Osage Street, Unit 120, Denver, CO 80204, Toll Free: 800-333-4234, Phone: 303-892-0400, Website: www.bisonip.com.

2.2 DECK APPLICATIONS/SCOPE

- A. Wood-Plastic Composite Lumber: Provide "Transcend" Decking.
 - 1. Material Description: Provide Composite planks consisting of recycled Linear Low Density Polyethylene (LLDPE) and recycled wood. The product is extruded into shapes and sizes as shown on drawings.
 - a. 1" x 6" grooved-edge boards.
 - b. 1" x 6" square-edge boards
 - c. Color shall be Tree House.
 - 2. Physical and Mechanical Properties as follows:

Test	Test Method	Value	
Flame spread	ASTM E 84	85	
Thermal Expansion	ASTM D 1037	1.9 x 10 ⁻⁵ inch/inch/degree F	
Moisture Absorption	ASTM D 1037	< 1.2%	
Screw Withdrawal	ASTM D1761	388 lbs./in	
Fungus Resistance	ASTM D1413	Rating - no decay	
Termite Resistance	AWPAE1-72	Rating = 9.7	
		Ultimate (Typical)Values *	Design Values
Compression Parallel	ASTM D198	1588 psi	540 psi
Compression Perpendicular	ASTM D143	1437 psi	540 psi
Bending Strength	ASTM D198	3280 psi	500 psi
Shear Strength	ASTM D143	1761 psi	360 psi
Modulus of Elasticity	ASTM D4761	400,000psi	200,000 psi
Modulus of Rupture	ASTM D4761	3750 psi	500 psi

* Ultimate strength values not meant for design analysis. Design values are for temperatures up to 130F (54C).

2.3 ACCESSORIES

- A. Fasteners: Provide Trex Universal Hideaway Hidden Fasteners, including stainless steel screws.

2.4 DECK LEVELING SYSTEM

- A. Leveling System: Provide LEVEL.IT adjustable pedestals as manufactured by Bison Innovative Products; 701 Osage Street, Unit 120, Denver, CO 80204, Toll Free: 800-333-4234 Phone: 303-892-0400, Web: www.bisonip.com.
1. General Pedestal Details:
 - a. 2 to 4-3/4 inches.
 - b. Capacity: 750 lbs. (per pedestal with a Safety Factor of 3 (FS:3)
 - c. Material: Mineral Filled High Density Copolymer Polypropylene. Bison #B-PP-2025.
 - d. Contains 20% post-industrial recycled material
 2. Pedestal Base Details:
 - a. Size: 7 7/8 inch diameter by 3/16 inch top wall thickness
 - b. Bearing Surface Area: 48 in²
 - c. Four (4) 3/4 inch diameter holes for drainage
 - d. Four (4) 1/4 inch diameter holes for mechanical attachment
 - e. Compatible with LD4 slope compensator.
 3. Pedestal Top Details:
 - a. 5 7/8 inch diameter by 5/16 inch thick plate
 - b. Bearing Surface Area: 27 in²
 - c. Eight (8) 3/8 inch diameter holes for drainage and/or mechanical attachment
 - d. Integrated C3 Coupler
 4. Couplers and Spacer Tabs: Only as needed.
 5. Accessories: Provide accessories for a complete installation of system.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Deck Leveling System:
1. Verify all elevations, required pedestal heights, and deck dimensions before commencing work.
 2. Do not begin installation until substrates have been properly prepared.
 3. The substrate surface that will receive the deck supports must be structurally capable of carrying the dead and live loads anticipated.
 4. The substrate must be clean and free of projections and debris that could impair the performance of the pedestals or the total deck system.

3.2 PREPARATION

- A. Deck Leveling System:
1. Reference manufacturer's Installation Details documentation for recommended preparations.
 2. Establish accurate lines, levels and pattern as per installation instructions.

3.3 INSTALLATION

- A. Install entire system according to manufacturers' installation guidelines. Cut, drill, and rout using carbide tipped blades.

3.4 CLEANING

- A. Following cleaning recommendations as per manufacturer's installation guide.

END OF SECTION

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SECTION 07 11 13

BITUMINOUS DAMPPROOFING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes: Concealed mastic dampproofing in masonry walls. Refer to schedule at end of section.

B. Related Requirements:

1. Section 04 20 00 - Masonry Units.
2. Section 06 16 56 - Air- and Water-Resistive Sheathing Board System
3. Section 07 13 26 - Self-adhering Sheet Waterproofing.
4. Section 07 27 26 - Fluid-Applied Membrane Air Barriers
5. Section 07 65 00 - Flexible Flashing

1.2 SUBMITTALS

A. General: Submit in accordance with SECTION 01 33 23 – SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.

B. Product Data: Indicate properties of products, performance characteristics, proposed use, and certifications that product meets or exceeds standards.

C. Manufacturer's Instructions: Including application instructions, precautions, material safety, and methods of attachment/embedment into substrate data sheets.

1.3 QUALITY ASSURANCE

A. Perform Work in accordance with NRCA Waterproofing Manual, and manufacturer's instructions, whichever are more stringent.

B. For interior and concealed in all applications, provide product certified by manufacturer to be substantially odor-free within 24 hours of application.

1.4 QUALIFICATIONS

A. Applicator Qualifications: Company experienced in application of dampproofing with 3-years' experience on similar sized projects.

1.5 FIELD SAMPLES

A. Provide 4 x 6 foot field sample of mastic dampproofing under provisions of SECTION 01 45 00 - QUALITY CONTROL illustrating application techniques and material thickness.

B. Sample may be incorporated as part of work if approved in writing by Architect.

1.6 DELIVERY, STORAGE AND HANDLING

A. Deliver, store, handle and protect under provisions of SECTION 01 65 00 - PRODUCT DELIVERY REQUIREMENTS and SECTION 01 66 00 - PRODUCT STORAGE AND HANDLING PROTECTION.

B. Do not allow products to become frozen.

1.7 ENVIRONMENTAL REQUIREMENTS

A. Maintain ambient and surface temperature above 40°F. for 24 hours before application and continuously until mastic dampproofing has cured.

B. Do not allow dampproofed surfaces to be exposed to prolonged sunlight.

1.8 SEQUENCING AND SCHEDULING

- A. Coordinate installation in accordance with SECTION 01 31 00 - PROJECT MANAGEMENT AND COORDINATION. Do not begin work until substrate preparation is complete.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Mastic: ASTM D 1227, Type II, Class 1, semi-mastic asphaltic emulsion reinforced with non-asbestos fibers. Product/manufacturer; one of the following:
 - 920AF Fibered Emulsion Mastic; Karnak
 - Sealmastic; W.R. Meadows, Inc.
 - MasterSeal 615; Master Builders Solutions by BASF
- B. Substitutions: Submit in accordance with SECTION 01 62 00 - PRODUCT OPTIONS.

2.2 ACCESSORIES

- A. Mastic Dampproofing:
 - 1. Emulsion Based Dampproofing: Non-asbestos fiber reinforced emulsion asphaltic compound, brush or spray consistency, meeting requirements of ASTM D 1227 or FS-4-1781.
 - 2. Reinforcing Mesh; Treated glass fabric, woven design, 20 x 10 mesh.
 - 3. Plastic Cement: Type recommended by manufacturer and compatible with dampproofing product, for trowel consistency.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verification of Conditions: Verify that surfaces and conditions are ready to receive work of this section. Notify Architect of any existing conditions which will adversely affect execution. Beginning of execution will constitute acceptance of existing conditions.
- B. Do not apply when surface of ambient temperature is below 40°F., during inclement weather, or if surface is damp, dirty, or dusty.
- C. Verify surfaces are solid and free of cracks, pits, rough or sharp projections.
- D. Verify items which penetrate surface to receive dampproofing are securely anchored.

3.2 PREPARATION

- A. Remove rough or sharp projections, loose particles, and foreign matter detrimental to adhesion and application of dampproofing.
- B. Clean and prepare surfaces to receive dampproofing in accordance with manufacturer's written instructions.
- C. Apply two coats of plastic cement and one layer of reinforcing mesh (between plastic cement coats) to seal penetrations, small cracks, and at other areas as recommended by manufacturer.
- D. Fill voids, seal joints, and apply bond breakers, if any, as recommended by prime materials manufacturer, with particular attention at control joints.

3.3 INSTALLATION

- A. Mastic Dampproofing: For application over concealed masonry, concrete surfaces, within walls.
 - 1. Clean surfaces of excess mortar and loose dirt and apply the mastic in two coats by brush or spray. Allow the first coat to dry tacky before applying the second coat.

2. Coverage shall be approximately 35 sq.ft. per gallon per coat. Fill in crevices and grooves and around projecting anchors and joint reinforcement. Make sure that coating is continuous and free from breaks and pinholes.
3. At glass-mat gypsum sheathing, apply dampproofing prior to installation of masonry anchors.

3.4 FIELD QUALITY CONTROL

- A. Tests: Periodically (not less than once per 100 sq.ft. of surface area) check application thickness to verify compliance with specified thickness. Immediately re-apply if found to be deficient.

3.5 PROTECTION

- A. Protect finished installation under provisions of SECTION 01 50 00 - TEMPORARY FACILITIES AND CONTROLS.
- B. Protect adjacent surfaces not to receive dampproofing against "overspray" or "over brush".
- C. Protect dampproofing against damage during backfilling with adhered protection course, neatly fitted around projections and penetrations. Do not apply until dampproofing has thoroughly cured.
- D. Protect flashing until placement within wall is complete. Do not allow wind to displace or damage flashing.

3.6 CLEANING

- A. Perform final cleaning under provisions of SECTION 01 74 13 - PROGRESS CLEANING.

3.7 DAMPPROOFING SCHEDULE

- A. Dampproof as follows with mastic:
 1. Over the exterior surfaces of the inside wythe of masonry and concrete backup in below-grade exterior cavity walls to provide an unbroken dampproofing barrier.
 2. Over the inside wythe of masonry and concrete backup in non-conditioned buildings or dumpster walls.
 3. Elsewhere where indicated.

END OF SECTION

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SECTION 07 13 26

SELF-ADHERING SHEET WATERPROOFING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Sheet membrane waterproofing.
- B. Related Sections:
 - 1. Section 32 05 19 - Geotextiles for Exterior Improvements.

1.2 SUBMITTALS

- A. Product Data: Submit in accordance with SECTION 01 33 23 - SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES. Include installation instructions, and general recommendations from waterproofing materials manufacturer.

1.3 QUALITY ASSURANCE

- A. Installer Qualifications: Firm with not less than 5 years of successful experience in installation of waterproofing sheets similar to requirements for this project.

1.4 PROJECT CONDITIONS

- A. Substrate: Proceed with work only after substrate construction, openings, and penetrating work have been completed.
- B. Weather: Proceed with waterproofing only when existing and forecasted weather conditions will permit work to be performed in accordance with manufacturer's recommendations and warranty requirements.

1.5 WARRANTY

- A. Provide written 5-year warranty, signed by Contractor, installer, and manufacturer of primary waterproofing material agreeing to replace or repair defective materials and workmanship. Warranty includes responsibility for removal and replacement of other work which conceals sheet membrane waterproofing.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Sheet Membrane: Self-adhering membrane of rubberized asphalt integrally bonded to polyethylene sheeting, formed into uniform flexible sheets of not less than 56 mils thick. Product/manufacturer; one of the following:
 - Bituthene; Grace Construction Products
 - Mel-Rol; W.R. Meadows, Inc.
 - Polyguard No. 650; Polyguard Products, Inc.
- B. Drainage Mat: Reference SECTION 32 05 19 - GEOTEXTILES FOR EXTERIOR IMPROVEMENTS.
- C. Protection Board: Organic fiberboard, treated for resistance to fungus and insects, asphalt impregnated and asphalt coated on both faces; 1/2" thickness.

PART 3 - EXECUTION

3.1 INSPECTION

- A. Examine substrate and conditions under which waterproofing work is to be performed. Do not proceed until unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Comply with manufacturer's instructions for handling and installation of sheet membrane waterproofing materials.
- B. Coordinate installation of waterproofing materials and associated work to provide complete system complying with recommendations of manufacturer. Schedule installation to minimize period of exposure of sheet waterproofing materials.
- C. Extend waterproofing sheet to provide complete membrane over areas to be waterproofed. Seal to projections through membrane and seal seams.
- D. Install protection board over completed membrane with close butt joints and cut to fit around projections.

3.3 PROTECTION

- A. Provide for protection of completed membrane during installation of other materials or processes over membrane and throughout remainder of construction period.

END OF SECTION

SECTION 07 14 00

FLUID-APPLIED WATERPROOFING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Fluid applied elastomeric waterproofing:
 - 1. Horizontal waterproofing membrane over concrete floor slabs.
 - 2. Vertical waterproofing below-grade.
- B. Related Sections:
 - 1. Section 03 30 00 - Cast-In-Place Concrete.
 - 2. Section 32 05 19 - Geotextiles for Exterior Improvements.

1.2 SUBMITTALS

- A. Product Data: Submit in accordance with SECTION 01 33 23 - SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES. Include membrane thickness, accessories, and method of application.

1.3 QUALITY ASSURANCE

- A. Applicator Qualifications: This work shall be performed by an experienced applicator who has successfully applied the materials and used the methods specified under similar conditions over a period of at least five years.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials in the original, sealed containers or unopened packages clearly labeled with the manufacturer's name and the contents.
- B. Store materials in a heated and ventilated area located away from all sources of sparks and open flame. Containers of liquid material shall not be left open at any time in the storage area.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Elastomeric Waterproofing: Provide a one-component, moisture-curing, bitumen-modified polyurethane elastomeric waterproofing membrane, containing no coal tar extenders. Provide formulation appropriate for chosen horizontal or vertical installation with associated trowel, squeegee, roller or spray application. Product/manufacturer; one of the following:
 - MasterSeal HLM 5000; BASF
 - MiraSEAL; Carlisle Coatings & Waterproofing Incorporated (CCW)
- B. Flashing Membrane: Provide 1/16" thick neoprene synthetic rubber sheet.
- C. Adhesive: Provide neoprene adhesive manufactured expressly for use with the synthetic rubber flashing membrane.
- D. Drainage Mat: Reference SECTION 32 05 19 - GEOTEXTILES FOR EXTERIOR IMPROVEMENTS.
- E. Protection Board: Provide a semi-rigid, asphalt saturated board 1/8" thick. Product/manufacturer: Type PC-2 Protection Course; W.R. Meadows.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Remove loose dirt and debris and clean off oil, grease, paint and other foreign contaminants to leave the concrete surface clean and dry. Immediately prior to and during application, remove dirt and dust from the surface with compressed air or a soft broom. Mask with paper and tape the surfaces not designated to receive waterproofing to protect them from accidental application of the waterproofing material.

3.2 INSTALLATION

- A. Applying Waterproofing:
 - 1. Select the grade of product that best meets the individual job requirements.
 - 2. Mix the waterproofing compound thoroughly in conformance with the manufacturer's printed instructions.
 - 3. Horizontal Application: Apply product over horizontal surface in one coat using a roller, trowel, or squeegee as required to obtain thickness required. Pour the mixed compound onto the concrete floor and spread out with trowel and squeegee to a thickness of not less than 1/16". Coverage shall be not less than 4 gallons per square.
 - 4. Vertical Application: Apply one coat using a roller, trowel, or squeegee as required to obtain thickness required. Wait for material to film form and become stable between each coat.
 - 5. Install flashing membrane along perimeter walls. Install with adhesive applied to the concrete surface and to the back of the membrane. Press firmly into place without stretching and work out all bubbles, wrinkles and fishmouths. At walls in horizontal application, turn membrane up approximately 3" above the waterproofed surface to form a dam. Lap joints 3" and bond with adhesive.
 - 6. Over flashing membrane, apply a thin coat of neoprene adhesive and allow to dry until tacky before covering with the waterproofing compound. On metal pipes and conduits projecting through the concrete, apply a second coat of waterproofing compound after the first coat has cured. Extend the waterproofing into the floor drain flashing rings.
 - 7. For at least 24 hours after completion of the waterproofing, keep the area clear of all traffic. After testing for leaks, cover the waterproofing with protection board laid with close butt joints and cut to fit around projections and at offsets.

3.3 FIELD QUALITY CONTROL

- A. Testing: Floor areas protected with elastomeric waterproofing shall be flood tested for leaks prior to installing the protection board. Plug the floor drains and flood the areas with water to a depth of 2" or more. Allow the water to stand for 24 hours before draining off. Repair all leaks.

END OF SECTION

SECTION 07 18 13

PEDESTRIAN TRAFFIC COATING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Interior pedestrian traffic coating system.
- B. Related Sections:
 - 1. Section 03 30 00 - Cast-In-Place Concrete.

1.2 SUBMITTALS

- A. Product Data: Submit in accordance with SECTION 01 33 23 - SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES. Include a printed sample of the joint guarantee to be furnished with the accepted coating system.

1.3 QUALITY ASSURANCE

- A. Installer Qualifications: Manufacturer's authorized representative who is trained and approved for installation of traffic coatings required for this Project.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials in original packages and containers with seals unbroken and bearing manufacturer's labels showing the following information:
 - 1. Manufacturer's brand name.
 - 2. Type of material.
 - 3. Directions for storage.
 - 4. Date of manufacture and shelf life.
 - 5. Lot or batch number.
 - 6. Mixing and application instructions.
 - 7. Color.
- B. Store materials in a clean, dry location protected from exposure to direct sunlight. In storage areas, maintain environmental conditions within range recommended in writing by manufacturer.

1.5 PROJECT CONDITIONS

- A. Environmental Limitations: Apply traffic coatings within the range of ambient and substrate temperatures recommended in writing by manufacturer. Do not apply traffic coatings to damp or wet substrates, when temperatures are below 40°F., when relative humidity exceeds 85 percent, or when temperatures are less than 5°F. above dew point.

1.6 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which traffic coating manufacturer agrees to repair or replace traffic coatings that deteriorate within five years from date of substantial completion.
 - 1. Deterioration of traffic coatings includes the following:
 - a. Adhesive or cohesive failures.
 - b. Abrasion or tearing failures.
 - c. Surface crazing or spalling.
 - d. Intrusion of water, oils, gasoline, grease, salt, deicer chemicals, or acids into deck substrate.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Traffic Coatings: Complying with ASTM C 957.

- B. Material Compatibility: Provide primers, base, intermediate, and topcoats; and miscellaneous materials that are compatible with one another and with substrate under conditions of service and application, as demonstrated by manufacturer based on testing and field experience.

2.2 PEDESTRIAN TRAFFIC COATING

- A. Product/manufacturer: Subject to compliance with requirements, provide one of the following:
 - MasterSeal Traffic 1500; BASF
 - Pecora Deck 802/804/806 System; Pecora Corporation (Carlisle CCW System)
 - Peda-Gard; Neogard, Division of Hempel
- B. Primer: Manufacturer's standard factory-formulated urethane primer recommended for substrate and conditions indicated.
- C. Preparatory and Base Coats: Single- or multi-component, aromatic liquid urethane elastomer.
- D. Topcoat: Single- or multi-component, aliphatic liquid urethane elastomer. Color shall be Gray.
- E. Aggregate: Uniformly graded, washed silica sand of particle sizes, shape, and minimum hardness recommended in writing by traffic coating manufacturer. Spreading rate as recommended by manufacturer for substrate and service conditions indicated, but not less than 8 to 10 lb./100 sq. ft.

2.3 MISCELLANEOUS MATERIALS

- A. Joint Sealants: Low modulus unmodified polyurethane based.
- B. Adhesive: Contact adhesive recommended in writing by traffic coating manufacturer.
- C. Reinforcing Strip: Fiberglass mesh recommended in writing by traffic coating manufacturer.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, with Installer present, for compliance with requirements and for other conditions affecting performance of traffic coatings.
- B. Begin coating application only after minimum concrete curing and drying period recommended by traffic coating manufacturer has passed, after unsatisfactory conditions have been corrected, and after surfaces are dry.
- C. Verify that substrates are visibly dry and free of moisture. Test for moisture vapor transmission by plastic sheet method according to ASTM D 4263.
- D. Application of coating indicates acceptance of surfaces and conditions.

3.2 PREPARATION

- A. Clean and prepare substrates according to ASTM C 1127 and manufacturer's written recommendations to produce clean, dust-free, dry substrate for traffic coating application.
- B. Mask adjoining surfaces not receiving traffic coatings, deck drains, and other deck substrate penetrations to prevent spillage, leaking, and migration of coatings.
- C. Concrete Substrates: Mechanically abrade concrete surfaces to a uniform profile according to ASTM D 4259. Do not acid etch.
 - 1. Remove grease, oil, paints, and other penetrating contaminants from concrete.
 - 2. Remove concrete fins, ridges, and other projections.
 - 3. Remove laitance, glaze, efflorescence, curing compounds, concrete hardeners, form-release agents, and other incompatible materials that might affect coating adhesion.
 - 4. Remove remaining loose material to provide a clean, sound surface.

3.3 TERMINATIONS AND PENETRATIONS

- A. Prepare vertical and horizontal surfaces at terminations and penetrations through traffic coatings and at drains and sleeves according manufacturer's written recommendations.
- B. Provide sealant cants at penetrations and at reinforced and nonreinforced, deck-to-wall butt joints.

3.4 JOINT AND CRACK TREATMENT

- A. Prepare, treat, rout, and fill joints and cracks in substrates according to manufacturer's written recommendations. Before coating surfaces, remove dust and dirt from joints and cracks.

3.5 TRAFFIC COATING APPLICATION

- A. Apply traffic coating material according to ASTM C 1127 and manufacturer's written recommendations.
- B. Apply traffic coatings to prepared wall terminations and vertical surfaces to height indicated, and omit aggregate on vertical surfaces.
- C. Cure traffic coatings according to manufacturer's written recommendations. Prevent contamination and damage during application and curing stages.

3.6 PROTECTING AND CLEANING

- A. Protect traffic coatings from damage and wear during remainder of construction period.
- B. Clean spillage from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction.

END OF SECTION

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SECTION 07 21 00

BUILDING INSULATION

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Thermal, acoustical, and fire safing building insulations.
- B. Related Sections:
 - 1. Section 04 22 00 - Concrete Masonry Units.
 - 2. Section 04 43 00 - Stone Masonry
 - 3. Section 06 10 00 - Rough Carpentry; FR plywood in crawlspace.
 - 4. Section 06 16 56 - Air- and Water-Resistive Sheathing Board System
 - 5. Section 07 21 19 - Foamed-in-Place Insulation
 - 6. Section 07 27 26 - Fluid-Applied Membrane Air Barriers
 - 7. Section 07 41 20 - Prefinished Metal Roof Panels; roof insulation
 - 8. Section 07 53 00 - Single-ply Membrane Roofing; roof insulation.
 - 9. Section 07 65 00 - Flexible Flashing
 - 10. Section 07 84 00 - Firestopping.

1.2 SUBMITTALS

- A. General: Submit following items under provisions of SECTION 01 33 23 - SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Product Data: Including performance specifications, composition and applicable standards.
- C. Samples: Submit 12" x 12" size samples of each type insulation proposed for use.
- D. Manufacturer's Instructions: Written installation instructions, including attachment recommendations.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturers: (See Articles below for specific products)
 - Certainteed Corp.
 - Dow Chemical Company
 - Johns Manville, A Berkshire Hathaway Co., Denver, CO
 - Knauf Insulation
 - Owens Corning, Toledo, OH
 - Thermafiber, Inc.
 - U.S. Gypsum Co.

2.2 BATT THERMAL INSULATION

- A. Glass fiber composition, unfaced, minimum one lb./c.f. density, meeting following standards:
 - 1. ASTM E 84: FHC 25/50 maximum.
 - 2. ASTM C 518: R value of 3.2 per inch of thickness.
 - 3. ASTM C 665: Type I and Type III, Class A.
- B. Following products are acceptable:
 - 1. Unfaced Thermal Batts by Owens Corning Fiberglas Corp.
 - 2. Unfaced Building Insulation by Certainteed Corp.
 - 3. Unfaced Building Insulation by Johns Manville Corp.
 - 4. Unfaced EcoBatt Insulation by Knauf Insulation

2.3 BATT ACOUSTICAL INSULATION

- A. Unfaced glass fiber composition, 3½" thick, minimum one lb./c.f. density, meeting following standards:
 - 1. ASTM E 84: FHC 25/50 maximum.
 - 2. ASTM C 518: R value of 3.2 per inch of thickness.
 - 3. ASTM C 665: Type I, Class A.
- B. Following products are acceptable
 - 1. Sound Control Batts by Certaineed Corp.
 - 2. EcoTouch Sonobatts by Owens Corning Insulating Systems, LLC
 - 3. Unfaced Building Insulation by Johns Manville Corp.
 - 4. EcoBatt Insulation by Knauf Insulation

2.4 SEMI-RIGID AND RIGID INSULATION

- A. Reference Building Assembly Types for areas to receive Mineral Wool Board (Semi-Rigid) and Rigid Mineral Wool Board (Rigid) Insulation.
 - 1. Mineral Wool Board (Semi-Rigid Continuous Insulation) Basis of Design: Provide Thermafiber RainBarrier 45 Insulation as manufactured by Thermafiber, Inc., Wabash, IN (phone: 888-834-2371; web: www.thermafiber.com (an Owens Corning company))
 - a. Acceptable Products/Manufacturers:
 - Thermafiber RainBarrier 45; Thermafiber, Inc.
 - Cavityrock; Rockwool
 - b. Description: Non-combustible, semi-rigid mineral wool insulation board that is water repellent and resists temperatures above 2,000° F, meets ASTM C 612, IVA.
 - c. Thickness: As noted on contract drawings.
 - d. Paint flat black behind joints at open joint panel assemblies.
 - e. Type:
 - 1) R-value of min. 4.2 per inch.
 - 2) Facing: Unfaced.
 - 3) Density: 4.5 pcf.
 - 4) Surface Burning Characteristics: Unfaced-Flame Spread 0 and Smoke Developed 0
 - 5) Moisture Resistance: Absorbs less than 0.03% by volume, ASTM C 1104.
 - 6) Non-corrosive, ASTM C 665.
 - 2. Rigid Mineral Wool Board (Rigid Continuous Insulation) Basis of Design: Provide Rockwool Comfortboard 80 Insulation as manufactured by Rockwool, (phone: 1-800-265-6878, web: www.rockwool.com)
 - a. Description: Rigid, water repellent, mineral wool insulation board for exterior non-structural commercial and industrial high performance insulation sheathing applications to ASTM C612, Type IVB.
 - b. Thickness: As noted on contract drawings.
 - c. Cladding Attachment Method: Screw-through method.
 - d. Type:
 - 1) R-value of min. 4.2 per inch.
 - 2) Facing: Unfaced
 - 3) Density: 8.0 lbs/ft³, actual.
 - 4) Surface Burning Characteristics: Unfaced-Flame Spread 0 and Smoke Developed 0
 - 5) Moisture Resistance: Absorbs less than 0.05% by volume, ASTM C 1104.
 - 6) Non-corrosive, ASTM C 665.
 - 7) Fungi resistance: Zero mold growth to ASTM C1338

2.5 FIRE SAFING INSULATION

- A. Mineral fiber composition, 4" thick, 4.0 pcf density, meeting following standards
 - 1. ASTM E 84: FHC 15/10 maximum.
 - 2. ASTM C 665: Type I, Class A
 - 3. ASTM E 119: Testing Procedures.
 - 4. FS HH-I-558B: Class 1 and 2.
- B. Following products are acceptable
 - 1. Thermafiber Safing Insulation by Owens Corning.
 - 2. Mineral Wool Safing Insulation by Johns Manville.

2.6 ACCESSORIES

- A. Joint Tape: Pressure sensitive type, recommended by insulation manufacturer.
- B. Insulation Adhesive: Type recommended by insulation manufacturer.
- C. Stick Clips
 - 1. Galvanized sheet metal with impaling pins and retainer washers.
 - 2. Size and type to suit application and insulation thickness.
 - 3. Approved by manufacturer of insulation for intended use.
- D. Stick Clip Adhesive
 - 1. High strength, resilient adhesive, having drying time of 0 to 30 minutes (rapid initial set), and 24 hours final set.
 - 2. Compatible with insulation adhesive, insulation and substrate.
 - 3. Non-corrosive to galvanized steel.
- E. Supportive Wire Mesh: Hexagonal design, woven mesh "chicken wire" style.
- F. Tie wire: Minimum 18 ga. annealed wire.
- G. Mechanical fasteners for rigid insulation shall be in accordance with insulation manufacturer's written recommendations.

PART 3 - EXECUTION

3.1 INSPECTION

- A. Examine areas to receive insulation for conditions that will adversely affect the execution and quality of the work. Do not start this work until unsatisfactory conditions are corrected.

3.2 INSTALLATION

- A. Fit insulation tight within stud spaces, above soffits, behind fascias, and tight to and behind mechanical and electric services within plane of insulation, leaving no gaps or voids. Butt insulation tightly. Cut and fit tightly around items penetrating insulation. Stagger and butt joints, or cavity of a cavity wall system.
- B. Install in conformance with the manufacturer's recommendations. Cut material to fit closely around obstructions and projections.
 - 1. Walls: Secure insulation by mechanical means to hold it in place without sagging or slumping. Install insulation with edges and joints butted tight to leave no gaps.
 - 2. Soffits: Insulation shall be laid between wire hangers on back of cement plaster and over cross runners. Sides and ends of adjacent batts shall be tightly butted together.
 - 3. Acoustical Insulation:
 - a. Install acoustical insulation between the studs in those gypsum drywall partitions so detailed and noted on the drawings. Staple blankets to the gypsum board or otherwise fasten in place as recommended by the manufacturer of the blankets. Fill all voids.
 - b. Where indicated at suspended gypsum board ceilings, lay sound attenuation blankets between wire hangers on back of gypsum board and over cross runners. Do not install on top of or within 3" of light fixtures.
- C. Applying Semi-Rigid Insulation: Install board insulation between the wythes in exterior masonry walls.
 - 1. In masonry walls place boards over the fluid-applied membrane air barrier on the face of the backup masonry before the face brick wythe is laid.
 - 2. Securely fasten the board to the backup with mastic and suitable mechanical anchors to hold it firmly in place.
 - 3. In framed construction, apply insulation units to substrates by method indicated, complying with manufacturer's written instructions. If no specific method is indicated, bond units to substrate with adhesive or use mechanical anchorage to provide permanent placement and support of units.
 - 4. Cut the material to fit snugly around obstructions and projections. Joints shall be tight.
 - 5. Seal joints between units by applying adhesive, mastic, or sealant to edges of each unit to form a tight seal as units are shoved into place. Fill voids in completed installation with adhesive, mastic, or sealant as recommended by insulation manufacturer.

- D. Applying Rigid Insulation: Install rigid board insulation with mechanical fasteners per the manufacturer's recommendations.
- E. Safing Insulation: Compress and install insulation on wire hangers or clips in spaces between floor slabs and curtain walls. Also, in openings in floor slabs to seal around telephone cables, piping, ducts and other utilities per SECTION 07 84 00 - FIRESTOPPING.

3.3 SCHEDULES

- A. Provide R values for thermal insulation as indicated on the drawings.
- B. Provide acoustical insulation in thickness and locations as follows:
 - 1. Walls: 3½" (or as shown on drawings)
 - 2. Above Ceilings: 3½" (or as shown on drawings)

END OF SECTION

SECTION 07 21 19

FOAMED-IN-PLACE INSULATION

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Closed cell sprayed polyurethane foam insulation.
- B. Related Sections:
 - 1. Section 03 31 00 - Structural Concrete.
 - 2. Section 05 31 14 - Steel Composite Floor Decking.
 - 3. Section 06 10 00 - Rough Carpentry.

1.2 SYSTEMS DESCRIPTION/QUALITY ASSURANCE

- A. Contractor must use a total system, encompassing equipment, insulation, thermal barrier as supplied and tested by the manufacturer to meet IBC, IECC, and NFPA requirements. No substitutions may be made for tested systems.
- B. Contractor must be licensed and trained by the manufacturer.
- C. Manufacturer's qualified technical representative will be required to visit project site to advise Installer of procedures and precautions for installation of insulation materials and to verify installation requirements. Manufacturer's representative shall make inspection of the installation a minimum of three times. Manufacturer's written reports of findings shall be submitted for the Architect review.

1.3 SUBMITTALS

- A. General: Submit in accordance with SECTION 01 33 23 - SHOP DRAWINGS, PRODUCT DATA AND SAMPLES.
- B. Product Data:
 - 1. Submit data that the product meets or exceeds specified requirements.
 - 2. Preparation instructions and recommendations.
 - 3. Storage and handling requirements and recommendations.
 - 4. Installation methods.
 - 5. Product Test Reports: For each product, for tests performed by a qualified testing agency.
- C. Certification:
 - 1. Submit current Manufacturer's Authorized Contractor Certificate.
 - 2. Submit manufacturer's certificate that the product meets or exceed specified requirements.
 - 3. Manufacturer's written certification that product contains no asbestos.
 - 4. Submit the technical data sheet from the manufacturer showing the test results from the ASTM E84 (Surface Burning Characteristics).
- D. Samples: Submit samples of each product specified.
- E. Mock-Up:
 - 1. A representative surface of not less than 100 square feet shall be sprayed and approved by the manufacturer and Architect prior to proceeding.
 - 2. Finish areas designated by Architect.
 - 3. Do not proceed with remaining work until installation is approved by manufacturer and Architect.
 - 4. Rework mock-up area as required to produce acceptable work.

1.4 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Materials shall be delivered in original, unopened containers bearing name of manufacturer, product identification, safety information, and expiration date.
- B. Store materials off ground, under cover and away from damp surfaces and keep material dry at all times.

- C. Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction. Empty containers shall be removed from site on a daily basis.

1.5 PROJECT CONDITIONS

- A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.
- B. Ventilate insulation application area in accordance with the Spray Foam Coalition's Guidance on best practices for the installation of Spray Polyurethane Foam.
- C. Protect workers as recommended by the Spray Foam Coalition's Guidance on best practices for the installation of Spray Polyurethane Foam.
- D. Protect adjacent surfaces, windows, equipment and site areas from damage of overspray.

1.6 WARRANTY

- A. Provide limited lifetime warranty. Manufacturer's sole responsibility under this Limited Lifetime Warranty shall be to repair or replace any defective Product.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. The following installation contractors are approved on this project as trained and certified by the Air Barrier Association of America (ABAA) and have received Demilec SPF training and certification.
 - LCR, Dallas, TX, Devin James, 214-761-1940, DJames@lcrcontractors.com
 - Alpha IBP, Dallas, TX, Chuck Jahant, 972-446-2600, CJahant@alphaiwp.com
 - True Fireproofing, Tulsa, OK, Dustin Norman, 918-346-1009, dnorman@truefireproofing.com
- 1. Allowance will be made for additional installers, provided they submit their name, certification by the manufacturer, experience, and information showing their proficiency to the Architect at least one week prior to the bid. Approval or denial will be issued by addendum.
- B. Basis of Design: ASTM C 1029, Type II, provide thicknesses to meet R-values as shown on the drawings, Heatlok Soy® 200 Plus foamed-in-place insulation as manufactured by DEMILEC USA®; 3315 E. Division St., Arlington, TX 76011. (Phone: (877) DEMILEC or (817) 640-4900. Web: <http://www.demilecusa.com>)
 - 1. Application with a prescriptive Thermal Barrier: Up to 9-1/4 inches for wall cavities with minimum 1/2 inch gypsum wall board or equivalent 15 minute thermal barrier in accordance with IBC 2603.4.
 - 2. Application without a Thermal or Ignition Barrier (exposed foam): Passes NFPA 285 testing as part of an approved assembly.
 - a. Up to 9-1/4 inches in walls and with all foam surfaces covered with BLAZELOK TBX intumescent coating.
 - b. Up to 5-1/2 inches in walls with all foam surfaces covered with 12 dry mils of BLAZELOK TBX intumescent coating.
 - 3. Crawlspace: Passed AC 377 Appendix X compliant NFPA 286.
 - a. Up to 7-1/2 inches on vertical surfaces and 11-1/2 inches on the underside of the space with no intumescent coating. Reference drawings for R-value required for this project.
 - 4. Physical Properties:
 - a. Density (ASTM D 1622): 2.1 lb/cf.
 - b. Thermal Resistance (ASTM C 518): Aged R value at 1 inch (180 days at 76 degrees F) – R-7.4 (sf.h degree F/BTU)
 - c. Water Vapor Permeance @ 1.2"(ASTME 96-05): < 1 perms (is a vapor barrier per IBC Section 202 definitions at 1.2")
 - d. Air Permeance @ 75 Pa @ 1" (ASTME 2178-03): 0.02 L/sm²
 - e. Air Leakage of Air Barrier Assembly (static loading to 600 Pa and gust loading to 1,200 PA) Complies with ABAA requirements (ASTME 2357-05): <0.02L/sm²
 - f. Compressive Strength (ASTM D 1621): 28.7 psi (198 kPa).
 - g. Tensile Strength (ASTM D 1623): 46.2 psi
 - h. Off Gassing Test (VOC Emissions) (CGSB 51.23-92): Pass (no toxic vapor).

- i. Surface Burning Characteristics (ASTM E 84) 4 inches: Class I. Flame Spread Index 20, Smoke Developed Index 400.
 - j. Closed Cell Content (ASTM D2856) : >90%
- C. Equipment used to apply the foam insulation shall have fixed ratio positive displacement pumps and approved by foam manufacturer.
- D. Accessories:
1. Joint Cover Membrane: Membrane at Tilt-Wall Joints, Transitions in Substrate, and Connections to Adjacent Elements shall be 40 mil, minimum 9 inches wide, Heatlok® ABS Membrane.
 2. Primer: Material recommended by insulation manufacturer where required for adhesion of insulation to substrates.
- E. Water Based Intumescent coating: Where thermal barrier is required, provide BLAZELOK™ TBX Intumescent Coating, Distributed by DEMILEC USA® and Manufactured by TPR².
1. Provide intumescent coating only when foam insulation is exposed to the building interior, plenums, attics or crawlspaces, except that no intumescent coating is required if the foam insulation is specifically approved based on large-scale tests such as, but not limited to, NFPA 286 (with the acceptance criteria identified in the International Building Code), FM 4880, UL 1040 or UL 1715. Such testing shall be related to the actual end-use configuration and be performed on the finished manufactured foam plastic assembly in the maximum thickness intended for use.
 2. Application: Follow manufacturer's application recommendations.
 3. Physical Properties:
 - a. Approval: Complies with NFPA 101 paragraph 10.2.3.7.2 for use without a prescriptive thermal barrier.
 - b. Surface Burning Characteristics (ASTM E 84): Class I. Flame Spread Index <25, Smoke Developed Index <50.
 - c. Expands up to 2000 percent.
 - d. Flash Point: None
 - e. Volatility/VOC: < 50 g/L
 - f. Non-toxic, drain safe, water based, non-fuming.
 - g. Color: Dull Flat White / Gray. Wait minimum 24 hours prior to top coating with quality latex paint. Verify dryness with moisture meter.

PART 3 - EXECUTION

3.1 INSPECTION

- A. The installing contractor shall examine all surfaces and report all unsatisfactory conditions in writing to the Contractor. The work shall not proceed until unsatisfactory conditions are corrected. Commencement of work outlined in this section shall be deemed as acceptance of existing work and conditions.
- B. Surfaces to receive spray insulation shall be inspected prior to application to determine if priming/sealing is required to insure bonding and/or to prevent discoloration caused by migratory stains. Prime accordingly.

3.2 PREPARATION

- A. Provide masking, drop cloths or other satisfactory coverings for all materials/surfaces which are not to receive insulation so as to prevent damage from overspray.
- B. Clips, hangers, fasteners, supports, sleeves and other attachments to spray bases are to be placed by other trades prior to the application of sprayed insulation.
- C. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
- D. Area shall be dried-in before spraying insulation.

3.3 INSTALLATION

- A. Installation, clean-up and curing shall be accomplished according to the manufacturer's recommendations and common construction standards.

- B. Peel off silicone release paper or film from joint cover membrane. Membrane must be adhered to wall a minimum of 3 inches wide on either side of the joint. Once installed, a pressure must be applied over the whole surface using a hard roller to ensure a perfect adhesion.
- C. Apply insulation to substrate in sufficient thickness to achieve the required thermal value.
- D. Spray insulation to envelop entire area to be insulated and fill voids.
- E. Spray insulation on wall and continue onto deck 4" to seal to deck. Tape area on deck to achieve a straight line.
- F. Apply in multiple passes to reach specified R-Value (-0 / +1/4) and not exceed maximum thicknesses recommended by manufacturer. Do not spray into rising foam.
- G. Miscellaneous Voids: Apply according to manufacturer's written instructions.
- H. Provide natural or mechanical ventilation continuously to properly cure the insulation.

3.4 PROTECTION

- A. Protect installed products from damage due to harmful weather exposures, physical abuse, and other causes until completion of project.
- B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION

SECTION 07 26 00

VAPOR RETARDERS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
1. Vapor barrier placed on masonite topping sheet.
 2. Vapor barrier placed on soil surface.
 3. Vapor barrier placed on soil surface in mechanically ventilated crawlspaces.
- B. Related Sections:
1. Section 03 11 13 - Structural Concrete Forms: topping sheet.
 2. Section 03 31 00 - Structural Concrete.
 3. Section 07 62 00 - Sheet Metal Flashing and Trim: Vapor retarder at roof expansion joints.
 4. Section 31 31 00 - Soil Treatment: Temporary polyethylene sheeting over treated soil.

1.2 SUBMITTALS

- A. General: Submit in accordance with SECTION 01 33 23 - SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Product Data:
1. Provide product data for each type of product.
 2. Manufacturer's installation instructions for placement, seaming, penetration prevention and repair, and perimeter seal per ASTM E1643.
 3. Product Test Reports: For each product, for tests performed by a qualified testing agency.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Vapor Barrier: Product/manufacturer; one of the following:
Ecoshield-E; Epro Services
Stego Wrap (15 mil) Vapor Barrier; Stego Industries, LLC
Perminator (15 mil); W.R. Meadows
1. Vapor Barrier membrane shall have the following qualities:
 - a. Permeance of less than 0.01 Perms [grains/(ft²*hr*inHg)] as tested after mandatory conditioning tests ASTM E 154 (sections 8, 11, 12, 13) per ASTM F 1249 or ASTM E 96.
 - b. ASTM E 1745 Class A.
 - c. Minimum thickness 15 mils.
 2. Accessories:
 - a. Seam Tape: High-density polyethylene tape with pressure sensitive adhesive. Minimum width 3.75 inches.
 - b. Pipe Boots (Penetrations of Vapor Barrier): Construct pipe boots from vapor barrier material and pressure sensitive tape per manufacturer's instructions.
 - c. Perimeter/edge seal: Provide the following as manufactured by Stego Industries LLC, (887) 464-7834 www.stegoindustries.com.
 - 1) Stego Crete Claw
 - 2) Stego Term Bar.
 - 3) StegoTack Double-Sided Tape.
- B. Reinforced Vapor Barrier at Mechanically Ventilated Crawlspaces: Provide Griffolyn 20 mil Reinforced White as manufactured by Reef Industries or approved equivalent.
1. Material: 3-ply laminate, combining 2 layers of linear low density polyethylene and 1 high-strength non-woven cord grids.
 - a. Weight, ASTM D 3776: 93 lb/1,000 ft² (45 kg/100 m²).
 - b. Puncture, Propagation Tear: ASTM D 2582: 50 lbs (222 N)
 - c. Permeance (Perm), ASTM E 96: 0.019 grains/hr-ft²-in Hg (1.06 ng/(Pa-s-m²)).
 - d. Drop Dart D-1709: 910 g.
 - e. Tensile Strength, 3 Inches, ASTM D 882: 150 lb/2,630 psi (667N/18,100 kPa).

- f. Usable Temperature Range: -45 to 170 degrees F (-42 to 77 degrees C).
2. Self-Adhesive Tape: Griffolyn® White Sealant Tape RI Part Number: 60-0153.
 - a. Description: Reinforced white backing with Gray Adhesive.
 - b. Weight: 3.0 lbs for 4 inch x 50 foot roll.
 - c. Thickness: 26 mils (0.65 mm).
 - d. 3 inch Seam Shear: 30 lbs (134 N)
3. Pipe Boots: Griffolyn® pipe boots, factory-fabricated.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Remove soil treatment protective vapor barrier before placement of permanent vapor barrier.
- B. Ensure that subsoil is approved by Architect and/or geotechnical engineer.

3.2 INSTALLATION

- A. Install vapor barrier in accordance with manufacturer's instructions and ASTM E 1643.
- B. Unroll vapor retarder with the longest dimension parallel with the direction of the concrete pour.
- C. Extend vapor barrier to the perimeter of the slab. If practicable, terminate it at the top of the slab, otherwise (a) at a point acceptable to the structural engineer or (b) where obstructed by impediments, such as dowels, waterstops, or any other site condition requiring early termination of the vapor barrier. At the point of termination, seal vapor barrier to the slab itself using perimeter/edge seal, such as Stego Crete Claw or termination bar and tape per manufacturer's instructions.
 1. Turn edge of sheeting down face of perimeter grade beam a minimum of 6".
- D. At Crawlspace:
 1. Install reinforced vapor retarders in accordance with manufacturer's instructions.
 2. Install vapor retarders continuously at locations in crawl space as indicated on the drawings. Ensure there are no discontinuities in vapor retarder at seams and penetrations
 3. Ensure surface beneath vapor retarder is smooth level and compacted, with no sharp projections.
 4. Join sections of vapor retarder and seal penetrations in vapor retarder with mastic tape. Ensure vapor retarder surfaces to receive mastic tape are clean and dry.
 5. Immediately repair holes in vapor retarder with self-adhesive White Sealant Tape.
 6. Seal around piers, pipes and other penetrations in vapor retarder with pipe boots in accordance with manufacturer's instructions.
 7. At walls, install two rows of double-sided tape. Install one at the base of the wall and another one a couple inches above that.
 8. Mechanically attached vapor retarder to wall with termination bar/cleat.
 9. Seal top edge of vapor retarder and termination bar.
- E. Overlap joints a minimum of 6" and seal with manufacturer's seam tape.
- F. Seal all penetrations (including pipes) with manufacturer's pipe boot.
- G. Use reinforcing bar supports with base sections that eliminate or minimize the potential for puncture of the vapor barrier.
- H. Repair damaged areas by cutting patches of vapor retarder, overlapping damaged area 6" and taping all four sides with tape.

END OF SECTION

SECTION 07 27 26

FLUID-APPLIED MEMBRANE AIR BARRIERS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Vapor-permeable, fluid-applied air barriers, which also function as water-resistive barriers.
- B. Related Requirements:
 - 1. Section 01 45 00 - Quality Control: for general mockup requirements.
 - 2. Section 01 45 23 - Testing and Inspection Services: for coordination with testing agency.
 - 3. Section 04 20 00 - Masonry Units; concrete unit masonry treatment.
 - 4. Section 06 16 56 - Air and Water-Resistive Sheathing Board System: for vapor-permeable air- and water-resistive wall sheathing and associated site-fluid-applied air barrier flashing.

1.2 DEFINITIONS

- A. Air-Barrier Material (AB): A primary element that provides a continuous barrier to the movement of air.
- B. Air-Barrier Accessory: A transitional component of the air barrier that provides continuity.
- C. Air-Barrier Assembly: The collection of air-barrier materials and accessories applied to an opaque wall, including joints and junctions to abutting construction, to control air movement through the wall.
- D. Water-Resistive Barrier (WRB): Water-shedding barrier made of material that is moisture-resistant, and installed to shed water, with sealed joints and penetrations, and with terminations sealed to adjacent surfaces.

1.3 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.
 - 1. Review air-barrier requirements and installation, special details, mockups, air-leakage and bond testing, air-barrier protection, and work scheduling that covers air barriers.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include manufacturer's written instructions for evaluating, preparing, and treating each substrate; technical data; dry film thickness; and tested physical and performance properties of products.
- B. Shop Drawings: For air-barrier assemblies.
 - 1. Show locations and extent of air-barrier materials, accessories, and assemblies specific to Project conditions.
 - 2. Include details for substrate joints and cracks, counterflashing strips, penetrations, inside and outside corners, terminations, and tie-ins with adjoining construction.
 - 3. Include details of interfaces with other materials that form part of air barrier.
 - 4. Consult air barrier manufacturer for additional installation guidelines and illustrations to assist with meeting shop drawing requirements.

1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer.
 - 1. Installer(s) shall be accredited at the time of bidding and during the complete installation period by the Air Barrier Association of America (ABAA) whose Installer(s) are certified in accordance with the site Quality Assurance Program (QAP) used by ABAA.
 - 2. Installer(s) shall be certified by BPQI (Building Performance Quality Institute) for the ABAA Quality Assurance Program in accordance with the requirements outlined in the QAP program used by ABAA. Installers shall have their photo identification air barrier certification cards in their possession and available on the project site, for inspection upon request.

- B. Product Certificates: From air-barrier manufacturer, certifying compatibility of air barriers and accessory materials with Project materials that connect to or that come in contact with the barrier.
 - 1. Certification shall include statement that materials proposed for use are permanently chemically compatible and adhesively compatible with adjacent materials proposed for use.
 - 2. Certification shall include statement that cleaning materials used during installation are chemically compatible with adjacent materials proposed for use.
- C. Product Test Reports: For each air-barrier assembly, for tests performed by a qualified testing agency.
- D. Field quality-control reports.

1.6 QUALITY ASSURANCE

- A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer.
- B. Mockups: Build mockups to set quality standards for materials and execution and for preconstruction testing.
 - 1. Build integrated mockups of exterior wall assembly, 150 sq. ft., incorporating backup wall construction, external cladding, window, storefront, door frame and sill, insulation, ties and other penetrations, and flashing to demonstrate surface preparation, crack and joint treatment, application of air barriers, and sealing of gaps, terminations, and penetrations of air-barrier assembly.
 - a. Coordinate construction of mockups to permit inspection and testing of air barrier before external insulation and cladding are installed.
 - b. Include junction with roofing membrane, building corner condition, and foundation wall intersection.
 - c. If Architect determines mockups do not comply with requirements, reconstruct mockups and apply air barrier until mockups are approved.
 - 2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
 - 3. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.7 PRECONSTRUCTION TESTING

- A. Preconstruction Testing Service: Contractor shall engage a qualified testing agency to perform preconstruction testing on field mockups.
- B. Mockup Testing: Air-barrier assemblies shall comply with performance requirements indicated, as evidenced by reports based on mockup testing by a qualified testing agency.
 - 1. Air-Leakage-Location Testing: Mockups will be tested for evidence of air leakage according to ASTM E 1186, chamber pressurization or depressurization with smoke tracers.
 - 2. Air-Leakage-Volume Testing: Mockups will be tested for air-leakage rate according to ASTM E 783 or ASTM E 2357.
 - 3. Water Penetration Testing: Mockups will be tested for water penetration according to ASTM E 1105.
 - 4. Adhesion Testing: Mockups will be tested for required air-barrier adhesion to substrate according to ASTM D 4541 (modified).
 - a. Use a type II pull tester, except that the membrane shall be cut through to separate the material attached to the disc from the surrounding material.
 - b. Perform test after curing period recommended by the material manufacturer.
 - c. Record mode of failure and area where the material failed in accordance with ASTM D4541.
 - d. The inspection report shall indicate whether the specified adhesion requirement has been met.
 - 5. Compatibility Determinations: Mockups will be inspected for visual signs of decay, chemical attack, or degradation of any kind. Suspect instances shall be reported to the corresponding manufacturer who shall provide a letter that approves moving forward with the project or rejects the use of the product or rejects the method or circumstances of installation with an appropriate explanation of the position taken.
 - 6. Notify Architect seven days in advance of the dates and times when mockups will be tested.
 - 7. Perform the air leakage test and water penetration test of mockups prior to installation of cladding and trim but after installation of all fasteners for cladding and trim, and after installation of other penetrating elements.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Remove and replace liquid materials that cannot be applied within their stated shelf life.

- B. Protect stored materials from direct sunlight.
- C. Deliver materials to Project site in original packages with seals unbroken, labeled with material Manufacturer's name, product, date of manufacture, and directions for storage.
- D. Store materials in their original undamaged packages in a clean, dry, protected location and within temperature range required by material manufacturer.
- E. Handle materials in accordance with material manufacturer's recommendations.

1.9 FIELD CONDITIONS

- A. Environmental Limitations: Apply air barrier within the range of ambient and substrate temperatures recommended in writing by air-barrier manufacturer.
 - 1. Protect substrates from environmental conditions that affect air-barrier performance.
 - 2. Do not apply air barrier to a damp or wet substrate or during snow, rain, fog, or mist.
- B. Sequencing. Do not install air barrier material before the roof assembly has been sufficiently installed to prevent a buildup of water in the interior of the building.
- C. Compatibility. Do not allow air barrier materials to come in contact with chemically incompatible materials.
- D. Ultra-violet Exposure. Do not expose air barrier materials to sunlight longer than as recommended by the material manufacturer.

1.10 WARRANTY

- A. Manufacturer's Warranty: Manufacturer's standard form in which air barrier manufacturer agrees to furnish and install air barrier material to repair or replace those materials installed according to manufacturer's written instructions that exhibit material defects or otherwise fail to perform as specified under normal use within warranty period specified.
 - 1. Manufacturer's Warranty Period: Five (5) years from Date of Substantial Completion.
- B. Installer's Warranty: Provide installer's installation warranty, including all accessories and materials of the air barrier assembly, against failures including loss of airtight seal, loss of watertight seal, loss of attachment, loss of adhesion and failure to cure properly.
 - 1. Installer's Warranty Period: Two (2) years from Date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Source Limitations: Obtain primary air-barrier materials and air-barrier accessories from single source from single manufacturer.
 - 1. If the materials in this section are adjacent to the materials specified in Section 06 16 56 Air- and Water-Resistive Sheathing Board System, all materials in this section shall be compatible with the materials and products specified in that section and shall be approved by the air- and water-resistive sheathing board system manufacturer.

2.2 PERFORMANCE REQUIREMENTS

- A. Air-Barrier Performance: Air-barrier assembly and seals with adjacent construction shall be capable of performing as a continuous air barrier and as a liquid-water drainage plane flashed to discharge to the exterior incidental condensation or water penetration. Air-barrier assemblies shall be capable of accommodating substrate movement and of sealing substrate expansion and control joints, construction material changes, penetrations, tie-ins to installed waterproofing, and transitions at perimeter conditions without deterioration and air leakage exceeding specified limits.
- B. Air-Barrier Assembly Air Leakage: Maximum 0.04 cfm/sq. ft. of surface area at 1.57 lbf/sq. ft., when tested according to ASTM E 2357.

2.3 MEDIUM-BUILD AIR BARRIERS, VAPOR PERMEABLE

- A. Medium-Build, Vapor-Permeable Air Barrier: Synthetic polymer material with an installed dry film thickness, according to manufacturer's written instructions, of 17 to 30 mils (0.4 to 0.8 mm) over smooth, void-free substrates.
 - 1. Basis of Design Product: Subject to compliance with requirements, provide Prosoco, Inc.; R-Guard Spray Wrap MVP (at medium-build thickness) or a comparable acrylic product by one of the following:
 - Tremco, Inc.
 - 3M Industrial Adhesives and Tapes Division.
 - DuPont Safety & Construction.
 - GE Construction Sealants; Momentive Performance Materials Inc.
 - Hohmann & Barnard, Inc.
 - W.R. Meadows, Inc.
 - 2. Physical and Performance Properties:
 - a. Air Permeance: Maximum 0.004 cfm/sq. ft. of surface area at 1.57-lbf/sq. ft. pressure difference; ASTM E 2178.
 - b. Vapor Permeance: Minimum 10 perms; ASTM E 96/E 96M, Desiccant Method, Procedure A.
 - c. Ultimate Elongation: Minimum 250 percent; ASTM D 412, Die C.
 - d. Adhesion to Substrate: Minimum 16 lbf/sq. in. when tested according to ASTM D 4541.
 - e. Fire Propagation Characteristics: Passes NFPA 285 testing as part of an approved assembly.
 - f. UV Resistance: Can be exposed to sunlight for 120 days according to manufacturer's written instructions.
 - g. Fastener Sealability: No water infiltration when tested in accordance with ASTM D 1970.

2.4 ACCESSORY MATERIALS

- A. Requirement: Provide primers, transition strips, termination strips, joint reinforcing fabric and strips, joint sealants, counterflashing strips, flashing sheets and metal termination bars, termination mastic, substrate patching materials, adhesives, tapes, foam sealants, lap sealants, and other accessory materials that are recommended in writing by air-barrier manufacturer to produce a complete air-barrier assembly and that are compatible with primary air-barrier material and adjacent construction to which they may seal.
- B. Primer: Liquid waterborne primer recommended for substrate by air-barrier material manufacturer.
- C. Stainless-Steel Sheet: ASTM A 240/A 240M, Type 304, 0.0187 inch thick, and Series 300 stainless-steel fasteners.
- D. Preformed Silicone Extrusion: Manufacturer's standard system consisting of cured low-modulus silicone extrusion, sized to fit opening widths, with a single-component, neutral-curing, Class 100/50 (low-modulus) silicone sealant for bonding extrusions to substrates.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Dow Corning Corporation.
 - b. GE Construction Sealants; Momentive Performance Materials Inc.
 - c. Pecora Corporation.
 - d. Prosoco, Inc.
 - e. Tremco Incorporated.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements and other conditions affecting performance of the Work.
 - 1. Verify that substrates are sound and free of oil, grease, dirt, excess mortar, or other contaminants.
 - 2. Verify that substrates have cured and aged for minimum time recommended in writing by air-barrier manufacturer.
 - 3. Verify that substrates are visibly dry and free of moisture. Test concrete substrates for capillary moisture by plastic sheet method according to ASTM D 4263.
 - 4. Verify that masonry joints are flush and completely filled with mortar.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 SURFACE PREPARATION

- A. Clean, prepare, treat, fill, and seal substrate and joints and cracks in substrate according to manufacturer's written instructions and details. Provide clean, dust-free, and dry substrate for air-barrier application.
- B. Mask off adjoining surfaces not covered by air barrier to prevent spillage and overspray affecting other construction.
- C. Remove grease, oil, bitumen, form-release agents, paints, curing compounds, and other penetrating contaminants or film-forming coatings from concrete.
- D. Remove fins, ridges, mortar, and other projections and fill honeycomb, aggregate pockets, holes, and other voids in concrete with substrate-patching material.
- E. Remove excess mortar from masonry ties, shelf angles, and other obstructions.
- F. At changes in substrate plane, apply sealant or termination mastic beads at sharp corners and edges to form a smooth transition from one plane to another.
- G. Cover gaps in substrate plane and form a smooth transition from one substrate plane to another with stainless-steel sheet mechanically fastened to structural framing to provide continuous support for air barrier.
- H. Bridge isolation joints, expansion joints and discontinuous wall-to-wall, deck-to-wall, and deck-to-deck joints with air-barrier accessory material that accommodates joint movement according to manufacturer's written instructions and details.

3.3 ACCESSORIES INSTALLATION

- A. Install accessory materials according to air-barrier manufacturer's written instructions and details to form a seal with adjacent construction and ensure continuity of air and water barrier.
 - 1. Coordinate the installation of air barrier with installation of roofing membrane and base flashing to ensure continuity of air barrier with roofing membrane.
 - 2. Install transition strip on roofing membrane or base flashing so that a minimum of 3 inches (75 mm) of coverage is achieved over each substrate.
 - 3. Unless manufacturer recommends in writing against priming, apply primer to substrates at required rate and allow it to dry.
 - 4. Apply primer to substrates at required rate and allow it to dry. Limit priming to areas that will be covered by air-barrier material on same day. Reprime areas exposed for more than 24 hours.
- B. Connect and seal exterior wall air-barrier material continuously to roofing-membrane air barrier, concrete below-grade structures, floor-to-floor construction, exterior glazing and window systems, glazed curtain-wall systems, storefront systems, exterior louvers, exterior door framing, and other construction used in exterior wall openings, using accessory materials.
- C. At end of each working day, seal top edge of strips and transition strips to substrate with termination mastic.
- D. Apply joint sealants forming part of air-barrier assembly within manufacturer's recommended application temperature ranges. Consult manufacturer when sealant cannot be applied within these temperature ranges.
- E. Wall Openings: Prime concealed, perimeter frame surfaces of windows, curtain walls, storefronts, and doors. Apply transition strip so that a minimum of 3 inches of coverage is achieved over each substrate. Maintain 3 inches of full contact over firm bearing to perimeter frames, with not less than 1 inch of full contact.
 - 1. Transition Strip: Roll firmly to enhance adhesion.
- F. Fill gaps in perimeter frame surfaces of windows, curtain walls, storefronts, and doors, and miscellaneous penetrations of air-barrier material with foam sealant.
- G. Seal strips and transition strips around masonry reinforcing or ties and penetrations with termination mastic.

- H. Seal top of through-wall flashings to air barrier with an additional 6-inch-wide, transition strip.
- I. Seal exposed edges of strips at seams, cuts, penetrations, and terminations not concealed by metal counterflashings or ending in reglets with termination mastic.
- J. Repair punctures, voids, and deficient lapped seams in strips and transition strips. Slit and flatten fishmouths and blisters. Patch with transition strips extending 6 inches beyond repaired areas in strip direction.

3.4 PRIMARY AIR-BARRIER MATERIAL INSTALLATION

- A. Apply air-barrier material to form a seal with strips and transition strips and to achieve a continuous air barrier according to air-barrier manufacturer's written instructions and details. Apply air-barrier material within manufacturer's recommended application temperature ranges.
 - 1. Unless manufacturer recommends in writing against priming, apply primer to substrates at required rate and allow it to dry.
 - 2. Limit priming to areas that will be covered by air-barrier material on same day. Reprime areas exposed for more than 24 hours.
 - 3. Where multiple prime coats are needed to achieve required bond or thickness, allow adequate drying time between coats.
- B. Medium-Build Air Barriers: Apply continuous unbroken air-barrier material to substrates according to the following thickness. Apply an increased thickness of air-barrier material in full contact around protrusions such as masonry ties.
 - 1. Vapor-Permeable, Medium-Build Air Barrier: Total dry film thickness as recommended in writing by manufacturer to comply with performance requirements, but not less than 17 mils, applied in two equal coats. Apply additional material as needed to achieve void- and pinhole-free surface, but do not exceed thickness on which required vapor permeability is based.
 - a. Second coat shall be back rolled in accordance with manufacturer's written instructions.
- C. Do not cover air barrier until it has been tested and inspected by testing agency.
- D. Correct deficiencies in or remove air barrier that does not comply with requirements; repair substrates and reapply air-barrier components.

3.5 FIELD QUALITY CONTROL

- A. Testing Agency: Contractor shall engage a qualified testing agency to perform tests and inspections.
- B. Inspections: Air-barrier materials, accessories, and installation are subject to inspection for compliance with requirements. Inspections may include the following:
 - 1. Continuity of air-barrier system has been achieved throughout the building envelope with no gaps or holes.
 - 2. Air-barrier dry film thickness.
 - 3. Continuous structural support of air-barrier system has been provided.
 - 4. Masonry and concrete surfaces are smooth, clean, and free of cavities, protrusions, and mortar droppings.
 - 5. Site conditions for application temperature and dryness of substrates have been maintained.
 - 6. Maximum exposure time of materials to UV deterioration has not been exceeded.
 - 7. Surfaces have been primed, if applicable.
 - 8. Laps in strips and transition strips have complied with minimum requirements and have been shingled in the correct direction (or mastic has been applied on exposed edges), with no fishmouths.
 - 9. Termination mastic has been applied on cut edges.
 - 10. Strips and transition strips have been firmly adhered to substrate.
 - 11. Compatible materials have been used.
 - 12. Transitions at changes in direction and structural support at gaps have been provided.
 - 13. Connections between assemblies (air-barrier and sealants) have complied with requirements for cleanliness, surface preparation and priming, structural support, integrity, and continuity of seal.
 - 14. All penetrations have been sealed.
- C. Tests: As determined by testing agency from among the following tests:
 - 1. Air-Leakage-Location Testing: Air-barrier assemblies will be tested for evidence of air leakage according to ASTM E 1186, chamber pressurization or depressurization with smoke tracers.

2. Air-Leakage-Volume Testing: Air-barrier assemblies will be tested for air-leakage rate according to ASTM E 783 or ASTM E 2357.
 3. Adhesion Testing: Air-barrier assemblies will be tested for required adhesion to substrate according to ASTM D 4541 for each 600 sq. ft. of installed air barrier or part thereof.
- D. Air barriers will be considered defective if they do not pass tests and inspections.
1. Apply additional air-barrier material, according to manufacturer's written instructions, where inspection results indicate insufficient thickness.
 2. Remove and replace deficient air-barrier components for retesting as specified above.
- E. Repair damage to air barriers caused by testing; follow manufacturer's written instructions.
- F. Prepare test and inspection reports.
- 3.6 CLEANING AND PROTECTION
- A. Protect air-barrier system from damage during application and remainder of construction period, according to manufacturer's written instructions.
1. Protect air barrier from exposure to UV light and harmful weather exposure as recommended in writing by manufacturer. If exposed to these conditions for longer than recommended, remove and replace air barrier or install additional, full-thickness, air-barrier application after repairing and preparing the overexposed materials according to air-barrier manufacturer's written instructions.
 2. Protect air barrier from contact with incompatible materials and sealants not approved by air-barrier manufacturer.
- B. Clean spills, stains, and soiling from construction that would be exposed in the completed work using cleaning agents and procedures recommended in writing by manufacturer of affected construction.
- C. Remove masking materials after installation.

END OF SECTION

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SECTION 07 41 20

PREFINISHED METAL ROOF PANELS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Prefinished metal roof panels and soffit panels, including related insulation, underlayments, flashing, trim and accessories.
- B. Related Sections:
 - 1. Section 06 10 00 - Rough Carpentry.
 - 2. Section 07 62 00 - Sheet Metal Flashing and Trim.
 - 3. Section 07 72 13 - Manufactured Roof Curbs and Portals.
 - 4. Section 07 92 00 - Joint Sealants.
 - 5. Section 09 54 23 - Linear Metal Ceilings; soffit panels.

1.2 SYSTEM REQUIREMENTS

- A. Performance Requirements
 - 1. Uplift resistance: UL Class 90 wind uplift resistance.
 - 2. Design and install system to accommodate thermal expansion, thermal contraction and building movement.

1.3 SUBMITTALS

- A. Submit in accordance with SECTION 01 33 23 - SHOP DRAWINGS, PRODUCT DATA AND SAMPLES.
- B. Shop Drawings: Drawings shall indicate type of roof panels, gage of metal, finish and shape and size of flashing and accessories.
- C. Product Data: Submit manufacturer's technical literature indicating properties of materials, finishes and performance capabilities.
- D. Samples
 - 1. Submit 2' x 4' section of roof and soffit panel system(s), complete with flashings and attachment devices.
 - 2. Upon selection of colors by Architect, submit 12" x 12" finish samples representing color and finish.
 - 3. Submit 6" x 6" sample of self-adhering sheet underlayment.
- E. Color Charts: Submit samples of manufacturer's full range of standard colors. Submit actual color chips, not photo reproductions.
- F. Qualification Data
 - 1. Submit installer qualifications verifying years of experience; include list of completed projects having similar scope of work identified by name, location, date, reference name and phone number.
 - 2. Submit letter certifying manufacturer's approval for installation of system.
 - 3. On-site or field manufactured panels are not acceptable, unless approved in writing. Field curving of pre-manufactured panels is acceptable. If on site roll-forming is approved, submit documentation on roll-forming equipment which will be used to roll-form roofing panels on site. Provide copy of UL certificate, including certification report identifying Make and Model No., Serial No. of roll-forming machine, panel specification and expiration date of certificate.
- G. Manufacturer's Instructions: Submit written installation instructions indicating method and sequence of installation. Provide for roofing system and self-adhering sheet underlayment.
- H. Warranty: Submit signed and dated copies of warranties.

1.4 QUALITY ASSURANCE

- A. Applicator Qualifications: This work shall be performed by an experienced applicator who has successfully installed the materials under similar conditions over a period of at least 10 years.

- B. Cover self-adhering sheet underlayment within 14 days of underlayment installation.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver preformed metal roof panels and trim items to the project site with no dents, scratches, or abraded areas. Deliver in manufacturer's standard bundles, securely bound and store at the project site raised above slab or ground level on pallets.

1.6 WARRANTY

- A. Submit manufacturer's 20-year "No-Dollar-Limit" Complete System panel and trim weathertightness warranty, non-prorated, to be jointly signed by the manufacturer and panel applicator. Warranty shall include full cost of repair and replacement.
- B. Submit manufacturer's standard 20-year warranty against fading or visible (noticeable) chalking, checking, crazing or peeling of the exterior finish when exposed to natural sunlight for a period of 20 years.
 - 1. Free from fading or color change in excess of 5 Hunter ΔE units as determined by ASTM D-2244-02.
 - 2. Will not chalk in excess of a numerical rating of 7 in accordance with ASTM D-4214.
 - 3. Will not peel, crack, chip or delaminate.
- C. Submit a written weathertightness warranty signed by the panel applicator for a 5-year period from the date of Substantial Completion of the building guaranteeing materials and workmanship for weathertightness of the roofing system, flashing, penetrations and against all leaks.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Roof Panels: Basis of Design shall be Tite-Loc Plus as manufactured by **Peterson Aluminum Corp.** Metal panels shall be zinc coated steel complying with ASTM A 653, with ASTM A 653 G90 hot-dip coating, 24 gage minimum thickness for roof panels. Seam spacing shall be 16" o.c. with 2" high seams with striations with all panels having the same spacing. Panels shall be single length pieces with no horizontal joints. Provide one of the following:
 - MBCI; SuperLok (Double-lock)
 - Merchant & Evans, Inc.; Zip-Lock 2" Standing Seam Panel, Double Lock
 - Peterson Aluminum Corp.; Tite-Loc Plus
- B. Soffit Panels (Only at MWS-31): Provide "Flush Solid", 12" wide soffit panels as manufactured by Peterson Aluminum Corp. Color shall be as selected by Architect from manufacturer's complete color line. Equivalent products of one of the following, in the opinion of the Architect, will be acceptable:
 - MBCI
 - Peterson Aluminum Corp.
- C. Finish: Metal roof panels, and all exposed trim items, shall receive fluorocarbon polymeric coating containing 70% PVDF Hylar 5000 or Kynar 500 finish.
 - 1. Color shall be as selected by Architect from manufacturer's standard color line.
- D. Flashing and all trim items which are contiguous to roof panels shall be of the same metal and finish as roof panels.
- E. Fasteners: Provide manufacturer's standard zinc coated self-tapping screws meeting **UL 90** requirements.
- F. Isocyanurate Insulation: Reinforced isocyanurate foam core faced both sides with non-asphaltic glass fibers chemically bonded in the manufacturing process. Insulation shall meet the requirements of Factory Mutual Class 1 Roofs. Insulation shall have a minimum of 2 layers with a total thickness, using R-5.0 per inch per NRCA, to meet the R-Value as shown on the Building Assembly Types Sheet on the drawings.
- G. Cover Board (Only at MRS-32): ASTM C 1177, over insulation, provide 1/2-inch thick DensDeck® Prime Roof Board. glass-mat, water-resistant gypsum substrate as manufactured by G-P Gypsum Corporation.

- H. Self-adhering Sheet Underlayment (High Temperature): 30 to 40 mils thick minimum, consisting of slip-resisting, polyethylene-film top surface laminated to layer of butyl or SBS-modified asphalt adhesive, with release-paper backing; cold applied. Provide primer when recommended by underlayment manufacturer.
1. Thermal Stability: Stable after testing at 240 degrees F; ASTM D 1970.
 2. Low-Temperature Flexibility: Passes after testing at minus 20 deg F (29 deg C); ASTM D 1970.
 3. Products: Subject to compliance with requirements, provide one of the following:
Carlisle Coatings & Waterproofing Inc., Div. of Carlisle Companies Inc.; CCW WIP 300HT.
Grace Construction Products; a unit of Grace, W. R. & Co.; Ultra.
Henry Company; Blueskin PE200 HT.
Metal-Fab Manufacturing, LLC; MetShield.
- I. Slip Sheet: Provide when required by underlayment or roofing manufacturer. Manufacturer's recommended slip sheet (rosin-sized sheathing paper or unsaturated building paper), of type required for application.
- J. Mechanical Fasteners and Bearing Plates: Provide U.L. listed (standard) clip designed to allow panels to expand and contract. Steel deck fasteners shall be UL listed and shall be approved by roofing manufacturer for compliance with **UL-90** uplift requirements.
- K. Sealants and Gaskets: Manufacturer's standard type suitable for use with installation of metal roofing; non-staining; skinning, non-shrinking and non-sagging; ultra-violet and ozone resistant for exterior applications; colors to match exposed metal.
- L. Internal and External Corners: Same materials, gage and finish as panels; profile to suit system; brake formed to required angles. Mitered internal corners, back braced with sheet stock, to maintain continuity of profile.
- M. Expansion Joints: Same material and where exposed, finish as panels, manufacturer's standard type, of profile to suit system. Exposed fasteners same finish as panels.
- N. Trim, Closure Pieces, Cap, Fascias, Infills, Flashings and Accessories: Same material, gage and where exposed, of same finish as metal panels, brake formed to required profiles.
- O. Touch-Up Paint: As recommended by manufacturer.

2.2 FABRICATION

- A. Comply with dimensions, profile, gages and fabrication details shown and if not shown, provide manufacturer's standard product fabrication.
- B. Fabricate components of the system at the factory, ready for field assembly.
- C. Fabrication of component profiles on site not permitted.
- D. Apply finish coatings prior to roll forming.
- E. Fabricate continuous panels only. No field joints allowed.

PART 3 - EXECUTION

3.1 INSPECTION

- A. Examine supporting members and areas to receive prefinished metal roof panels, flashing and trim items for conditions that will adversely affect the execution and quality of work. Do not start this work until unsatisfactory conditions are corrected.

3.2 INSTALLATION

- A. General: Install prefinished metal roof panels and related items in strict compliance with manufacturer's recommendations.

- B. Install insulation over metal deck per UL-90. End joints shall occur over solid supports. Stagger end joints of insulation in adjacent rows.
 - 1. Mechanically fasten first layer to the roof deck.
 - 2. Apply second layer over first layer in broken joint pattern so that each layer breaks joints both ways with the preceding layer.
 - 3. Apply insulation with long joints continuous and short joints staggered.
 - 4. Bring insulation panels into moderate contact with each other and cope to fit neatly around projections.
 - 5. Joints parallel to ribs on steel deck installation shall be located over solid bearing.
 - 6. Mechanically fasten first layer to the roof deck throughout. Spacing and number of fasteners shall meet current building code requirements and per UL-90. Adhere second layer of insulation to the first layer.
 - 7. Do not install more insulation at one time than the amount which can be covered with roofing the same day.
 - 8. At the end of each day's work and after any other work stoppage, apply temporary water cutoffs in accordance with metal roof manufacturer's approval.

- C. Self-adhering Sheet Underlayment: Apply primer if required by manufacturer. Comply with temperature restrictions of underlayment manufacturer for installation. Apply over insulation at entire roof area, wrinkle free, in shingle fashion to shed water, and with end laps of not less than 6 inches staggered 24 inches between courses. Overlap side edges not less than 3-1/2 inches. **Extend underlayment into gutter trough.** Roll laps with roller. Do not install underlayment perpendicular to roof slope except at locations specifically required for watertightness.
 - 1. Cover underlayment within 14 days. If underlayment cannot be covered within that time period, install an additional layer of underlayment as described above immediately prior to roof installation.
 - 2. Install underlayment in accordance with underlayment manufacturer's written instructions.

- D. Apply slip sheet over underlayment before installing metal roof panels if required by underlayment manufacturer or metal roofing manufacturer.

- E. Metal roofing installation shall be installed so that entire metal roof system meets UL Windstorm Resistance Classification 90 and meets 1-hour fire-resistance requirements as indicated on the drawings.

- F. Continuous full length pans shall be fabricated by factory roll forming in power equipment capable of producing metal roofing pans to the required lengths. End laps are not allowed. Jobsite roll-forming for panel lengths in excess of 60 feet will only be allowed if manufacturer's factory equipment is utilized and the equipment is operated by manufacturer's trained operator.

- G. Anchor components parts of the prefinished roof panels securely in place, providing for necessary thermal and structural movement.

- H. Install and securely anchor metal flashing, trim and related items to provide a weathertight enclosure.

- I. Install trim, closures, caps and accessories as indicated or required for complete weathertight installation.

- J. Provide a concealed fasteners installation system with no fasteners exposed on the exterior face of the work.

- K. Seal prefinished roof panels as required for weathertightness.

- L. Tolerances:
 - 1. Maximum Offset from True Alignment Between Adjacent Members Butting or in line: 1/16".
 - 2. Maximum Variation from Plane or Location Indicated on Drawings: 1/8".

3.3 TOUCH-UP AND CLEAN

- A. Touch-up:
 - 1. Defective materials shall be replaced with new materials.
 - 2. Field touch-up of scratches or defaced finish will be permitted only if approved by Architect.

- B. Cleaning: Clean exposed surfaces; leave free of soil and imperfections.

END OF SECTION

SECTION 07 42 13

METAL WALL PANELS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Preformed metal wall and soffit panels, including related flashing and trim installed on the building.
- B. Related Sections:
 - 1. Section 05 41 00 - Lightgauge Metal Framing.
 - 2. Section 07 48 00 - Rainscreen Attachment System (MFI)

1.2 SUBMITTALS

- A. Shop Drawings: Submit in accordance with SECTION 01 33 23 - SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES. Drawings shall indicate type of wall panels, gage of metal, finish, and shape and size of flashing and accessories.

1.3 QUALITY ASSURANCE

- A. Applicator Qualifications: This work shall be preformed by an experienced applicator who has successfully installed the materials under similar conditions over a period of at least 10 years.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Deliver preformed metal wall panels and trim items to the project site with no dents, scratches, or abraded areas. Deliver in manufacturer's standard bundles, securely bound, and store at the project site raised above slab or ground level on pallets.

1.5 WARRANTY

- A. Submit manufacturer's standard 20-year warranty against fading or visible (noticeable) chalking, checking, crazing or peeling of the exterior finish when exposed to natural sunlight for a period of 20 years.
- B. Submit applicator's 2-year weathertightness warranty.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Wall and Soffit Panels (MWS-31): Provide "Flush Panel" metal wall and soffit panels as manufactured by Petersen Aluminum. Panels shall be 11" wide with concealed anchors. Panels shall be 24 gauge.
- B. Finish: Metal wall and soffit panels and all exposed trim items shall receive fluorocarbon polymeric coating containing 70% Kynar 500 or Hylar 5000 finish with a dry film thickness of 0.7 to 0.8 mil exclusive of the primer. Color as selected by Architect to match metal roof panels.
- C. Flashing and all trim items which are contiguous to wall panels shall be of the same metal and finish as wall panels. Color(s) as selected by Architect.
- D. Fasteners: Screws holding anchor clips to the structure shall be stainless steel cadmium plated self-tapping screws into predrilled holes.
 - 1. Exposed fasteners shall match the finish of the panel system and shall be aluminum or stainless steel with separate washers with hot-bonded neoprene faces; pop rivets are not acceptable.
- E. Sealant:
 - 1. Concealed Sealant: Non-curing, non-skinning butyl, polyisobutylene or polybutane tape of sufficient thickness to make full contact with both surfaces.
 - 2. Exposed Sealant: Curing type, manufacturer's standard. Color shall be as selected by Architect.

2.2 FABRICATION

- A. Comply with dimensions, profile, gages, and fabrication details shown and if not shown, provide manufacturer's standard product fabrication.

PART 3 - EXECUTION

3.1 INSPECTION

- A. Examine supporting members and areas to receive preformed metal wall panels, flashing, and trim items for conditions that will adversely affect the execution and quality of work. Do not start this work until unsatisfactory conditions are corrected.

3.2 INSTALLATION

- A. General: Install preformed metal wall panels and related items in strict compliance with manufacturer's recommendations.
- B. Full length pans shall be fabricated by roll forming in power equipment capable of producing metal wall pans to the required lengths.
- C. Anchor components parts of the preformed wall panels securely in place, providing for necessary thermal and structural movement.
- D. Install and securely anchor metal flashing, trim and related items to provide a weathertight enclosure.
- E. Provide a concealed fasteners installation system with no fasteners exposed on the exterior face of the work.
- F. Seal preformed panels as required for weathertightness.
- G. When used in rainscreen, windscreen or fence location, panels must be fastened (stitched) through side joints.

3.3 TOUCH-UP AND CLEAN

- A. Touch-up:
 - 1. Defective materials shall be replaced with new materials.
 - 2. Field touch-up of scratches or defaced finish will be permitted only if approved by Architect.
- B. Cleaning: Clean exposed surfaces; leave free of soil and imperfections.

END OF SECTION

CSECTION 07 46 46

FIBER-CEMENT SIDING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Fiber-cement siding.
- B. Related Sections:
 - 1. Section 04 22 00 - Masonry Units.
 - 2. Section 05 40 00 - Cold-Formed Metal Framing
 - 3. Section 07 27 26 - Fluid-Applied Membrane Air Barriers
 - 4. Section 07 48 00 - Rainscreen Attachment System (MFI)
 - 5. Section 07 92 00 - Joint Sealants.
 - 6. Section 09 91 00 - Painting.

1.2 SUBMITTALS

- A. Drawings: Submit detailed drawings showing installation details.
- B. Product Data:
 - 1. Submit manufacturer's product description, indicating material types and thicknesses, and installation details.
- C. Product Data: Manufacturer's data sheets on each product to be used, including:
- D. Shop Drawings: Provide detailed drawings of non-standard applications of fiber cement materials which are outside the scope of the standard details and specifications provided by the manufacturer.
- E. Samples:
 - 1. Submit three 6 inch x 6 inch pieces of siding in texture and widths shown and specified herein.
 - 2. Submit sample of aluminum joint closures and decorative corner profiles in color to match fiber cement panels.
- F. Submit warranty.

1.3 PRODUCT HANDLING

- A. Stack panels on edge or lay flat on a smooth, level surface. Protect edges and corners from chipping. Store sheets under cover and keep dry prior to installing. Direct contact between the panels and the ground should be avoided at all times.
- B. Panels MUST be carried on edge. Do not carry or lift panels flat. Improper handling may cause cracking or panel damage.

1.4 PROJECT CONDITIONS

- A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit installation according to manufacturer's written instructions and recommendations.
- B. Repair voids in the weather-resistive barrier prior to the installation of the siding.
- C. Protect siding from other trades.
- D. If panels are exposed to water or water vapor prior to installation, allow to completely dry before installing. Failure to do so may result in shrinkage at ship lap joints, and such action may void warranty.

1.5 WARRANTY

- A. Product Warranty: Limited, non-pro-rated product warranty.
 - 1. Siding Panels:
 - a. Manufacturer's 10-years warranty against manufactured defects.
- B. Provide 5-year weatherproof installation warranty.

PART 2 - PRODUCTS

2.1 PANELS

- A. Basis of Design Siding Panels: Provide the following panels as manufactured by American Fiber Cement Corporation, Colorado, 800.688.8677, website: <https://www.americanfibercement.com>
- B. Aluminum Joint Closures and Decorative Corner Profiles: Closure panel products in finished in color to match fiber cement panels. Maximum thickness of finishing profile to be 0.8 mm or 21-gauge.
- C. Based on autoclaved, wood fiber reinforced cement panels. Wood fiber bundles are mixed with Portland cement and silica.
 - 1. AFC Cladding: Through color high density fiber cement panels, 5/16" thick, "Cembrit Patina" fiber cement panels with matching acrylic coating.
 - 2. Color:
 - a. The panel's surface is pre-finished, and factory applied.
 - b. Color shall be P 070 Flint.
 - 3. Finish: Through-colored, muted, matte finish with a unique weather-proof treatment which makes it resistant to staining and surface dirt
 - 4. The panels are profiled along all four edges, such that both horizontal and vertical joints between the installed panels are shipped lapped.
 - 5. Weather-Resistant Barrier: Reference SECTION 07 27 00 - AIR BARRIER.
 - 6. A factory-applied sealant is applied to panel edges, such that all joints will contain a factory sealant.
 - 7. Physical Characteristics: ASTM C1185/C1186
 - a. Density Dry: 1405 kg/m³
 - b. Bending strength at with grain: 36.0 MPa.
 - c. Bending strength at across grain: 24.5 MPa.
 - d. Modulus of elasticity at with grain: greater than 14.7 GPa.
 - e. Modulus of elasticity at across grain: greater than 12.6 GPa.
 - f. Durability classification (EN 12467): Category A.
 - g. Strength classification (EN 12467): Class 4.
 - h. Fire reaction (EN 13501-1): A2-s1-d0.
 - i. Warm water test: Ok.
 - j. Soak dry test: Ok.
 - k. Freeze thaw test: greater than 100 cycles.
 - l. Thermal conductivity e: 0.4 W/mK.
 - m. Fire Testing:
 - 1) ASTM E84
 - 2) ASTM E136
 - n. ICC-ES Evaluation Report: ESR-3863 Cembrit Fiber-Cement Façade Panel System

2.2 FASTENERS

- A. Metal framing: 1" No. 8-18 x 0.311" head self-drilling, corrosion resistant S-12 ribbed buglehead screws.

PART 3 - EXECUTION

3.1 SURFACE CONDITIONS

- A. Correct conditions detrimental to timely and proper completion of work.

3.2 INSTALLATION

- A. Cutting Product:
 - 1. Always cut panels outside or in a well-ventilated area. Do not cut the products in an enclosed area.

2. Always wear safety glasses and OSHA approved respirator, whenever cutting, drilling, sawing, sanding or abrading the products. Refer to manufacturer MSDS for more information.
 3. Use a dust-reducing circular saw with a diamond-tipped or carbide-tipped blade, for general cuttings. Recommended circular saw: Makita 7-1/4" Circular Saw with Dust Collector (#5057KB). Recommended blade: Tenryu Board-Pro Plus PCD Blade (#BP-18505). Shears (electric or pneumatic) or jig saw can be used for complicated cuttings, such as service openings, curves, radii and scrollwork.
 4. Use best work practices (proper cutting blade) to reduce airborne dust concentrations.
 5. Use a fiber cement circular saw with a dust collector for cutting (e.g., Makita 5057KB). The dust collector must be connected to a HEPA vacuum.
 6. Do not use compressed air for cleaning dust.
 7. Work outdoors where feasible; otherwise, use mechanical ventilation.

 8. Everyone handling products must wear safety glasses and properly fitted respirators prior to handling products. requires that users wear a OSHA approved respirator with a rating of N100, O100, P100, or R100 in accordance with applicable government regulations and manufacturer instructions. All employers must comply with the OSHA PEL and ACGIH TLV-TWA.
 9. Warn others in area. These requirements are designed to help minimize exposure to crystalline silica. We also require that you read all instructions and warnings (including the MSDS) prior to using product. For further information or questions, please consult the MSDS or your employer. The MSDS for products are available at your local dealer.
- B. Fastening: Corrosion resistant fasteners, such as hot-dipped galvanized and stainless steel nails and screws that are appropriate to local building codes and practices must be used. Do not use aluminum fasteners, staples, clipped head nails or fasteners that are not rated or designed for intended use. See manufacturer's detailed instructions for appropriate fasteners for construction method used.
- C. Detailing Requirements:
1. Air space at top and bottom of building or wall termination shall be 3/4 inch to facilitate airflow from behind the panels. Do not block vertical airflow at windows, doors, eaves, or at the base of the building. Airflow shall be continuous from bottom to top so there is air movement behind each panel. For walls over 60 feet high, the ventilated cavity between rear of panels and exterior wall shall be increased to 1-5/8 inches. Air flow behind the cement fiber panels is critical to the performance of the rain screen constructions.
 2. Fasteners in profile shall accommodate thermal expansion/contraction of metal and not interfere with panel application.
 3. Install panels from top of building to bottom.
 4. For straight walls, start panel installation in center and work outward.
 5. For walls with inside corners, start installation at corner and work across wall.
 6. Pattern: Straight in pattern as shown on drawings. Panel size as indicated.
- D. Rain Screen Installation:
1. Attachment System: Comply with manufacturer's engineered design for cladding support framing.

3.3 CLEANING

- A. Upon completion of panels installation, clean finished surfaces as recommended by panel manufacturer.

END OF SECTION

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SECTION 07 48 00

RAINSCREEN ATTACHMENT SYSTEM (MFI)

PART 1 - GENERAL

1.1 SUMMARY

- A. Provide a thermally broken, rainscreen attachment system for attachment of exterior cladding including metal wall panels, preformed siding, fiber cement siding and wall panels, aluminum faced composite panel system and stucco assemblies installed over exterior mineral fiber insulation.
- B. Related Sections:
 - 1. Section 01 45 00 - Quality Control: for general mockup requirements.
 - 2. Section 05 40 00 - Cold-formed Metal Framing: for cold-formed steel exterior wall studs and furring.
 - 3. Section 06 16 56 - Air and Water-Resistive Sheathing Board System: for vapor-permeable air- and water-resistive wall sheathing and associated site-fluid-applied air barrier flashing.
 - 4. Section 07 21 00 - Building Insulation: for mineral wool board insulation.
 - 5. Section 07 27 26 - Fluid-Applied Membrane Air Barriers: for vapor-permeable fluid-applied air barriers, which also function as water-resistive barriers.
 - 6. Section 07 42 13 - Metal Wall Panels.
 - 7. Section 07 46 46 - Fiber-cement Siding and Wall Panels.
 - 8. Section 07 21 00 - Building Insulation: for mineral wool board insulation.

1.2 SYSTEM DESCRIPTION

- A. System assembly shall include the following components from the substrate out:
 - 1. Substrate: Wall framing assembly and sheathing, concrete masonry unit wall, or concrete wall.
 - 2. Weather Resistant/Air Barrier over substrate.
 - 3. Mineral fiber insulation (mineral wool board insulation).
 - 4. Thermally broken rainscreen attachment system.
 - 5. Exterior cladding.
- B. Design Requirements:
 - 1. Manufacturer is responsible for designing system, including anchorage to structural system and necessary modifications to meet specified requirements and maintain visual design concepts.
 - 2. Employ registered professional engineer, licensed to practice engineering in jurisdiction where Project is located, to engineer each component of rainscreen attachment system.
 - 3. Structural Design: Exterior-insulated rainscreen wall assembly capable of withstanding effects of load and stresses from dead loads, wind loads, ice loads (if applicable) as indicated on Structural General Notes on Structural Drawings, and normal thermal movement without evidence of permanent defects of assemblies or components.
 - a. Thermal Movements: Provide assemblies that allow for thermal movements resulting from the following maximum ambient temperatures by preventing overstressing of components and other detrimental effects:
 - 1) Temperature Change (range): 120 degrees Fahrenheit, ambient:
 - 4. Support Framing/Attachment System:
 - a. Frequency and spacing of brackets as indicated by manufacture in project specific engineering package.
- C. Performance Requirements:
 - 1. Structural Performance:
 - a. Framing Members:
 - 1) Test framing components to AAMA TIR- A8-16 – Section 7.2 to determine structural performance and effective moment of inertia for each perforated component. Minimum Effective Moment of Inertia for Primary Rail: 0.0134 in⁴.
 - 2) Localized bending stress for eccentrically loaded framing members must be evaluated with the maximum effective length of resisting element not more than 12 inches.
 - b. Fasteners:
 - 1) Tension shall be taken as sum of direct tension plus tension due to prying for eccentrically loaded connections. Prying may be reduced or eliminated if proven via engineering analysis or testing.
 - 2) Minimum Safety Factor of 3 for both tension and shear values.

- 3) Combined tension and shear shall be evaluated according to an interaction formula. Sum of terms shall not exceed 1.0.

1.3 SUBMITTALS

- A. Product Data: Submit manufacturer's product literature and descriptions of testing performed on system components to indicate meeting or exceeding specified performance.
- B. Shop Drawings:
 1. Submit connection details to the cladding manufacturer, showing interface of rainscreen attachment system to substrate and panels with adjacent construction, signed and sealed by Professional Engineer, licensed to practice engineering in jurisdiction where Project is located.
 2. Show system installation and attachment, including fastener size and spacing.
- C. Structural Calculations:
 1. Submit rainscreen attachment manufacturer's comprehensive Structural Design analysis signed and sealed by a Professional Engineer, licensed to practice engineering in jurisdiction where Project is located.
- D. Samples: Submit following material samples for verification:
 1. Wall Brackets: Two (2) samples.
 2. Horizontal and Vertical Rails: Two (2) 12-inch long samples.
- E. Test Reports:
 1. Test to the following standards and provide written test reports by a third party:
 - a. AAMA TIR-A8-16: Structural Performance of Composite Thermal Barrier Framing Systems – Section 7.2.
 2. Comprehensive three-dimensional thermal modeling report indicating framing systems impact on exterior insulation rated R-value.

1.4 QUALITY ASSURANCE

- A. Manufacturer Qualifications:
 1. Minimum 5 years' experience specializing in the manufacturing of façade attachment/support framing similar to those specified.
 2. Ability to demonstrate conformance to testing requirements.
- B. Installer Qualifications:
 1. Minimum of 3 years' documented experience or minimum of 5 completed projects of equivalent scope and quality and recommended by manufacturer to perform work of this Section.
 2. Onsite superintendent or foreman overseeing installation on site during entire work of this Section with experience equivalent to installer and in good standing with the manufacturer.
- C. Engineer Qualifications: Registered professional engineer experienced in the design of curtain wall systems, anchors, fasteners and licensed to practice engineering in the jurisdiction where Project is located.
- D. Pre-Installation Meeting:
 1. Discuss sequence and scheduling of work and interface with other trades.
 2. Review metal wall framing assemblies for potential interference and conflicts and coordinate layout and support provisions for interfacing work.
 3. Review and document methods, procedures and manufacturer's installation guidelines and safety procedures for exterior wall assembly.
- E. Mock-Ups: Coordinate mock-up materials and requirements with mock-up specified in Division 01 and exterior cladding specifications.

1.5 QUALITY CONTROL

- A. Single source responsibility:
 1. Furnish engineered rainscreen attachment system components under direct responsibility of single manufacturer.

- B. Field Measurements: Verify actual supporting and adjoining construction before fabrication.
- C. Record field measurements on project record shop drawings.
- D. Established Dimensions: Where field measurements cannot be made without delaying work, guarantee dimensions and proceed with fabrication of rainscreen attachment system corresponding to established dimensions.

1.6 DELIVERY, STORAGE AND HANDLING

- A. Delivery: Deliver materials and components in manufacturers' original, unopened and undamaged containers or bundles, fully identified. Exercise care to avoid damage during unloading, storing and installation.
- B. Store, protect and handle materials and components in accordance with manufacturer recommendations to prevent damage, contamination and deterioration. Keep materials clean, dry, and free of dirt and other foreign matter, and protect from damage due to weather or construction activities.

1.7 SEQUENCING

- A. Ordering: Comply with manufacturers' ordering instructions and lead time requirements to avoid construction delays.
- B. Coordinate construction to ensure that assemblies fit properly to supporting and adjoining construction; coordinate schedule with construction in progress to avoid delaying work.

1.8 WARRANTY

- A. Manufacturer Warranties:
 - 1. Attachment System: Ten (10) year Limited Warranty.
 - a. Covers components of the attachment system, including structural failure of components when all the materials and components are supplied and installed per manufacturer's requirements.
 - b. Includes labor and material for removal and replacement of defective material.
 - c. Includes labor to remove and reinstall façade finish panels, finish closures and façade finish accessories necessary to access defective material.
- B. Contractor's Warranties: 2-year labor warranty, starting from date of Substantial Completion, to cover repair of materials found to be defective as a result of installation errors.

PART 2 - PRODUCTS

2.1 RAINSCREEN ATTACHMENT/SUPPORT FRAMING SYSTEM

- A. Comply with ANSI/ASHRAE 90.1-2013.
- B. Coating Material: ASTM A1046, Zinc-Aluminum-Magnesium, minimum thickness ZM40.
 - 1. ASTM A653 Galvanized steel is not acceptable.
- C. Steel Classification: Structural Steel (SS), Grade 50, 50 ksi Yield.
- D. Spacing: Comply with manufacturer's Professional Engineer's project specific calculations.
- E. Wall Brackets:
 - 1. Basis of Design Product: ThermaBracket-S by Knight Wall Systems or approved equal.
 - 2. Minimum 0.074 inch thick (14 gauge) sheet steel.
 - 3. Dimensions:
 - a. Bracket Base: Minimum 3.125 inch high by 2.125 inch wide.
 - b. Offset Brackets: 2-inch or 3-inch depth, as indicated on drawings.
 - 1) Align offsets to differing wall planes as shown on Drawings.
 - 4. Pre-Punched Holes: Two wall anchors per bracket.

- F. Primary Rail (horizontal or vertical per cladding requirements):
 - 1. Basis of Design Product: S-Rail by Knight Wall Systems or approved equivalent.
 - 2. Minimum 0.054-inch thick (16 gauge) cold-formed steel.
 - 3. Profile: C channel, two flanges of equal length and one web.
 - 4. Nominal Dimensions: Minimum 1.0 inch flange for attaching to wall bracket and 1.625 inch at web.
 - 5. Pre-Punched Attachment Holes: 1.0 inch on center along length of track and oversized allowing for thermal contraction and expansion of rail without placing stress on brackets.
 - 6. Finish: Painted flat black at open joint panel assemblies.

- G. Thermal Isolation:
 - 1. Material: Injection molded Polyoxymethylene copolymer (POM), non-fiber reinforced.
 - 2. Tensile Yield Strength: 9.57 ksi per ISO 527.
 - 3. Melting Temperature: 329 degrees Fahrenheit per ISO 3146.
 - 4. Components:
 - a. Basis of Design Product: ThermaStop™ Isolators by Knight Wall Systems or approved equivalent.
 - b. Wall Anchor Isolation Washer: minimum 0.125 inch thick.
 - c. Support Wall Substrate Isolation: Minimum 0.375-inch thick at each wall bracket.
 - d. Rail to Bracket Isolation: Minimum 0.125 inch thick at each connection.
 - e. Bracket Shim: Match support wall substrate isolator profile; available in 0.125-inch thickness and does not decrease thermal or structural performance of system.

- H. Fasteners:
 - 1. Sufficient length to provide solid attachment to structure as required by manufacturer.
 - 2. Thermally isolated.
 - 3. Framed substrate with sheathing: Self-drill hex-washer-head stainless steel with 1,000 hour salt-spray rated thermoset polyester coating.
 - a. Embedment depth: 0.625 inches or three full threads minimum, whichever is greater.
 - b. Minimum ultimate pull-out capacity from 18 gauge steel: 450 pounds.
 - 4. Concrete and concrete masonry units substrate:
 - a. Embedment depth: 1.25 inches minimum.
 - b. Minimum ultimate pull-out capacity from substrate material: 450 pounds.
 - c. Acceptable Products:
 - 1) 1/4 inch Kwik-Con II+ by Hilti
 - 2) 1/4 inch Tapcon by Buildex
 - 3) 1/4 inch UltraCon by Elco Industries
 - 4) Or approved equal.
 - 5. For primary to secondary rail connection: Self-drill hex-washer-head stainless steel with 1,000 hour salt-spray rated thermoset polyester coating.
 - a. Embedment depth: 0.625 inches or three full threads minimum, whichever is greater.
 - b. Minimum ultimate pull-out capacity from 18 gauge steel: 450 pounds.

- I. Accessories:
 - 1. Bracing, Furring, Bridging, Plates, Gussets, and Clips: Formed sheet steel, thickness as necessary to meet structural requirements for special conditions encountered.
 - 2. Galvanic Protection: Utilize tapes and other methods as necessary to separate and prevent contact between dissimilar metals.

2.2 MINERAL FIBER INSULATION

- A. Refer to Section 07 21 00 – Building Insulation.

2.3 SIDING/CLADDING PANEL

- A. Refer to Division 07 for cladding materials.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions for compliance with manufacturer requirements for installation conditions affecting performance of the work.
 - 1. Do not proceed with installation until unsatisfactory conditions have been corrected.
 - 2. Ensure air barrier/weather-resistant barrier (AB/WRB) is installed prior to installing rainscreen attachment system.

3. Ensure fenestration, transitions, discontinuities, sills, and ledgers are flashed and sealed to move moisture to the exterior of the building.
- B. Field verify architectural details and mechanical and electrical requirements prior to commencing installation.
- C. Commencement of installation constitutes acceptance of existing conditions and acceptance of responsibility for satisfactory performance.

3.2 RAINSCREEN ATTACHMENT SYSTEM INSTALLATION

- A. Preparation: Review areas of potential interference and conflicts and coordinate layout and support provisions for interfacing work.
- B. Installation: Install in strict accordance with manufacturer's installation instructions.
- C. Wall Brackets and Primary Rail:
 1. Mount wall brackets at 16-inches on center horizontally on support wall (at each stud location).
 - a. Brackets must be laid out at 0.5 inch increments vertically or horizontally.
 - b. Secure brackets with fasteners that are wet-set with sealant compatible with the air- and water-resistive barrier system.
 - c. Tighten screws to substructure to a snug tight condition and not stripped. Do not over-torque beyond manufacturer's recommendation. If installed using hand tools, verify for each installer at beginning of project using snug-tight criteria. Do not use stripped holes.
 2. Thermally isolate wall bracket attachments by sandwiching thermal break material between metal bracket and support wall substrate.
 3. Thermally isolate screw fastener washers using material to thermally isolate fastener heads from metal bracket.
 4. Mineral Fiber Insulation: Install to expand into and friction fit between wall brackets as specified by Section 07 21 00 prior to installing primary rails.
 5. Attach primary rail to wall bracket stem by use of a self-tapping screw fastener through the pre-punched holes in the rail and into the pre-punched pilot holes on the bracket.
 6. Isolate primary rail from bracket by sandwiching a thermal break material between rail and bracket stem.
 7. Attach primary rail at proper pre-punched pilot holes on bracket stem to align plumb and true. Account for irregularities in support wall.
 8. Establish and re-establish and restart vertical bracket locations using laser or chalk-line at fenestrations and other obstructions to establish horizontal alignments.

3.3 ERECTION TOLERANCES

- A. Maximum Framing Member Variation from True Position: 1/4 inch.
- B. Maximum Framing Member Variation from Plane:
 1. Individual Framing Members: Do not exceed 1/4 inch in 10 foot.
 2. Accumulative Over-all Variation for Wall and Floor System: Do not exceed 1/4 inch.

3.4 FIELD QUALITY CONTROL

- A. Manufacturer's Field Technical Service: Make intermittent and final inspection to verify installation in conformance to manufacturer instructions and suitable as framing assembly for subsequent metal panels, acrylic plastering, and other cladding installations.
 1. Confirm snug tight and fastener sizing.
 2. Confirm framing members installed in correct orientation.

3.5 ADJUSTING

- A. Inspect and adjust after installation. Replace or repair defective work.
- B. Adjust, and reconfigure as necessary to accommodate cladding systems for installations over work of this Section. Do not reuse pre-drilled holes unless fastener size is increased.

3.6 SIDING/CLADDING PANEL INSTALLATION

- A. The cavity must be clear and free from air flow and drainage obstructions.

END OF SECTION

SECTION 07 53 00

SINGLE-PLY MEMBRANE ROOFING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Fully adhered, UL Class A, factory applied white color finish, non-ballasted single-ply roofing system. Single-ply roofing system shall not have torch-sealed seam construction.
- B. Related Sections:
 - 1. Section 06 10 00 - Rough Carpentry: treated wood nailers, blocking, and curbs.
 - 2. Section 07 62 00 - Sheet Metal Flashing and Trim.
 - 3. Section 07 72 13 - Manufactured Roof Curbs and Portals.
 - 4. Section 07 72 33 - Roof Hatches
 - 5. Division 22 - Plumbing: roof drains.

1.2 SUBMITTALS

- A. General: Submit in accordance with SECTION 01 33 23 - SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Product Data:
 - 1. Furnish manufacturer's printed specifications and instructions for installation of system.
 - 2. Include procedures and materials for terminations, flashing, splicing, expansion joints, and bonding.
- C. Shop Drawings shall indicate:
 - 1. Roof configuration.
 - 2. Design of tapered insulation system showing layout, slope and thickness of entire system.
 - 3. Sheet layout.
 - 4. Location of field splices.
 - 5. Type of splices.
 - 6. Mechanical equipment flashing.
 - 7. Expansion joints.
 - 8. Termination details.
 - 9. Penetration details.
 - 10. Parapet wall details.
 - 11. Roof slopes.
 - 12. Cricket locations.
- D. Samples:
 - 1. Submit a 12" x 12" sample of membrane material.
 - 2. Submit a sample of each type of fastener.
 - 3. Submit a 12" x 12" sample of cover board.
- E. Certificates:
 - 1. Submit manufacturer's certification stating materials ordered and supplied are compatible with each other, suited for locale and purpose intended, and shipped in sufficient quantity to ensure proper, timely installation.
 - 2. Submit manufacturer's approval of proposed fasteners.
 - 3. Submit manufacturer's approval of installer.
 - 4. Submit installer's experience record.
 - 5. Certify materials shipped to site meet membrane manufacturer's published performance requirements.

1.3 QUALITY ASSURANCE

- A. Manufacturer Qualifications:
 - 1. Obtain primary sheet roofing materials from a single manufacturer.
 - 2. Provide secondary materials as recommended in writing by manufacturer of primary materials.

3. Manufacturer's qualified technical representative will be required to visit project site to advise Installer of procedures and precautions for installation of roofing materials and to verify warranty inspection requirements. Manufacturer's representative shall make inspection of the membrane installation a minimum of three times. Manufacturer's written reports of findings shall be submitted for the Architect and Owner's review.
 4. Provide primary products, including each type of flexible sheet roofing and sheet flashing produced by a single manufacturer, which has produced that type product successfully for not less than 5 years. Provide accessory products which are acceptable to manufacturers of primary products.
- B. Applicator Qualifications: Five years successful experience in installation of roofing systems similar to system for this project and approved by membrane manufacturer. Similar in system shall be experience with same type, same insulation, same substrate, and same method of attachment. Insulation applicator and application method shall be approved by the manufacturer of the single-ply roofing materials to be installed.
- C. Wind Up-lift Requirements: Provide a roofing system that is identical to systems that have been successfully tested by a qualified testing and inspecting agency to resist wind uplift pressures calculated according to ASCE 7-10 and based on a 3-second gust of 115 miles per hour.
- D. Solar Reflectance Index: Not less than 78 when calculated according to ASTM E 1980, based on testing identical products by a qualified testing agency.
- E. Compatibility of Roofing System: Roof insulation, roof crickets and tapered insulation roof system shall be compatible with the roofing materials to be used and shall be approved by the manufacturer of the singly-ply sheet roofing materials.
- F. Provisions for Expansion: If in the manufacturer's or installer's expert opinions, the roofing area is large enough to require expansion joints, then they are to be provided, whether shown on the construction documents or not. Contractor shall consult with the Architect regarding the exact joint locations.
- G. Pre-roofing Conference:
1. At least one week prior to start of roofing installation, convene pre-roofing conference at project site.
 2. Attendance is required by Contractor, installer, manufacturer's technical representative, Architect, and effected subcontractors, i.e. mason, electrical, and plumber.
 3. Review requirements for work and conditions which could possibly interfere with successful performance of work.
 4. Minimum Formal Written Agenda:
 - a. Review project specifications and drawings.
 - b. Review weather and working conditions.
 - 1) Substrate requirements.
 - 2) Insulation installation.
 - 3) Membrane installation.
 - 4) Roof terminations, flashings, and roof drain requirements, including roof drain location, i.e. minimum distance from parapets allowed by roofing membrane manufacturer. Coordinate reglet location.
 - 5) Mechanical equipment placement, supports, and height requirements.
 - 6) Inspection, testing, and quality control procedures.
 - 7) Protection requirements for construction period beyond roofing installation.
 - 8) Procedures for making roof penetrations after membrane installation.
 - 9) Water cutoffs at end of day's work.
 5. Conduct tour of roof deck; report discrepancies and problem areas to Architect.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials in manufacturer's original unopened packaging with legible labels intact.
- B. Store materials on site in enclosures or under protective coverings off ground.
- C. Insulation stored on the site shall be raised above deck or ground level on pallets and covered with waterproof tarpaulins or plastic sheeting.
- D. Do not store material in or on building in such concentrations as to impose excessive strain on deck or structural members.

1.5 PROJECT CONDITIONS

- A. Weather:
 - 1. Proceed with roofing work when existing and forecasted weather conditions permit performance in accordance with manufacturer's recommendations and warranty requirements.
 - 2. Take special precautions as recommended by manufacturer when applying roofing below 40°F. Ensure cements, adhesives, mastics, and coatings are not affected by freezing weather.
- B. Protection: Protect finished surfaces of the building from damage and staining during the installation work with suitable covers.
- C. Contractor shall clean roof on a daily basis. Remove construction debris which could harm the membrane. Construction material spillage must be removed without harming the membrane. If spillage cannot be removed satisfactorily, remove and replace the damaged membrane.
- D. Smoking on the roof during installation shall not be allowed.
- E. Roof membrane shall be cleaned for the removal of all stains following installation. Cleaning to be performed in accordance with manufacturer's recommendations.

1.6 WARRANTY

- A. Furnish written 20-year, no dollar limit (NDL), warranty of materials and workmanship for watertightness extended to include but not be limited to flashings, seams, membrane, and penetrations. Warranty shall be signed by membrane manufacturer, agreeing to repair or replace defects in material or workmanship and failure of roof to resist water penetration for period of 20 years from substantial completion of project. Warranty shall be furnished without financial limitation based on initial installation cost or inclusion of other financial constraints that would limit manufacturer's repair or replacement costs during warranty period. Repair of the system, including materials and labor, shall be done at no cost to the Owner.
 - 1. Project shall be installed in such a manner that the roofing material manufacturer will furnish a written twenty (20) year NDL type warranty with no exclusion for hail events containing hail stones up to and including two inches (2") from the date of substantial completion of the completed project. Manufacturer issuing warranty shall provide historical data supporting hail resistance.
 - 2. Installer: Roofing contractor shall guarantee the entire roofing system as described above for a period of 5-years from the date of Substantial Completion.
 - 3. Warranty repairs shall be performed by a certified installer. The repairs shall be performed in accordance with the manufacturer's written instructions and recommended procedures so as to not void the warranty.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

- A. Product/manufacturer; one of the following:
 - EverGuard® PVC Roofing System; GAF Materials Corp.
 - JM PVC; Johns Manville

2.2 INSULATION MATERIALS

- A. Polyisocyanurate Board Insulation: ASTM C 1289, Type II, felt or glass-fiber mat facer on both surfaces. Polyisocyanurate insulation shall be a minimum 2-layers and shall meet or exceed the requirements of ASTM C 1289, with the following characteristics:
 - 1. Thermal Resistance (LTTR value) of: Minimum of 2-layers with a Total minimum value of that stated in the Building Assembly Types on the drawings.
 - 2. Compressive Strength: 20 psi
- B. Cover Board: ASTM C 1177, over insulation, provide 1/2-inch thick DensDeck® Prime Roof Board. glass-mat, water-resistant gypsum substrate as manufactured by G-P Gypsum Corporation.
- C. Crickets and Cants: Provide crickets and cants at locations as shown. Cricket and cant must be compatible with single-ply roofing membrane.

- D. Tapered Roof Insulation: Provide tapered roof insulation as required to fulfill slope requirements. Tapered roof insulation must be compatible with single-ply roofing membrane.
- E. Mechanical Fasteners: Stainless steel deck fasteners, size and configuration of fasteners shall be approved by roof insulation manufacturer and single-ply roofing membrane manufacturer.

2.3 PVC SHEET ROOFING

- A. Membrane Material:
 - 1. Polyvinyl chloride (PVC) sheet material.
 - 2. Thickness: 60-mil minimum, with Elvaloy KEE and fleece back, reinforced for mechanically attached membranes.
 - 3. Exposed membrane shall be resistant to ozone, ultraviolet radiation, and water permeable.
 - 4. Top sheet shall be white color membrane.
- B. Sheet Size: Maximum width and length of sheet possible as determined by project conditions.
- C. Slip Sheet: As determined by membrane manufacturer if installation is necessary for conditions encountered.
- D. Flashing: PVC coated galvanized steel or membrane manufacturer's approved material for conditions encountered.

2.4 RELATED MATERIALS

- A. Asphalt Bitumen: ASTM D 312, Type III and IV.
- B. Adhesives:
 - 1. As recommended by roofing sheet manufacturer for bonding to substrates and for waterproof sealing of seams.
 - 2. Do not use bonding adhesive for splice cement.
- C. Fasteners: Provide either stainless steel fasteners or Fluorocarbon coating over electroplated zinc-chromate conversion-coated fasteners; size and configuration as approved by membrane manufacturer for conditions encountered and to comply with warranty requirements.
- D. Accessories: Provide primers, batten strips, adhesives, sealants, mastics, prefabricated pipe flashing, roof drain flashing, liquid sealers, sponge tubing expansion joint filler, expansion joint flashing, and appropriate cleaning agents and solvents as recommended by membrane manufacturer for conditions encountered.
- E. Expansion Joints: Provide manufacturer's approved expansion joints for conditions encountered. Provide expansion joint sponge tubing installed on 2" high tapered cant strips where required by membrane system.
- F. Walkway Protection: Provide additional layer of sheet roofing membrane around all roof-top mounted mechanical equipment, at top and bottom of ladders on roof, at roof hatch landing, and where shown on the drawings.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine surfaces scheduled to receive roofing to assure that they are smooth, dry, and free from oils, grease, and conditions that will adversely affect execution, permanence, or quality of work.

3.2 PREPARATION OF SURFACES

- A. Comply with manufacturer's instructions for substrate preparation.
- B. Sweep surfaces upon which sheet is applied, removing loose and foreign materials.
- C. Fill voids in substrate as recommended by system manufacturer.

- D. Coat metal surfaces with primer or adhesive as recommended by manufacturer.

3.3 INSULATION INSTALLATION

- A. Install insulation in minimum of two layers for polyisocyanurate insulation over all areas to receive roof insulation.
 - 1. First layer of insulation shall be a minimum of 1-1/2" thick.
 - 2. Install layers (polyisocyanurate insulation) over all areas to receive roof insulation. Apply each layer over the previous layer in broken joint pattern so that each layer breaks joints both ways with the preceding layer.
 - 3. Apply insulation with long joints continuous and short joints staggered.
 - 4. Bring insulation panels into moderate contact with each other and cope to fit neatly around projections. Joints parallel to ribs on steel deck installation shall be located over solid bearing.
- B. Mechanically fasten first layer of insulation to the deck throughout. Spacing and number of fasteners shall meet current building code requirements and per ASCE 7 calculations.
 - 1. Adhere remaining layers.
 - 2. Tapered roof insulation system and crickets shall be installed per manufacturer's instructions as required to meet current building code requirements and per ASCE 7 calculations.
 - 3. Do not install more insulation at one time than the amount which can be covered with roofing the same day.
 - 4. At the end of each day's work and after any other work stoppage, apply temporary water cutoffs in accordance with single-ply membrane manufacturer's approval.

3.4 COVER BOARD INSTALLATION

- A. Install 1/2" cover boards over insulation with long joints in continuous straight lines with end joints staggered between rows. Offset joints of insulation below a minimum of 6 inches in each direction. Loosely butt cover boards together and fasten to roof deck.
 - 1. Fasten cover boards to meet current building code requirements and per ASCE 7 calculations.
 - 2. Fasten cover boards to resist uplift pressure at corners, perimeter, and field of roof.
 - 3. Use appropriate corrosion-resistant fasteners

3.5 BITUMEN HANDLING

- A. Do not mix different types of asphalt.
- B. Use only ASTM D 312, Type III or Type IV Steep Asphalt. Type III asphalt may be used on slopes up to 1/2' per foot. Type IV asphalt must be used on all slopes greater than 1/2" per foot.
- C. Application with hot asphalt requires continuous, uniform interply mopping rates of 25 lbs. +/- 20% per 100 square feet of roof area.
- D. Application temperature of the asphalt must be at the Equiviscous Temperature (EVT) with a tolerance of +/- 25°F, at which a viscosity of 125 centipoise is attained. When using mechanical asphalt applicators, the target viscosity should be 75 centipoise.
- E. For all SBS modified asphalt flashings; the minimum application temperature of the asphalt must be at the EVT or 425 deg F, whichever is greater, with a rolling bank (puddle) of mopping asphalt across the full width of the roll.
- F. Do not heat the asphalt to or above its flash point or hold the asphalt at temperatures above the finished blowing temperature for more than 4 hours.
- G. Do not keep heated tankers above 325°F overnight.

3.6 MEMBRANE INSTALLATION

- A. General: Manufacturer's technical representative is required to be present as necessary to ensure proper installation. Install materials in accordance with manufacturer's printed instructions.

- B. Slip Sheet:
1. Install slip sheet loosely laid above cover board, lapping joints 4" minimum.
 2. Turn slip sheet up parapets and curbs.
 3. Spot adhere slip sheet on vertical surfaces not more than 8" above roof line.
- C. Membrane Installation: Fully adhered.
1. Place membrane so that wrinkles and buckles are not formed. Any wrinkles or buckles must be removed from the sheet prior to permanent attachment. Roof membrane shall be fully adhered immediately after it is rolled out, followed by welding to adjacent sheets.
 2. Overlap roof membrane a minimum of 3" (15 cm) for side laps and 3" (15 cm) for end laps.
 3. Install membrane so that the side laps run across the roofslope lapped towards drainage points.
 4. All exposed sheet corners shall be rounded a minimum of 1".
 5. Use full width rolls in the field and perimeter region of roof.
 6. Fully adhere membrane sheets to the substrate with hot roofing asphalt at a rate of 25 lbs per 100 square feet.
 7. Prevent seam contamination by keeping the asphalt application a few inches back from the seam area.
 8. Adhere approximately one half of the membrane sheet at a time. One half of the sheet's length shall be folded back in turn to allow for asphalt application. Lay membrane into asphalt immediately after application.
 9. Roll membrane with a weighted roller to ensure complete bonding between asphalt and membrane.
 10. Membrane laps shall be hot-air-welded together. All welds shall be continuous, without voids or partial welds. Welds shall be free of bums and scorch marks.
 11. Weld shall be a minimum of 1" to 1-1/2" in width for automatic machine welding and a minimum 2" in width for hand welding.
 12. Supplemental membrane attachment is required at the base of all walls and curbs, and where the angle of the substrate changes by more than five (5) degrees (1" in 12"). Roofing membrane shall be secured to the structural deck with appropriate Drill-Tec™ screws and plates spaced every 12" o.c. The screws and plates must be installed no less than 1,6" from the membrane edge. Alternatively, the roofing membrane may be turned up the vertical plane a minimum of 3" and secured with screws and termination bar. Fastener spacing is the same as is used for in-lap attachment. The termination bar must be installed within 1-1/2" to 2" of the plane of the roof membrane, with a minimum of 1" of membrane extending above the termination bar.
 13. Supplemental membrane attachment to the structural deck is required at all penetrations unless the insulation substrate is fully adhered to the deck. Roofing membrane shall be secured to the deck with appropriate Drill-Tec™ screws and plates.
 14. Fasteners must be installed to achieve the proper embedment depth. Install fasteners without lean or tilt.
 15. Install fasteners so that the plate or termination bar is drawn down tightly to the membrane surface. Properly installed fasteners will not allow the plate or termination bar to move (underdriving), but will not cause wrinkling of the membrane (overdriving).
- D. Equipment Pads:
1. Adhere membrane over equipment supports or pads prior to installation of mechanical equipment.
 2. Place loose piece of membrane under each equipment isolator pad prior to attachment of equipment to pad.
 3. Provide sealant over exposed fasteners.
- E. Expansion Joints: Install expansion joints in accordance with manufacturer's recommendations.
- F. Flashing:
1. Install flashings as indicated and recommended by manufacturer.
 2. Use longest pieces practicable.
 3. Extend splice 3" beyond fasteners which attach membrane to batten strip.
 4. Apply bonding adhesive to flashing and surface to which flashing is to be applied to obtain 100% bond.
 5. After bonding adhesive has dried to point where it does not string, roll flashing into adhesive.
 6. Take measures to assure flashing is not ridging where there is change of direction.
 7. Full flashing at parapet walls shall extend up under metal parapet coping to exterior face of wall.
 8. Fasten top of flashing under metal counterflashing at manufacturer's recommended spacing.
 9. Flash penetrations passing through membrane.
 10. Use factory prefabricated pipe seals where installation is possible.
 11. When prefabricated pipe seals cannot be used, field fabricate pipe seals.
 12. Provide prefabricated pipe seals for pitch pockets.

13. Install fillers around penetrations and fill pocket with non-shrink grout and manufacturer's approved sealer.

3.7 TERMINATIONS

- A. Provide water cutoffs at end of each day's work as discussed at pre-roofing conference.
- B. Pull membrane loose from water cutoff and remove contaminated material before resuming work.

3.8 WALKWAY PROTECTION

- A. Install additional layer of roofing membrane of size and configuration as shown.
- B. Invert walkway membrane (if possible), producing a contrasting color from roof membrane.
- C. Clean roof membrane and bond walkway membrane to obtain 100% coverage on both mating surfaces. Seal all seams.

END OF SECTION

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SECTION 07 62 00

SHEET METAL FLASHING AND TRIM

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Sheet metal flashing and trim.
- B. Related Sections:
 - 1. Section 05 55 00 - Metal Fabrications: Galvanized steel pipe downspouts with cast iron boots.
 - 2. Section 07 41 20 - Prefinished Metal Roof Panels.
 - 3. Section 07 53 00 - Single-ply Membrane Roofing.
 - 4. Section 07 92 00 - Joint Sealants.
 - 5. Section 09 91 00 - Painting.

1.2 SUBMITTALS

- A. Samples:
 - 1. Submit in accordance with SECTION 01 33 23 - SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
 - 2. Submit for approval samples of parapet coping cover expansion joint and soldered joint.
- B. Product Certificates: Showing that each type of coping and roof edge flashing is ANSI/SPRI/FM 4435/ES-1 tested.
- C. Evaluation Reports: For copings and roof edge flashing, from an agency acceptable to authority having jurisdiction showing compliance with ANSI/SPRI/FM 4435/ES-1.

1.3 QUALITY ASSURANCE

- A. Standard: Comply with the requirements of the Architectural Sheet Metal Manual published by SMACNA.
- B. Installer Qualifications: Company specializing in sheet metal flashing work with three years minimum experience in similar sized installations

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, handle and protect products under provisions of SECTION 01 65 00 - PRODUCT DELIVERY REQUIREMENTS and SECTION 01 66 00 - PRODUCT STORAGE AND HANDLING REQUIREMENTS.
- B. Stack pre-formed material to prevent twisting, bending, and abrasions, and to provide ventilation.
- C. Prevent contact with materials which may cause discoloration or staining.

1.5 WARRANTY

- A. Furnish to the Owner a written warranty providing the following without cost to the Owner.
 - 1. Sheet metal roof flashings shall be maintained in normal repair and free of leaks for a period of 2 years from the date of acceptance of the roof.
 - 2. At end of 2-year period, Owner and Contractor shall make final inspection of flashing work. Holes, breaks and other defects shall be promptly repaired at the Contractor's expense.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Sheet Metal: ASTM A 653
 - 1. Areas which can be seen from the ground level, including but not limited to, coping, edging, gutters, conductor heads, downspouts, expansion joint terminations, and sheet metal shown in interior sloped ceiling details shall be prefinished fluorocarbon coating containing 70% Kynar 500.
 - a. Colors shall be selected by Architect from Fluropon Standard colors as manufactured by Valspar.
 - 2. Roof top accessories, including but not limited to, expansion joint covers, flanges, and concealed counterflashings not visible from ground level shall be Coating Designation G90 Paint Grip, zinc coated (galvanized) copper-bearing steel sheet, mill-phosphatized ready to receive field finishing in accordance with SECTION 09 91 00 - PAINTING
- B. Reglet: Two piece snaplock receiver, Per Figure 4-4C, SMACNA Manual, 8th Edition, of 24 gauge galvanized steel.
- C. Underlayment: ASTM D 226, 30 lb/100 s.f. weight felt containing no additives corrosive to sheet metals.
- D. Solder: ASTM B 32, made from block tin and pig lead (50/50) with no antimony.
- E. Solder for Stainless Steel: ASTM B 32, Grade Sn60, with an acid flux of type recommended by stainless-steel sheet manufacturer.
- F. Fasteners for Stainless-Steel Sheet: Series 300 stainless steel.
- G. Sealant: Two component polyurethane, non-sagging, sealant as specified in SECTION 07 92 00 - JOINT SEALANTS.
- H. Asphalt Roofing Cement: ASTM D 4586, asbestos free, of consistency required for application.
- I. Miscellaneous items such as nails and mastic shall be furnished as required by the conditions of use and must be of the best grade available.

2.2 FABRICATION

- A. Form sections true to shape, accurate in size, square, free from distortion and defects, to profiles indicated in accordance with SMACNA Architectural Sheet Metal Manual.
- B. Fabricate cleats and starter strips of same material as sheet, interlockable with sheet.
- C. Form pieces in longest practical lengths.
- D. Hem exposed flashings on underside $\frac{1}{2}$ "; miter and seam corners.
- E. Solder and seal metal joints except those indicated or required to be expansive type joints. After soldering, remove flux. Wipe and wash solder joints clean.
- F. Fabricate corners from one place with minimum 18" long legs; solder for rigidity; seal with sealant.
- G. Fabricate vertical faces with bottom edge formed outward $\frac{1}{4}$ " and hemmed to form drip.
- H. Fabricate flashings to allow toe to extend minimum 2" over wall surfaces.
- I. Fabricate as much as possible in shop with machinery to eliminate as much hand tooling on the job as possible. Shop fabricate to allow for adjustments in the field for proper anchoring and joining.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that surfaces and conditions are ready to receive work of this section. Notify Architect of any existing conditions which will adversely affect execution. Beginning of execution will constitute acceptance of existing conditions.
- B. Verify roof openings, curbs, pipes, sleeves, ducts, and vents through roof are solidly set, cant strips and reglets in place, and nailing strips located.
- C. Verify membrane termination and base flashings are in place, sealed, and secure.

3.2 PREPARATION

- A. Field measure site conditions prior to fabricating work.
- B. Install starter and edge strips, and cleats before starting installation.
- C. Install surface mounted reglets true to lines and levels. Seal top of reglets with sealant.
- D. Install one layer of underlayment prior to installing copings.

3.3 INSTALLATION

- A. General: Fabricate, assemble, and install sheet metal work in conformance with referenced standard.
 - 1. Make adequate provision for metal expansion and contraction without buckling or splitting. Use cleats and watertight slip and expansion joints.
 - 2. Nails and screws shall be of the same metal as the member on which used. Nails through exposed wash surfaces will not be permitted.
 - 3. When soldering, use flux and wash off surplus flux after soldering has been completed.
 - 4. Set sheet metal with horizontal lines straight and level. Surfaces shall be flat without wrinkles and waves. Profiles shall align at joints with no offsets.
 - 5. Conform to drawing details included in manuals published by SMACNA and NRCA.
 - 6. Edge Securement for Low-Slope Roofs: Design in accordance with ANSI/SPRI ES-1 for basic wind speed zone with 3-second gusts.
 - 7. Fit flashings tight in place. Make corners square, surfaces true and straight in planes, and lines accurate to profiles.
 - 8. Seal metal joints watertight.
 - 9. Provide electrolytic separation between dissimilar metals with protective back paint.
- B. Reglet: Install surface mounted reglets on walls.
 - 1. Clean surface of oil, grease and loose particles.
 - 2. Place sealant bead on back in groove and on lap.
 - 3. Secure reglet in precise alignment to wall with power driven pins spaced 12" o.c.
 - 4. Lap joints 3" and bed in sealant. Miter and seal corners.
- C. Reglet Counterflashing: Counterflashing for reglet shall be formed of 24 gage metal to fit the reglet in conformance with the manufacturer's instructions.
 - 1. Lap counterflashing down over flashing strip approximately 4" and form lower edge with a spring bend against the base flashing.
 - 2. After roofing and flashing strip have been installed, snap counter-flashing up into reglet so that it is held securely in place without screws or clips.
 - 3. Lap end joints 3" and bed in sealant. Miter and seal corners.
- D. Parapet Coping Cover: Form and install coping covers and fascia covers of 24 gage metal. Finish coping covers with a fluorocarbon coating containing 70% Kynar 500. Color shall be selected from Fluropon Standard colors as manufactured by Valspar.
 - 1. Make up the coping in 10 ft. lengths.
 - 2. Bend outside bottom edge to form drip and lock to continuous cleat, 22 gage min., secured to wood blocking with nails and to masonry with screws into expansion shields.
 - 3. On roof side copings shall be fastened through slotted holes located 2' o.c. with screws and watertight washers.

4. Provide loose-locked expansion joints filled with sealant where each 10' section meets. Provide an expansion joint within 10 ft. of each corner.
 5. Corners shall be mitered, locked and soldered seams.
- E. Vent Stack Roof-Penetration Flashing: Flashing shall have a weight range of 2 – 4 lbs/sq. ft. Coordinate installation of roof-penetration lead flashing flange with installation of roofing and other items penetrating roof. Base flashing shall be flanged 4 in. onto the roof. The flange is fastened through the roofing felts and is then stripped in by the roofer. Turn the top of the flashing down inside the vent pipe. Seal with sealant per Section 07 92 00 – Joint Sealants, and clamp flashing to pipes that penetrate roof.
- F. Gutter: Form and install hung molded gutters of 26 gage metal at roof eaves.
1. Provide watertight lap or butt type expansion joints at intervals of 50 ft. and not more than 16 ft. from inside and outside corners.
 2. Support molded outside edge with 1" wide 18 gage strap hangers at 36" centers and weld to gutter as detailed.
 3. Form downspout outlet sleeves and rivet and solder sleeves to gutter. Fit each sleeve with a removable, galvanized wire basket strainer.
- G. Roof-Edge Fascia: Manufactured, two-piece, roof-edge fascia consisting of snap-on metal fascia cover in section lengths not exceeding 12 feet and a continuous metal receiver with integral drip-edge cleat to engage fascia cover and secure modified roof membrane. Provide matching corner units.
1. Metallic-Coated Steel Sheet Fascia Covers: Zinc-coated (galvanized) steel, nominal thickness as required to meet performance SPRI ES-1 requirements.
 - a. Surface: Smooth, flat finish.
 - b. Finish coping covers with a fluorocarbon coating containing 70% Kynar 500. Color shall be selected by Architect from Fluoropon Standard colors as manufactured by Valspar.
- H. Roof Expansion Joint Cover: Form and install the continuous covers and flashing required to make the roof expansion joints watertight.
1. Install covers over the ice and watershield on wood curbs and nail flanges to the wood curbs in accordance with roofing membrane manufacturer's instructions.
 2. At wall intersections, nail upper vertical flange to wall just below receiver reglet and seal top edge and nail heads with roof cement.
 3. Faced, Slag-Wool-Fiber/Rock-Wool-Fiber Blanket Insulation In-fill: ASTM C 665, Type III (blankets with reflective membrane facing), Class A (membrane-faced surface with a flame spread of 25 or less); Category 1 (membrane is a vapor barrier), faced with foil-scrim-kraft, foil-scrim, or foil-scrim-polyethylene vapor-retarder membrane on both faces, 1-1/2" thick.
 4. Vapor Retarder: Vapor retarder membrane shall be 45 mils EPDM, minimum 24" roll width. Drape vapor retarder down into expansion joint the full depth of the joint, and secure to face of wall and to top of expansion joint curb. Install in continuous length, without joints. Install in-fill insulation per detail.
 5. Ice and Watershield Underlayment: Provide Ice & Watershield self-adhered roofing underlayment as manufactured by Grace Construction Products. Extend membrane over expansion joint opening and secure to face of wall and front face of expansion joint curb nailer with screws (do not secure to top of curb).
 6. Splice joints and intersections of covers in accordance with the manufacturer's instructions.
- I. Splash Pans: Provide 24 gage galvanized metal splash pans where downspouts discharge onto roofs. Install pans in mastic (mastic must be approved by membrane manufacturer) to set flat on the roof and secure to downspouts by riveting and soldering.
- J. Miscellaneous flashings and other items of sheet metal roof work shall be provided as required for a weathertight job.

END OF SECTION

SECTION 07 65 00

FLEXIBLE FLASHING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Concealed through-wall flashing system.
- B. Related Sections:
 - 1. Section 04 22 00 - Concrete Masonry Units.
 - 2. Section 04 43 00 - Stone Masonry
 - 3. Section 05 40 00 - Cold-formed Metal Framing.
 - 4. Section 06 16 56 - Air- and Water-Resistive Sheathing Board System.
 - 5. Section 07 27 26 - Fluid-Applied Membrane Air Barriers
 - 6. Section 07 46 46 - Fiber-cement Siding and Wall Panels

1.2 GENERAL

- A. Contractor shall review American Concrete Institute 530.1 mandatory specification checklist for additional requirements necessary for specific project.

1.3 QUALITY ASSURANCE

- A. At a scheduled pre-construction meeting with all trades, contractor shall review flashing for the project and how the flashing shall be sequenced with the following: below grade waterproofing, air and vapor system, window installation, sealant installation, relief angles and roofing.

1.4 SUBMITTALS

- A. General: Submit in accordance with SECTION 01 33 23 - SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Shop Drawings: Contractor shall provide from the manufacturer a review of the flashing design for the project and location of preformed shapes on reduced floor plan.
- C. Product Certificates: From flexible flashing manufacturer, certifying compatibility (including adequate adhesion) of flexible flashing and accessory materials with Project materials that connect to or that come in contact with flexible flashing.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials in manufacturer's original, unopened containers and rolls with all labels intact and legible including labels indicating appropriate warnings, storage conditions, lot numbers, and usage instructions. Materials damaged in shipping or storage shall not be used.
- B. Manufacturer's packaging and/or roll plastic is not acceptable for exterior storage. Tarpaulin with grommets shall be minimum acceptable for exterior coverings. All materials stored as above shall be a minimum of four inches (4") off the substrate, and the tarpaulin tied off with rope.
- C. Deliver materials in sufficient quantity to allow continuity of work.
- D. Handle and store material in such a manner as to avoid damage.
- E. Protect materials against damage by construction traffic.
- F. Storage: All materials should be stored under cover to avoid site damage. During cool weather construction, store materials inside at 50° F or higher.

- G. The proper storage of materials is the sole responsibility of the contractor and damaged materials shall be discarded, removed from the project site, and replaced prior to application.

1.6 SITE CONDITIONS

- A. Job Condition Requirements: Coordinate the work of the contractor with the work to be performed by the Owner's personnel, to ensure proper sequencing of the entire work. The contractor shall follow local, state, and federal regulations, safety standards, and codes. When a conflict exists, use the stricter document.
- B. Protection of Work and Property:
 - 1. Work: The contractor shall maintain adequate protection of all his work from damage and shall protect the Owner's and adjacent property from injury or loss arising from this contract. He shall provide and maintain at all times any OSHA required danger signs, guards, and/or obstructions necessary to protect the public and his workmen from any dangers inherent with or created by the work in progress. All federal, state, and city rules and requirements pertaining to safety and all EPA standards, OSHA standards, NESHAP regulations shall be fulfilled by the contractor as part of his proposal.
 - 2. Property: Protect existing planting and landscaping as necessary or required to provide and maintain clearance and access to the work of this contract. Examples of two categories or degrees of protection are generally as follows:
 - a. removal, protection, preservation, or replacement and replanting of plant materials;
 - b. protection of plant materials in place, and replacement of any damage resulting from the contractor's operations.
- C. Damage to Work of Others: The contractor shall repair, refinish, and make good any damage to the building or landscaping resulting from any of his operation. This shall include, but is not limited to, any damage to plaster, tile work, wall covering, paint, ceilings, floors, or any other finished work. Damage done to the building, equipment, or grounds shall be repaired at the successful contractor's expense holding the Owner harmless from any other claims for property damage and/or personal injury.
- D. Measurements: It will be the contractor's responsibility to obtain and/or verify any necessary dimensions by visiting the job site, and the contractor shall be responsible for the correctness of same. Any drawings supplied are for reference only.
- E. Cleaning and Disposal of Materials:
 - 1. Contractor shall keep the job clean and free from all loose materials and foreign matter. Contractor shall take necessary precautions to keep outside walls clean.
 - 2. All waste materials, rubbish, etc., shall be removed from the Owner's premises as accumulated. Rubbish shall be carefully handled to reduce the spread of dust. At completion, all work areas shall be left clean and all contractor's equipment and materials removed from the site.
 - 3. Debris shall be deposited at an approved disposal site.

PART 2 - PRODUCTS

2.1 BUILT-IN FLASHING MEMBRANE (ELVALOY® SHEET)

- A. The built-in flashing membrane shall be 40 mil flexible sheet material, consisting of a blend of elastomeric and thermal plastic polymers, incorporating DuPont™ Elvaloy®. The membrane shall be reinforced with synthetic fibers, calendared into sheet form, rolled and cut to width.
- B. Cloaks shall be pre-formed, three dimensional flexible units used for detail corners, level changes, stop ends, and special applications.

Physical Properties

Elongation	175%	ASTM D412
Tensile Strength	650 psi	ASTM D412
Tear Strength	280 psi	ASTM D624
Low Temperature Flexibility	-25° F Pass	ASTM D146
Water Absorption	Less than 0.1%	ASTM D471

2.2 RELATED MATERIALS FOR BUILT-IN FLASHING MEMBRANE

- A. Joint Support Boards: Aid the mason in lap formation by providing a flat work surface and in-cavity support for membrane joints. The boards shall be used under all membrane to membrane laps.

- B. Double-Sided Tape: Shall be a two-sided, self-adhering tape used to seal joints in membrane and joints between membrane and cloaks. Adhesive may be used as an alternative.
- C. Drip Plate: Type 304 stainless steel, 26 ga., 3-1/2" drip plate with prefabricated inside/outside corners and end dams. Basis of Design shall be Hohmann & Barnard #DP. At locations detailed without an exposed drip edge, the Basis of Design shall be #FDP.
- D. Mastic: Shall be used at all laps and joints.

2.3 SURFACE-ADHERED FLASHING MEMBRANE (ELVALOY® SHEET)

- A. Surface-adhered membrane shall be a composite 40 mil membrane consisting of 25 mils of elastomeric/thermal plastic membrane incorporating DuPont™ Elvaloy® and 15 mils of SBS asphaltic adhesive. The membrane shall be reinforced with synthetic fibers, calendered into sheet form, rolled and cut to standard widths.
- B. Standard Sheet Dimensions:

Thickness	40 mil
Roll length	75 ft
Roll widths	12, 18, 24, 36 in
- C. Cloaks shall be pre-formed, three dimensional flexible units used for detail corners, level changes, stop ends, and special applications.

Physical Properties

Elongation	225%	ASTM D412
Tensile Strength	875 psi	ASTM D412
Tear Strength	270 psi	ASTM D624
Low Temperature Flexibility	-25° F Pass	ASTM D146
Water Absorption	Less than 0.1%	ASTM D471

2.4 RELATED MATERIALS FOR SURFACE ADHERED FLASHING MEMBRANE

- A. Double-Sided Tape: Shall be a two-sided, self-adhering tape used to seal the top of cloaks against the back-up wythe. Adhesive may be used as an alternative.
- B. Mastic: Shall be used at all laps and joints, and top terminations.
- C. Termination Bars for Flexible Flashing: Stainless steel bars 1/8" x 1".
- D. Drip Plate: Type 304 stainless steel, 26 ga., 3-1/2" drip plate with prefabricated inside/outside corners and end dams. Basis of Design shall be Hohmann & Barnard #DP. At locations detailed without an exposed drip edge, the Basis of Design shall be #FDP.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine conditions for compliance with requirements for installation tolerances and other specific conditions.

3.2 GENERAL

- A. Laying Masonry Walls: Use an inverted lintel CMU or fully grouted hollow CMU as a base for flashing at sills, floor joints, and other similar conditions.
- B. Preparation: All sharp protrusions and mortar droppings must be removed from the substrate, and the surface must be clean and dry.
- C. Where brick work occurs about the roof elevation, provide solid protection of the existing roof system until work is complete.

3.3 INSTALLATION OF BUILT-IN FLASHING MEMBRANE (ELVALOY® SHEET)

- A. Set drip plate in full bed of sealant. Lap joints 3" with bead of sealant between and tooled sealant on top edge of overlap. Flashing membrane and cloaks shall be installed in a bed of fresh mortar.
- B. Weep holes shall be provided immediately above all flashing at 24-inch centers. A minimum of two weeps shall be installed above any wall opening.
- C. All joints in the flashing membrane shall be lapped a minimum of four inches (4") using double sided tape or flashing adhesive and a joint support board.
- D. Flashing membrane shall be installed six inches (6") above top of cavity drainage material.
- E. Cloaks and end dams shall be installed at all window and door heads and sills.
- F. Vertical flashing at wall openings shall extend into the wall opening one inch (1"). The door/window frame shall be installed with the flashing extending into the frame.
- G. Cleaning: Flashing membrane shall not be damaged by cavity cleaning after installation. Precautions to be taken during subsequent work are:
 - 1. Use of cavity battens to prevent mortar droppings;
 - 2. Removal of droppings before they harden;
 - 3. Never use implements such as steel rods for cleaning the cavity; and
 - 4. Inspection of cavity flashing for damage as the work proceeds.

3.4 INSTALLATION OF SURFACE-ADHERED FLASHING MEMBRANE (ELVALOY® SHEET)

- A. Priming: If the surface-adhered flashing membrane will not adhere to the substrate or the substrate is dusty or dirty, the area shall be primed. Flashing primer shall be applied with a brush, roller or sprayed. Coverage is approximately 400 square feet per U.S. gallon (3.78L). Drying time may vary depending on temperature, humidity, and air movement; drying time should be approximately 45 minutes.
- B. Flashing System Installation: Starting at a corner, mount cloak to substrate using double-sided tape or flashing adhesive. Cut surface adhered membrane into workable sections (8'-10'). Remove the release sheet and adhere the membrane to the inner leaf of construction lapping the membrane onto the cloak four inches (4"). Use firm hand pressure and a steel roller to totally adhere membrane in place. Extend membrane completely through the outer leaf and leave it exposed ¼" minimum. The surface-adhered membrane is not UV sensitive. Apply a bead of flashing mastic to all top termination edges.
- C. Termination Bar: The surface-adhered membrane shall be installed using a termination bar for additional attachment to the inner leaf.
- D. Weep holes shall be provided immediately above all flashing at 24-inch centers. A minimum of two baffle weeps shall be installed above any wall opening.
- E. Flashing membrane shall be installed six inches (6") above top of cavity drainage material.
- F. Stop end cloaks shall be installed at all windows, door heads, sills, and through-wall starts, stops, steps, etc.
- G. Enveloped vertical flashing at wall openings shall extend into the wall opening one inch (1"). The door/window frame shall be installed with the flashing extending into the frame. Enveloped vertical flashing shall be installed at all abutments of dissimilar exterior wall treatments: inside and outside nineties (90), etc.
- H. Cleaning: Flashing membrane shall not be damaged by cavity cleaning after installation. Precautions to be taken during subsequent work are:
 - 1. Use of cavity battens to prevent mortar droppings;
 - 2. Removal of droppings before they harden;
 - 3. Never use implements such as steel rods for cleaning the cavity; and
 - 4. Inspection of cavity flashing for damage as the work proceeds.

3.5 FLASHING SCHEDULE

- A. Flashing as follows with membrane:
1. Over steel lintels, plates and angles in exterior masonry walls.
 2. Within masonry parapets and walls as through flashing to detail.
 3. At the bottom of cavity walls with weep holes.
 4. Under window sills to detail.
 5. Elsewhere in walls where indicated.

END OF SECTION

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SECTION 07 72 13

MANUFACTURED ROOF CURBS AND PORTALS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Prefabricated roof curbs and penetration portals.
- B. Related Sections:
 - 1. Section 05 31 23 - Steel Roof Decking.
 - 2. Section 05 50 00 - Metal Fabrications.
 - 3. Section 06 10 00 - Rough Carpentry: Field-constructed curbs and cants.
 - 4. Section 07 53 00 - Single-ply Membrane Roofing.
 - 5. Section 07 62 00 - Sheet Metal Flashing and Trim: Flashings and counter-flashings.
 - 6. Section 07 92 00 - Joint Sealants.

1.2 SUBMITTALS

- A. General: Submit following items under provisions of SECTION 01 33 23 - SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Product Data: Indicating technical and performance data of products.
- C. Shop Drawings: Indicating details of special connections and transitions, typical section details, and layout showing intended locations for use of products.
- D. Manufacturer's Instructions: Printed instructions for recommended installation methods and sequences for all products.

1.3 QUALITY ASSURANCE

- A. Manufacturers Qualifications: Company specializing in the manufacturing of prefabricated roof expansion joints for a minimum of 5 years.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, handle, and protect products under provisions of SECTION 01 65 00 - PRODUCT DELIVERY REQUIREMENTS and SECTION 01 66 00 - PRODUCT STORAGE AND HANDLING REQUIREMENTS.
- B. Prevent contact with materials which may cause discoloration or staining.

PART 2 - PRODUCTS

2.1 PRODUCTS AND MANUFACTURERS

- A. Acceptable Products and Manufacturers
 - 1. Roof Curbs: RPS Expansion Curbs (EC-2B, with 2" extended flange), Roof Curbs (RC-2B) and Equipment Rail (ER-2B) by Roof Products and Systems Corp., Bensenville, Illinois.
 - 2. Penetration Portals: Alumi-Flash by Portals Plus, Bensenville, Illinois.
 - 3. Pipe Mounting Pedestal: For pipes larger than 2" o.d., provide RPS Pipe Mounting Pedestals as manufactured by Roof Products and Systems Corp., Bensenville, Illinois.
- B. Substitutions: Submit in accordance with SECTION 01 62 00 - PRODUCT OPTIONS.

2.2 SIZES AND CONFIGURATIONS

- A. Provide in sizes and configurations as required to accommodate joint widths, penetrations, and equipment being supported.

- B. Provide configurations and special transitions as shown or required to utilize factory formed pieces wherever possible.
- C. Provide custom factory-formed pieces conforming to roof slope to allow for a level equipment installation.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that surfaces and conditions are ready to receive work of this section. Notify Architect of any existing conditions which will adversely affect execution. Beginning of execution will constitute acceptance of existing conditions.
- B. Verify that curbs are level and flashing reglets have been installed at proper locations.
- C. Verify that insulation has been packed into joint prior to beginning work.

3.2 INSTALLATION

- A. Interface with other systems. On roof mounted expansion joints, set flanges in adhesive and make watertight over cant strip.
- B. Install using skilled workmen in accordance with manufacturer's printed instructions and recommendations.
- C. Anchor units securely with fasteners and at spacing as recommended by manufacturer.
- D. Where metal surfaces are to be in contact with corrosive substrates, apply bituminous coating on concealed metal surfaces.
- E. Splice sections of curbs together with procedures as recommended by manufacturer for a solid, watertight installation.
- F. Penetrations of piping through equipment curbs shall not be permitted.
- G. Utilize factory fabricated intersections and transitions wherever possible. Field fabricate where pre-manufactured sections are not available.

3.3 PROTECTION

- A. Protect completed installation under provisions of SECTION 01 50 00 - TEMPORARY FACILITIES AND CONTROLS.

END OF SECTION

SECTION 07 72 33

ROOF HATCHES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Roof hatches, including ladder safety post.
- B. Related Sections:
 - 1. Section 05 31 23 - Steel Roof Decking.
 - 2. Section 05 50 00 - Metal Fabrications; angles miscellaneous metal, and ladder fall arrest systems.
 - 3. Section 06 10 00 - Rough Carpentry.
 - 4. Section 07 53 00 - Single-ply Membrane Roofing.
 - 5. Section 07 62 00 - Sheet Metal Flashing and Trim: flashing of the hatch curb.
 - 6. Section 07 72 13 - Manufactured Roof Curbs and Portals.
 - 7. Section 07 92 00 - Joint Sealants.

1.2 SUBMITTALS

- A. Product Data: Submit in accordance with SECTION 01 33 23 - SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES. Include complete manufacturer's catalog cuts and installation requirements for each item specified.

1.3 WARRANTY

- A. Provide manufacturer's standard warranty. Materials shall be free from defects in material and workmanship for a period of:
 - 1. Roof Hatch: Five years.
 - 2. Ladder Extension: Five years.

PART 2 - PRODUCTS

2.1 ROOF HATCHES

- A. Roof Hatches: Provide single leaf roof hatches, 2'-6" x 3'-0", of 14 gage galvanized/galvannealed steel with 22 gage galvanized/galvannealed steel liner. Product/manufacturer; one of the following:
 - Model No. BRHU; Babcock-Davis Hatchways Inc.
 - Type S-20; The Bilco Co.
 - Model No. SAH-CM-12; Bristolite Daylighting Systems
 - Model No. RB-1; Milcor Limited Partnership
 - Model No. RHU; Nystrom
- B. Construction:
 - 1. Hatch shall be factory assembled with heavy pintle hinges, compression spring operators, positive snap latch with turn handles, padlock hasps and neoprene draft seals.
 - 2. Curb shall be 12" high with 3½" flanges, fully welded at corners and equipped with integral metal cap flashing.
 - 3. Cover shall be insulated with concealed 1" thick fiberglass insulation.
 - 4. Curb shall be insulated with 1" thick high-density fiberglass insulation. Fiberboard insulation is not acceptable.
 - 5. Cover shall have an automatic hold-open arm with red vinyl grip handle. All hardware shall be cadmium plated.

2.2 LADDER EXTENSION

- A. Basis of Design: Provide ladder extension Model LU-2, "LadderUP" Safety post as manufactured by The Bilco Company.
 - 1. 42" high telescoping extension.
 - 2. Post shall lock automatically when fully extended. Release lever shall disengage the post to allow it to be returned to its lowered position.

3. Adjustable mounting brackets shall fit ladder rung spacing and clamp brackets shall accommodate ladder rungs.
4. Balancing Spring: A stainless steel spring balancing mechanism shall be provided to provide smooth, easy, controlled operation when raising and lower the safety post.
5. Hardware: All mounting hardware shall be Type 316 stainless steel.
6. Finish: Factory finish of post shall be hot dipped galvanized steel.

PART 3 - EXECUTION

3.1 INSPECTION

- A. Verify that ladder safety post installations will not disrupt other trades.
- B. Verify that the ladder rungs are dry, clean, and free of foreign matter.
- C. Report and correct defects prior to any installation.

3.2 INSTALLATION

- A. Roof Hatch: Install roof hatches in accordance with the manufacturer's recommendations. Securely fasten to the roof deck with bolts or screws.
- B. Installer shall field check conditions and verify the manufacturer's ladder safety post details for accuracy to fit the application prior to fabrication.
- C. Installer shall comply with the ladder safety post manufacturer's installation instructions.
- D. The manufacturer shall furnish fasteners necessary for installations.

END OF SECTION

SECTION 07 84 00

FIRESTOPPING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Firestopping for all fire-rated construction complete, including, but not limited to:
 - 1. Firestopping in conjunction with gypsum board, masonry and plaster partitions.
 - 2. Firestopping shall include, but not be limited to the following applications:
 - a. Sealing gaps between tops of partitions and roof/floor decks.
 - b. Sealing gaps between structure and glass curtainwalls with fire safing insulation.
 - c. Other locations where "firestopping", "firestop", or "safing" is indicated.
 - d. Where required by codes.
 - e. Control joints and expansion joints in masonry or gypsum board fire-rated partitions.
 - f. Expansion joints in roof and floor assemblies.
- B. Related Sections:
 - 1. Section 04 22 00 - Masonry Units.
 - 2. Section 07 21 00 - Building Insulation.
 - 3. Section 07 92 00 - Joint Sealants.
 - 4. Section 09 21 16 - Gypsum Board Assemblies.
 - 5. Section 09 21 19 - Gypsum Board Shaft Wall Assemblies.
 - 6. Divisions 23 and 26.

1.2 SUBMITTALS

- A. Refer to SECTION 01 33 23 - SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Product Data: Submit copies of manufacturer's literature. Include data substantiating that materials comply with specified tested system requirements.
- C. Samples: Submit duplicate samples of each type of firestopping material and accessories.
- D. For those firestop applications that exist for which no UL tested system is available through a manufacturer, an engineering judgement derived from similar UL system designs or other tests will be submitted to local authorities having jurisdiction for their review and approval prior to installation. Engineer judgement drawings must follow requirements set forth by the International Firestop Council.

1.3 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Do not allow firestopping materials to become wet, soiled, or covered with ice or snow. Comply with manufacturer's recommendations for handling, storage and protection.

1.4 PROJECT CONDITIONS

- A. Do not install firestopping materials until building is completely enclosed and weathertight.
- B. Coordinate installation with the work of other trades. Reference SECTION 01 31 00 - PROJECT MANAGEMENT AND COORDINATION.

PART 2 - PRODUCTS

2.1 PRODUCT/MATERIAL PERFORMANCE REQUIREMENTS

- A. Except as otherwise indicated, firestop materials shall be classified in the Underwriters Laboratories (UL) Building Materials Directory, "Section XHEZ-Through-Penetration Firestop Systems", and/or "Section XHHW-Fill Void or Cavity Materials", and "Section XHBN - Joint Systems" for specific project conditions:
 - 1. Time rating ("F", Fire and "T", Temperature) (T-rating is only required for construction joint systems).
 - 2. Floor or wall assembly and material.
 - 3. Penetrating materials/items diameters, or void space.

4. Through opening size.
 5. Annular space between penetration opening and penetrating item.
- B. Firestopping materials shall provide a fire-rating commensurate with the adjacent construction rating.
 - C. Firestop materials shall comply with ASTM E 84: Surface Burning Characteristics.
 - D. Firestop materials shall have been tested in accordance with ASTM E 814, UL 1479 or UL 2079.
 - E. Firestop materials shall be free of asbestos.
 - F. Firestop materials shall be paintable or capable of receiving finish materials in those areas which are exposed to view and which are scheduled to receive finishes.
 - G. Obtain firestop products from a single manufacturer.

PART 3 - EXECUTION

3.1 INSPECTION

- A. Installer must examine substrate and conditions under which firestopping work is to be performed and notify Contractor in writing of any unsatisfactory conditions.

3.2 INSTALLATION

- A. Install firestopping materials including foaming, packing and accessory materials to fill openings around penetrations in floors and walls, to seal gaps between decks and partitions, gaps between structure and curtainwall, etc., to provide fire-stops with fire resistance ratings indicated for floor or wall assembly in which penetration occurs. Use silicone based materials for all wet or damp conditions.
- B. Install firestop materials and systems in accordance with manufacturer's printed instructions and applicable UL Building Materials Directory assemblies.
- C. Cut and friction fit fire safing type insulation firestopping to completely fill all gaps and voids. Provide stick-clips, sheet metal closures, and any other accessories to support insulation.
- D. Where floor openings are 4" or more in width and subject to traffic or loading, install firestopping materials capable of supporting same loading as floor.
- E. Remove damming materials after curing if made of other than fire resistant materials.
- F. Protect materials from damage on surfaces subject to traffic.

3.3 FIELD TESTING

- A. Firestop materials and installation may be tested by an independent testing laboratory. Refer to SECTION 01 45 23 - TESTING AND INSPECTION SERVICES.

3.4 CLEAN UP

- A. Clean up all debris caused by the work of this Section, keeping the premises clean and neat at all times.
- B. Clean adjacent surfaces soiled by the work of this section.

END OF SECTION

SECTION 07 92 00

JOINT SEALANTS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Sealing and caulking of joints.
- B. Related Sections:
 - 1. Section 03 30 00 - Cast-In-Place Concrete.
 - 2. Section 04 20 00 - Masonry Units.
 - 3. Section 06 40 00 - Architectural Woodwork.
 - 4. Section 07 62 00 - Sheet Metal Flashing and Trim.
 - 5. Section 07 84 00 - Firestopping.
 - 6. Section 08 80 00 - Glazing.
 - 7. Section 09 21 16 - Gypsum Board Assemblies.

1.2 SUBMITTALS

- A. Submit under provisions of SECTION 01 33 23 - SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Submit product data indicating sealant chemical characteristics, performance criteria, limitations, color availability and application instructions.
- C. Submit two samples ¼" diameter x 4" in size illustrating color selections available.
- D. Submit manufacturer's certificate under provisions of SECTION 01 45 00 - QUALITY CONTROL that products meet or exceed specified requirements.

1.3 QUALITY ASSURANCE

- A. Manufacturer: Company specializing in manufacturing the products specified in this section with minimum 3 years documented experience.
- B. Applicator: Company specializing in applying the work of this section with minimum 3 years documented experience and approved by sealant manufacturer.
- C. Conform to Sealant and Waterproofers Institute requirements for materials and installation.

1.4 FIELD SAMPLES

- A. Provide samples under provisions of SECTION 01 33 23 - SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Construct one field sample joint, 5 feet long, illustrating sealant type, color, and tooled surface.
- C. Locate where directed.
- D. Accepted sample may remain as part of the work.

1.5 PROJECT CONDITIONS

- A. Environmental Requirements: No caulking shall be done at temperatures below 40°F.

1.6 WARRANTY

- A. Furnish to the Owner a written warranty that the sealants shall remain watertight for a period of 2 years from the date of acceptance of the building. Joints which prove defective by leaking, cracking, melting or shrinking of the sealant shall be re-sealed without additional expense to the Owner.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Reference "SEALANT SCHEDULE" at end of this specification section for locations of Sealant Types.
- B. Modified Polyurethane (Type 1 Sealant):
1. Two or three-part conforming to ASTM C 920, Type M, Grade NS, Class 25.
 2. Color: Custom colors as selected by Architect.
 3. Acceptable products:
MasterSeal NP2, Master Builders Solutions, a brand of MBCC Group.
Dymeric 240FC, Tremco.
- C. Pourable Urethane (Type 2 Sealant):
1. Multicomponent conforming to ASTM C 920, Type M, Grade P (pourable), Class 25, Use T (traffic).
 2. Color: Custom color as selected by Architect.
 3. Acceptable products:
Urexpand NR-200, Pecora Corp.
MasterSeal SL 2 Sealant; Master Builders Solutions, a brand of MBCC Group.
THC 900 (Self leveling) or 901 (low sag), Tremco.
- D. Pourable Urethane Sealant (Type 3 Sealant):
1. Single-component conforming to ASTM C 920, Type S, Grade P (pourable), Class 25, Use T (traffic).
 2. Color: Gray or limestone as selected by Architect.
 3. Acceptable products:
Sikaflex - 1CSL; Sika Corporation, Inc.
MasterSeal SL 1; Master Builders Solutions, a brand of MBCC Group.
Vulkem 45; Tremco
- E. Silicone, General Purpose (Type 4 Sealant)
1. One-part rubber based silicone conforming to ASTM C 920, Type S, Grade NS, Class 100/50.
 2. Color: As selected by Architect.
 3. Acceptable products
790 Building Sealant, Dow Corning.
SCS2700 Silpruf LM, GE Silicones.
Spectrem 1, Tremco.
- F. Polyurethane Hybrid, Paintable (Type 5 Sealant):
1. One-part, moisture-cure, polyurethane hybrid sealant for interior use, conforming to ASTM C 920, Type S, Grade NS, Class 35 and Fed. Spec TT-S-00230C, Class A, Type II.
 2. Acceptable product:
Dymonic FC, Tremco
- G. Silicone, Sanitary (Type 6 Sealant):
1. One-part conforming to ASTM C 920, Type S, Grade NS, Class 25, F.D.A. Regulation 21 CFR177.2600, and FDA Food Additive Regulation 121.2514.
 2. Color: Clear.
 3. Acceptable products:
786 Silicone Sealant - M, Dow Corning.
SCS1700 Sanitary, GE Silicones.
- H. Acrylic Latex (Type 7 Sealant)
1. One-part, non-sag acrylic latex, siliconized, conforming to ASTM C 834, Type OP, Grade NF or -18° C.
 2. Acceptable products:
AC-20+, Pecora Corp.
MasterSeal NP 520; Master Builders Solutions, a brand of MBCC Group.
Tremflex 834; Tremco.
- I. Acoustical Sealant (Type 8 Sealant):
1. Butyl rubber for concealed locations.
 2. Acceptable products:
AC-20 FTR Acoustical and Insulation Sealant, Pecora Corp.
Acoustical Sealant, Tremco
Sheetrock Acoustical Sealant; USG Co.

2.2 ACCESSORIES

- A. Primer: Non-staining type, recommended by sealant manufacturer to suit application.
- B. Joint Cleaner: Non-corrosive and non-staining type, recommended by sealant manufacturer; compatible with joint forming materials.
- C. Joint Backing: ASTM D 1056 and C 1330. In vertical joints use closed cell polyethylene foam rod; oversized 30 to 50 percent larger than joint width. In horizontal joints, use solid neoprene or butyl rubber, Shore A hardness of 70.
- D. Bond Breaker: Pressure sensitive tape recommended by sealant manufacturer to suit application.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that surfaces and joint openings are ready to receive work and field measurements are as shown on drawings and recommended by the manufacturer.
- B. Beginning of installation means installer accepts existing substrate.

3.2 PREPARATION

- A. Joint surfaces shall be clean and dry. Remove loose mortar and other material completely with compressed air or by brushing.
 - 1. Joints to be caulked shall be at least ¼" wide unless specifically specified smaller. At any point where the width of the joint is appreciably less, cut or grind out the joint to that width to assure an adequate volume of sealant along the length of the joint, except at concrete paving joints, those shall remain ¼" wide as indicated.
 - 2. Pack with backing material the voids and recesses around metal frames which are deeper than the depth required for caulking. Leave the proper depth for the sealant.
 - 3. In open joints and where detailed, install rod stock as backing material. Roll the material into the joints to avoid stretching. The natural thickness of the rod stock shall be approximately twice the thickness of the joint in which it is installed.
 - 4. In raked masonry joints, apply a bondbreaker strip of polyethylene or masking tape along the bottom of the joints.
 - 5. Where sealant is to be applied against smooth metal surfaces, wipe these surfaces clean with a suitable ketone solvent immediately prior to caulking.
 - 6. Particular attention shall be paid to the preparation of horizontal joints in wear surfaces to be filled with sealant. Adjust joint depth to comply with sealant manufacturer's recommendations by malleting down the joint filler or filling in with rod stock as may be required. Joints in concrete paving shall be primed in accordance with manufacturer's recommendations.
 - 7. Perform preparation in accordance with ASTM C 1193 for solvent release sealants, C 1193 for latex base sealants, C 919 for acoustical applications, and C 1193 for elastomeric sealants.

3.3 APPLICATION

- A. Priming: Prime porous joint surfaces, particularly masonry and concrete. Test the primer to make sure it causes no staining of the material on which it is applied.
- B. Depth of sealant: Seal joints to a depth of approximately ½ the joint width, but never less than ¼" deep. Follow the sealant manufacturer's recommendations where possible.
- C. Apply the sealant in accordance with the manufacturer's instructions.
 - 1. Force the sealant into joints with enough pressure to expel all air and provide a solid filling. Correct any flowing or sagging before final inspection is made.
 - 2. Where adjacent surfaces permit, use masking tape to obtain straight, even lines. Remove tape immediately after the joints have been sealed.
 - 3. Fill joints flush with adjacent surfaces except where a recessed joint is specifically detailed. Tool beads with a sled runner or similar tool to insure full contact with joint faces.

4. For caulking horizontal joints in wear surfaces, use a gun with a narrow nozzle. Apply the flow type sealant with the nozzle riding along the bottom so that the sealant is forced up to completely fill the slot without cavities. Provide and use a portable vacuum cleaner to remove loose dirt from the joints just ahead of the caulking gun.

D. Install sealant free of air pockets, foreign embedded matter, ridges, and sags.

E. Tool joints concave. Sealant shall achieve a firm skin before surface coating is applied.

3.4 CLEANING/REPAIRING

A. Clean adjacent surfaces of soiling due to caulking operations. This applicator shall be responsible for and shall bear the cost of replacing any material damaged or discolored due to caulking operations.

B. Repair or replace defaced or disfigured finishes caused by work of this section.

3.5 SEALANT SCHEDULE

A. Locations specified below for sealants and caulking required under this section are general and shall not be considered as affecting the required use of sealing compounds specified under other sections of the specifications.

<u>SEALANT TYPE</u>	<u>APPLICATION</u>
1	<ol style="list-style-type: none">a. Vertical control and expansion joints in exterior and unpainted interior masonry surfaces. At joint width 1" or more, reference SECTION 07 95 00 - EXPANSION CONTROL.b. Vertical joints at perimeter of window, door, and storefront elements where adjacent to stone, masonry, or concrete surfaces.c. Reglets: The top groove along the surface-mounted flashing reglets.d. Sealing joints in sheet metal fabrications.e. Unless noted otherwise, any other exterior vertical joints.
2	<ol style="list-style-type: none">a. Interior horizontal control and expansion joints in flooring, stone, masonry and tile flooring and at junctures between these materials and other adjacent materials.
3	<ol style="list-style-type: none">a. Exterior horizontal control and expansion joints in concrete paving.
4	<ol style="list-style-type: none">a. Sealing of joints between plumbing fixtures and substrates and between plastic laminate splashes and adjacent tops and walls.b. Threshold and windowsills set in full bed of sealant.
5	<ol style="list-style-type: none">a. General caulking as part of interior painting in joints subject to movement.
6	<ol style="list-style-type: none">a. Sealing joints between countertops and substrates in areas which may be in contact with food.
7	<ol style="list-style-type: none">a. General caulking as part of interior painting.
8	<ol style="list-style-type: none">a. Setting sill track, head track, and end studs to substrates on acoustically rated partitions. Refer to SECTION 09 21 16 - GYPSUM BOARD ASSEMBLIES for application requirements.

END OF SECTION

SECTION 07 95 00

EXPANSION CONTROL

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
1. Expansion joint assemblies for floor, wall and ceiling surfaces.
 2. Preformed, foam joint seals.
 3. Preformed, rubber joint seals.
- B. Related Sections:
1. Section 03 11 13 - Structural Concrete Forming: Expansion and contraction joints in exterior concrete joints.
 2. Section 07 62 00 - Sheet Metal Flashing and Trim: Roof control joints.
 3. Section 07 92 00 - Joint Sealants: Expansion and control joints.

1.2 SUBMITTALS

- A. General: Submit under provisions of SECTION 01 33 23 - SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Product Data: Provide joint assembly profiles, dimensions, locations in the Work, affected adjacent construction, anchorage devices, available colors and finish, and locations of splices. Provide Manufacturer's Installation Instructions. Indicate rough-in sizes.
- C. Certificates:
1. Expansion Joint Covers: Material test reports from qualified independent testing laboratory indicating and interpreting test results relative to compliance of fire-rated expansion joint assemblies with requirements indicated.
 2. Preformed Joint Seals: Tests performed by manufacturer and witnessed by a qualified testing agency for each preformed joint seal.
 3. Warranties: Submit warranty information.
- D. Samples:
1. Preformed Joint Seal:
 - a. Initial Selection: Manufacturer's color charts showing the full range of colors available for each product exposed to view.
 - b. Verification: For each type and color of preformed joint seal required, provide samples with joint seals in 2-inch-wide joints formed between two 6-inch-long strips of material matching the appearance of exposed surfaces adjacent to joint seals.
 2. Expansion Joint Covers: Submit two 4" long samples, illustrating profile, dimension, color, and finish selected.
- E. Templates: For cast-in or placed frames or anchors, and indicate tolerances for item placement.
- F. Preformed Joint Seal Schedule: Include the following information:
1. Joint seal location and designation.
 2. Joint width and movement capability.
 3. Joint seal manufacturer and product name.
 4. Joint seal color.

1.3 FIELD MEASUREMENTS

- A. Verify that field measurements are as instructed by the manufacturer.

1.4 WARRANTY

A. Preformed Joint Seal:

1. Special Warranty: Installer agrees to repair or replace preformed joint seals that do not comply with performance and other requirements specified in this Section within specified warranty period.
 - a. Warranty Period: Two years from date of Substantial Completion.
2. Special Manufacturer's Warranty: Manufacturer agrees to furnish preformed joint seals to repair or replace those that do not comply with performance and other requirements specified in this Section within specified warranty period.
 - a. Warranty Period: Five years from date of Substantial Completion.

1.5 EXTRA MATERIALS

- A. Furnish under provisions of SECTION 01 78 40 - SPARE PARTS, OVERAGES, AND MAINTENANCE MATERIALS.
- B. Provide 25% overage of resilient joint filler, and special tools required for servicing components.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Expansion Joints: Factory-fabricated closure materials and transition pieces, T-joints, corners, curbs, cross-connections, and other accessories as required to provide continuous expansion joint cover assemblies.
 1. Basis-of-design Products for each architectural joint system is based on products by **Balco, Inc.** Subject to compliance with requirements, provide either the named products or comparable products by one of the following:
 - Architectural Art Mfg. Inc.
 - Construction Specialties, inc.
 - MM Systems Corp.
 2. Floor to Floor System: Provide Model 75FCE-1 aluminum mill finish expansion joint as manufactured by Balco, Inc.
 - a. 3/16" recess for carpet.
 - b. Approximately 25% movement.
 - c. Filler Color: As selected by Architect.
 3. Wall/Ceiling Systems:
 - a. Model 75FWGC-1 aluminum mill finish expansion joint as manufactured by Balco, Inc.
 - 1) Approximately 25% movement.
 - 2) Filler Color: As selected by Architect.
 - b. Model 75FWG-1 aluminum mill finish expansion joint as manufactured by Balco, Inc.
 - 1) Approximately 25% movement.
 - 2) Filler Color: As selected by Architect.
- B. Preformed, Foam Joint Seals (PJS-1): Manufacturer's standard joint seal manufactured with a primary silicone surface seal factory applied to a secondary closed-cell copolymer ethylene vinyl acetate foam rubber seal. Can accommodate miters and changes in direction with heat weldable transitions. Resistant to UV, ozone, acid rain, most chemicals and extreme temperatures. Meets all applicable standards for compressible sealants. Provide **MM Systems Corp. ColorJoint (SCE Series)** Siesmic Colorseal, or subject to compliance with requirements, comparable products by one of the following:
 - EMSEAL Joint Systems, Ltd.
 - MM Systems Corporation.
 - Nystrom, Inc.
 1. Design Criteria:
 - a. Nominal Joint Width: As indicated on Drawings.
 - b. Tensile Strength 115 psi (+25/-0) D3575
 - c. Ultimate Elongation 225% D3575
 - d. Tear Resistance 20 lbs/in ± 25% D624
 - e. Water Absorption (by weight) <.02 lbs/sq.ft. D3575
 - f. Density Average 2.7 - 3.2 lbs/cu.ft. D3575
 - g. Movement Capability: -25 percent/+25 percent.
 2. Joint Seal Color: As selected by Architect from full range of industry colors.
 3. Primer: Material recommended by preformed-joint-seal manufacturer for joint substrates indicated.

- C. Preformed, Rubber Joint Seals (PJS-2): The expansion joint shall be a continuous low stress multi-web elastoprene compression seal that remains in compression throughout its entire movement cycle. It shall be bonded in place with polyurethane adhesive creating a watertight seal. The rubber seal design shall be bonded in place with polyurethane adhesive creating a watertight seal. The seal shall be supplied in the longest continuous length possible.
1. Basis of Design Product: Provide **MM Systems Corp. Vertical Compression Seal (VCS Series)**, or subject to compliance with requirements, comparable products by one of the following:
MM Systems Corporation
Nystrom, Inc.
 2. Design Criteria:
 - a. Nominal Joint Width: As indicated on Drawings.
 - b. Tensile Strength 1000 psi (+75/-0) D412
 - c. Ultimate Elongation 445% D412
 - d. Hardness, Shore A 65 +/- 3 pts. D2240
 - e. Tear Strength 140 pli / 24.5 kN/m @ 23°C D624
58 pli / 10.2 kN/m @100°C D624
 - f. Compression set
168 hrs. 25% @ 23°C D395
168 hrs. 38% @ 100°C D395
 - g. Ozone Resistance No Cracks D1149
 - h. UV Resistance Very Good
 - i. Brittle Point -76°F D746
 3. Joint Seal Color: As selected by Architect from full range of industry colors.
 4. Primer: Material recommended by preformed-joint-seal manufacturer for joint substrates indicated.
- D. Substitutions: In accordance with SECTION 01 62 00 - PRODUCT OPTIONS.

2.2 MATERIALS

- A. Extruded Aluminum: ANSI/ASTM B 221 6063-T5 alloy for extrusions; ASTM B 308 Alloy 6061-T6, for sheet and plate.
- B. Resilient Filler: Extruded vinyl exhibiting Shore 'A' hardness of 40 - 65 Durometer.
- C. Threaded Fasteners: Stainless steel.
- D. Primer: Manufacturer's standard protective coating on aluminum surfaces to be placed in contact with cementitious materials, or provide bituminous paint, impregnated paper or felt, or an alkali-resistant insulating coating.
- E. Fire Rated Systems: Fire barrier caulk (SECTION 07 84 00 - FIRESTOPPING), fire blanket, and insulation.
- F. Exterior Building Expansion Joint in Masonry Veneer: Provide Compression Seal Expansion Joint Model VCS-225 as manufactured by MM Systems

2.3 FABRICATION

- A. Joint Covers: Flexible dual durometer extruded preformed gasket bonded to extruded aluminum retainers for interior expansion joints in floors and walls.
 1. Covers shall be single or multilayered rubber extrusions as classified under ASTM D 2000, with continuous, longitudinal, internal baffles and formed to fit compatible frames. Expansion joint seals shall be as manufactured by Construction Specialties, Inc., or approved equivalent. See drawings for types.
 2. Extruded preformed gasket color(s) shall be as selected by Architect.
- B. Concealed aluminum surfaces in direct contact with masonry and concrete shall be shop coated with Manufacturer's standard protective coating on aluminum surfaces to be placed in contact with cementitious materials, or provide bituminous paint, impregnated paper or felt, or an alkali-resistant insulating coating..
- C. Galvanize embedded ferrous metal anchors and fastening devices.
- D. Shop assemble components and package with anchors and fittings.
- E. Provide joint components in single length wherever practical. Minimize site splicing.

2.4 FINISHES

- A. Floors: Mill finish.
- B. Walls and Ceilings: Mill Finish.
- C. Resilient Filler Exposed to View: Color as selected by Architect from standard colors.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify surfaces are ready to receive the materials of this section.
- B. Verify that joint preparation and affected dimensions are acceptable.
- C. Preformed, Foam Joint Seals: Examine joints indicated to receive preformed joint seals, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting preformed-joint seal performance.
- D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Provide anchoring devices for installation.
- B. Provide templates and rough-in measurements.
- C. Preformed, Foam Joint Seals
 - 1. Surface Cleaning of Joints: Clean out joints immediately before installing preformed joint seals to comply with preformed joint seal manufacturer's written instructions and the following requirements:
 - a. Remove all foreign material from joint substrates that could interfere with adhesion of preformed joint seal, including dust, paints (except for permanent protective coatings tested and approved for seal adhesion and compatibility by seal manufacturer), old joint sealants, oil, grease, waterproofing, water repellents, water, surface dirt, and frost.
 - b. Clean porous joint substrate surfaces by brushing, grinding, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimal bond with preformed joint seals. Remove loose particles remaining after cleaning operations above by vacuuming or blowing out joints with oil-free compressed air. Porous joint substrates include the following:
 - 1) Concrete.
 - 2) Masonry.
 - 3) Unglazed surfaces of ceramic tile.
 - c. Remove laitance and form-release agents from concrete.
 - d. Clean nonporous joint substrate surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint seals. Nonporous joint substrates include the following:
 - 1) Metal.
 - 2) Glass.
 - 3) Porcelain enamel.
 - 4) Glazed surfaces of ceramic tile.
 - 2. Joint Priming: Prime joint substrates where recommended by preformed joint seal manufacturer or as indicated by tests or prior experience. Apply primer to comply with joint seal manufacturer's written instructions. Confine primers to areas of joint seal bond; do not allow spillage or migration onto adjoining surfaces.
 - 3. Masking Tape: Use masking tape where required to prevent contact of adhesive or primer with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove smears. Remove tape immediately after tooling without disturbing joint seal.

3.3 INSTALLATION

- A. Install components and accessories in accordance with manufacturer's instructions.

- B. Align work plumb and level, flush with adjacent surfaces.
- C. Rigidly anchor components to substrate to prevent misalignment.
- D. Install fire-rated systems where required.
- E. Installation of Preformed, Foam Joint Seals:
 - 1. Install each length of seal immediately after removing protective wrapping.
 - 2. Firmly secure compressed joint seals to joint gap side to obtain full bond using exposed pressure-sensitive adhesive or field-applied adhesive as recommended by manufacturer.
 - 3. Do not pull or stretch material. Produce seal continuity at splices, ends, turns, and intersections of joints.
 - 4. For applications at low ambient temperatures, heat foam joint seal material in compliance with manufacturer's written instructions.
- F. Installation of Preformed, Rubber Joint Seals:
 - 1. Remove and repair all unsound substrate. Joint opening sidewall interface areas must be clean and dry prior to installation.
 - 2. Prepare joint opening - surfaces must be sound, dry, by sandblasting free laitance, curing agents or foreign matter.
 - 3. Uncoil seal and allow it to relax in the sun for as long as possible before installation.
 - 4. Joint opening must be blown with compressed air immediately prior to seal installation.
 - 5. Clean and prepare sidewalls of the seal and joint opening interface per the installation guidelines.
 - 6. Apply a thin layer of the polyurethane lubricant adhesive to the sides of the seal (enough to fill the ribs) and to the sidewalls of the expansion joint opening.
 - 7. Install the seal by pushing it into the joint opening with a blunt/flat metal bar.
 - 8. Position seal according to dimensional guidelines.
 - 9. Clean excess adhesive from seal and concrete.

3.4 PROTECTION OF FINISHED WORK

- A. Protect finished work under provisions of SECTION 01 50 00 - TEMPORARY FACILITIES AND CONTROLS.
- B. Do not permit traffic over unprotected floor joint surfaces.
- C. Provide removable coating to protect finish surface.

END OF SECTION

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SECTION 08 11 00

HOLLOW METAL DOORS AND FRAMES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Hollow metal doors and frames, sidelight frames, and borrowed light frames.
- B. Related Sections:
 - 1. Section 08 14 23 - Plastic-laminate-faced Wood Doors.
 - 2. Section 08 71 00 - Door Hardware: hardware locations.
 - 3. Section 08 80 00 - Glazing: glass for doors, sidelights, and borrowed lights.
 - 4. Section 09 91 00 - Painting: finishing of hollow metal doors and frames.

1.2 SUBMITTALS

- A. Shop Drawings: Submit in accordance with SECTION 01 33 23 - SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
 - 1. Include door sizes, construction, frame types, wall anchors, and accessories required for installation.
 - 2. Include cable routing diagram through hollow metal doors indicating the cable routing from the power supply to the electric hinge to the electrified locking device.

1.3 REGULATORY REQUIREMENTS

- A. Conform to applicable local building codes for fire rated requirements of metal door/metal frame and wood door/metal frame assemblies.
- B. Fire Rated Door and Transom Panel Construction: Conform to NFPA 252 or UL 10C.

1.4 QUALITY ASSURANCE

- A. Standard: Provide steel doors and frames complying with the Steel Door Institute ANSI/SDI A250.8 and as herein specified. Hollow metal provider that is not a member of the Steel Door Institute is not approved and must submit product data and samples for review.
- B. Fire-Rated Door Assemblies: Provide door and frame assemblies which are identical in materials and construction to units tested in door and frame assemblies per NFPA 252 and which are labeled and listed for ratings indicated by UL. Metal UL classification markers shall be attached to these doors and frames.
 - 1. Test Pressure (positive-pressure testing): After 5 minutes into the test, the neutral pressure level in furnace shall be established at 40 inches or less above the sill.
- C. Conform to requirements of ANSI/SDI A250.8.
- D. Installed frame and door assembly to conform to UL 10C for fire-rated class indicated or scheduled.
- E. Manufacturer: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver metal doors and frames to the project site with no dents or open seams and store upright in a protected dry area. Provide packaging and wrapping to protect hollow metal items.

PRODUCTS

1.6 ACCEPTABLE MANUFACTURERS

- A. Provide steel doors and frames as manufactured by one of the following:
- Ceco Door Products; an ASSA ABLOY Group Co.
 - Curries Company; an ASSA ABLOY Group Co.
 - Deansteel Mfg., Inc.
 - Mesker Door, Inc.
 - Republic Builders Products Co.
 - Steelcraft; an Ingersoll-Rand Co.

1.7 MATERIALS

- A. Sheet and Strip: ASTM A 1008, commercial quality, leveled, cold-rolled steel free of scale and other surface defects.

1.8 FABRICATION

- A. Flush Steel Doors: Full flush type of welded seamless construction with no visible seams or joints on faces or vertical edges.
1. Exterior Doors:
 - a. Extra Heavy Duty; 0.053" thick metallic-coated steel sheet faces (16 ga.); SDI A250.8 Level 3; SDI A250.4 Performance Level A; Edge Construction Model 2 Seamless.
 - b. Provide foamed-in-place polyurethane insulation with minimum U-value of 0.60 for assembly with frame.
 - c. Face: Metallic-coated steel sheet, with minimum A60 coating.
 2. Interior Doors:
 - a. Heavy Duty; 0.042" thick uncoated steel sheet faces (18 ga.); SDI A250.8 Level 2; SDI A250.4 Performance Level B; Edge Construction Model 2 Seamless.
 3. Fire Rated Doors: Provide mineral fiberboard core as scheduled and/or as required to meet applicable codes.
 4. Steel thickness is thickness of base metal without coatings according to NAAMM-HMMA 803 or SDI A250.8.
 5. Steel reinforced, stiffened and sound-deadened by laminating to small cell impregnated kraft honeycomb core completely filling the door or by formed steel vertical stiffeners spaced 6" o.c. and attached to face sheets by spot welds and with the spaces between stiffeners filled with inorganic blanket insulation material.
 6. Continuous vertical interlocking joints on lock and hinge edges with seams continuously welded, filled and dressed smooth. Bevel vertical edges.
 7. Top and bottom edges closed with continuous recessed steel channels spot welded to both faces. Top edge of exterior doors sealed flush with closing channel to exclude water.
 8. Fixed glass moldings welded to security side of door. Loose moldings of 20 gage steel fastened with countersunk flat head screws. Fabricate stops to receive vinyl gaskets.
 9. Overlapping steel astragals for pairs of labeled doors as required by manufacturer to meet codes.
- B. Steel Frames: Combination buck, frame and trim type. Provide frames with face width, throat opening, backbend, and jamb depth as per dimensions shown.
1. Exterior Frames:
 - a. Extra Heavy Duty; 0.067" thick metallic-coated steel sheet (14 ga.); SDI A250.8 Level 3; SDI A250.4 Performance Level A.
 - b. Continuously welded (full profile welded).
 - c. Minimum U-value of 0.60 for assembly with door.
 - d. Metallic-coated steel sheet with minimum A60 coating.
 2. Interior Frames:
 - a. Heavy Duty; 0.053" thick uncoated steel sheet (16 ga.); SDI A250.8 Level 3; SDI A250.4 Performance Level B.
 - b. Continuously welded (full profile welded).
 3. Brake-form to profile free of warp, buckles, and fractures with corners square and sharp. Form stop integral with frame except where detailed otherwise. Dress sheared edges straight and smooth.
 4. Close corner joints tight with trim faces mitered and continuously welded. Dress exposed welds flush and smooth.
 5. Fabricate frames for large openings in knocked-down sections for field assembly with butt joints and internal reinforcing sleeves. Knocked-down frame assemblies shall be trial assembled in the shop.

6. Loose glazing stops shall be 16 gage steel, mitered corners, fastened with countersunk flathead screws. Fabricate stops to receive vinyl gaskets.
 7. Weld 14 gage steel floor anchors inside each jamb with two holes each anchor for floor anchor bolts.
 8. Furnish frames with steel spreader temporarily fastened to the feet of both jambs for rigidity during shipping and handling.
 9. For each jamb in masonry construction provide 3 or more 16 gage adjustable jamb anchors of the T-strap type spaced not more than 30" apart. Furnish yoke type Underwriters anchors for labeled door openings only.
 10. For each jamb in steel stud construction provide 4 or more 18 gage drywall type jamb anchors. Weld anchors inside each jamb and wire or bolt to the studs.
- C. Shop Finish: After fabrication, doors and frames shall be degreased, phosphatized, and factory painted inside and out with a rust inhibitive synthetic primer. Apply mineral filler to eliminate weld scars and other blemishes.
- D. Fabricate frames and doors with hardware reinforcement plates welded in place. Provide mortar guard boxes.
- E. Reinforce frames wider than 48" with roll formed steel channels fitted tightly into frame head, flush with top.
- F. Prepare frame for silencers. Provide three single rubber silencers for single doors and mullions of double doors on strike side, and two single silencers on frame head at double doors without mullions.
- G. Attach fire-rated label to each frame and door unit.
- H. Close top edge of exterior door flush with inverted steel channel closure. Seal joints watertight.
- I. Fabricate frames for masonry wall coursing with 2" head member.

1.9 HARDWARE PREPARATION

- A. Prepare doors and door frames for hardware. Mortising, reinforcing, drilling, and tapping shall be done at the factory for mortised hardware. Reinforcement shall be provided for surface-applied hardware, and the drilling and tapping for this hardware shall be done in the field. Provide plaster guards for hinge and strike reinforcements and cutouts on frames.
- B. Reinforcement plates in doors and frames for hardware shall be 7 gage for hinges and 12 gage for all other hardware.
- C. Punch for and install rubber silencers on all interior hollow metal door frames. Furnish 3 silencers for each single door and 2 silencers for each pair of doors. Set out and adjust strikes to provide clearance for the silencers. Omit silencers on exterior door frames.

1.10 CLEARANCES

- A. Doors shall have pre-fit clearances of:
 1. At Head and Lock Stile: 1/8".
 2. At Hinge Stile: 1/16".
 3. At Door Sill:
 - a. Without Threshold: 1/8" from bottom of door to top of decorative floor finish or covering.
 - b. With Threshold: 1/8" from bottom of door to top of threshold.
 4. Between meeting edges of pair of doors: 1/8".
- B. Fitting Clearances for Fire-Rated Doors: Comply with NFPA 80. Bevel fire-rated doors 1/8" in 2" in lock edge.

1.11 ACCESSORIES

- A. Rubber Silencers: Resilient rubber.
- B. Anchors: Three per jamb, typically, of type to suit supportive construction.

PART 2 - EXECUTION

2.1 EXAMINATION

- A. Verify substrate conditions under provisions of SECTION 01 31 00 - PROJECT MANAGEMENT AND COORDINATION.
- B. Verify that opening sizes and tolerances are acceptable.
- C. Verify surfaces and conditions are ready to receive work of this section. Notify Architect of any existing conditions which will adversely affect execution. Beginning of execution will constitute acceptance of existing conditions.

2.2 INSTALLATION

- A. Install frames in accordance with SDI-105.
- B. Install doors in accordance with DHI.
- C. Install fire-rated frames and place fire-rated doors in accordance with NFPA 80.
- D. Coordinate with masonry and wallboard construction for anchor placement.
- E. Coordinate installation of glass and glazing.
- F. Install doors accurately in frames, maintaining specified clearances.
- G. Setting Frames:
 - 1. Check frames for rack, twist and out-of-square, and correct.
 - 2. Set frames accurately to maintain scheduled dimensions, hold head level and maintain jambs plumb and square.
 - 3. Anchor frames securely to adjacent construction. Anchor to floor at each jamb with two bolts to prevent twist.
 - 4. Leave spreader bars in place until frames have been permanently built into the walls.
 - 5. Install fire-rated frames in accordance with NFPA 80.
- H. Hanging Doors:
 - 1. Fit and hang the doors to maintain specified door clearances. Metal hinge shims are acceptable to maintain clearances.
 - 2. Doors shall be out of wind and shall operate smoothly and quietly after adjustment.
 - 3. Place fire-rated doors with clearances as specified in NFPA 80.

2.3 TOLERANCES

- A. Maximum Diagonal Distortion: 1/8" measured with straight edge, corner to corner.

END OF SECTION

SECTION 08 14 23

PLASTIC-LAMINATE-FACED WOOD DOORS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Solid core plastic-faced wood doors.
 - 2. Fire-rated plastic-faced wood doors.
- B. Related Sections:
 - 1. Section 06 40 00 - Architectural Woodwork: laminate clad cabinets.
 - 2. Section 08 11 00 - Hollow Metal Doors and Frames: hollow metal frames.
 - 3. Section 08 71 00 - Door Hardware: location of hardware.
 - 4. Section 08 80 00 - Glazing: glass for doors.
 - 5. Section 12 32 16 - Manufactured Plastic-laminate-clad Casework

1.2 SUBMITTALS

- A. General: Submit in accordance with SECTION 01 33 23 - SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Shop Drawings: Indicate sizes, construction, core materials, edge banding dimensions and stop profile.
- C. Product Data: Indicate door core materials and construction; type and characteristics.
- D. Samples:
 - 1. Submit a sample, 6" by 6", of each plastic laminate finish and color selected.
 - 2. Submit a 12" x 12" sample of solid core door panel indicating construction, core, face and edge detail.
 - 3. Submit 8-1/2" x 11" paint color samples of door glazing frame paint.
- E. Certificates: Submit certification that doors comply with reference standards fabrication requirements, signed by authorized representative of door manufacturer.

1.3 QUALITY ASSURANCE

- A. Standard: Comply with the requirements of "Architectural Woodwork Quality Standards, Guide Specifications and Quality Certification Program" as published by Architectural Woodwork Institute.
- B. Fire-Rated Wood Doors: Provide plastic faced wood doors which are identical in materials and construction to units tested in door and frame assemblies per NFPA 252 and which are labeled and listed for ratings indicated by UL or Warnock Hersey. Provide metal UL or Warnock Hersey classification markers attached to door.
 - 1. Test Pressure (positive-pressure testing): After 5 minutes into the test, the neutral pressure level in furnace shall be established at 40 inches or less above the sill.
- C. Manufacturer: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

1.4 REGULATORY REQUIREMENTS

- A. Fire Door Construction: Conform to NFPA 252.
- B. Installed Fire-Rated Door Assembly: Conform to NFPA 80 for fire-rated class as scheduled.

1.5 DELIVERY

- A. Deliver doors to the project site ready for installation and to receive hardware. Each unit shall be individually plastic wrapped at the factory for protection in transit and storage.

1.6 WARRANTY

- A. Special Warranty: Provide Life-of-Installation warranty on manufacturer's standard form, signed by manufacturer, installer, and contractor, in which manufacturer agrees to repair or replace doors that are defective in materials or workmanship or have warped (bow, cup, or twist) more than 1/4 inch in a 42-by-84-inch section. Warranty shall specifically include installation of replacement doors required during term of the warranty.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

- A. Provide plastic laminate faced wood doors as manufactured by one of the following:
Marshfield-Algoma (Masonite Architectural)
Oregon Door
VT Industries, Inc./Eggers Industries, Architectural Door Div.

2.2 MATERIALS AND FABRICATION

- A. Flush Doors: Premium Grade, PC-HPDL-3 (3-ply), as defined in Section 9 of AWI Quality Standards.
1. Core: Particleboard meeting ANSI A 208.1, Grade LD-2, Urea-Formaldehyde Free.
 2. Stiles: Vertical edges at least 1-1/8" and bonded to core. Species shall be closed grain hardwood with factory-painted finish to match faces. At doors with wood-look plastic laminate faces, stain vertical edges to match faces.
 3. Rails: Top and bottom rail edges at least 1-1/8" and bonded to core. Mill option.
 4. Faces: HGS (nominal 0.048") high pressure decorative laminated plastic conforming to NEMA LD 3. Laminate to be bonded to both faces. Fire-rated plastic laminate faced wood doors shall be surfaced with fire-rated (UL Stamped) laminated plastic sheet. Color shall be as selected by Architect from manufacturer's full color and pattern range. Product/manufacturer; one of the following:
Formica Brand Laminate; Formica Corp.
Nevamar; TexMar, Inc.
Pionite Decorative Laminate; Pioneer Plastics Corp.
Wilsonart; Ralph Wilson Plastics Co.
 5. Stops: Provide shop primed metal glazing frames at all light openings. Fasten by through-bolted countersunk flathead screws. Field painted color as selected by Architect.
- B. Labeled Doors:
1. "B" Label Doors (60-minute): AWI Type FD 1-1/2 or 1 non-combustible solid mineral core with chemically treated hardwood edge banding and fire-retardant cross banding. Pairs of "B Label" doors shall be furnished with necessary metal edge and astragal trim if required by door manufacturer to meet code requirements.
 2. Cut-outs for vision panels in fire-rated doors shall be factory cut. No field cutting shall be permitted.
 3. Stops: Provide listed shop primed metal glazing frames at all light openings. Fasten by through-bolted countersunk flathead screws. Field painted color as selected by Architect.
- C. Fitting:
1. Cutouts for mortise hardware shall be made to template at the factory.
 2. Top and bottom rail edges and core exposed by cutouts for hardware shall be factory sealed.
 3. Doors shall have pre-fit clearances of:
 - a. At Head and Lock Stile: 1/8"
 - b. At Hinge Stile: 1/16"
 - c. At Door Sill:
 - 1) Without Threshold: 1/8" from bottom of door to top of decorative floor finish or covering.
 - 2) With Threshold: 1/8" from bottom of door to top of threshold.
 - d. Between meeting edges of pair of doors: 1/8"
 4. Fitting Clearances for Fire-Rated Doors: Comply with NFPA 80. Bevel fire-rated doors 1/8" in 2" in lock edge.

2.3 ADHESIVE

- A. Facing Adhesive: Type I - waterproof.

2.4 FABRICATION

- A. Fabricate non-rated doors in accordance with AWI Quality Standards requirements.
- B. Fabricate fire-rated doors in accordance with AWI Quality Standards and to UL or Warnock-Hersey requirements. Attach fire-rating label to door.
- C. Provide lock blocks at lock edge and top of door for closer for hardware reinforcement.
- D. Fit door metal edge trim to edge of stiles after applying veneer facing.
- E. Bond edge banding to cores.
- F. Factory machine doors for finish hardware in accordance with hardware requirements and dimensions. Do not machine for surface hardware. Provide solid blocking for through-bolted hardware.
- G. Factory pre-fit doors for frame opening dimensions identified on shop drawings.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify frame opening conditions under provisions of SECTION 01 31 00 - PROJECT MANAGEMENT AND COORDINATION.
- B. Verify that opening sizes and tolerances are acceptable.
- C. Do not install doors in frame openings that are not plumb or are out-of-tolerance for size or alignment.

3.2 PREPARATION

- A. Condition plastic faced wood doors to the average prevailing humidity in the building prior to fitting and hanging.

3.3 INSTALLATION

- A. General: Installation of doors shall comply with the applicable requirements of Section 1700 Installation of Architectural Woodwork (Interior) of the AWI Quality Standards.
- B. Hang doors to maintain uniform clearances. Doors shall be out of wind and shall operate smoothly and quietly after adjustment. Replace doors damaged during installation.
- C. Cutting and fitting of plastic laminate faced doors at the project site will not be permitted. Doors which do not fit properly shall be replaced.
- D. Install fire-rated doors in corresponding fire-rated frames according to NFPA 80. Trim stiles and rails of fire-rated doors only to extent permitted by labeling agency.
- E. Pilot drill screw and bolt holes.
- F. Machine cut for hardware. Core for handsets and cylinders.
- G. Coordinate installation of doors with installation of frames specified in SECTION 08 11 00 - HOLLOW METAL DOORS AND FRAMES and hardware specified in SECTION 08 71 00 - DOOR HARDWARE.
- H. Coordinate installation of glass and glazing.

3.4 INSTALLATION TOLERANCES

- A. Conform to AWI requirements for fit and clearance tolerances.

- B. Maximum Diagonal Distortion (Warp): 1/8" measured with straight edge or taut string, corner to corner, over an imaginary 36" x 84" surface area.
- C. Maximum Vertical Distortion (Bow): 1/8" measured with straight edge or taut string, top to bottom, over an imaginary 36" x 84" surface area.
- D. Maximum Width Distortion (Cup): 1/8" measured with straight edge or taut string, edge to edge, over an imaginary 36" x 84" surface area.

3.5 ADJUSTING

- A. Adjust work under provisions of SECTION 01 77 00 - CLOSEOUT PROCEDURES.
- B. Adjust door for smooth and balanced door movement.

END OF SECTION

SECTION 08 31 00

ACCESS DOORS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Wall and ceiling access doors.
- B. Related Sections
 - 1. Section 03 30 00 - Cast-In-Place Concrete: Openings in concrete.
 - 2. Section 04 20 00 - Masonry Units: Openings in masonry.
 - 3. Section 09 21 16 - Gypsum Board Assemblies: Openings in gypsum board walls and ceilings.
 - 4. Section 09 30 13 - Ceramic Tiling.
 - 5. Section 09 91 00 - Painting: Field paint finish.
 - 6. Division 22 - Plumbing components requiring access.
 - 7. Division 23 - Mechanical components requiring access.
 - 8. Division 26 - Electrical components requiring access.

1.2 SUBMITTALS

- A. Product Data: Submit in accordance with SECTION 01 33 23 - SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES. Include manufacturer's installation instructions.

1.3 QUALITY ASSURANCE

- A. Perform work in accordance with UL requirements for fire-rated doors.

1.4 REGULATORY REQUIREMENTS

- A. Conform to applicable code for fire-rated access units.

1.5 FIELD MEASUREMENTS

- A. Verify that field measurements are as instructed by the manufacturer.

1.6 COORDINATION

- A. Coordinate work under provisions of SECTION 01 31 00 - PROJECT MANAGEMENT AND COORDINATION.
- B. Coordinate the work with mechanical and electrical work requiring access units.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

- A. Provide **wall and ceiling** access doors as manufactured by one of the following:
 - J.L. Industries, Inc.
 - Karp Associates, Inc.
 - Larsen's Mfg. Co.
 - Milcor Limited Partnership
 - Nystrom Building Products Co.

2.2 GENERAL

- A. Flush metal panel access doors.
- B. Size: As required for ease of access, but not less than 12" x 12".

C. Material:

1. Model M3202: Painted steel 14 gauge frame and door.
2. Model MS3202: Stainless steel 16 gauge frame and door.
3. Models DW3203 and K3200: Painted steel 16 gauge frame; 14 gauge door.
4. Model ATR3204: Painted steel 16 gauge frame; 18 gauge door.
5. Fire-Rated Model 3218: Painted and stainless steel 14 gauge frame; 20 gauge door.

D. Lock: Screwdriver operated, with metal cam.

2.3 ACCESS UNITS - WALLS

A. Non-Fire-Rated Door and Frame Unit:

1. In Cast-in-Place Concrete: Model M3202 (painted) manufactured by Milcor.
2. In Masonry: Model M3202 (painted) manufactured by Milcor.
3. In Ceramic Tile on Gypsum Board on Steel Studs: Model MS3202 (stainless steel) manufactured by Milcor.
4. In Gypsum Board on Steel Studs: Model DW3203 (painted) manufactured by Milcor.
5. In Plaster on Metal Furring: Model K3200 (painted) manufactured by Milcor.

B. Fire-Rated Door and Frame Unit: 1-1/2 hour UL B label fire rating

1. In Cast-in-Place Concrete: Model 3218 (painted) manufactured by Milcor.
2. In Masonry: Model 3218 (painted) manufactured by Milcor.
3. In Ceramic Tile on Gypsum Board on Steel Studs: Model 3218 (stainless steel) manufactured by Milcor.
4. In Gypsum Board on Steel Studs: Model 3218 (painted) manufactured by Milcor.
5. In Plaster on Metal Furring: Model 3218 manufactured by Milcor.

2.4 ACCESS UNITS - CEILINGS

A. Non-Fire-Rated Door and Frame Unit:

1. In Gypsum Board on Metal Furring: Model DW 3203 manufactured by Milcor.
2. In Plaster on Metal Furring: Model K3200 manufactured by Milcor.
3. In Metal T-Bar Ceiling: Model ATR 3204 manufactured by Milcor.

B. Fire-Rated Door and Frame Unit: 1-1/2 hour UL B label fire rating

1. In Gypsum Board on Metal Furring: Model 3218 manufactured by Milcor.
2. In Plaster on Metal Furring: Model 3218 manufactured by Milcor.

2.5 FINISHES

A. Painted Finish: One coat baked enamel primer with baked enamel finish, color as selected by Architect.

B. Stainless Steel: No. 4 finish.

C. Aluminum: Mill finish.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify substrate conditions under provisions of SECTION 01 31 00 - PROJECT MANAGEMENT AND COORDINATION.

B. Verify that rough openings for door and frame are correctly sized and located.

3.2 INSTALLATION

A. Verify substrate conditions under provisions of SECTION 01 31 00 - PROJECT MANAGEMENT AND COORDINATION.

B. Verify that rough openings for door and frame are correctly sized and located.

END OF SECTION

ACCESS DOORS

08 31 00 - 2

SECTION 08 36 19

MULTI-LEAF VERTICAL LIFT DOORS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Vertical retractable bi-fold acoustical wall.
- B. Related Work
 - 1. Section 05 12 00 - Structural Steel Framing: main support steel beam for wall.
 - 2. Section 05 50 00 - Metal Fabrications: miscellaneous support steel.
 - 3. Section 07 21 00 - Building Insulation: Acoustic insulation.
 - 4. Section 08 71 00 - Finish Hardware; Key cylinders for locks.
 - 5. Section 09 21 16 - Gypsum Board Assemblies: Ceiling storage pocket.
 - 6. Division 26 - Electrical: Installation and wiring.

1.2 SYSTEM DESCRIPTION

- A. Design Criteria
 - 1. The design shall be furnished, approved and sealed by a professional engineer registered in the State of Texas.
 - 2. The bi-fold doors shall be designed to the same loading requirements for live, dead and wind loads as the building.
 - 3. The doors shall be engineered to resist all anticipated loads without sagging, bowing or conflicting with its smooth and efficient operation.
 - 4. The building header shall be designed to accommodate horizontal and vertical building deflections to support the bi-fold door in all positions (with the proper lateral bracing)
 - 5. The building's door columns shall be framed of the proper design and size to reinforce the opening (with lateral bracing) and to carry all loads and vibrations imposed thereon.
 - 6. The bi-fold door should have solid footing with sill directly underneath the door frame and extending outward from the door to provide a base for the door's weather seal. This also prevents flow of water into, or under, the door installation.
 - 7. The operable wall shall not weigh more than 6.2 lbs per ft² for the Skyfold Zenith 51. This weight does not include the motor drive or finishes on the acoustical panels.

1.3 SUBMITTALS

- A. General: Submit in accordance with SECTION 01 33 23 - SHOP DRAWINGS, PRODUCTS DATA, AND SAMPLES.
- B. Product Data:
 - 1. Submit manufacturer's product data and installation instructions. Include both published data and any specific data prepared for this project.
 - 2. Submit certified test reports evidencing compliance to acoustical STC (Rw) requirements.
- C. Shop Drawings:
 - 1. The design shall be furnished, approved and sealed by a professional engineer registered in the State of Texas.
 - 2. Submit shop drawings showing complete layout of operable wall system based on field verified dimensions. The drawings shall include dimensional relationship to adjoining work. Include details indicating materials, finishes, tolerances, and methods of attachment to building steel and electrical requirements.

1.4 QUALITY ASSURANCE

- A. Manufacturer: Bi-fold vertical lift doors shall be manufactured by a firm with a minimum of five years' experience in the fabrication and installation of bi-fold vertical lift doors.
- B. Installer: Installation of doors shall be performed by the authorized representative of the manufacturer.
- C. Single-Source Responsibility: Provide doors, tracks, and accessories from one manufacturer. Provide secondary components from source acceptable to manufacturer of primary components.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials and products in labeled protective packages. Store and handle in strict compliance with manufacturer's instructions and recommendations. Protect from weather damage, excessive temperatures, and construction operations.

1.6 WARRANTY

- A. Basic Warranty: The operable wall shall include an extended warranty to be warranted free from defects in material and workmanship, including coverage on all parts, for a period of ten (10) years or five thousand (5,000) cycles, whichever occurs first, from the date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PRODUCT/MANUFACTURER

- A. Basis of Design: Provide Zenith® 51 which is System STC 51 (Rw51) and Panel Construction STC 61 (Rw 60) rated, automatic vertically retractable acoustic interior wall as manufactured by Skyfold, Inc. (Dormakaba Group) (514) 457-4767, or approved equal.

2.2 OPERATION

- A. Electrical:
 - 1. The operable wall shall be equipped for a three phase power supply to the electrical control box.
 - 2. Standard electrical control box will be NEMA 1.
 - 3. Low voltage wiring (by others). 18 gauge wiring from the switches to the control box.
- B. Touch Screen Operator Stations: Two (2), 4.3" resistive LCD touch screens, wired in series with multilingual capabilities and 4-digit adjustable user pin. The screens will display faults in case of a failure with the electrical system. (wiring by others).
- C. Safety Equipment:
 - 1. The operable wall shall employ an electromagnetic type of brake which shall activate firmly, without hesitation, when power is lost to the system. This brake shall have a minimum retarding torque rating equal to 200% of the power drive full load torque. The drive system shall be equipped with a manual override and brake release lever.
 - 2. The operable wall shall employ a dynamic brake, distinct and separate from the brake above, in order to lower the operable wall at a controlled speed of no more than approximately 150% of the normal down speed, in the case of a catastrophic failure in the power train. Alternately, the operable wall shall employ a brake, distinct and separate from the brakes above, in order to completely halt the downward motion of the operable wall in the case of a catastrophic failure in the power train.
 - 3. The operable wall shall employ electrical or other limit switches in order to stop the wall at the up and down travel limits.
 - 4. The operable wall shall employ an over torque detector in order to sense a jam in the system and to act as an over travel limit in the up direction should the primary limit switch fail to act. This over torque sensor shall be mechanical, using the motor's torque arm in its over torque detection.
 - 5. The entire length of the bottom edge of the operable wall shall be equipped with a continuous pressure sensing strip which shall cut power to the motor drive and shall activate the brake, if the sensing edge comes in firm contact with an object, before the operable wall is in the full down (closed) position. The operable wall will automatically reverse direction and ascend for approximately 3 seconds to clear the obstruction. The power shall remain cut to the motor drive until the switches have been released. The operation of the operable wall can resume once the obstruction is removed.
 - 6. The lifting equipment shall use industry standards in thermal protection, overload protection, quick acting fuses, etc., in order to ensure the safety and reliability of the system.
 - 7. The operable wall shall be equipped with an optical sensor, which shall cut power to the lifting equipment if an object or person passes between the emitter(s) and receiver(s). The operable wall will then automatically reverse direction for approximately 3 seconds to clear the object. Regular operation of the operable wall shall resume once the key switch has been released and the obstruction removed.

2.3 PANEL CONSTRUCTION

- A. Acoustical panels shall be faced with steel.

- B. Acoustical panels, together with all of the sound insulation, shall be, as much as possible, made of non-combustible or fire-treated materials.
- C. Acoustical panels shall be fabricated to be as stiff as possible in order to satisfy the rigid criteria when the operable wall is down (closed) and to ensure that there is no interference between panels when the wall is in motion.
- D. Acoustical panels shall be architecturally flat with no bowing, oil canning, warping, waviness or any other surface deformation and discontinuity.
- E. Acoustical panels shall have the finish as scheduled in SECTION 09 99 00 - COLOR SCHEDULE.
 - 1. Finishes shall be railroaded onto the panels, applied horizontally along the panel length.
- F. Acoustical panels shall meet the following STC ratings in accordance with ASTM E90 (ISO 140-3) specification as reported by an independent laboratory.
 - 1. Skyfold Zenith 51:
 - (1) Panel Construction: 61 STC (60 Rw)
 - (2) Wall Construction: 51 STC (51 Rw)
- G. Each acoustical panel shall be individually removable using only a screw driver. No special tools or equipment shall be required. The removal of a single acoustical panel shall not affect, dislocate or cause the removal of any adjacent panels or other acoustical panels.

2.4 FOLDING MECHANISM

- A. The hanging, folding and extension mechanism shall be made from structural grade aluminum extrusions and structural shapes, in order to minimize the weight of the system.
- B. All wear surfaces, such as bushings, spacers, pins, discs, bearings, sleeves shall be designed to function quietly and with minimum wear, over the 10,000 cycle design life of the operable wall.
- C. The hangers, which fasten the lifting mechanism to the support steel, shall be fabricated from steel and shall be welded or bolted to the support steel supplied by others

2.5 LIFTING EQUIPMENT (MOTOR DRIVE)

- A. The lifting equipment shall be sized properly so that it can open and close the wall effectively over the 10,000 cycle design life of the wall, at the minimum design speed of approximately 5 to 10 vertical feet per minute (1.5 to 3 meters per minute).
- B. The folding mechanism shall be designed to function as smoothly, quietly and safely as possible. Wherever possible, ball bearings shall be used instead of bushings and wear surfaces. Chain or belt drive systems are not acceptable.
- C. There shall be a wire rope cable for every set of lifting mechanisms. This cable shall be of 6 x 31 construction aircraft cable and shall be made of galvanized steel. The diameter of the cables shall be sized so that they shall be able to hold the entire weight of the wall, with the appropriate safety factor.
- D. The cable wraps on yoyo drums with 2 safety wraps and multiple layers of cable.
- E. The line shaft, sized to deliver the required torque with minimum deflection, shall support and rotate the cable drums.
- F. Flange bearings shall be used for the drive system, located immediately on both sides of the drum assembly.
- G. The power drive shall be sized to deliver sufficient amount of torque to safely and effectively raise and lower the operable wall over its design life.
- H. The motor drive shall use the latest in industry standards in thermal protection, overload protection, quick acting fuses, etc., in order to ensure the safety and reliability of the system.

2.6 FINISHES

- A. Panels: Acoustical panels shall have the following finishes per elevation and SECTION 09 99 00 - COLOR SCHEDULE.
 - 1. Vinyl Wall covering as selected by architect from standard finishes.
 - 2. White markerboard on specific panels where shown on elevation.
 - 3. Plastic Laminate: Formica as scheduled in SECTION 09 99 00 - COLOR SCHEDULE.
- B. Framework: Manufacturer's standard silver metallic.
- C. Sound seals: Black

2.7 SOUND SEALS:

- A. The operable wall shall automatically and acoustically seal against the floor without the need for any manual intervention. The floor seals shall leave a joint between the floor and the bottom panels of not more than approximately 2".
- B. The operable wall shall seal to the wall track with brush seals and leave a joint between the lifting mechanism and the track of no more than approximately 3/4".
- C. The operable wall shall automatically and acoustically seal against the ceiling without any manual intervention. The top seals shall leave a joint between the top panels and the ceiling of the pocket of not more than approximately 2".

PART 3 - EXECUTION

3.1 PREPARATION

- A. Examine areas to receive doors for conditions that will adversely affect the execution and quality of work. Do not start this work until unsatisfactory conditions are corrected.

3.2 INSTALLATION

- A. Doors shall be installed by skilled mechanics supervised by the manufacturer's authorized representative.
- B. Erect the doors, tracks, and accessories in a rigid substantial manner, straight and plumb, and with horizontal lines level.

3.3 ADJUSTING

- A. Adjust and fine-tune the operable walls to ensure that all seals are operating and sealing properly and that the operable walls are in correct and smooth operation.
- B. Clean any dirt, oil, grime, etc., that may have found its way onto the panels.

END OF SECTION

SECTION 08 41 13

ALUMINUM-FRAMED ENTRANCES AND STOREFRONTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes: Aluminum entrance and storefront systems with associated aluminum doors.

B. Related Sections:

1. Section 07 92 00 - Joint Sealants: caulking of perimeter joints.
2. Section 08 44 13 - Glazed Aluminum Curtain Walls
3. Section 08 71 00 - Door Hardware; hardware for aluminum doors.
4. Section 08 80 00 - Glazing.
5. Section 08 88 10 - Fire Rated Glass & Framing.

1.2 SUBMITTALS

A. General: Submit in accordance with SECTION 01 33 23 - SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.

B. Shop Drawings: Include drawings showing elevations of each entrance and storefront type, detail sections of typical composite members, and glazing details.

C. Samples: Submit for approval duplicate samples showing the limits of color range to which the entrance, storefront, and door materials will be processed. Samples shall be representative of the materials to be furnished, and the color of the installed materials shall be within the range of the approved samples.

D. Verify that field measurements are as indicated on shop drawings and as instructed by the manufacturer.

1.3 SYSTEM DESCRIPTION AND PERFORMANCE

A. Architectural Requirements

1. Drawings are diagrammatic and do not purport to identify or solve problems of thermal or structural movement, glazing or anchorage.
2. Requirements shown by details are intended to establish basic dimensions of units, sightlines and profiles of members.
3. Provide concealed fastening wherever possible.
4. Provide continuous snap-in thermally-broken aluminum backer plate at head and jamb conditions.

B. Structural Requirements

1. System to provide for expansion and contraction within system components caused by a cycling temperature range of 170°F. without causing detrimental effects to system or components.
2. Design and size members to withstand dead loads and live loads caused by pressure and suction of wind as calculated in accordance with building code, and measured in accordance with ANSI/ASTM E 330.
3. Limit mullion deflection to L/175, or flexure limit of glass with full recovery of glazing materials, whichever is less.
4. System to accommodate, without damage to system or components, or deterioration of perimeter seal: Movement within system; movement between system and perimeter framing components; dynamic loading and release of loads; and deflection of structural support framing.
5. Storefront manufacturer shall be responsible for design and engineering of storefront system, including necessary modifications to meet specified requirements and maintaining visual design concepts.
6. Attachment considerations shall take into account site peculiarities and expansion and contraction movements so there is no possibility of loosening, weakening or fracturing connection between units and building structure or between units themselves.
7. Design anchors, fasteners and braces to be structurally stressed not more than 50% of allowable stress when maximum loads are applied.
8. Engineer storefront and entrances to be free from rattles, wind whistles and noise due to thermal and structural movement and wind pressure.

C. Environmental Requirements

1. Drain water entering joints, condensation occurring in glazing channels, or migrating moisture occurring within system, to exterior. No leakage shall occur in wall when tested in accordance with ASTM E 331 at test pressure of 6.24 lbs/sq ft.
2. Limit air infiltration through assembly to 0.06 cu ft/min/sq ft of assembly surface area, measured at a reference differential pressure across assembly of 1.57 lbs/sq ft. as measured in accordance with ANSI/ASTM E 283.
3. Maintain continuous air and vapor barrier throughout assembly, primarily in line with inside pane of glass and heel bead of glazing compound.

1.4 QUALITY ASSURANCE

- A. Erector Qualifications: Erection of the entrance and storefront systems and doors shall be by an experienced erector approved by the manufacturer.
- B. Design Criteria:
1. Deflection of glass framing members under design loads shall not exceed $L/175$ or $3/4"$, whichever is less.
 2. Deadload deflection of horizontal glass framing members shall not exceed 0.125".
 3. Exterior Entrances and Storefront: Design windload shall be 22 psf.
- C. Perform work in accordance with AAMA SFM-1 and AAMA - Metal Curtain Wall, Window, Store Front and Entrance - Guide Specifications Manual.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver and handle system components under provisions of SECTION 01 65 00 - PRODUCT DELIVERY REQUIREMENTS.
- B. Store and protect system components under provisions of SECTION 01 66 00 - PRODUCT STORAGE AND HANDLING REQUIREMENTS.
- C. Provide wrapping to protect prefinished aluminum surfaces.

1.6 COORDINATION

- A. Manufacturer shall be responsible for details and dimensions not controlled by job conditions and shall show on his shop drawings required field measurements beyond his control.
- B. Coordinate with responsible trades to establish, verify and maintain field dimensions and job conditions.

1.7 ENVIRONMENTAL CONDITIONS

- A. Do not install sealants when ambient temperature is less than 40°F. during and 48-hours after installation.

1.8 WARRANTY

- A. Special Assembly Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of aluminum-framed systems that do not comply with requirements or that deteriorate within specified warranty period.
1. Failures include, but are not limited to, the following:
 - a. Structural failures including, but not limited to, excessive deflection.
 - b. Noise or vibration caused by thermal movements.
 - c. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
 - d. Water leakage through fixed glazing and framing areas.
 - e. Failure or operating components to function properly.
 2. Warranty Period: 2 years from date of substantial completion.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

- A. Provide aluminum entrances and storefronts as manufactured by one of the following:
- EFCO Corp.
 - Kawneer North America
 - Oldcastle Building Envelope
 - Tubelite, Inc
 - YKK AP America, Inc.

2.2 MATERIALS

- A. Extruded Aluminum: ASTM B 221; AA 6063-T5 alloy, temper.
- B. Sheet Aluminum: ASTM B 209; 5005-H34 alloy, temper; or other alloys and temper recommend by manufacturer appropriate for specified finish.
- C. Sheet Steel: ASTM A 446; hot-dipped galvanized.
- D. Steel Sections: ASTM A 36; shapes to suit mullion sections.
- E. Primer and Touch-Up Primer for Galvanized Surfaces: High-zinc-dust-content paint complying with SSPC-Paint 20.
- F. Fasteners: Stainless steel.

2.3 FABRICATED COMPONENTS

- A. General: Form section true to details with clean, straight, sharply defined profiles, free from defects impairing strength or durability.
- B. Framing:
1. Framing Types Basis of Design shall be Tubelite:
 - a. Exterior: Provide the following thermally broken framing systems where shown on drawings.
 - 1) 2" x 6-1/2" Framing System: Tubelite T24650 Series
 - b. Interior: Provide the following framing systems where shown on drawings.
 - 1) 1-3/4" x 4-1/2" Framing System: Tubelite 4500 Series
 2. Fabricate the aluminum entrance and storefront systems with the shapes and sections detailed.
 3. Design the glass framing system to minimize loads on the glass due to building movement and incorporate provisions for thermal expansion by means of expansion joints. Where insulating glass is to be installed, design the glass framing system so that moisture does not accumulate in the glazing channel for prolonged periods.
 4. Construction: Mill joints to a hairline fit. Assemble and connect members to form rigid, watertight assemblies. No exposed fastenings will be permitted. Reinforce the framing internally as required to meet the design criteria specified above.
 5. Continuous Solid Closures: Fabricate required closures and covers to detail of aluminum sheet, plate, and angles. Provide solid continuous thermally-broken backer plate closures at head and all jambs.
 6. Accessories: Provide glazing gaskets, flashing, and miscellaneous shims and other parts detailed or otherwise required to complete the work.
 7. Provide manufacturer's standard closure plate at perimeter framing members to cover open side of framing member against surrounding construction.
- C. Doors: Tubelite Monumental Doors and Monumental Frames. The aluminum doors shall be wide-stile type with 5" stiles, 6-1/2" top rail, 5" intermediate rail (centered on panic device) and 10¼" bottom rail; square glazing stops. Construction: Doors shall be mortised and have reinforced welded corner construction with hairline watertight joints. Fastenings shall be concealed.
1. Doors shall be factory fabricated by aluminum entrance and storefront manufacturer.
 2. Glazing Beads: Fixed or theft proof snap-in glazing beads on exterior or security side of doors. Interior glazing beads shall be snap-in type. All glazing beads shall have vinyl inserts and glazing gaskets.
 3. Weatherstripping: Continuous contact weatherstripping on stiles and top rails of exterior doors.

--- OR ---

- D. Hardware Preparation: Prepare and reinforce doors and door frames for hardware.
 - 1. Mortising, reinforcing, drilling, and tapping for mortised hardware shall be done at the factory.
 - 2. Wherever possible, concealed steel reinforcement for surface-applied hardware shall be installed at the factory. The drilling and tapping for surface-applied hardware shall be done in the field.
- E. Reinforced Mullion: Same profile as non-reinforced frames, of extruded aluminum cladding with internal reinforcement of steel shaped structural section.
- F. Flashings:
 - 1. Form from sheet aluminum with same finish as extruded sections. Apply finish after fabrication. Material thickness as required to suit condition without deflection or "oilcanning"; of proper alloy to match the finished extrusions.
 - 2. Subsill Flashing: Provide manufacturer's standard high-performance, thermally-broken aluminum subsill flashing with integral weep holes. End dams shall be manufacturer's standard fiberglass, plastic or thermally-broken aluminum end dams.
- G. Extruded Aluminum:
 - 1. Framing System: Principal extrusions shall have a minimum wall thickness of 0.08". Moldings, trim, and glass stops shall be not less than 0.050" thick.
 - 2. Doors and Door Framing System: Principal extrusions shall have a minimum wall thickness of 3/16". Moldings, trim, and glass stops shall be not less than 0.050" thick.
- H. Reinforcement: Concealed reinforcements for hardware in doors and frames and mullions shall be plated or galvanized steel and shall be secured in place. If Monumental doors are not specified, then provide continuous reinforcement at continuous geared hinges.
- I. Fabricate doors and frames allowing for minimum clearances and shim spacing around perimeter of assembly, yet enabling installation.
- J. Rigidly fit and secure joints and corners with internal reinforcement, except that door corners will be welded. Make joints and connections flush, hairline, and weatherproof.
- K. Develop drainage holes with moisture pattern to exterior.
- L. Prepare components to receive anchor devices. Fabricate anchorage items.
- M. Arrange fasteners, attachments, and jointing to ensure concealment from view.
- N. Prepare components with internal reinforcement for door hardware.
- O. Reinforce framing members for imposed loads.

2.4 HARDWARE

- A. Weatherstripping: Provide Polymeric Sealair Weathering System or approved equivalent, continuous at head, jamb, sill, and meeting stile.
- B. Refer to SECTION 08 71 00 - DOOR HARDWARE for balance of hardware.

2.5 FINISHES

- A. Finish coating to conform to AAMA 611. Finish for aluminum storefront, entrances, and curtain wall shall match.
- B. Aluminum Finish: Exposed aluminum surfaces of entrances, storefronts, frames, doors, and all their associated parts shall be Architectural Class I AA-M10C22A44 Hard Coat Color Anodic Coating Dark bronze color, .7 mil minimum. Screw and bolt heads exposed to view shall be finished to match the exposed aluminum surfaces.
- C. Concealed Steel Items: Galvanized in accordance with ANSI/ASTM A 123 to 2.0 oz/sq ft.

- D. Apply one coat of bituminous paint to concealed aluminum surfaces in contact with cementitious or dissimilar materials.

PART 3 - EXECUTION

3.1 INSPECTION

- A. Examine areas to receive entrances and storefronts for conditions that will adversely affect the execution and quality of work. Do not start this work until unsatisfactory conditions are corrected.
- B. Field check dimensions, elevations, and slopes on the connecting work affecting the entrance and storefront to assure a proper fit and weathertight installation.
- C. Verify that field measurements are as indicated on shop drawings and as instructed by the manufacturer.

3.2 INSTALLATION

- A. Install wall system, doors, and glazing in accordance with manufacturer's instructions and AAMA - Metal Curtain Wall, Window.
- B. Erecting Storefronts: Erect the members to be plumb, level, square and in proper alignment with other work, and free from sags, waves and buckles.
 - 1. Materials shall be accurately cut and fitted and rigidly anchored in place to resist safely all normal stresses to which the work will be subjected.
 - 2. Cut and machined ends and recesses shall be true, accurate and free of burrs and rough edges.
 - 3. Provide subsill extrusions positioned to collect water leakage through mullions and storefront. Subsill shall drain to the exterior. It shall run continuously across the opening width. The ends are sealed with end dams.
 - 4. Create end dams at ends of window heads, sills, at edges of storefronts, and other vertical elements to channel water to nearest weep hole away from window mullions and other items which might allow water to travel vertically.
 - 5. Provide clearance around the perimeter between entrance and storefront metal and the opening substrate (concrete, masonry, or stucco) for caulking.
- C. Hanging Doors: Fit the doors with hardware and hang to operate smoothly, without bind or chatter.
 - 1. Where concealed reinforcement for hardware cannot be provided, install and use Riv-Nuts for fastening surface applied hardware.
 - 2. Use sex bolts and nuts for fastening closers and closer arms to aluminum doors.
 - 3. The use of sheet metal or self-tapping screws to mount hardware is prohibited.
- D. Sealing Joints: Seal the metal-to-metal framing joints properly with butene tape and sealant in conformance with the manufacturer's standard procedure.
- E. Pack fibrous insulation in shim spaces at perimeter of assembly to maintain continuity of thermal barrier.
- F. Install hardware using templates provided. Refer to SECTION 08 71 00 - DOOR HARDWARE for installation requirements.
- G. Install glass and infill panels in accordance with SECTION 08 80 00 - GLAZING, using exterior dry method of glazing.
- H. Install perimeter 2 part polyurethane type sealant, backing materials, and installation requirements in accordance with SECTION 07 92 00 - JOINT SEALANTS.

3.3 TOLERANCES

- A. Maximum Variation from Plumb: 0.06" every 3' non-cumulative or 1/16" per 10', whichever is less.
- B. Maximum Misalignment of Two Adjoining Members Abutting in Plane: 1/32".

3.4 ADJUSTING

- A. Adjust operating hardware for smooth operation.

3.5 PROTECT AND CLEAN

- A. Protection of Aluminum:
 - 1. Protect concealed aluminum surfaces that will contact masonry, concrete and steel with neoprene gaskets or a coat of bituminous paint to prevent galvanic and corrosive action.
 - 2. If drainage of moisture from incompatible metal passes over aluminum, paint the incompatible metal with a coat of aluminum pigmented paint.
 - 3. Protect finished aluminum surfaces from staining by gypsum and cement materials until all adjacent masonry and plaster work has been completed.
- B. Cleaning: Upon completion of the work, wash down aluminum surfaces with water and soft cloths and leave in first class condition.

END OF SECTION

SECTION 08 43 29

SLIDING GLASS STOREFRONTS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Exterior sliding/folding aluminum and glass door system, including aluminum frame, tracks, threshold, sliding panels, swing panels, stacking bays, sliding/swinging and locking hardware, weather stripping for sound, glass and glazing; designed to provide an opening glass wall, with sizes and configurations as shown on drawings and specified herein.
- B. Related Sections:
 - 1. Section 08 71 00 - Door Hardware.

1.2 SUBMITTALS

- A. Detail Drawings: Indicate Sliding Glass Partition system component sizes, dimensions and framing R.O., configuration, sliding and swing panels, direction of swing, stacking layout, typical head jamb, side jambs and sill details, type of glazing material, handle height and field measurements.
- B. Product Data:
 - 1. Submit manufacturer's printed product literature for each Sliding Glass Partition system to be incorporated into the Work.
 - 2. Show performance test results and details of construction relative to materials, dimensions of individual components, profiles and colors.
- C. Contract Closeout Submittal: Submit Owner's Manual from manufacturer. Identify with project name, location and completion date, type and size of unit installed.

1.3 QUALITY ASSURANCE

- A. Manufacturer: Provide complete, precision built, engineered, pre-fitted unit by a single source manufacturer with at least 15 years' experience in providing folding/sliding door systems for large openings in the North American market.
 - 1. The manufacturer must have a quality system registration to the ISO9001:2015 standard.
- B. Installer Qualifications: Installer experienced in the installation of manufacturer's products or other similar products for large openings. Installer to provide reference list of at least 3 projects of similar scale and complexity successfully completed in the last 3 years.
 - 1. Installer to be trained and certified by manufacturer

1.4 SITE CONDITIONS, DELIVERY, STORAGE AND HANDLING

- A. In addition to general delivery, storage and handling requirements specified in Section 01 66 00, comply with the following:
 - 1. Deliver materials to job site in sealed, unopened cartons or crates. Protect units from damage. Store material under cover, protected from weather and construction activities.

1.5 WARRANTY

- A. Provide manufacturer's standard warranty against defects in materials and workmanship.
- B. Warranty Period: Ten years for rollers and for seal failure of insulated glass supplied. For all other components, ten years from date of Substantial Completion. Unit shall be installed by manufacturer's certified trained installer.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

- A. Provide Interior and Exterior Nanawall® HSW60 System as supplied by NANA WALL SYSTEMS, INC., California 94925, Toll Free: (800) 873-5673, Telephone: (415) 383-3148, Website: www.nanawall.com.

2.2 MATERIALS

- A. Sliding Glass Storefront Description: Standard top-hung, single-track, interlocking aluminum-framed sliding glass storefront system that can be pocketed when open and have a swing door hinged off a side jamb or within a sliding panel. Manufacturer's standard frame and panel profiles, with head track, stacking bays, side jambs, sliding panels, and swing panels with dimensions as shown on Drawings.
1. Provide clear anodized aluminum head track with aluminum covers on both sides that match aluminum profile finish.
 2. Panels and Frames:
 - a. Single lite.
 - b. Panel Size: Reference drawings.
 - c. Rail Depth: 2-5/16"
 - d. Top Rail Width: 4-5/16"
 - e. Bottom Rail Width: 2-3/8" for sliding panel and 4-5/16" for swing panel.
 2. Frame:
 - a. Top Track Depth: 3-1/8"
 - b. Top Track Width: 4-3/8"
 - c. Side Jamb Width: 1-9/16"
 - d. Interior Sill Type: Flush sill.
 - e. Exterior Sill Type: Low profile saddle sill.
 - f. Sill Aluminum Finish: Dark bronze anodized
 3. Aluminum Extrusion:
 - a. Extrusions with nominal thickness of .078" (2.0 mm). Alloy specified as AlMgSi0.5 with strength rated as 6063-T5 or (F-22 European standard).
 - b. Anodized conforming to AAMA 611.
 - c. Acoustic Break: 3/4" to 15/16" wide specially designed glass fiber reinforced (GFR) polyamide "Bionic Turtle".
 4. Aluminum Finish: Dark bronze anodized.
- B. Glass: All glass to comply with safety glazing requirements of ASTM C1036, ASTM C1048, ANSI Z97.1 and CPSC 16CFR 1201.
5. Manufacturer's tempered and laminated glass lites, dry glazed with glass stops on the inside.
 6. Interior System Glass: 3/8", STC 38 laminated glass to achieve System STC 36.
 7. IGU Exterior System Glass: 15/16"
 8. IGU Fill: Air filled.
 9. IGU Glass Spacers: Dark bronze finish.
 10. IGU Surface: Clear with Vitro Solar Ban 90 on second surface of double IGU.
- C. Locking Hardware and Handles:
11. Main entry panel: On the main entry panel for models with a swing panel, provide manufacturer's stainless steel lever handles in a brushed satin finish on the inside and outside. Provide lock core per SECTION 08 71 00 - DOOR HARDWARE, for a compatible lock set with lockable latch, multi-point locking with a dead bolt and rods at the top and bottom on primary panel only. Rods to be concealed and not edge mounted. Depression of handles withdraws latch. Lifting of handles engages rods and turn of key or thumb turn engages deadbolt and operates lock. If there is a secondary swing panel, provide two point locking with flat handles on inside only for the secondary swing panel.
 12. On all other pairs of folding panels, provide manufacturer's standard flat handles and concealed two point locking hardware operated by 180 degree turn of handle between each pair. Face applied flush bolt locking will not be allowed.
 13. Flat handle finish: stainless steel in a brushed satin finish.
 14. Provide handle height centered at 41-3/8" from bottom of panel.
 15. Aluminum locking rods with standard fiber glass reinforced polyamide end caps at top and bottom. Rods to have a stroke of 15/16".

- D. Sliding-Swinging Hardware:
1. For each sliding panel, provide two (2) two-three wheeled, sintered bronze (oil impregnated) unidirectional sliding panel carriers with a one wheeled, polyamide guide rollers that are attached to the panels with stainless steel rods.
 - a. Maximum carrying capacity of two carriers on a panel to be 330 lbs.
 - b. Provide on all four corners of sliding panels and incorporated swing panels, thermally broken, die cast zinc multifunctional corner fittings with carrier connectors, male and female locking receptacles, hinges and hinge pins as required.
 - c. Finish: Powder coated, closest match to finish of frame and panels.
 - d. Adjustment: Provide system capable of specified amount of adjustments without removing panels from tracks.
- E. Sound Gasketing: Depending on the direction of swing, panel configuration and type of locking and type of sill, sound gasketing may be manufacturer's double layer EPDM between panels and EPDM gasket, or brush seal between panel and frame, or brush seals with a two-layer fiberglass reinforced polyamide fin attached at both inner and outer edge of bottom of door panels with a recessed sill or on frame for sealing between panels and between panel and frame.
- F. Fasteners: Provide stainless steel screws for connecting frame components.

2.3 FABRICATION

- A. Extruded aluminum frame and panel profiles, corner connectors and hinges, sliding and folding hardware, locking hardware and handles, glass and glazing and sound gasketing components to construct sliding glass wall with stacking bays.
1. Each unit factory pre-assembled and shipped with complete system components and installation instructions.
 2. Exposed work to be carefully matched to produce continuity of line and design with all joints.
 3. No raw edges visible at joints.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Carefully examine rough openings with Installer present, for compliance with requirements affecting Work performance.
- B. Verify that field measurements, substrates, tolerances, levelness, plumbness, cleanliness and other conditions are as required by the manufacturer, and ready to receive Work.
- C. Verify the structural integrity of the header for deflection with live and dead loads limited to the lesser of L/720 of the span or 1/4 inch. Provide structural support for lateral loads, and both wind load and eccentric load when the panels are stacked open. Provide structural support for stacking bay.
- D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. General: Install Sliding Glass Partition system in accordance with the Drawings, approved submittals, manufacturers' recommendations and installation instructions, and as follows:
1. Properly seal around opening perimeter.
 2. Securely attach anchorage devices to rigidly fit frame in place, level, straight, plumb and square. Install frame in proper elevation, plane and location, and in proper alignment with other work
 3. Install panels, handles, lock set, sound gasketing and other accessories in accordance with manufacturer's recommendations and instructions.

3.3 FIELD QUALITY CONTROL

- A. Field Tests and Inspections per the following:
1. Verify the Sliding Glass Partition system operates and functions properly.
 2. Adjust hardware for proper operation.

- B. Non-Conforming Work: Repair or replace non-conforming work as directed by the Architect.

3.4 CLEANING AND PROTECTION

- A. Keep units closed and protect Sliding Glass Partition installation against damage from construction activities.
- B. Remove protective coatings and use manufacturer recommended methods to clean exposed surfaces.

END OF SECTION

SECTION 08 44 13

GLAZED ALUMINUM CURTAIN WALLS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Glazed aluminum curtain walls, including anchors, shims, fasteners, inserts, accessories, and support.
2. Basis of design is to install all wall penetrations including windows/doors; flash and water test all penetrations prior to installing exterior veneer. Water test shall be in accordance with AAMA 501.2-03.

B. Related Sections:

1. Section 07 92 00 - Joint Sealants: caulking of perimeter joints.
2. Section 08 41 13 - Aluminum-framed Entrances and Storefronts.
1. Section 08 80 00 - Glazing.
2. Section 08 88 10 - Fire Rated Glass & Framing.

1.2 SYSTEM PERFORMANCE REQUIREMENTS

A. General: Provide manufacturer's stock curtain wall system, adapted to the application indicated, that complies with performance requirements specified.

B. Water Penetration under Static Pressure: No evidence of water penetration through fixed glazing and framing areas when tested according to ASTM E 331 at a minimum static-air-pressure differential of 20 percent of positive wind-load design pressure, but not less than 6.24 lbf/sq. ft.

C. Energy Performance: Glazed aluminum curtain walls shall have certified and labeled energy performance ratings in accordance with NFRC.

1. Thermal Transmittance (U-factor): Fixed glazing and framing areas shall have U-factor of not more than 0.46 BTU/Sq.Ft. x h x deg F as determined according to NFRC 100.
2. Air Infiltration: Maximum air leakage through fixed glazing and framing areas of 0.06 cfm/sq. ft. of fixed wall area as determined according to ASTM E 283 at a minimum static-air-pressure differential of 1.57 lbf/sq. ft.

D. Structural Performance: Design, engineer, fabricate, and install the glazed aluminum curtain wall system to withstand the effects of a wind load indicated in the structural drawing notes, normal to the plane of the wall, when tested in accordance with ASTM E 330, with no material failures or permanent deformation of structural members.

1. Deflections: The curtain wall system shall be capable of withstanding building movements including wind loading and of performing within the following limitations:
 - a. Deflection of framing members perpendicular to the plane of the wall shall not exceed L/175 of its clear span or 3/4", whichever is less.
 - b. Deflection of metal panels perpendicular to the plane of the wall shall not exceed L/120 of the span or 3/4", whichever is less.
 - c. Deflection of members parallel to the plane of the wall, when carrying its full dead load, shall not exceed an amount that will reduce glass bite by less than 75 percent of the design dimension and shall not reduce edge clearance between itself and the panel, glass, or other fixed member immediately below to less than 1/8".

1.3 SUBMITTALS

A. General: Submit in accordance with SECTION 01 33 23 - SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.

B. Shop Drawings: Show adaptation of manufacturer's standard glazed aluminum curtain wall system to the project; include typical unit elevations at 1/2" scale and details at 3" scale. Show dimensions, profiles of members, anchorage system, interface with building construction, and glazing.

1. Include setting drawings, templates, and directions for the installation of anchor bolts and other anchorage.

- C. Test Reports: Provide test reports from a qualified independent testing laboratory that show compliance of the glazed aluminum curtain wall system with performance requirements indicated based on comprehensive testing of the system by the laboratory.
- D. Energy Performance Certificates: Submit NFRC-certified energy performance values for glazed aluminum curtain walls, accessories, and components, from manufacturer.

1.4 QUALITY ASSURANCE

- A. Installer Qualifications: Engage an experienced installer who has successfully completed installation of glazed curtain wall systems similar in material, design, and extent to that indicated for the project and who is acceptable to the curtain wall manufacturer.
- B. Glazing Standards: Comply with recommendations of Glass Association of North America (GANA) "Glazing Manual."
- C. Single-Source Responsibility: Provide glazed aluminum curtain wall system and aluminum-framed entrances and storefronts for the project from one source from a single manufacturer.
- D. Field-Constructed Mock-Up: Before installing the curtain wall system, erect a sample curtain wall panel mock-up not less than 4' x 8', including mullions, panels, vision glass, and other elements of the system. Construct the mock-up on site in the location as directed by the Architect. Obtain the Architect's acceptance of the mock-up before starting final erection of the glazed aluminum curtain wall system. Maintain the mock-up in undisturbed condition during construction as a standard for judging completed curtain wall installation.
- E. Design Criteria: The drawings indicate sizes, profiles, and dimensional requirements of the curtain wall system. Curtain wall systems having equal performance characteristics with deviations from indicated dimensions and profiles may be considered, provided deviations do not change the design concept of intended performance.
- F. Pre-installation Conference: Before beginning curtain wall installation, conduct a pre-installation conference at the project site with the curtain wall system manufacturer, installer, and other interested parties to review procedures, schedules, and coordination of the curtain wall installation with other elements of the Work.

1.5 WARRANTY

- A. General: Submit a written warranty signed by authorized representatives of the Contractor and installer warranting that portions of the Work involving glazed aluminum curtain wall are of good quality, free from defects, and in conformance with the requirements of the contract documents and further promising to repair or replace defective Work during a 5-year period following substantial completion of the project.

PART 2 - PRODUCTS

2.1 ACCEPTABLE PRODUCTS

- A. Products for aluminum storefront and glazed aluminum curtain walls shall be provided by the same manufacturer.
- B. Basis of Design: Provide CW400 curtain wall system by Tubelite. Reference drawings for minimum widths and depths of system(s) for 1" glazing. Products from the following will be acceptable, provided they equal the system identified.
 - EFCO Corp.
 - Kawneer North America
 - Oldcastle Building Envelope
 - YKK AP America, Inc.

2.2 MATERIALS

- A. Aluminum: Provide alloy, temper, and thickness recommended by the manufacturer for the type of use and finish indicated and with not less than the strength and durability properties of the alloy and temper designated below for each aluminum form required.
 - 1. Extruded Bar and Shapes: Comply with requirements of ASTM B 221.
 - 2. Plate and Sheet: Comply with requirements of ASTM B 209.
- B. Glass: Provide glass of types and thicknesses indicated and as specified in SECTION 08 80 00 - GLAZING.
- C. Glazing Gaskets: Manufacturer's standard sealed-corner pressure-glazing or wedge-lock dry glazing system of black, resilient elastomeric glazing gaskets, setting blocks and shims or spacers as required, hardness as selected by manufacturer.
 - 1. Gasket Material: Extruded or molded neoprene gaskets complying with requirements of ASTM D 2000, classification as selected by the manufacturer for performance and permanence.
- D. Framing System Gaskets and Joint Fillers: Manufacturer's standard permanent framing system gaskets and joint fillers, depending on joint movement and sealing requirements, such as sliding joints, compression joint translation, or non-moving joints.
- E. Sealants and joint fillers, both for joints within the curtain wall construction and for joints at the interface of curtain wall construction and other work, shall comply with requirements specified in SECTION 07 92 00 - JOINT SEALANTS AND section 08 80 00 - GLAZING.
- F. Concealed Flashing: Dead-soft 26-gage stainless steel concealed flashing of type selected for compatibility by the manufacturer.

2.3 COMPONENTS

- A. Brackets and Reinforcements: Manufacturer's standard non-magnetic stainless steel.
- B. Fasteners and Accessories: Provide manufacturer's standard non-corrosive fasteners and accessories compatible with materials used in the framing system and with exposed portions that match finish of the curtain wall system. Where movement is expected, provide slip-joint linings of sheets, pads, shims, or washers of fluorocarbon resin or a similar material recommended by the manufacturer.
 - 1. Where fasteners anchor into aluminum less than 0.125" thick, provide non-corrosive pressed-in splined grommet nuts or other type reinforcement to receive fastener threads.
 - 2. Provide aluminum filler cap at the tops of all mulls to accommodate wall flashing.
- C. Concrete or Masonry Inserts: Cast-iron, malleable iron or hot-dip galvanized steel inserts complying with ASTM A 123.

2.4 FINISHES

- A. Finish coating to conform to AAMA 611. Finish for aluminum storefront, entrances, and curtain wall shall match.
- B. Aluminum Finish: Exposed aluminum surfaces of entrances, storefronts, frames, doors, and all their associated parts shall be Architectural Class I AA-M10C22A44 Hard Coat Color Anodic Coating Dark bronze color, .7 mil minimum. Screw and bolt heads exposed to view shall be finished to match the exposed aluminum surfaces.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Furnish inserts at proper times for setting in concrete formwork, masonry, and similar work indicated to support curtain wall work.

3.2 INSPECTION

- A. Examine areas to receive glazed aluminum curtain walls for conditions that will adversely affect the execution and quality of work. Do not start this work until unsatisfactory conditions are corrected.
- B. Field check dimensions, elevations, and slopes on the connecting work affecting the glazed aluminum curtain walls to assure a proper fit and weathertight installation.

3.3 INSTALLATION

- A. Comply with manufacturer's instructions for protecting, handling, and installing fabricated curtain wall components, with particular care and attention to preservation of applied finishes. Discard or remove and replace damaged members.
- B. Anchor components securely in place in the manner indicated. Shim and allow for movement resulting from changes in thermal conditions. Provide separators and isolators to prevent corrosion, electrolytic deterioration, and freeze-up of moving joints.
- C. Glazing: Comply with applicable requirements specified in SECTION 08 80 00 - GLAZING.
- D. Sealants and Joint Fillers: Comply with applicable requirements specified in SECTION 07 92 00 - JOINT SEALANTS.
- E. Erection Tolerances: Install components plumb, level, accurately aligned, and located in reference to column lines and floor levels. Adjust work to conform to the tolerances indicated below. Tolerances indicated below are maximum and are not cumulative.
 - 1. Plumb: $\frac{1}{8}$ " in 10'; $\frac{1}{4}$ " in 40'.
 - 2. Level: $\frac{1}{8}$ " in 20'; $\frac{1}{4}$ " in 40'.
 - 3. Alignment: Limit offset of member alignment to 1/16" where surfaces are flush or less than $\frac{1}{2}$ " out of flush and separated by less than 2" by a reveal or protruding work; otherwise limit offsets to $\frac{1}{8}$ ".
 - 4. Location: $\frac{3}{8}$ " maximum deviation from the measured theoretical location of any member at any location.

3.4 CLEANING

- A. Clean the completed system, inside and out, promptly after erection and installation of glass and sealants, allowing for nominal curing of liquid sealants.
- B. At the time of substantial completion, clean curtain wall system thoroughly and polish glass. Demonstrate proper cleaning methods and materials to the Owner's maintenance personnel.

END OF SECTION

SECTION 08 71 00

DOOR HARDWARE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes commercial door hardware for the following:

1. Swinging doors.
2. Sliding doors.
3. Other doors to the extent indicated.

- B. Door hardware includes, but is not necessarily limited to, the following:

1. Mechanical door hardware.
2. Electromechanical door hardware.
3. Cylinders specified for doors in other sections.

- C. Related Sections:

1. Division 08 Section "Hollow Metal Doors and Frames".
2. Division 08 Section "Flush Wood Doors".
3. Division 08 Section "Aluminum-Framed Entrances and Storefronts".
4. Division 28 Section "Access Control Hardware Devices".

- D. Codes and References: Comply with the version year adopted by the Authority Having Jurisdiction.

1. ANSI A117.1 - Accessible and Usable Buildings and Facilities.
2. ICC/IBC - International Building Code.
3. NFPA 70 - National Electrical Code.
4. NFPA 80 - Fire Doors and Windows.
5. NFPA 101 - Life Safety Code.
6. NFPA 105 - Installation of Smoke Door Assemblies.
7. State Building Codes, Local Amendments.

- E. Standards: All hardware specified herein shall comply with the following industry standards as applicable. Any undated reference to a standard shall be interpreted as referring to the latest edition of that standard:

1. ANSI/BHMA Certified Product Standards - A156 Series.
2. UL10C – Positive Pressure Fire Tests of Door Assemblies.
3. CAN/ULC-S104 – Standard Method for Fire Tests of Door Assemblies.
4. ANSI/UL 294 – Access Control System Units.
5. ULC-S319 - Electronic Access Control Systems.
6. ULC-60839-11-1, Alarm and Electronic Security Systems - Part 11-1: Electronic Access Control Systems - System and Components Requirements.
7. CAN-ULC-S132 -- Standard Method of Tests for Emergency Exit and Emergency Fire Exit Hardware.
8. CAN-ULC-S533 - Egress Door Securing and Releasing Devices.

9. UL 305 – Panic Hardware.
10. ULC-S132, Emergency Exit and Emergency Fire Exit Hardware.
11. ULC-S533 – Egress Door Securing and Releasing Devices.
12. ANSI/UL 437- Key Locks.
13. ULC-S328, - Burglary Resistant Key Locks.

1.3 SUBMITTALS

- A. Product Data: Manufacturer's product data sheets including installation details, material descriptions, dimensions of individual components and profiles, operational descriptions and finishes.
- B. Door Hardware Schedule: Prepared by or under the supervision of supplier, detailing fabrication and assembly of door hardware, as well as procedures and diagrams. Coordinate the final Door Hardware Schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.
 1. Format: Comply with scheduling sequence and vertical format in DHI's "Sequence and Format for the Hardware Schedule."
 2. Organization: Organize the Door Hardware Schedule into door hardware sets indicating complete designations of every item required for each door or opening. Organize door hardware sets in same order as in the Door Hardware Sets at the end of Part 3. Submittals that do not follow the same format and order as the Door Hardware Sets will be rejected and subject to resubmission.
 3. Content: Include the following information:
 - a. Type, style, function, size, label, hand, and finish of each door hardware item.
 - b. Manufacturer of each item.
 - c. Fastenings and other pertinent information.
 - d. Location of door hardware set, cross-referenced to Drawings, both on floor plans and in door and frame schedule.
 - e. Explanation of abbreviations, symbols, and codes contained in schedule.
 - f. Mounting locations for door hardware.
 - g. Door and frame sizes and materials.
 - h. Warranty information for each product.
 4. Submittal Sequence: Submit the final Door Hardware Schedule at earliest possible date, particularly where approval of the Door Hardware Schedule must precede fabrication of other work that is critical in the Project construction schedule. Include Product Data, Samples, Shop Drawings of other work affected by door hardware, and other information essential to the coordinated review of the Door Hardware Schedule.
- C. Shop Drawings: Details of electrified access control hardware indicating the following:
 1. Wiring Diagrams: Upon receipt of approved schedules, submit detailed system wiring diagrams for power, signaling, monitoring, communication, and control of the access control system electrified hardware. Differentiate between manufacturer-installed and field-installed wiring. Include the following:
 - a. Elevation diagram of each unique access controlled opening showing location and interconnection of major system components with respect to their placement in the respective door openings.
 - b. Complete (risers, point-to-point) access control system block wiring diagrams.
 - c. Wiring instructions for each electronic component scheduled herein.
 2. Electrical Coordination: Coordinate with related sections the voltages and wiring details required at electrically controlled and operated hardware openings.

- D. Proof of Certification: Provide copy of manufacturer(s) official certification or accreditation document indicating proof of status as a qualified and authorized provider of the primary Integrated Wiegand Access Control Products.
- E. Keying Schedule: After a keying meeting with the owner has taken place prepare a separate keying schedule detailing final instructions. Submit the keying schedule in electronic format. Include keying system explanation, door numbers, key set symbols, hardware set numbers and special instructions. Owner must approve submitted keying schedule prior to the ordering of permanent cylinders/cores.
- F. Informational Submittals:
 - 1. Product Test Reports: Indicating compliance with cycle testing requirements, based on evaluation of comprehensive tests performed by manufacturer and witnessed by a qualified independent testing agency.
- G. Operating and Maintenance Manuals: Provide manufacturers operating and maintenance manuals for each item comprising the complete door hardware installation in quantity as required in Division 01, Closeout Procedures.

1.4 QUALITY ASSURANCE

- A. Manufacturers Qualifications: Engage qualified manufacturers with a minimum 5 years of documented experience in producing hardware and equipment similar to that indicated for this Project and that have a proven record of successful in-service performance.
- B. Certified Products: Where specified, products must maintain a current listing in the Builders Hardware Manufacturers Association (BHMA) Certified Products Directory (CPD).
- C. Installer Qualifications: A minimum 3 years documented experience installing both standard and electrified door hardware similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.
- D. Door Hardware Supplier Qualifications: Experienced commercial door hardware distributors with a minimum 5 years documented experience supplying both mechanical and electromechanical hardware installations comparable in material, design, and extent to that indicated for this Project. Supplier recognized as a factory direct distributor by the manufacturers of the primary materials with a warehousing facility in Project's vicinity. Supplier to have on staff a certified Architectural Hardware Consultant (AHC) available during the course of the Work to consult with Contractor, Architect, and Owner concerning both standard and electromechanical door hardware and keying.
- E. Integrated Wiegand, Wireless, and IP-Enabled Access Control Products Supplier Qualifications: Integrated access control products and accessories are required to be supplied and installed through current members of the ASSA ABLOY "Authorized Channel Partner" (ACP) and "Certified Integrator" (CI) programs. Suppliers are to be factory trained, certified prior to project bid, and a direct purchaser of the specified product. Installers are to be factory trained, certified prior to project bid, and are responsible for commissioning, servicing, and warranting the installed equipment specified for the project.
- F. Source Limitations: Obtain each type and variety of door hardware specified in this section from a single source unless otherwise indicated.
 - 1. Electrified modifications or enhancements made to a source manufacturer's product line by a secondary or third party source will not be accepted.
 - 2. Provide electromechanical door hardware from the same manufacturer as mechanical door hardware, unless otherwise indicated.
- G. Each unit to bear third party permanent label demonstrating compliance with the referenced standards.

- H. Keying Conference: Conduct conference to comply with requirements in Division 01 Section "Project Meetings." Keying conference to incorporate the following criteria into the final keying schedule document:
 - 1. Function of building, purpose of each area and degree of security required.
 - 2. Plans for existing and future key system expansion.
 - 3. Requirements for key control storage and software.
 - 4. Installation of permanent keys, cylinder cores and software.
 - 5. Address and requirements for delivery of keys.
- I. Pre-Submittal Conference: Conduct coordination conference in compliance with requirements in Division 01 Section "Project Meetings" with attendance by representatives of Supplier(s), Installer(s), and Contractor(s) to review proper methods and the procedures for receiving, handling, and installing door hardware.
 - 1. Prior to installation of door hardware, conduct a project specific training meeting to instruct the installing contractors' personnel on the proper installation and adjustment of their respective products. Product training to be attended by installers of door hardware (including electromechanical hardware) for aluminum, hollow metal and wood doors. Training will include the use of installation manuals, hardware schedules, templates and physical product samples as required.
 - 2. Inspect and discuss electrical roughing-in, power supply connections, and other preparatory work performed by other trades.
 - 3. Review sequence of operation narratives for each unique access controlled opening.
 - 4. Review and finalize construction schedule and verify availability of materials.
 - 5. Review the required inspecting, testing, commissioning, and demonstration procedures
- J. At completion of installation, provide written documentation that components were applied to manufacturer's instructions and recommendations and according to approved schedule.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Inventory door hardware on receipt and provide secure lock-up and shelving for door hardware delivered to Project site. Do not store electronic access control hardware, software or accessories at Project site without prior authorization.
- B. Tag each item or package separately with identification related to the final Door Hardware Schedule, and include basic installation instructions with each item or package.
- C. Deliver, as applicable, permanent keys, cylinders, cores, access control credentials, software and related accessories directly to Owner via registered mail or overnight package service. Instructions for delivery to the Owner shall be established at the "Keying Conference".

1.6 COORDINATION

- A. Templates: Obtain and distribute to the parties involved templates for doors, frames, and other work specified to be factory prepared for installing standard and electrified hardware. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing hardware to comply with indicated requirements.
- B. Door Hardware and Electrical Connections: Coordinate the layout and installation of scheduled electrified door hardware and related access control equipment with required connections to source power junction boxes, low voltage power supplies, detection and monitoring hardware, and fire and detection alarm systems.

- C. Door and Frame Preparation: Doors and corresponding frames are to be prepared, reinforced and pre-wired (if applicable) to receive the installation of the specified electrified, monitoring, signaling and access control system hardware without additional in-field modifications.

1.7 WARRANTY

- A. General Warranty: Reference Division 01, General Requirements. Special warranties specified in this Article shall not deprive Owner of other rights Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.
- B. Warranty Period: Written warranty, executed by manufacturer(s), agreeing to repair or replace components of standard and electrified door hardware that fails in materials or workmanship within specified warranty period after final acceptance by the Owner. Failures include, but are not limited to, the following:
 - 1. Structural failures including excessive deflection, cracking, or breakage.
 - 2. Faulty operation of the hardware.
 - 3. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
 - 4. Electrical component defects and failures within the systems operation.
- C. Standard Warranty Period: One year from date of Substantial Completion, unless otherwise indicated.
- D. Special Warranty Periods:
 - 1. Ten years for mortise locks and latches.
 - 2. Five years for exit hardware.
 - 3. Twenty five years for manual overhead door closer bodies.
 - 4. Five years for motorized electric latch retraction exit devices.
 - 5. Two years for electromechanical door hardware.

1.8 MAINTENANCE SERVICE

- A. Maintenance Tools and Instructions: Furnish a complete set of specialized tools and maintenance instructions as needed for Owner's continued adjustment, maintenance, and removal and replacement of door hardware.

PART 2 - PRODUCTS

2.1 SCHEDULED DOOR HARDWARE

- A. General: Provide door hardware for each door to comply with requirements in Door Hardware Sets and each referenced section that products are to be supplied under.
- B. Designations: Requirements for quantity, item, size, finish or color, grade, function, and other distinctive qualities of each type of door hardware are indicated in the Door Hardware Sets at the end of Part 3. Products are identified by using door hardware designations, as follows:
 - 1. Named Manufacturer's Products: Product designation and manufacturer are listed for each door hardware type required for the purpose of establishing requirements. Manufacturers' names are abbreviated in the Door Hardware Schedule.

- C. Substitutions: Requests for substitution and product approval for inclusive mechanical and electromechanical door hardware in compliance with the specifications must be submitted in writing and in accordance with the procedures and time frames outlined in Division 01, Substitution Procedures. Approval of requests is at the discretion of the architect, owner, and their designated consultants.

2.2 HANGING DEVICES

- A. Hinges: ANSI/BHMA A156.1 certified butt hinges with number of hinge knuckles and other options as specified in the Door Hardware Sets.
1. Quantity: Provide the following hinge quantity:
 - a. Two Hinges: For doors with heights up to **60 inches**.
 - b. Three Hinges: For doors with heights **61 to 90 inches**.
 - c. Four Hinges: For doors with heights **91 to 120 inches**.
 - d. For doors with heights more than **120 inches**, provide 4 hinges, plus 1 hinge for every **30 inches** of door height greater than **120 inches**.
 2. Hinge Size: Provide the following, unless otherwise indicated, with hinge widths sized for door thickness and clearances required:
 - a. Widths up to 3'0": 4-1/2" standard or heavy weight as specified.
 - b. Sizes from 3'1" to 4'0": 5" standard or heavy weight as specified.
 3. Hinge Weight and Base Material: Unless otherwise indicated, provide the following:
 - a. Exterior Doors: Heavy weight, non-ferrous, ball bearing or oil impregnated bearing hinges unless Hardware Sets indicate standard weight.
 - b. Interior Doors: Standard weight, steel, ball bearing or oil impregnated bearing hinges unless Hardware Sets indicate heavy weight.
 4. Hinge Options: Comply with the following:
 - a. Non-removable Pins: Provide set screw in hinge barrel that, when tightened into a groove in hinge pin, prevents removal of pin while door is closed; for the all out-swinging lockable doors.
 5. Manufacturers:
 - a. Bommer Industries (BO).
 - b. McKinney Products; ASSA ABLOY Architectural Door Accessories (MK).
- B. Continuous Geared Hinges: ANSI/BHMA A156.26 Grade 1-600 certified continuous geared hinge. with minimum 0.120-inch thick extruded 6060 T6 aluminum alloy hinge leaves and a minimum overall width of 4 inches. Hinges are non-handed, reversible and fabricated to template screw locations. Factory trim hinges to suit door height and prepare for electrical cut-outs.
1. Manufacturers:
 - a. Bommer Industries (BO).
 - b. Pemko Products; ASSA ABLOY Architectural Door Accessories (PE).

- C. Sliding and Folding Door Hardware: Hardware is to be of type and design as specified and should comply with ANSI/BHMA A156.14.
1. Sliding Bi-Passing Pocket Door Hardware: Provide complete sets consisting of track, hangers, stops, bumpers, floor channel, guides, and accessories indicated.
 2. Bi-folding Door Hardware: Rated for door panels weighing up to **125 lb.**
 3. Pocket Sliding Door Hardware: Rated for doors weighing up to **200 lb.**
 4. Manufacturers:
 - a. Hafele Manufacturing (HF).
 - b. Johnson Hardware (JO).
 - c. Pemko Products; ASSA ABLOY Architectural Door Accessories (PE).

2.3 POWER TRANSFER DEVICES

- A. Electrified Quick Connect Transfer Hinges: Provide electrified transfer hinges with Molex™ standardized plug connectors and sufficient number of concealed wires (up to 12) to accommodate the electrified functions specified in the Door Hardware Sets. Connectors plug directly to through-door wiring harnesses for connection to electric locking devices and power supplies. Wire nut connections are not acceptable.
1. Manufacturers:
 - a. McKinney Products; ASSA ABLOY Architectural Door Accessories (MK) - QC (# wires) Option.
- B. Electrified Quick Connect Continuous Geared Transfer Hinges: Provide electrified transfer continuous geared hinges with a 12" removable service panel cutout accessible without de-mounting door from the frame. Furnish with Molex™ standardized plug connectors with sufficient number of concealed wires (up to 12) to accommodate the electrified functions specified in the Door Hardware Sets. Connectors plug directly to through-door wiring harnesses for connection to electric locking devices and power supplies. Wire nut connections are not acceptable.
1. Manufacturers:
 - a. Bommer Industries (BO) - SER-QC (# of wires) Option.
 - b. Pemko Products; ASSA ABLOY Architectural Door Accessories (PE) - SER-QC (# wires) Option.
- C. Electric Door Wire Harnesses: Provide electric/data transfer wiring harnesses with standardized plug connectors to accommodate up to twelve (12) wires. Connectors plug directly to through-door wiring harnesses for connection to electric locking devices and power supplies. Provide sufficient number and type of concealed wires to accommodate electric function of specified hardware. Provide a connector for through-door electronic locking devices and from hinge to junction box above the opening. Wire nut connections are not acceptable. Determine the length required for each electrified hardware component for the door type, size and construction, minimum of two per electrified opening.
1. Provide one each of the following tools as part of the base bid contract:
 - a. McKinney Products; ASSA ABLOY Architectural Door Accessories (MK) - Electrical Connecting Kit: QC-R001.
 - b. McKinney Products; ASSA ABLOY Architectural Door Accessories (MK) - Connector Hand Tool: QC-R003.

2. Manufacturers:
 - a. McKinney Products; ASSA ABLOY Architectural Door Accessories (MK) – QC-C Series.

2.4 DOOR OPERATING TRIM

- A. Flush Bolts and Surface Bolts: ANSI/BHMA A156.3 and A156.16, Grade 1, certified.
 1. Flush bolts to be furnished with top rod of sufficient length to allow bolt retraction device location approximately six feet from the floor.
 2. Furnish dust proof strikes for bottom bolts.
 3. Surface bolts to be minimum 8" in length and U.L. listed for labeled fire doors and U.L. listed for windstorm components where applicable.
 4. Provide related accessories (mounting brackets, strikes, coordinators, etc.) as required for appropriate installation and operation.
 5. Manufacturers:
 - a. Burns Manufacturing (BU).
 - b. Door Controls International (DC).
 - c. Rockwood Products; ASSA ABLOY Architectural Door Accessories (RO).
- B. Coordinators: ANSI/BHMA A156.3 certified door coordinators consisting of active-leaf, hold-open lever and inactive-leaf release trigger. Model as indicated in hardware sets.
 1. Manufacturers:
 - a. Burns Manufacturing (BU).
 - b. Door Controls International (DC).
 - c. Rockwood Products; ASSA ABLOY Architectural Door Accessories (RO).
- C. Door Push Plates and Pulls: ANSI/BHMA A156.6 certified door pushes and pulls of type and design specified in the Hardware Sets. Coordinate and provide proper width and height as required where conflicting hardware dictates.
 1. Push/Pull Plates: Minimum .050 inch thick, size as indicated in hardware sets, with beveled edges, secured with exposed screws unless otherwise indicated.
 2. Door Pull and Push Bar Design: Size, shape, and material as indicated in the hardware sets. Minimum clearance of 2 1/2-inches from face of door unless otherwise indicated.
 3. Offset Pull Design: Size, shape, and material as indicated in the hardware sets. Minimum clearance of 2 1/2-inches from face of door and offset of 90 degrees unless otherwise indicated.
 4. Fasteners: Provide manufacturer's designated fastener type as indicated in Hardware Sets.
 5. Manufacturers:
 - a. Burns Manufacturing (BU).
 - b. Hiawatha, Inc. (HI).
 - c. Rockwood Products; ASSA ABLOY Architectural Door Accessories (RO).

2.5 CYLINDERS AND KEYING

- A. General: Cylinder manufacturer to have minimum (10) years experience designing secured master key systems and have on record a published security keying system policy.
- B. Source Limitations: Obtain each type of keyed cylinder and keys from the same source manufacturer as locksets and exit devices, unless otherwise indicated.

- C. Cylinders: Original manufacturer cylinders complying with the following:
1. Mortise Type: Threaded cylinders with rings and cams to suit hardware application.
 2. Rim Type: Cylinders with back plate, flat-type vertical or horizontal tailpiece, and raised trim ring.
 3. Bored-Lock Type: Cylinders with tailpieces to suit locks.
 4. Mortise and rim cylinder collars to be solid and recessed to allow the cylinder face to be flush and be free spinning with matching finishes.
 5. Keyway: Match Facility Restricted Keyway.
- D. Security Cylinders: ANSI/BHMA A156.5, Grade 1, patterned security cylinders and keys able to be used together under the same facility master or grandmaster key system. Cylinders to be factory keyed.
1. New security key systems shall not be established with products that have an expired patent. Expired systems shall only be specified and supplied to support existing systems.
 2. Manufacturers:
 - a. Schlage (SC) – Primus Everest.
 - b. Match Facility Restricted Keyway.
- E. Keying System: Each type of lock and cylinders to be factory keyed.
1. Supplier shall conduct a "Keying Conference" to define and document keying system instructions and requirements.
 2. Furnish factory cut, nickel-silver large bow permanently inscribed with a visual key control number as directed by Owner.
 3. Existing System: Field verify and key cylinders to match Owner's existing system.
- F. Key Quantity: Provide the following minimum number of keys:
1. Change Keys per Cylinder: Three (3).
 2. Master Keys (per Master Key Level/Group): Five (5).
 3. Construction Keys (where required): Ten (10).
- G. Construction Keying: Provide construction master keyed cylinders.
- H. Key Registration List (Bitting List):
1. Provide keying transcript list to Owner's representative in the proper format for importing into key control software.
 2. Provide transcript list in writing or electronic file as directed by the Owner.

2.6 MECHANICAL LOCKS AND LATCHING DEVICES

- A. Mortise Locksets, Grade 1 (Heavy Duty): ANSI/BHMA A156.13, Series 1000, Operational Grade 1 Certified Products Directory (CPD) listed. Locksets are to be manufactured with a corrosion resistant steel case and be field-reversible for handing without disassembly of the lock body.
1. Where specified, provide status indicators with highly reflective color and wording for "locked/unlocked" or "vacant/occupied" with custom wording options if required. Indicator to be located above the cylinder with the inside thumb-turn not blocking the visibility of the indicator status. Indicator window size to be a minimum of 2.1" x 0.6" with a curved design allowing a 180 degree viewing angle with protective covering to prevent tampering.
 2. Manufacturers:
 - a. Corbin Russwin Hardware (RU) – ML2000 Series.

- b. Schlage (SC) – L9000 Series.

2.7 INTEGRATED WIEGAND OUTPUT LOCKING DEVICES – MULTI-CLASS READER

- A. Integrated Wiegand Output Multi-Class Mortise Locks: Wiegand output ANSI A156.13, Grade 1, mortise lockset with integrated card reader, request-to-exit signaling, door position status switch, and latchbolt monitoring in one complete unit. Hard wired, solenoid driven locking/unlocking control of the lever handle trim, 3/4" deadlocking anti-friction latch, and 1" case-hardened steel deadbolt. Lock is U.L listed and labeled for use on up to 3 hour fire rated openings. Available with or without keyed high security cylinder override.
 - 1. Open architecture, hard wired platform supports centralized control of locking units with new or existing Wiegand compatible access control systems. Latchbolt monitoring and door position switch act in conjunction to report door-in-frame (DPS) and door latched (door closed and latched) conditions.
 - 2. Integrated reader supports the following credentials:
 - a. 125kHz proximity credentials: HID, AWID, Indala, and EM4102.
 - b. 13.56 MHz proximity credentials: HID iClass, HID iClass SE, SE for MIFARE Classic, DESFire EV1.
 - 3. 12VDC external power supply required for reader and lock, with optional 24VDC lock solenoid. Fail safe or fail secure options.
 - 4. Energy Efficient Design: Provide lock bodies which have a holding current draw of 15mA maximum, and can operate on either 12 or 24 volts. Locks are to be field configurable for fail safe or fail secure operation.
 - 5. Support end-of-line resistors contained within the lock case.
 - 6. Installation requires only one cable run from the lock to the access control panel without requirements for additional proprietary lock panel interface boards or modules.
 - 7. Installation to include manufacturer's access control panel interface board or module where required for Wiegand output protocol.
 - 8. Manufacturers:
 - a. Corbin Russwin (RU) – ML2000 SE-LP10 Series.
 - b. Match Facility Standard.

2.8 AUXILIARY LOCKS

- A. Mortise Deadlocks, Small Case: ANSI/BHMA A156.36, Grade 1, small case mortise type deadlocks constructed of heavy gauge wrought corrosion resistant steel. Steel or stainless steel bolts with a 1" throw and hardened steel roller pins. Deadlocks to be products of the same source manufacturer and keyway as other specified locksets.
 - 1. Manufacturers:
 - a. Corbin Russwin Hardware (RU) - DL4100 Series.
 - b. Schlage (SC) - L460 Series.

2.9 LOCK AND LATCH STRIKES

- A. Strikes: Provide manufacturer's standard strike with strike box for each latch or lock bolt, with curved lip extended to protect frame, finished to match door hardware set, unless otherwise indicated, and as follows:
 - 1. Flat-Lip Strikes: For locks with three-piece antifriction latchbolts, as recommended by manufacturer.

2. Extra-Long-Lip Strikes: For locks used on frames with applied wood casing trim.
3. Aluminum-Frame Strike Box: Provide manufacturer's special strike box fabricated for aluminum framing.
4. Double-lipped strikes: For locks at double acting doors. Furnish with retractable stop for rescue hardware applications.

B. Standards: Comply with the following:

1. Strikes for Mortise Locks and Latches: BHMA A156.13.
2. Strikes for Bored Locks and Latches: BHMA A156.2.
3. Strikes for Auxiliary Deadlocks: BHMA A156.36.
4. Dustproof Strikes: BHMA A156.16.

2.10 CONVENTIONAL EXIT DEVICES

A. General Requirements: All exit devices specified herein shall meet or exceed the following criteria:

1. At doors not requiring a fire rating, provide devices complying with NFPA 101 and listed and labeled for "Panic Hardware" according to UL305. Provide proper fasteners as required by manufacturer including sex nuts and bolts at openings specified in the Hardware Sets.
2. Where exit devices are required on fire rated doors, provide devices complying with NFPA 80 and with UL labeling indicating "Fire Exit Hardware". Provide devices with the proper fasteners for installation as tested and listed by UL. Consult manufacturer's catalog and template book for specific requirements.
3. Except on fire rated doors, provide exit devices with hex key dogging device to hold the pushbar and latch in a retracted position. Provide optional keyed cylinder dogging on devices where specified in Hardware Sets.
4. Devices must fit flat against the door face with no gap that permits unauthorized dogging of the push bar. The addition of filler strips is required in any case where the door light extends behind the device as in a full glass configuration.
5. Energy Efficient Design: Provide lock bodies which have a holding current draw of 15mA maximum, and can operate on either 12 or 24 volts. Locks are to be field configurable for fail safe or fail secure operation.
6. Electromechanical Options: Subject to same compliance standards and requirements as mechanical exit devices, electrified devices to be of type and design as specified in hardware sets. Include any specific controllers when conventional power supplies are not sufficient to provide the proper inrush current.
7. Motorized Electric Latch Retraction: Devices with an electric latch retraction feature must use motors which have a maximum current draw of 600mA. Solenoid driven latch retraction is not acceptable.
8. Lever Operating Trim: Where exit devices require lever trim, furnish manufacturer's heavy duty escutcheon trim with threaded studs for thru-bolts.
 - a. Lock Trim Design: As indicated in Hardware Sets, provide finishes and designs to match that of the specified locksets.
 - b. Where function of exit device requires a cylinder, provide a cylinder (Rim or Mortise) as specified in Hardware Sets.

9. Vertical Rod Exit Devices: Where surface or concealed vertical rod exit devices are used at interior openings, provide as less bottom rod (LBR) unless otherwise indicated. Provide dust proof strikes where thermal pins are required to project into the floor.
 10. Narrow Stile Applications: At doors constructed with narrow stiles, or as specified in Hardware Sets, provide devices designed for maximum 2" wide stiles.
 11. Dummy Push Bar: Nonfunctioning push bar matching functional push bar.
 12. Extended cycle test: Devices to have been cycle tested in ordinance with ANSI/BHMA 156.3 requirements to 9 million cycles.
 13. Rail Sizing: Provide exit device rails factory sized for proper door width application.
 14. Through Bolt Installation: For exit devices and trim as indicated in Door Hardware Sets.
- B. Conventional Push Rail Exit Devices (Heavy Duty): ANSI/BHMA A156.3, Grade 1 Certified Products Directory (CPD) listed panic and fire exit hardware devices furnished in the functions specified in the Hardware Sets. Exit device latch to be stainless steel, pullman type, with deadlock feature.
1. Manufacturers:
 - a. Corbin Russwin Hardware (RU) - ED4000 / ED5000 Series.
 - b. Match Facility Standard.
- C. Tube Steel Removable Mullions: ANSI/BHMA A156.3 removable steel mullions with malleable-iron top and bottom retainers and a primed paint finish.
1. Provide keyed removable feature where specified in the Hardware Sets.
 2. Provide stabilizers and mounting brackets as required.
 3. Provide electrical quick connection wiring options as specified in the hardware sets.
 4. Manufacturers:
 - a. Same as exit device manufacturer.

2.11 INTEGRATED WIEGAND OUTPUT EXIT DEVICES – MULTI-CLASS READER

- A. Integrated Wiegand Output Multi-Class Exit Hardware: Wiegand output ANSI 156.3 Grade 1 rim, mortise, and vertical rod exit device hardware with integrated proximity card reader, latchbolt and touchbar monitoring, and request-to-exit signaling, in one complete unit. Hard wired, solenoid driven locking/unlocking control of the lever handle exit trim with 3/4" throw latch bolt. U.L listed and labeled for either panic or "fire exit hardware" for use on up to 3 hour fire rated openings. Available with or without keyed high security cylinder override.
1. Open architecture, hard wired platform supports centralized control of locking units with new or existing Wiegand compatible access control systems. Inside push bar (request-to-exit) signaling and door position (open/closed status) monitoring (via separately connected DPS).
 2. Integrated reader supports the following credentials:
 - a. 125kHz proximity credentials: HID, AWID, Indala, and EM4102.
 - b. 13.56 MHz proximity credentials: HID iClass, HID iClass SE, SE for MIFARE Classic, DESFire EV1.

3. 12VDC external power supply required for reader. 24VDC required for solenoid operated exit trim. Fail safe or fail secure options.
4. Installation requires only one cable run from the exit hardware to the access control panel without requirements for additional proprietary lock panel interface boards or modules.
5. Competitor Alternates Allowed Option: Installation to include manufacturer's access control panel interface board or module where required for Wiegand output protocol.
6. Manufacturers:
 - a. Corbin Russwin (RU) – ED5000 SE-LP10 Series.
 - b. Match Facility Standard.

2.12 DOOR CLOSERS

- A. All door closers specified herein shall meet or exceed the following criteria:
 1. General: Door closers to be from one manufacturer, matching in design and style, with the same type door preparations and templates regardless of application or spring size. Closers to be non-handed with full sized covers.
 2. Standards: Closers to comply with UL-10C for Positive Pressure Fire Test and be U.L. listed for use of fire rated doors.
 3. Size of Units: Comply with manufacturer's written recommendations for sizing of door closers depending on size of door, exposure to weather, and anticipated frequency of use. Where closers are indicated for doors required to be accessible to the Americans with Disabilities Act, provide units complying with ANSI ICC/A117.1.
 4. Closer Arms: Provide heavy duty, forged steel closer arms unless otherwise indicated in Hardware Sets.
 5. Closers shall not be installed on exterior or corridor side of doors; where possible install closers on door for optimum aesthetics.
 6. Closer Accessories: Provide door closer accessories including custom templates, special mounting brackets, spacers and drop plates as required for proper installation. Provide through-bolt and security type fasteners as specified in the hardware sets.
- B. Door Closers, Surface Mounted (Large Body Cast Iron): ANSI/BHMA A156.4, Grade 1 Certified Products Directory (CPD) listed surface mounted, heavy duty door closers with complete spring power adjustment, sizes 1 thru 6; and fully operational adjustable according to door size, frequency of use, and opening force. Closers to be rack and pinion type, one piece cast iron body construction, with adjustable backcheck and separate non-critical valves for closing sweep and latch speed control.
 1. Manufacturers:
 - a. Corbin Russwin Hardware (RU) – DC8000 Series.
 - b. LCN Closers (LC) – 4040XP Series.

- C. Door Closers, Surface Mounted (Heavy Duty): ANSI/BHMA A156.4, Grade 1 Certified Products Directory (CPD) listed surface mounted, heavy duty door closers with complete spring power adjustment, sizes 1 thru 6; and fully operational adjustable according to door size, frequency of use, and opening force. Closers to be rack and pinion type, one piece cast iron or aluminum alloy body construction, with adjustable backcheck and separate non-critical valves for closing sweep and latch speed control. Provide non-handed units standard.

1. Manufacturers:

- a. Corbin Russwin Hardware (RU) – DC6000 Series.
- b. LCN Closers (LC) – 4040XP Series.

2.13 ARCHITECTURAL TRIM

A. Door Protective Trim

1. General: Door protective trim units to be of type and design as specified below or in the Hardware Sets.
2. Size: Fabricate protection plates (kick, armor, or mop) not more than 2" less than door width (LDW) on stop side of single doors and 1" LDW on stop side of pairs of doors, and not more than 1" less than door width on pull side. Coordinate and provide proper width and height as required where conflicting hardware dictates. Height to be as specified in the Hardware Sets.
3. Where plates are applied to fire rated doors with the top of the plate more than 16" above the bottom of the door, provide plates complying with NFPA 80. Consult manufacturer's catalog and template book for specific requirements for size and applications.
4. Protection Plates: ANSI/BHMA A156.6 certified protection plates (kick, armor, or mop), fabricated from the following:
 - a. Stainless Steel: 300 grade, 050-inch thick.
5. Options and fasteners: Provide manufacturer's designated fastener type as specified in the Hardware Sets. Provide countersunk screw holes.
6. Manufacturers:
 - a. Burns Manufacturing (BU).
 - b. Hiawatha, Inc. (HI).
 - c. Rockwood Products; ASSA ABLOY Architectural Door Accessories (RO).

2.14 DOOR STOPS AND HOLDERS

A. General: Door stops and holders to be of type and design as specified below or in the Hardware Sets.

- B. Door Stops and Bumpers: ANSI/BHMA A156.16, Grade 1 certified door stops and wall bumpers. Provide wall bumpers, either convex or concave types with anchorage as indicated, unless floor or other types of door stops are specified in Hardware Sets. Do not mount floor stops where they will impede traffic. Where floor or wall bumpers are not appropriate, provide overhead type stops and holders.

1. Manufacturers:

- a. Burns Manufacturing (BU).

- b. Hiawatha, Inc. (HI).
 - c. Rockwood Products; ASSA ABLOY Architectural Door Accessories (RO).
- C. Overhead Door Stops and Holders: ANSI/BHMA A156.8, Grade 1 Certified Products Directory (CPD) listed overhead stops and holders to be surface or concealed types as indicated in Hardware Sets. Track, slide, arm and jamb bracket to be constructed of extruded bronze and shock absorber spring of heavy tempered steel. Provide non-handed design with mounting brackets as required for proper operation and function.
- 1. Manufacturers:
 - a. Rixson Door Controls (RF).
 - b. Sargent Manufacturing (SA).

2.15 ARCHITECTURAL SEALS

- A. General: Thresholds, weatherstripping, and gasket seals to be of type and design as specified below or in the Hardware Sets. Provide continuous weatherstrip gasketing on exterior doors and provide smoke, light, or sound gasketing on interior doors where indicated. At exterior applications provide non-corrosive fasteners and elsewhere where indicated.
- B. Smoke Labeled Gasketing: Assemblies complying with NFPA 105 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for smoke control ratings indicated, based on testing according to UL 1784.
 - 1. Provide smoke labeled perimeter gasketing at all smoke labeled openings.
- C. Fire Labeled Gasketing: Assemblies complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire ratings indicated, based on testing according to UL-10C.
 - 1. Provide intumescent seals as indicated to meet UL10C Standard for Positive Pressure Fire Tests of Door Assemblies, and NPFA 252, Standard Methods of Fire Tests of Door Assemblies.
- D. Sound-Rated Gasketing: Assemblies that are listed and labeled by a testing and inspecting agency, for sound ratings indicated.
- E. Replaceable Seal Strips: Provide only those units where resilient or flexible seal strips are easily replaceable and readily available from stocks maintained by manufacturer.
 - 1. Manufacturers:
 - a. Pemko Products; ASSA ABLOY Architectural Door Accessories (PE).
 - b. Reese Enterprises, Inc. (RE).

2.16 ELECTRONIC ACCESSORIES

- A. Push-Button Switches: Industrial grade momentary or alternate contact, back-lighted push buttons with stainless-steel switch enclosures. 12/24 VDC bi-color illumination suitable for either flush or surface mounting.
 - 1. Manufacturers:
 - a. Alarm Controls (AK) - TS Series.
 - b. Securitron (SU) - PB Series.

- B. Door Position Switches: Door position magnetic reed contact switches specifically designed for use in commercial door applications. On recessed models the contact and magnetic housing snap-lock into a 1" diameter hole. Surface mounted models include wide gap distance design complete with armored flex cabling. Provide SPDT, N/O switches with optional Rare Earth Magnet installation on steel doors with flush top channels.
 - 1. Manufacturers:
 - a. Security Door Controls (SD) - DPS Series.
 - b. Securitron (SU) - DPS Series.
- C. Switching Power Supplies: Provide power supplies with either single or dual voltage configurations at 12 or 24VDC. Power supplies shall have battery backup function with an integrated battery charging circuit and shall provide capability for power distribution, direct lock control and Fire Alarm Interface (FAI) through add on modules. Power supplies shall be expandable up to 16 individually protected outputs. Output modules shall provide individually protected, continuous outputs and/or individually protected, relay controlled outputs.
 - 1. Manufacturers:
 - a. Securitron (SU) - AQD Series.
- D. Energy Efficient Switching Power Supplies: Provide UL listed or recognized filtered and regulated power supplies. Provide single voltage units as shown in the hardware sets. Units must have one access control input and one fire alarm input. Standby power consumption of unit must be less than 10mW at 120VAC. Provide integral battery backup as standard for all units. Provide the least number of units, at the appropriate amperage level, sufficient to exceed the required total draw for the specified electrified hardware and access control equipment.
 - 1. Manufacturers:
 - a. Securitron (SU) – EPS Series.

2.17 FABRICATION

- A. Fasteners: Provide door hardware manufactured to comply with published templates generally prepared for machine, wood, and sheet metal screws. Provide screws according to manufacturers recognized installation standards for application intended.

2.18 FINISHES

- A. Standard: Designations used in the Hardware Sets and elsewhere indicate hardware finishes complying with ANSI/BHMA A156.18, including coordination with traditional U.S. finishes indicated by certain manufacturers for their products.
- B. Provide quality of finish, including thickness of plating or coating (if any), composition, hardness, and other qualities complying with manufacturer's standards, but in no case less than specified by referenced standards for the applicable units of hardware
- C. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine scheduled openings, with Installer present, for compliance with requirements for installation tolerances, labeled fire door assembly construction, wall and floor construction, and other conditions affecting performance.
- B. Notify architect of any discrepancies or conflicts between the door schedule, door types, drawings and scheduled hardware. Proceed only after such discrepancies or conflicts have been resolved in writing.

3.2 PREPARATION

- A. Hollow Metal Doors and Frames: Comply with ANSI/DHI A115 series.
- B. Wood Doors: Comply with ANSI/DHI A115-W series.

3.3 INSTALLATION

- A. Install each item of mechanical and electromechanical hardware and access control equipment to comply with manufacturer's written instructions and according to specifications.
 - 1. Installers are to be trained and certified by the manufacturer on the proper installation and adjustment of fire, life safety, and security products including: hanging devices; locking devices; closing devices; and seals.
- B. Mounting Heights: Mount door hardware units at heights indicated in following applicable publications, unless specifically indicated or required to comply with governing regulations:
 - 1. Standard Steel Doors and Frames: DHI's "Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames."
 - 2. Wood Doors: DHI WDHS.3, "Recommended Locations for Architectural Hardware for Wood Flush Doors."
 - 3. Where indicated to comply with accessibility requirements, comply with ANSI A117.1 "Accessibility Guidelines for Buildings and Facilities."
 - 4. Provide blocking in drywall partitions where wall stops or other wall mounted hardware is located.
- C. Integrated Wiegand access control products are required to be installed through current members of the ASSA ABLOY "Certified Integrator" (CI) program.
- D. Retrofitting: Install door hardware to comply with manufacturer's published templates and written instructions. Where cutting and fitting are required to install door hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation of surface protective trim units with finishing work specified in Division 9 Sections. Do not install surface-mounted items until finishes have been completed on substrates involved.
- E. Thresholds: Set thresholds for exterior and acoustical doors in full bed of sealant complying with requirements specified in Division 7 Section "Joint Sealants."
- F. Storage: Provide a secure lock up for hardware delivered to the project but not yet installed. Control the handling and installation of hardware items so that the completion of the work will not be delayed by hardware losses before and after installation.

3.4 FIELD QUALITY CONTROL

- A. Field Inspection (Punch Report): Reference Division 01 Section "Closeout Procedures" for project punch and reporting requirements including compliance with approved submittals and verification door hardware is properly installed, operating and adjusted.

3.5 ADJUSTING

- A. Initial Adjustment: Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate as intended. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.

3.6 CLEANING AND PROTECTION

- A. Protect all hardware stored on construction site in a covered and dry place. Protect exposed hardware installed on doors during the construction phase. Install any and all hardware at the latest possible time frame.
- B. Clean adjacent surfaces soiled by door hardware installation.
- C. Clean operating items as necessary to restore proper finish. Provide final protection and maintain conditions that ensure door hardware is without damage or deterioration at time of owner occupancy.

3.7 DEMONSTRATION

- A. Instruct Owner's maintenance personnel to adjust, operate, and maintain mechanical and electromechanical door hardware.

3.8 DOOR HARDWARE SETS

- A. The hardware sets represent the design intent and direction of the owner and architect. They are a guideline only and should not be considered a detailed hardware schedule. Discrepancies, conflicting hardware and missing items should be brought to the attention of the architect with corrections made prior to the bidding process. Omitted items not included in a hardware set should be scheduled with the appropriate additional hardware required for proper application and functionality.
 1. Quantities listed are for each pair of doors, or for each single door.
 2. The supplier is responsible for handing and sizing all products.
 3. Where multiple options for a piece of hardware are given in a single line item, the supplier shall provide the appropriate application for the opening.

B. Manufacturer's Abbreviations:

1. MK - McKinney
2. PE - Pemko
3. RO - Rockwood
4. RU - Corbin Russwin
5. AD - Adams Rite
6. SA - SARGENT
7. SC - Schlage
8. RF - Rixson
9. SU - Securitron

10. AK - Alarm Controls

Hardware Sets

Set: 1.0

Doors: C001A.1

Description: Ext - Alum Pair - Rim/NL - MELR - SELP10 - KRM - Closer/stop - DC

2 Continuous Hinge	_FM__SLF-HD1 SER12	Match Dr	PE	087100	↔
1 Mullion	CR90xBKM		RU	087100	
1 Rim Exit Device, Exit Only	ED5200 EO M91 M92 MELR	613E	RU	087100	↔
1 Access Control Rim Exit	ED5200N-SELP10 K157 BIPS B03 MELR	613E	RU	281500	↔
2 Primus Cylinder	Type as req	613E	SC	087100	
2 Offset Door Pull	RM3312-24 Mtg-Type 12XHD	US10BE	RO	087100	
2 Surface Closer (sps)	DC8200 A11/A4	690	RU	087100	
1 Threshold	252x3DFG		PE	087100	
1 Mullion Gasketing	5110BL		PE	087100	
2 Sweep	315DN		PE	087100	
2 ElectroLynx Harness	QC-Cxxx sized for door width		MK	087100	↔
2 ElectroLynx Harness	QC-C1500P		MK	087100	↔
2 Position Switch	DPS-M-BK		SU	087100	↔
1 Power Supply	AQD6		SU	087100	↔

Notes:

Weatherstripping by Alum Door manufacturer

Coordinate voltage, operation and electrical characteristics with all related trades.

Wiring and connections by security provider.

GC and Alum Door mfr to coordinate pull installation and location with SEVLP 10

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Set: 2.0

Doors: A101A.1

Description: Ext - Alum Sgl -Rim/NL - MELR - SELP10 - Closer/stop - DC - Remore Release

1 Continuous Hinge	_FM_SLF-HD1 SER12	Match Dr	PE	087100	↔
1 Access Control Rim Exit	ED5200N-SELP10 K157 BIPS B03 MELR	613E	RU	281500	↔
1 Primus Cylinder	Type as req	613E	SC	087100	
1 Offset Door Pull	RM3312-24 Mtg-Type 12XHD	US10BE	RO	087100	
1 Surface Closer (sps)	DC8200 A11/A4	690	RU	087100	
1 Threshold	252x3DFG		PE	087100	
1 Sweep	315DN		PE	087100	
1 ElectroLynx Harness	QC-Cxxx sized for door width		MK	087100	↔
1 ElectroLynx Harness	QC-C1500P		MK	087100	↔
1 Position Switch	DPS-M-BK		SU	087100	↔
1 Door Release	TS-18		AK	087100	↔
1 Power Supply	AQD6		SU	087100	↔

Notes:

Weatherstripping by Alum Door manufacturer

Coordinate voltage, operation and electrical characteristics with all related trades.

Wiring and connections by security provider.

GC and Alum Door Mfr to coordinate installation and location of pull with SELP 10

Set: 3.0

Doors: A101E.4, A103D.1, C101A.1, C101E.2, C102G.1, C102H.1

Description: Ext - Alum Sgl - Rim/NL - MELR - SELP10 - Closer/stop - DC

1 Continuous Hinge	_FM__SLF-HD1 SER12	Match Dr	PE	087100	↔
1 Access Control Rim Exit	ED5200N-SELP10 K157 BIPS B03 MELR	613E	RU	281500	↔
1 Primus Cylinder	Type as req	613E	SC	087100	
1 Offset Door Pull	RM3312-24 Mtg-Type 12XHD	US10BE	RO	087100	
1 Surface Closer (sps)	DC8200 A11/A4	690	RU	087100	
1 Threshold	252x3DFG		PE	087100	
1 Sweep	315DN		PE	087100	
1 ElectroLynx Harness	QC-Cxxx sized for door width		MK	087100	↔
1 ElectroLynx Harness	QC-C1500P		MK	087100	↔
1 Position Switch	DPS-M-BK		SU	087100	↔
1 Power Supply	AQD6		SU	087100	↔

Notes:

Weatherstripping by Alum Door manufacturer

Coordinate voltage, operation and electrical characteristics with all related trades.

Wiring and connections by security provider.

GC and Alum Door mfr to coordinate installation and location of pull with SELP 10

Set: 4.0

Doors: A101A.2, A101A.3, A101A.4

Description: Ext - Alum Pair - Rim/NL - MELR - Closer/stop

1 Continuous Hinge	_FM__SLF-HD1 SER12	Match Dr	PE	087100	↔
1 Rim Exit Device, Exit Only	ED5200 EO M91 M92 MELR	613E	RU	087100	↔
1 Offset Door Pull	RM3312-24 Mtg-Type 12XHD	US10BE	RO	087100	
1 Surface Closer (sps)	DC8200 A11/A4	690	RU	087100	
1 Threshold	252x3DFG		PE	087100	
1 Sweep	315DN		PE	087100	
1 ElectroLynx Harness	QC-Cxxx sized for door width		MK	087100	↔
1 ElectroLynx Harness	QC-C1500P		MK	087100	↔
1 Power Supply	AQD6		SU	087100	↔

Notes:

Weatherstripping by Alum Door manufacturer

Coordinate voltage, operation and electrical characteristics with all related trades.

Wiring and connections by security provider.

Set: 5.0

Doors: A104F.3, B102.2, B104.2, B106.2, C104D.2, C106B.2, C107.2

Description: Ext - Alum Sgl - SELP10 SEC Lock - Closer/stop

1 Continuous Hinge	_FM__SLF-HD1 SER12	Match Dr	PE	087100	↔
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1 Access Control Mort Lock	ML20606 x SELP10-SEC CSA BIPS B03	613E	RU	281500	⚡
1 Primus Cylinder	Type as req	613E	SC	087100	
1 Surface Closer (sps)	DC8200 A11/A4	690	RU	087100	
1 Threshold	252x3DFG		PE	087100	
1 Sweep	315DN		PE	087100	
1 ElectroLynx Harness	QC-Cxxx sized for door width		MK	087100	⚡
1 ElectroLynx Harness	QC-C1500P		MK	087100	⚡
1 Position Switch	DPS-M-BK		SU	087100	⚡
1 Power Supply	EPS-05		SU	087100	⚡

Notes:

Weatherstripping by Alum Door manufacturer

Wiring and connections by security provider.

Doors electrically locked after hours, card reader access on exterior.

Set: 5.1

Doors: B108.2

Description: Ext - Alum Sgl - Rim SELP10 - Closer/stop

1 Continuous Hinge	_FM__SLF-HD1 SER12	Match Dr	PE	087100	⚡
1 Access Control Rim Exit	ED5200N C9605ET-SELP10 BIPS B03	613E	RU	281500	⚡
1 Primus Cylinder	Type as req	613E	SC	087100	
1 Surface Closer (sps)	DC8200 A11/A4	690	RU	087100	
1 Threshold	252x3DFG		PE	087100	
1 Sweep	315DN		PE	087100	
1 ElectroLynx Harness	QC-Cxxx sized for door width		MK	087100	⚡
1 ElectroLynx Harness	QC-C1500P		MK	087100	⚡
1 Power Supply	AQD6		SU	087100	⚡

Notes:

Weatherstripping by Alum Door manufacture

Wiring and connections by security provider.

Doors electrically locked after hours, card reader access on exterior.

Set: 6.0

Doors: A101E.1, A101E.2, A101E.3, A103D.2, C101A.2, C101A.3, C101A.4, C101E.1, C102G.2, C102H.2
Description: Ext - Alum Sgl - Rim/EO - Door Pull - Closer/stop

1 Continuous Hinge	_FM__SLF-HD1	Match Dr	PE	087100
1 Rim Exit Device, Exit Only	ED5200 EO	613E	RU	087100
1 Offset Door Pull	RM3312-24 Mtg-Type 12XHD	US10BE	RO	087100
1 Surface Closer (sps)	DC8200 A11/A4	690	RU	087100
1 Threshold	252x3DFG		PE	087100
1 Sweep	315DN		PE	087100

Notes:
Weatherstripping by Door manufacturer.

Set: 6.1

Doors: A102.3
Description: Ext - Alum Sgl - Rim/EO - Closer/stop

1 Continuous Hinge	_FM__SLF-HD1	Match Dr	PE	087100
1 Rim Exit Device, Exit Only	ED5200 EO	613E	RU	087100
1 Surface Closer (sps)	DC8200 A11/A4	690	RU	087100
1 Threshold	252x3DFG		PE	087100
1 Sweep	315DN		PE	087100

Notes:
Weatherstripping by Door manufacturer.

Set: 7.0

Doors: C002.2, C003.2
Description: Ext - Alum Sgl - Rim/SELP10 - Closer/stop

1 Continuous Hinge	_FM__SLF-HD1 SER12	Match Dr	PE	087100	↔
1 Access Control Rim Exit	ED5200N C9605ET-SELP10 BIPS B03	613E	RU	281500	↔
1 Primus Cylinder	Type as req	613E	SC	087100	
1 Surface Closer (sps)	DC8200 A11/A4	690	RU	087100	
1 Threshold	252x3DFG		PE	087100	
1 Sweep	315DN		PE	087100	
1 ElectroLynx Harness	QC-Cxxx sized for door width		MK	087100	↔
1 ElectroLynx Harness	QC-C1500P		MK	087100	↔
1 Position Switch	DPS-M-BK		SU	087100	↔
1 Power Supply	AQD6		SU	087100	↔

Notes:
Weatherstripping by Door manufacturer.

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Set: 8.0 – NOT USED

Description: Ext - Alum Sgl - Push/Pull - Deadlock - Closer/stop

1 Continuous Hinge	_FM__SLF-HD1	Match Dr	PE	087100
1 Mortise Deadlock	MS1850SN	313	AD	087100
1 Primus Cylinder	Type as req	613E	SC	087100
1 Cylinder Thumb Turn	4066-01	313	AD	087100
1 Push Bar	RM3122 Mtg-Type 12XHD	US10BE	RO	087100
1 Offset Door Pull	RM3312-24 Mtg-Type 12XHD	US10BE	RO	087100
1 Surface Closer (sps)	DC8200 A11/A4	690	RU	087100
1 Threshold	252x3DFG		PE	087100
1 Sweep	315DN		PE	087100

Notes:

Weatherstripping by Door manufacturer.

Set: 9.0- NOT USED

Description: NOT USED Ext - Alum Sgl - Push/Pull - Deadlock - Closer/stop - DC

1 Continuous Hinge	_FM__SLF-HD1	Match Dr	PE	087100
1 Mortise Deadlock	MS1850SN	313	AD	087100
1 Primus Cylinder	Type as req	613E	SC	087100
1 Cylinder Thumb Turn	4066-01	313	AD	087100
1 Push Bar	RM3122 Mtg-Type 12XHD	US10BE	RO	087100
1 Offset Door Pull	RM3312-24 Mtg-Type 12XHD	US10BE	RO	087100
1 Surface Closer (sps)	DC8200 A11/A4	690	RU	087100
1 Threshold	252x3DFG		PE	087100
1 Sweep	315DN		PE	087100
1 Position Switch	DPS-M-BK		SU	087100



Notes:

Weatherstripping by Door manufacturer.

Set: 10.0

Doors: A101A.5

Description: Vestibule - Alum Pair - Rim/NL - MELR - SELP10 - Fixed Mullion - Closer/stop - DC

2 Continuous Hinge	_FM_SLF-HD1 SER12	Match Dr	PE	087100	↔
1 Rim Exit Device, Exit Only	ED5200 EO M91 M92 MELR	613E	RU	087100	↔
1 Access Control Rim Exit	ED5200N-SELP10 K157 BIPS B03 MELR	613E	RU	281500	↔
1 Primus Cylinder	Type as req	613E	SC	087100	
2 Offset Door Pull	RM3312-24 Mtg-Type 12XHD	US10BE	RO	087100	
2 Surface Closer (sps)	DC8200 A11/A4	690	RU	087100	
1 Mullion Gasketing	5110BL		PE	087100	
2 ElectroLynx Harness	QC-Cxxx sized for door width		MK	087100	↔
2 ElectroLynx Harness	QC-C1500P		MK	087100	↔
2 Position Switch	DPS-M-BK		SU	087100	↔
1 Power Supply	AQD6		SU	087100	↔

Notes:

Coordinate voltage, operation and electrical characteristics with all related trades.

Wiring and connections by security provider.

GC and Alum Door Mfr to coordinate installation and location of pull with SE LP 10 Reader

Set: 11.0

Doors: A101A.6

Description: Vestibule - Alum Pair - Rim/EO - MELR - Fixed Mullion - Closer/stop

2 Continuous Hinge	_FM_SLF-HD1 SER12	Match Dr	PE	087100	
1 Access Control Rim Exit	ED5200N- SELP10 K157 BIPS B03 MELR	613E	RU	087100	↔
1 Rim Exit Device, Exit Only	ED5200 EO M91 M92 MELR	613E	RU	087100	↔
1 Primus Cylinder	Type as req	613E	SC	087100	
2 Offset Door Pull	RM3312-24 Mtg-Type 12XHD	US10BE	RO	087100	
2 Surface Closer (sps)	DC8200 A11/A4	690	RU	087100	
1 Mullion Gasketing	5110BL		PE	087100	
1 ElectroLynx Harness	QC-Cxxx sized for door width		MK	087100	↔
1 ElectroLynx Harness	QC-C1500P		MK	087100	↔
1 Power Supply	AQD6		SU	087100	↔

Notes:

Coordinate voltage, operation and electrical characteristics with all related trades.

Wiring and connections by security provider.

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Set: 12.0

Doors: A101E.5, A101E.6, A103D.3, C001A.2, C101A.5, C101A.6, C101E.3, C102G.3, C102H.3
Description: Vestibule - Alum Pair - Push/Pull - Closer/stop

2 Continuous Hinge	_FM__SLF-HD1	Match Dr	PE	087100
2 Push Bar	RM3122 Mtg-Type 12XHD	US10BE	RO	087100
2 Offset Door Pull	RM3312-24 Mtg-Type 12XHD	US10BE	RO	087100
2 Surface Closer (sps)	DC8200 A11/A4	690	RU	087100

Set: 13.0

Description: Ext - Pair - Rim/Lever-EO - KRM - Closer/stop

2 Continuous Hinge	DFM__HD1		PE	087100
1 Mullion	CR90xBKM		RU	087100
1 Rim Exit Device, Exit Only	ED5200 EO	613E	RU	087100
1 Rim Exit Device, Classroom	ED5200 C955ET	613E	RU	087100
2 Primus Cylinder	Type as req	613E	SC	087100
2 Surface Closer (sps)	DC8200 A11/A4	690	RU	087100
1 Threshold	253x3DFG		PE	087100
1 Rain Guard	346D		PE	087100
1 Mullion Gasketing	5110BL		PE	087100
2 Sweep	315DN		PE	087100

Notes:

Hollow metal frame manufacturer to provide weather stripping in the Thermal Break frame.

Set: 13.1

Doors: B001.2

Description: Ext - Pair - Storeroom - MFB - Closer/stop

2 Continuous Hinge	DFM__HD1		PE	087100
2 Flush Bolt	555	US10BE	RO	087100
1 Storeroom Lock	ML2057 CSA	613E	RU	087100
1 Primus Cylinder	Type as req	613E	SC	087100
2 Surface Closer (sps)	DC8200 A11/A4	690	RU	087100
1 Threshold	253x3DFG		PE	087100
1 Rain Guard	346D		PE	087100
2 Sweep	315DN		PE	087100
1 Astragal	3572-10BE		PE	087100

Notes:

Hollow metal frame manufacturer to provide weather stripping in the Thermal Break frame.

Set: 13.2

Doors: [B001.3](#)

Description: Ext - Pair - Rim/Lever-SELP10 - KRM - Closer/stop

1 Continuous Hinge	DFM__HD1		PE	087100	
1 Continuous Hinge	_FM__SLF-HD1 SER12	Match Dr	PE	087100	↔
1 Mullion	CR90xBKM		RU	087100	
1 Rim Exit Device, Exit Only	ED5200 EO	613E	RU	087100	
1 Access Control Rim Exit	ED5200N C9605ET-SELP10 BIPS B03	613E	RU	281500	↔
2 Primus Cylinder	Type as req	613E	SC	087100	
2 Surface Closer (sps)	DC8200 A11/A4	690	RU	087100	
1 Threshold	253x3DFG		PE	087100	
1 Rain Guard	346D		PE	087100	
1 Mullion Gasketing	5110BL		PE	087100	
2 Sweep	315DN		PE	087100	
1 ElectroLynx Harness	QC-Cxxx sized for door width		MK	087100	↔
1 ElectroLynx Harness	QC-C1500P		MK	087100	↔
2 Position Switch	DPS-M-BK		SU	087100	↔
1 Power Supply	AQD6		SU	087100	↔

Notes:

Hollow metal frame manufacturer to provide weather stripping in the Thermal Break frame.

Set: 13.3

Doors: [B001C.2](#)

Description: Ext - Pair - SELP10 - MFB - Closer/stop /HM

1 Continuous Hinge	DFM__HD1		PE	087100	
1 Continuous Hinge	_FM__SLF-HD1 SER12	Match Dr	PE	087100	↔
2 Flush Bolt	555	US10BE	RO	087100	
1 Access Control Mort Lock	ML20606 x SELP10-SEC CSA BIPS B03	613E	RU	281500	↔
1 Primus Cylinder	Type as req	613E	SC	087100	
2 Surface Closer (sps)	DC8200 A11/A4	690	RU	087100	
1 Threshold	253x3DFG		PE	087100	
1 Rain Guard	346D		PE	087100	
2 Sweep	315DN		PE	087100	
1 Astragal	3572-10BE		PE	087100	
1 ElectroLynx Harness	QC-Cxxx sized for door width		MK	087100	↔
1 ElectroLynx Harness	QC-C1500P		MK	087100	↔
2 Position Switch	DPS-M-BK		SU	087100	↔
1 Power Supply	EPS-05		SU	087100	↔

Notes:

Hollow metal frame manufacturer to provide weather stripping in the Thermal Break frame.

Coordinate voltage, operation and electrical characteristics with all related trades.

Wiring and connections by security provider.

Set: 14.0

Doors: [A000](#)

Description: Ext - Sgl - Storeroom - Closer/stop

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1 Continuous Hinge	DFM__HD1		PE	087100
1 Storeroom Lock	ML2057 CSA	613E	RU	087100
1 Primus Cylinder	Type as req	613E	SC	087100
1 Surface Closer (sps)	DC8200 A11/A4	690	RU	087100
1 Threshold	253x3DFG		PE	087100
1 Rain Guard	346D		PE	087100
1 Sweep	315DN		PE	087100

Notes:

Hollow metal frame manufacturer to provide weather stripping in the Thermal Break frame.

Set: 14.1

Doors: B003, B004, C002B.2, C003B.2

Description: Ext - Sgl - SELP10/HM - Closer/stop

1 Continuous Hinge	_FM__SLF-HD1 SER12	Match Dr	PE	087100	↔
1 Access Control Mort Lock	ML20606 x SELP10-SEC CSA BIPS B03	613E	RU	281500	↔
1 Primus Cylinder	Type as req	613E	SC	087100	
1 Surface Closer (sps)	DC8200 A11/A4	690	RU	087100	
1 Threshold	253x3DFG		PE	087100	
1 Rain Guard	346D		PE	087100	
1 Sweep	315DN		PE	087100	
1 ElectroLynx Harness	QC-Cxxx sized for door width		MK	087100	↔
1 ElectroLynx Harness	QC-C1500P		MK	087100	↔
1 Power Supply	EPS-05		SU	087100	↔

Notes:

Coordinate voltage, operation and electrical characteristics with all related trades.

Hollow metal frame manufacturer to provide weather stripping in the Thermal Break frame.

Wiring and connections by security provider

Set: 15.0

Doors: C004E.2

Description: Ext - Sgl - Rim/Storeroom - Closer/stop

1 Continuous Hinge	DFM__HD1		PE	087100
1 Rim Exit Device, Storeroom	ED5200 C959ET	613E	RU	087100
1 Primus Cylinder	Type as req	613E	SC	087100
1 Surface Closer (sps)	DC8200 A11/A4	690	RU	087100
1 Threshold	253x3DFG		PE	087100
1 Rain Guard	346D		PE	087100
1 Sweep	315DN		PE	087100

Notes:

Hollow metal frame manufacturer to provide weather stripping in the Thermal Break frame.

Set: 15.1

Doors: C004.2

Description: Ext - Sgl - Rim/SELP10 - Closer/stop

1 Continuous Hinge	_FM__SLF-HD1 SER12	Match Dr	PE	087100	↔
1 Access Control Rim Exit	ED5200N C9605ET-SELP10 BIPS B03	613E	RU	281500	↔
1 Primus Cylinder	Type as req	613E	SC	087100	
1 Surface Closer (sps)	DC8200 A11/A4	690	RU	087100	
1 Threshold	253x3DFG		PE	087100	
1 Rain Guard	346D		PE	087100	
1 Sweep	315DN		PE	087100	
1 ElectroLynx Harness	QC-Cxxx sized for door width		MK	087100	↔
1 ElectroLynx Harness	QC-C1500P		MK	087100	↔
1 Power Supply	AQD6		SU	087100	↔

Notes:

Hollow metal frame manufacturer to provide weather stripping in the Thermal Break frame.

Set: 16.0

Description: Ext - Sgl - Classroom - Closer/stop

1 Continuous Hinge	DFM__HD1		PE	087100
1 Classroom Lock	ML2055 CSA	613E	RU	087100
1 Primus Cylinder	Type as req	613E	SC	087100
1 Surface Closer (sps)	DC8200 A11/A4	690	RU	087100
1 Threshold	253x3DFG		PE	087100
1 Rain Guard	346D		PE	087100
1 Sweep	315DN		PE	087100

Notes:

Hollow metal frame manufacturer to provide weather stripping in the Thermal Break frame.

Set: 17.0

Doors: B101.1, B101.3, C102.1, C102.2

Description: Alum Pair - Rim/SELP10 - KRM - Closer/stop

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1 Continuous Hinge	_FM_SLF-HD1	Match Dr	PE	087100	
1 Continuous Hinge	_FM_SLF-HD1 SER12	Match Dr	PE	087100	↔
1 Mullion	CR90xBKM		RU	087100	
1 Rim Exit Device, Exit Only	ED5200 EO	613E	RU	087100	
1 Access Control Rim Exit	ED5200N-SELP10 C960ET BIPS B03	613E	RU	281500	↔
2 Primus Cylinder	Type as req	613E	SC	087100	
2 Surface Closer (sps)	DC8200 A11/A4	690	RU	087100	
1 ElectroLynx Harness	QC-Cxxx sized for door width		MK	087100	↔
1 ElectroLynx Harness	QC-C1500P		MK	087100	↔
1 Power Supply	EPS-05		SU	087100	↔

Notes:
 Wiring and connections by security provider.

Set: 18.0

Doors: B108.1
 Description: Alum Pair - Rim/Class - KRM - Closer/stop

2 Continuous Hinge	_FM_SLF-HD1	Match Dr	PE	087100	
1 Mullion	CR90xBKM		RU	087100	
2 Rim Exit Device, Classroom	ED5200 C955ET	613E	RU	087100	
3 Primus Cylinder	Type as req	613E	SC	087100	
2 Surface Closer (sps)	DC8200 A11/A4	690	RU	087100	
1 Mullion Gasketing	5110BL		PE	087100	

Set: 18.1

Doors: A102.1, A102.2
 Description: Alum Pair - Rim/NL - KRM - Closer/stop

2 Continuous Hinge	_FM_SLF-HD1	Match Dr	PE	087100	
1 Mullion	CR90xBKM		RU	087100	
1 Rim Exit Device, Exit Only	ED5200 EO	613E	RU	087100	
2 Rim Exit Device, Nightlatch	ED5200 K157ET	613E	RU	087100	
2 Primus Cylinder	Type as req	613E	SC	087100	
2 Offset Door Pull	RM3312-24 Mtg-Type 12XHD	US10BE	RO	087100	
2 Surface Closer (sps)	DC8200 A11/A4	690	RU	087100	
1 Mullion Gasketing	5110BL		PE	087100	

Set: 19.0

Description: NOT USED Alum Pair - Push/Pull - Closer/stop

2 Continuous Hinge	_FM__SLF-HD1	Match Dr	PE	087100
2 Push Bar	RM3122 Mtg-Type 12XHD	US10BE	RO	087100
2 Straight Door Pull	RM3302-24 Mtg-Type 12XHD	US10BE	RO	087100
2 Surface Closer (ps)	DC6200/DC6210 A4	690	RU	087100

Set: 20.0

Doors: B102.1

Description: Alum - Sgl - SELP10 SAF Lock - Closer

1 Continuous Hinge	_FM__SLF-HD1 SER12	Match Dr	PE	087100	↔
1 Access Control Mort Lock	ML20606 x SELP10-SAF CSA BIPS B03	613E	RU	281500	↔
1 Primus Cylinder	Type as req	613E	SC	087100	
1 Surface Closer	DC6200 A3/A10	690	RU	087100	
1 W/F Stop	406 / 441CU	US10BE	RO	087100	
1 ElectroLynx Harness	QC-Cxxx sized for door width		MK	087100	↔
1 ElectroLynx Harness	QC-C1500P		MK	087100	↔
1 Power Supply	EPS-05		SU	087100	↔

Notes:

Coordinate voltage, operation and electrical characteristics with all related trades.

Wiring and connections by security provider.

Set: 21.0

Doors: B202A, C104A.2, C108

Description: Alum Sgl - Office

1 Continuous Hinge	_FM__SLF-HD1	Match Dr	PE	087100
1 Office Lock	ML2051 CSA	613E	RU	087100
1 Primus Cylinder	Type as req	613E	SC	087100
1 W/F Stop	406 / 441CU	US10BE	RO	087100

Set: 22.0

Doors: B104F, B201A.1, [B201A.2](#), B202D, C003.4, C102F

Description: Alum Sgl - Office - OH Stop

1 Continuous Hinge	_FM__SLF-HD1	Match Dr	PE	087100
1 Office Lock	ML2051 CSA	613E	RU	087100
1 Primus Cylinder	Type as req	613E	SC	087100
1 Surf Overhead Stop	10-336	613E	RF	087100

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Set: 23.0

Doors: B107D

Description: Alum Sgl - Rim/Lever - Closer/ho

1 Continuous Hinge	_FM__SLF-HD1	Match Dr	PE	087100
1 Rim Exit Device, Classroom	ED5200 C955ET	613E	RU	087100
1 Primus Cylinder	Type as req	613E	SC	087100
1 Surface Closer (ho)	DC6210 A14	690	RU	087100
1 W/F Stop	406 / 441CU	US10BE	RO	087100

Set: 24.0

Doors: B205.1, B205.2, C002.4

Description: Alum Sgl - Rim/Lever - Closer/stop

1 Continuous Hinge	_FM__SLF-HD1	Match Dr	PE	087100
1 Rim Exit Device, Classroom	ED5200 C955ET	613E	RU	087100
1 Primus Cylinder	Type as req	613E	SC	087100
1 Surface Closer (ps)	DC6200/DC6210 A4	690	RU	087100

Set: 25.0

Doors: B201, B202.1, B203

Description: Alum Sgl - Rim/Passage - Closer

1 Continuous Hinge	_FM__SLF-HD1	Match Dr	PE	087100
1 Rim Exit Device, Passage	ED5200 C910ET	613E	RU	087100
1 Surface Closer	DC6200 A3/A10	690	RU	087100
1 W/F Stop	406 / 441CU	US10BE	RO	087100

Set: 26.0

Doors: B202R

Description: Alum Sgl - Passage - OH Stop

1 Continuous Hinge	_FM__SLF-HD1	Match Dr	PE	087100
1 Passage Latch	ML2010 CSA	613E	RU	087100
1 Surf Overhead Stop	10-336	613E	RF	087100

Set: 27.0

Doors: A001, B001A, B001C.1, B001E, B001G, B001I, B002, C004A, C004C
Description: Pair - Storeroom - AFB, Closer/stop

6 Hinge, Full Mortise	TA2714 4-1/2" x 4-1/2"	US10BE	MK	087100
1 Automatic Flush Bolt	2842/2942	US10BE	RO	087100
1 Dust Proof Strike	570	US10BE	RO	087100
1 Storeroom Lock	ML2057 CSA	613E	RU	087100
1 Primus Cylinder	Type as req	613E	SC	087100
1 Coordinator	2672	BLK	RO	087100
2 Mounting Bracket	2601AB or 2601C	BLK	RO	087100
2 Surface Closer (ps)	DC6200/DC6210 A4	690	RU	087100
1 Gasketing Pair	S88BL		PE	087100
1 Astragal	S771D		PE	087100
1 Astragal	3572-10BE		PE	087100

Set: 28.0

Doors: C004E.1
Description: Pair - SVR/Storeroom - Closer/stop

6 Hinge, Full Mortise	TA2714 4-1/2" x 4-1/2"	US10BE	MK	087100
1 Fire Rated Surf Vert Rod, Exit Only	ED5470B EO M55	613E	RU	087100
1 Fire Rated Surf Vert Rod, Storeroom	ED5470B C959ET M55	613E	RU	087100
1 Primus Cylinder	Type as req	613E	SC	087100
2 Surface Closer (ps)	DC6200/DC6210 A4	690	RU	087100
1 Gasketing Pair	S88BL		PE	087100
1 Astragal	S771D		PE	087100

Set: 28.1

Doors: C004D.1
Description: Pair - SVR/Storeroom - AFB - Closer/stop

6 Hinge, Full Mortise	TA2714 4-1/2" x 4-1/2"	US10BE	MK	087100
1 Automatic Flush Bolt	2842/2942	US10BE	RO	087100
1 Dust Proof Strike	570	US10BE	RO	087100
1 Fire Rated Surf Vert Rod, Storeroom	ED5470B C959ET M55	613E	RU	087100
1 Primus Cylinder	Type as req	613E	SC	087100
1 Coordinator	2672	BLK	RO	087100
2 Mounting Bracket	2601AB or 2601C	BLK	RO	087100
2 Surface Closer (ps)	DC6200/DC6210 A4	690	RU	087100
1 Gasketing Pair	S88BL		PE	087100
1 Astragal	S771D		PE	087100

Set: 28.2

Doors: **A002**

Description: Pair - Rim/Storeroom - KRM - Closer/stop

6 Hinge, Full Mortise	TA2714 4-1/2" x 4-1/2"	US10BE	MK	087100
1 Mullion	CR90xBKM		RU	087100
1 Fire Rated Rim Exit, Storeroom	ED5200A C959ET	613E	RU	087100
1 Fire Rated Rim Exit, Exit Only	ED5200A EO	613E	RU	087100
2 Primus Cylinder	Type as req	613E	SC	087100
2 Surface Closer (ps)	DC6200/DC6210 A4	690	RU	087100
1 Gasketing Pair	S88BL		PE	087100
1 Mullion Gasketing	5110BL		PE	087100

Set: 29.0

Doors: **A103A**

Description: Pair - Storeroom - MFB - Closer/stop - OH Stop

6 Hinge, Full Mortise	TA2714 4-1/2" x 4-1/2"	US10BE	MK	087100
2 Flush Bolt	555	US10BE	RO	087100
1 Dust Proof Strike	570	US10BE	RO	087100
1 Storeroom Lock	ML2057 CSA	613E	RU	087100
1 Primus Cylinder	Type as req	613E	SC	087100
1 Surf Overhead Stop	55-x36	690	RF	087100
1 Surface Closer (ps)	DC6200/DC6210 A4	690	RU	087100
1 Astragal	S771D		PE	087100
2 Silencer - Metal Frame	608		RO	087100

Set: 30.0

Description: Pair - Rim/Lever-EO- KRM - Closer/stop - KP

6 Hinge, Full Mortise	TA2714 4-1/2" x 4-1/2"	US10BE	MK	087100
1 Mullion	CR90xBKM		RU	087100
1 Rim Exit Device, Exit Only	ED5200 EO	613E	RU	087100
1 Rim Exit Device, Classroom	ED5200 C955ET	613E	RU	087100
2 Primus Cylinder	Type as req	613E	SC	087100
2 Surface Closer (ps)	DC6200/DC6210 A4	690	RU	087100
2 Kick Plate	K1050 10" 4BE CSK	US10BE	RO	087100
1 Threshold	151D		PE	087100
1 Gasketing Pair	S88BL		PE	087100
1 Mullion Gasketing	5110BL		PE	087100

Set: 31.0

Doors: [B001.1](#), [C004.1](#)

Description: Pair - SVR/Lever - Closer/stop - KP

6 Hinge, Full Mortise	TA2714 4-1/2" x 4-1/2"	US10BE	MK	087100
2 Fire Rated Surf Vert Rod, Classroom	ED5470B C955ET M55	613E	RU	087100
2 Primus Cylinder	Type as req	613E	SC	087100
2 Surface Closer (ps)	DC6200/DC6210 A4	690	RU	087100
2 Kick Plate	K1050 10" 4BE CSK	US10BE	RO	087100
1 Gasketing Pair	S88BL		PE	087100
1 Astragal	S771D		PE	087100

Set: 32.0

Doors: [C004B](#), [C103N](#)

Description: Sgl - SELP10 SEC Lock - Closer

2 Hinge, Full Mortise	TA2714 4-1/2" x 4-1/2"	US10BE	MK	087100
1 Hinge, Full Mortise	TA2714 QCxx 4-1/2" x 4-1/2"	US10BE	MK	087100 ⚡
1 Access Control Mort Lock	ML20606 x SELP10-SEC CSA BIPS B03	613E	RU	281500 ⚡
1 Primus Cylinder	Type as req	613E	SC	087100
1 Surface Closer	DC6200 A3/A10	690	RU	087100
1 W/F Stop	406 / 441CU	US10BE	RO	087100
1 Gasketing Sgl	S88BL		PE	087100
1 ElectroLynx Harness	QC-Cxxx sized for door width		MK	087100 ⚡
1 ElectroLynx Harness	QC-C1500P		MK	087100 ⚡
1 Power Supply	EPS-05		SU	087100 ⚡

Notes:

Coordinate voltage, operation and electrical characteristics with all related trades.

Wiring and connections by security provider.

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Set: 33.0

Doors: **A101C**

Description: Sgl - SELP10 SAF Lock - Closer

2 Hinge, Full Mortise	TA2714 4-1/2" x 4-1/2"	US10BE	MK	087100	
1 Hinge, Full Mortise	TA2714 QCxx 4-1/2" x 4-1/2"	US10BE	MK	087100	⚡
1 Access Control Mort Lock	ML20606 x SELP10-SAF CSA BIPS B03	613E	RU	281500	⚡
1 Primus Cylinder	Type as req	613E	SC	087100	
1 Surface Closer	DC6200 A3/A10	690	RU	087100	
1 W/F Stop	406 / 441CU	US10BE	RO	087100	
3 Silencer - Metal Frame	608		RO	087100	
1 ElectroLynx Harness	QC-Cxxx sized for door width		MK	087100	⚡
1 ElectroLynx Harness	QC-C1500P		MK	087100	⚡
1 Power Supply	EPS-05		SU	087100	⚡

Notes:

Coordinate voltage, operation and electrical characteristics with all related trades.

Wiring and connections by security provider.

Set: 34.0

Doors: **A104F**

Description: Sgl - SELP10 SAF Lock - Closer - KP

2 Hinge, Full Mortise	TA2714 4-1/2" x 4-1/2"	US10BE	MK	087100	
1 Hinge, Full Mortise	TA2714 QCxx 4-1/2" x 4-1/2"	US10BE	MK	087100	⚡
1 Access Control Mort Lock	ML20606 x SELP10-SAF CSA BIPS B03	613E	RU	281500	⚡
1 Primus Cylinder	Type as req	613E	SC	087100	
1 Surface Closer	DC6200 A3/A10	690	RU	087100	
1 Kick Plate	K1050 10" 4BE CSK	US10BE	RO	087100	
3 Silencer - Metal Frame	608		RO	087100	
1 ElectroLynx Harness	QC-Cxxx sized for door width		MK	087100	⚡
1 ElectroLynx Harness	QC-C1500P		MK	087100	⚡
1 Power Supply	EPS-05		SU	087100	⚡

Notes:

Coordinate voltage, operation and electrical characteristics with all related trades.

Wiring and connections by security provider.

Set: 34.1

Doors: B107C

Description: Sgl - Rim/SELP10 - Closer - KP

2 Hinge, Full Mortise	TA2714 4-1/2" x 4-1/2"	US10BE	MK	087100	
1 Hinge, Full Mortise	TA2714 QCxx 4-1/2" x 4-1/2"	US10BE	MK	087100	⚡
1 Access Control Rim Exit	ED5200N-SELP10 K157 BIPS B03 MELR	613E	RU	281500	⚡
1 Primus Cylinder	Type as req	613E	SC	087100	
1 Surface Closer	DC6200 A3/A10	690	RU	087100	
1 Kick Plate	K1050 10" 4BE CSK	US10BE	RO	087100	
3 Silencer - Metal Frame	608		RO	087100	
1 ElectroLynx Harness	QC-Cxxx sized for door width		MK	087100	⚡
1 ElectroLynx Harness	QC-C1500P		MK	087100	⚡
1 Power Supply	EPS-05		SU	087100	⚡

Notes:

Coordinate voltage, operation and electrical characteristics with all related trades.

Wiring and connections by security provider.

Set: 35.0

Doors: B202Q

Description: Sgl - SELP10 SEC Lock - Closer

2 Hinge, Full Mortise	TA2714 4-1/2" x 4-1/2"	US10BE	MK	087100	
1 Hinge, Full Mortise	TA2714 QCxx 4-1/2" x 4-1/2"	US10BE	MK	087100	⚡
1 Access Control Mort Lock	ML20606 x SELP10-SEC CSA BIPS B03	613E	RU	281500	⚡
1 Primus Cylinder	Type as req	613E	SC	087100	
1 Surface Closer	DC6200 A3/A10	690	RU	087100	
1 Kick Plate	K1050 10" 4BE CSK	US10BE	RO	087100	
1 W/F Stop	406 / 441CU	US10BE	RO	087100	
1 Gasketing Pair	S88BL		PE	087100	
1 ElectroLynx Harness	QC-Cxxx sized for door width		MK	087100	⚡
1 ElectroLynx Harness	QC-C1500P		MK	087100	⚡
1 Power Supply	EPS-05		SU	087100	⚡

Notes:

Coordinate voltage, operation and electrical characteristics with all related trades.

Wiring and connections by security provider.

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Set: 36.0

Doors: C105

Description: Sgl - SELP10 SEC Lock - Closer

2 Hinge, Full Mortise	TA2714 4-1/2" x 4-1/2"	US10BE	MK	087100	
1 Hinge, Full Mortise	TA2714 QCxx 4-1/2" x 4-1/2"	US10BE	MK	087100	⚡
1 Access Control Mort Lock	ML20606 x SELP10-SEC CSA BIPS B03	613E	RU	281500	⚡
1 Primus Cylinder	Type as req	613E	SC	087100	
1 Surface Closer	DC6200 A3/A10	690	RU	087100	
1 W/F Stop	406 / 441CU	US10BE	RO	087100	
3 Silencer - Metal Frame	608		RO	087100	
1 ElectroLynx Harness	QC-Cxxx sized for door width		MK	087100	⚡
1 ElectroLynx Harness	QC-C1500P		MK	087100	⚡
1 Power Supply	EPS-05		SU	087100	⚡

Notes:

Coordinate voltage, operation and electrical characteristics with all related trades.

Wiring and connections by security provider.

Set: 37.0- NOT USED

Description: NOT USED Sgl - Storeroom - Closer

3 Hinge, Full Mortise	TA2714 4-1/2" x 4-1/2"	US10BE	MK	087100	
1 Storeroom Lock	ML2057 CSA	613E	RU	087100	
1 Primus Cylinder	Type as req	613E	SC	087100	
1 Surface Closer	DC6200 A3/A10	690	RU	087100	
1 W/F Stop	406 / 441CU	US10BE	RO	087100	
1 Gasketing Sgl	S88BL		PE	087100	

Set: 38.0

Doors: B001B, B001D, B001F

Description: Sgl - Storeroom - Closer/stop

3 Hinge, Full Mortise	TA2714 5" x 4-1/2"	US10BE	MK	087100	
1 Storeroom Lock	ML2057 CSA	613E	RU	087100	
1 Primus Cylinder	Type as req	613E	SC	087100	
1 Surface Closer (ps)	DC6200/DC6210 A4	690	RU	087100	
1 Gasketing Sgl	S88BL		PE	087100	

Set: 39.0- NOT USED

Description: NOT USED Sgl - Office - Closer

3 Hinge, Full Mortise	TA2714 4-1/2" x 4-1/2"	US10BE	MK	087100
1 Office Lock	ML2051 CSA	613E	RU	087100
1 Primus Cylinder	Type as req	613E	SC	087100
1 Surface Closer	DC6200 A3/A10	690	RU	087100
1 W/F Stop	406 / 441CU	US10BE	RO	087100
1 Gasketing Sgl	S88BL		PE	087100

Set: 40.0

Doors: B001H, B106C, B202C, B202L, C004D.2, C103I

Description: Sgl - Rim/Storeroom - Closer

3 Hinge, Full Mortise	TA2714 4-1/2" x 4-1/2"	US10BE	MK	087100
1 Fire Rated Rim Exit, Storeroom	ED5200A C959ET	613E	RU	087100
1 Primus Cylinder	Type as req	613E	SC	087100
1 Surface Closer	DC6200 A3/A10	690	RU	087100
1 W/F Stop	406 / 441CU	US10BE	RO	087100
1 Gasketing Sgl	S88BL		PE	087100

Set: 41.0

Description: NOT USED Sgl - Storeroom - Closer

3 Hinge, Full Mortise	TA2714 4-1/2" x 4-1/2"	US10BE	MK	087100
1 Storeroom Lock	ML2057 CSA	613E	RU	087100
1 Primus Cylinder	Type as req	613E	SC	087100
1 Surface Closer	DC6200 A3/A10	690	RU	087100
1 W/F Stop	406 / 441CU	US10BE	RO	087100
1 Gasketing Sgl	S88BL		PE	087100

Set: 42.0

Doors: A104A, A104B, A104C, B101L, B202B, B202N, B202P, C002A.1, C003A.1, C102J

Description: Sgl - Storeroom - Closer

3 Hinge, Full Mortise	TA2714 4-1/2" x 4-1/2"	US10BE	MK	087100
1 Storeroom Lock	ML2057 CSA	613E	RU	087100
1 Primus Cylinder	Type as req	613E	SC	087100
1 Surface Closer	DC6200 A3/A10	690	RU	087100
1 W/F Stop	406 / 441CU	US10BE	RO	087100
3 Silencer - Metal Frame	608		RO	087100

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Set: 43.0

Doors: B101H, B103A, C002A.2, C003A.2, C108.1
 Description: Sgl - Storeroom - Closer/stop

3 Hinge, Full Mortise	TA2714 4-1/2" x 4-1/2"	US10BE	MK	087100
1 Storeroom Lock	ML2057 CSA	613E	RU	087100
1 Primus Cylinder	Type as req	613E	SC	087100
1 Surface Closer (ps)	DC6200/DC6210 A4	690	RU	087100
3 Silencer - Metal Frame	608		RO	087100

Set: 44.0

Doors: A103.1, B101.2, B102A, B107A.1, B107C.1, B202.2, C103A, C108A.1
 Description: Sgl - Storage

3 Hinge, Full Mortise	TA2714 4-1/2" x 4-1/2"	US10BE	MK	087100
1 Storeroom Lock	ML2057 CSA	613E	RU	087100
1 Primus Cylinder	Type as req	613E	SC	087100
1 W/F Stop	406 / 441CU	US10BE	RO	087100
3 Silencer - Metal Frame	608		RO	087100

Set: 45.0

Doors: B101K.1, B107B.1.1, C104B.1
 Description: Sgl - Storage - OH Stop

3 Hinge, Full Mortise	TA2714 4-1/2" x 4-1/2"	US10BE	MK	087100
1 Storeroom Lock	ML2057 CSA	613E	RU	087100
1 Primus Cylinder	Type as req	613E	SC	087100
1 Surf Overhead Stop	55-x36	690	RF	087100
3 Silencer - Metal Frame	608		RO	087100

Set: 46.0

Doors: B101K
 Description: Sgl - Office - Closer

3 Hinge, Full Mortise	TA2714 4-1/2" x 4-1/2"	US10BE	MK	087100
1 Office Lock	ML2051 CSA	613E	RU	087100
1 Primus Cylinder	Type as req	613E	SC	087100
1 Surface Closer	DC6200 A3/A10	690	RU	087100
1 W/F Stop	406 / 441CU	US10BE	RO	087100
3 Silencer - Metal Frame	608		RO	087100

Set: 47.0

Doors: A101B, A101D, B101B, B101D, B101E, B101I, B101M, B102C, B103B, B103C, B103D, B103E, B104E, B105A, B105B, B105C, B105D, B107A, C103G, C103H, C103J, C104A.1, C105A

Description: Sgl - Office

3 Hinge, Full Mortise	TA2714 4-1/2" x 4-1/2"	US10BE	MK	087100
1 Office Lock	ML2051 CSA	613E	RU	087100
1 Primus Cylinder	Type as req	613E	SC	087100
1 W/F Stop	406 / 441CU	US10BE	RO	087100
1 Silencer - Metal Frame	608		RO	087100

Set: 48.0

Doors: B101C, B102D, B102E, B102F, B102G, B102H, B104A, B104C, B104D, B106A, B106B, B108C, B202E, B202F, B202G, B202H, B202I, B203A, B204A, B204B, B204C, B204D, B205B, C101B, C102A, C102B, C102C, C102D, C102I, C103B, C103D, C103E, C103F, C103K, C103L, C104B, C104C, C104D.1, C104E, C104G, C106, C106E, C107.1, C107A, C107B, C108A

Description: Sgl - Office - OH Stop

3 Hinge, Full Mortise	TA2714 4-1/2" x 4-1/2"	US10BE	MK	087100
1 Office Lock	ML2051 CSA	613E	RU	087100
1 Primus Cylinder	Type as req	613E	SC	087100
1 Surf Overhead Stop	55-x36	690	RF	087100
3 Silencer - Metal Frame	608		RO	087100

Set: 48.1

Doors: C106B.1

Description: Sgl - Office - OH Stop - Sound Seals

3 Hinge, Full Mortise	TA2714 4-1/2" x 4-1/2"	US10BE	MK	087100
1 Office Lock	ML2051 CSA	613E	RU	087100
1 Primus Cylinder	Type as req	613E	SC	087100
1 Surf Overhead Stop	55-x36	690	RF	087100
1 Gasketing	303AS		PE	087100
1 Door Bottom	STC411APK		PE	087100

Set: 49.0

Doors: B107.1, B107B.1, B107B.2

Description: Sgl - Rim/Lever - Closer - KP

3 Hinge, Full Mortise	TA2714 4-1/2" x 4-1/2"	US10BE	MK	087100
1 Rim Exit Device, Classroom	ED5200 C955ET	613E	RU	087100
1 Primus Cylinder	Type as req	613E	SC	087100
1 Surface Closer	DC6200 A3/A10	690	RU	087100
1 Kick Plate	K1050 10" 4BE CSK	US10BE	RO	087100
1 W/F Stop	406 / 441CU	US10BE	RO	087100
3 Silencer - Metal Frame	608		RO	087100

Set: 49.1

Doors: B103, B105.1, B105.2, B106.1

Description: Sgl - Rim/Lever - Closer/ho - KP

3 Hinge, Full Mortise	TA2714 4-1/2" x 4-1/2"	US10BE	MK	087100
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1 Rim Exit Device, Classroom	ED5200 C955ET	613E	RU	087100
1 Primus Cylinder	Type as req	613E	SC	087100
1 Surface Closer (ho)	DC6210 A14	690	RU	087100
1 Kick Plate	K1050 10" 4BE CSK	US10BE	RO	087100
1 W/F Stop	406 / 441CU	US10BE	RO	087100
3 Silencer - Metal Frame	608		RO	087100

Set: 50.0

Doors: B104.1

Description: Sgl - Rim/Lever - Closer/stop - KP

3 Hinge, Full Mortise	TA2714 4-1/2" x 4-1/2"	US10BE	MK	087100
1 Rim Exit Device, Classroom	ED5200 C955ET	613E	RU	087100
1 Primus Cylinder	Type as req	613E	SC	087100
1 Surface Closer (ps)	DC6200/DC6210 A4	690	RU	087100
1 Kick Plate	K1050 10" 4BE CSK	US10BE	RO	087100
3 Silencer - Metal Frame	608		RO	087100

Set: 51.0

Doors: A104F.4, C002B.1, C003B.1

Description: Sgl - Classroom - Closer

3 Hinge, Full Mortise	TA2714 4-1/2" x 4-1/2"	US10BE	MK	087100
1 Classroom Lock	ML2055 CSA	613E	RU	087100
1 Primus Cylinder	Type as req	613E	SC	087100
1 Surface Closer	DC6200 A3/A10	690	RU	087100
1 W/F Stop	406 / 441CU	US10BE	RO	087100
3 Silencer - Metal Frame	608		RO	087100

Set: 52.0

Doors: B101G.2, B107.2

Description: Sgl - Classroom - Closer - OH Stop

3 Hinge, Full Mortise	TA2714 4-1/2" x 4-1/2"	US10BE	MK	087100
1 Classroom Lock	ML2055 CSA	613E	RU	087100
1 Primus Cylinder	Type as req	613E	SC	087100
1 Surf Overhead Stop	10-336	613E	RF	087100
1 Surface Closer	DC6200 A3/A10	690	RU	087100
3 Silencer - Metal Frame	608		RO	087100

Set: 53.0

Doors: A104F.2, B102B

Description: Sgl - Classroom

3 Hinge, Full Mortise	TA2714 4-1/2" x 4-1/2"	US10BE	MK	087100
1 Classroom Lock	ML2055 CSA	613E	RU	087100
1 Primus Cylinder	Type as req	613E	SC	087100
1 W/F Stop	406 / 441CU	US10BE	RO	087100
3 Silencer - Metal Frame	608		RO	087100

Set: 54.0

Doors: A104F.1

Description: Sgl - Passage - Closer - KP

3 Hinge, Full Mortise	TA2714 4-1/2" x 4-1/2"	US10BE	MK	087100
1 Passage Latch	ML2010 CSA	613E	RU	087100
1 Surface Closer	DC6200 A3/A10	690	RU	087100
1 Kick Plate	K1050 10" 4BE CSK	US10BE	RO	087100
1 W/F Stop	406 / 441CU	US10BE	RO	087100
3 Silencer - Metal Frame	608		RO	087100

Set: 55.0

Doors: C103C, C103M

Description: Sgl - Passage

3 Hinge, Full Mortise	TA2714 4-1/2" x 4-1/2"	US10BE	MK	087100
1 Passage Latch	ML2010 CSA	613E	RU	087100
1 W/F Stop	406 / 441CU	US10BE	RO	087100
3 Silencer - Metal Frame	608		RO	087100

Set: 56.0

Doors: B101G.1

Description: Sgl - Passage - OH Stop

3 Hinge, Full Mortise	TA2714 4-1/2" x 4-1/2"	US10BE	MK	087100
1 Passage Latch	ML2010 CSA	613E	RU	087100
1 Surf Overhead Stop	9-x36	613E	RF	087100
3 Silencer - Metal Frame	608		RO	087100

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Set: 57.0

Doors: B202M

Description: Sgl - Privacy/IND

4 Hinge, Full Mortise	TA2714 4-1/2" x 4-1/2"	US10BE	MK	087100
1 Privacy Lock	ML2030 CSA M19V	613E	RU	087100
1 W/F Stop	406 / 441CU	US10BE	RO	087100
1 Gasketing Sgl	S88BL		PE	087100

Set: 57.1

Doors: A104D, A104E, C001B, C001C

Description: Sgl - Keyed Privacy/IND

3 Hinge, Full Mortise	TA2714 4-1/2" x 4-1/2"	US10BE	MK	087100
1 Institutional Privacy Lock	ML2069 CSA M19V	613E	RU	087100
1 Primus Cylinder	Type as req	613E	SC	087100
1 W/F Stop	406 / 441CU	US10BE	RO	087100
1 Gasketing Sgl	S88BL		PE	087100

Set: 58.0

Doors: C106C.1

Description: Sgl - Keyed Privacy/IND - OH Stop

3 Hinge, Full Mortise	TA2714 4-1/2" x 4-1/2"	US10BE	MK	087100
1 Institutional Privacy Lock	ML2069 CSA M19V	613E	RU	087100
1 Primus Cylinder	Type as req	613E	SC	087100
1 Surf Overhead Stop	55-x36	690	RF	087100
1 Gasketing Sgl	S88BL		PE	087100

Set: 59.0

Doors: A103B, A103C, B101J, B101P, B202K, B202S, C101C, C101D

Description: Sgl - Push/Pull - Deadlock - Closer - KP

3 Hinge, Full Mortise	TA2714 4-1/2" x 4-1/2"	US10BE	MK	087100
1 Deadbolt	DL4117	613E	RU	087100
1 Primus Cylinder	Type as req	613E	SC	087100
1 Push Plate	70F	US32D	RO	087100
1 Straight Door Pull	RM3302-24 Mtg-Type 12XHD	US10BE	RO	087100
1 Surface Closer	DC6200 A3/A10	690	RU	087100
1 Kick Plate	K1050 10" 4BE CSK	US10BE	RO	087100
1 W/F Stop	406 / 441CU	US10BE	RO	087100
3 Silencer - Metal Frame	608		RO	087100

Set: 60.0- NOT USED

Description: NOT USED Sgl - Push/Pull - Closer - KP

3 Hinge, Full Mortise	TA2714 4-1/2" x 4-1/2"	US10BE	MK	087100
1 Push Plate	70F	US32D	RO	087100
1 Straight Door Pull	RM3302-24 Mtg-Type 12XHD	US10BE	RO	087100
1 Surface Closer	DC6200 A3/A10	690	RU	087100
1 Kick Plate	K1050 10" 4BE CSK	US10BE	RO	087100
1 W/F Stop	406 / 441CU	US10BE	RO	087100
3 Silencer - Metal Frame	608		RO	087100

Set: 61.0

Doors: A104F.1.1

Description: Sgl - Pocket Door - Track/Kit - Spring Lock

1 Sliding Pocket Hdwe	PF28200A		PE	087100
1 Mortise Deadlock	2331	121	AD	087100
1 Primus Cylinder	Type as req	613E	SC	087100
1 Flush Pull	94Px94L	US10BE	RO	087100

Notes: Door Pulls mounted BTB.

Set: 62.0

Doors: C106C

Description: Sgl - Pocket - Locking - Pull

1 Sliding Pocket Hdwe	PF28200A		PE	087100
1 Mortise Deadlock	2331	121	AD	087100
1 Primus Cylinder	Type as req	613E	SC	087100
1 Flush Pull	94Px94L	US10BE	RO	087100

Set: 63.0

Doors: C106D

Description: Sgl - Surface Slider

1 Side Wall Track Kit	280D-SWTKIT 6'		PE	087100
2 Straight Door Pull	RM3301-96 Mtg-Type 14XHD	US10BE	RO	087100

Notes:

Door Pulls mounted BTB.

Set: 64.0

Doors: C002.3, C003.1, C003.3

Description: All Hardware by Dr provider

1 All Hardware by door manufacturer.				00
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Set: 65.0

Doors: C002.1

Description: Cyl Only

1 Primus Cylinder	Type as req	613E	SC	087100
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END OF SECTION

SECTION 08 80 00

GLAZING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Glass and glazing accessories.
- B. Related Sections:
 - 1. Section 07 92 00 - Joint Sealants
 - 2. Section 08 11 00 - Hollow Metal Doors and Frames.
 - 3. Section 08 14 23 - Plastic-laminate-faced Wood Doors.
 - 4. Section 08 41 13 - Aluminum-framed Entrances and Storefronts.
 - 5. Section 08 44 13 - Glazed Aluminum Curtain Walls.
 - 6. Section 08 88 10 - Fire Rated Glass & Framing; fire rating glass

1.2 PERFORMANCE REQUIREMENTS

- A. Glass and glazing materials of this section shall provide continuity of building enclosure vapor and air barrier
 - 1. In conjunction with materials described in SECTION 07 92 00 - JOINT SEALANTS.
 - 2. Maintain continuous air and vapor barrier throughout glazed assembly from glass pane to heel bead of glazing sealant.
- B. Design and size glass to withstand dead loads and live loads caused by pressure and suction of wind as calculated in accordance with building code, and measured in accordance with ASTM E 330.
- C. Limit glass deflection to 1/200 or flexure limit of glass with full recovery of glazing materials, whichever is less.

1.3 SUBMITTALS

- A. Submit product data and samples under provisions of SECTION 01 33 23 - SHOP DRAWINGS, PRODUCT DATA AND SAMPLES.
- B. Provide structural, physical and environmental characteristics, size limitations, special handling or installation requirements.
- C. Provide data on glazing sealant. Identify colors available.
- D. Samples:
 - 1. Submit 2 samples of each type of glass (except clear glass), 12" x 12" in size, illustrating glass unit, coloration, design.
 - 2. Submit 4" long bead of glazing sealant in color selected.

1.4 QUALITY ASSURANCE

- A. Glazing Standards: Comply with recommendations of Glass Association of North America (GANA) "Glazing Manual."
- B. Source Quality Control: Glass shall be identified by the manufacturer's labels of grade and quality. Temporary labels shall not be removed until final cleaning. Permanent labels on tempered glass shall not be removed.
 - 1. Safety Glazing Labeling: Where safety glazing is indicated, permanently mark glazing with certification label of the SGCC or another certification agency acceptable to authorities having jurisdiction. Label shall indicate manufacturer's name, type of glass, thickness, and safety glazing standard with which glass complies.
 - 2. Insulating-Glass Certification Program: Permanently marked either on spacers or on at least one component lite of units with appropriate certification label of the IGCC.

- C. Safety Glazing Standard: Where safety glass is indicated or required, provide type of products indicated which comply with ANSI Z97.1 and testing requirements of CPSC 16 CFR Part 1201 for Category II materials.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Protect glass and glazing materials during delivery, storage, and handling as required to prevent edge damage to glass, and damage to glass and glazing materials from effects of moisture including condensation, or temperature changes, and other causes.

1.6 WARRANTY

- A. Provide written 10-year warranty signed by manufacturer of insulating glass agreeing to furnish replacements for those insulating glass units developing manufacturing defects. Manufacturing defects are defined as failure of hermetic seal of air space (beyond that due to glass breakage) as evidenced by intrusion of dirt or moisture, internal condensation or fogging, and other visual indications of seal failure or performance.
- B. Provide written 5-year warranty signed by manufacturer of spandrel glass agreeing to furnish replacements for those spandrel glass units developing defects of ceramic frit. Warranty covers deterioration due to normal conditions of use.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

- A. Basis of Design products are **Vitro Architectural Glass (PPG)**: Provide glass as manufactured by one of the following:
AGC Glass North America
Guardian Industries Corp.
Technical Glass Products
Oldcastle Building Envelope
Pilkington North America, Inc. (NSG Group)
Vitro Architectural Glass (formerly PPG Glass)

2.2 GLASS

- A. (CT1) Low-E Tempered Insulating Glass, Clear: Manufacturer's standard 1" thick pre-assembled units consisting of 2 sheets of tempered glass, ASTM C 1048, enclosing a hermetically sealed dehydrated air space; with spacers, sealant, and without protective edge banding. Metal spacers shall be finished to match finish of aluminum storefronts.
1. Thickness of Each Pane: 1/4".
 2. Air Space Thickness: 1/2".
 3. Interior Pane: Type I, Class 1 (Clear), Quality q3 (Glazing select), Kind FT - Fully Tempered, Condition A - Uncoated surfaces.
 4. Exterior Pane: Type I, Class 1 (Clear), Quality q3 (Glazing select), Kind FT - Fully Tempered, Condition A - with low-emissivity Vitro Solarban 90 coating on second surface.
 5. Performance Characteristics: Low-E insulating glass shall comply with the following:
 - a. Solar Heat Gain Coefficient: 0.23
 - b. Winter U-value: 0.29.
 - c. Summer U-value: 0.27
 - d. Visible Transmittance: 51%
- B. (CT4) Tempered Glass, Clear: ASTM C 1048, Type I, Class 1 (Clear), Quality q3 (Glazing select). Kind FT - Fully Tempered, Condition A - Uncoated surfaces, 1/4" thickness.
1. Each piece of fire-rated glazing material shall be labeled with a permanent logo including name of product, manufacturer, testing laboratory, fire rating period, and safety glazing standards.
- C. (CT4-F) Frosted Glass Decorative Film Overlay: For Acid-etched frosted glass appearance, use translucent, dimensionally stable, cast PVC film, 2-mil-minimum thickness, with pressure-sensitive, clear adhesive back for adhering to glass and releasable protective backing. Provide 3M; Scotchcal Dusted Crystal, or approved equivalent.

- D. (ST1) Insulated Spandrel Glass:
1. Ceramic coated spandrel glass, ASTM C 1048, Condition B (spandrel glass one surface ceramic coated), Kind FT (fully tempered), Type I (transparent glass, flat), Class 1 (clear), quality q3 (glazing select) and complying with requirements specified.
 2. Fallout Resistance: Provide spandrel units identical to those passing fallout resistant test for spandrel glass specified in ASTM C 1048.
 3. Thickness of each Pane: 1/4".
 4. Air Space Thickness: 1/2".
 5. Interior Pane: Clear tempered glass - Ceramic Frit on Side 4. Color as selected by Architect.
 6. Exterior Pane: Type I, Class 1 (Clear), Quality q3 (Glazing select), Kind FT - Fully Tempered, Condition A - with low-emissivity PPG Solarban 90 coating on second surface.

2.3 GLAZING MATERIALS

- A. Glazing Compound: Comply with ASTM C 1311 or FS TT-S-00230, one-part, non-sag acrylic polymeric sealant. Product/manufacturer; one of the following:
Acryl-R Acrylic Sealant; Schnee-Moorehead, Inc.
Mono 555; Tremco
- B. Channel Glazing Strips; Hollow Metal Doors and Frames: Provide black vinyl channel glazing strips, Glazing Vinyl for 990 Sliders Part #6062-01 as manufactured by Kawneer.
- C. Accessories: Setting blocks, tape, vinyl gaskets and spacer strips as required for a complete installation.

PART 3 - EXECUTION

3.1 INSPECTION

- A. Examine areas to receive glass for conditions that will adversely affect the execution and quality of work. Do not start this work until unsatisfactory conditions are corrected.

3.2 INSTALLATION

- A. Setting Glass: Glazing shall be done at the site by skilled glaziers in conformance with the general conditions governing glazing in the GANA Glazing Manual.
1. Glazing of aluminum windows and storefront shall be done in conformance with the methods recommended by the manufacturer of the aluminum items. Beads or stops furnished with the items to be glazed shall be used to secure the glass in place.
 2. For interior hollow metal door and frame glazing, install channel glazing strips and place glass within glazing strips. Install the removable stop and position the channel glazing strip to seal completely the void around the glass.
 3. Verify glass sizes for required edge clearances by measuring the openings. Cut each piece accurately and fit to its particular position. Center glass in the opening vertically and horizontally. Use edge blocks in vertical jambs to prevent lateral "walking" of the glass.
 4. Glass shall have clean cut edges. Do not seam, nip, stone or strike edges, or scarf corners, and do not install glass with flared edges at the bottom. Do not bump, drag, or rest the edge of a glass light against metal or other hard objects.
 5. Set tempered glass with tong marks completely concealed or in as inconspicuous a location as possible.

3.3 CLEANING

- A. Upon completion of the building, clean glass on both sides and remove labels, paint spots, putty and other defacement. Replace damaged glass with new.

END OF SECTION

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SECTION 08 88 10

FIRE RATED GLASS & FRAMING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Fire resistive framing system.
 - 1. Fire resistive, temperature rise, framing system with aluminum cladding for 60 minute interior application.
 - 2. Full vision fire rated doors, sidelites, borrowed lites, windows, and transoms with fire rating requirement as specified.

- B. Related Sections:
 - 1. Section 01 33 23: Shop Drawings, Product Data and Samples.
 - 2. Section 08 11 00: Hollow Metal Doors & Frames.
 - 3. Section 08 41 13: Aluminum-Framed Entrances and Storefronts.
 - 4. Section 08 71 00: Finish Hardware.
 - 5. Section 08 80 00: Glazing.

1.2 SYSTEM DESCRIPTION

- A. Performance Requirements:
 - 1. Fire Rating: must meet 60 minutes as specified.
 - 2. Fire Resistive Wall Assembly Certifications: must meet 60 minute fire resistive wall assemblies tested in accordance with ASTM E119, NFPA 251, UL 263 and ULC-S101.
 - 3. Fire Resistive, Temperature Rise Door Assembly Certifications: must meet 60-90 minute fire resistive temperature rise door assemblies tested in accordance with NFPA 252, UL 10B, UL 10C and CAN4 S104. Must meet 250 degrees F/450 degrees F temperature rise door requirements.
 - 4. Uniform Load Deflection Test Pressure: up to +/- 50.0 psf
 - 5. Uniform Load Structural Test Pressure: up to +/- 75.0 psf
 - 6. Testing Laboratory: Fire test must be conducted by a nationally recognized independent testing laboratory.

- B. Listings and Labels:
 - 1. Fire resistive, temperature rise framing system shall be under current follow-up service by a nationally recognized independent laboratory approved by OSHA and maintain a current listing or certification. Assemblies shall be labeled in accordance with limits of listings.

- C. Appearance:
 - 1. Fire rated wall/door assembly shall have a neat finished appearance with minimum joints at decorative cover intersections.

1.3 SUBMITTALS

- A. Submit listed submittals in accordance with Conditions of the Contract and Division 1 Submittal Procedure Section.
 - 1. Shop Drawings: Submit shop drawings showing layout, profiles and product components.
 - 2. Samples: Submit samples for finishes, colors and textures.
 - 3. Technical Information: Submit latest edition of manufacturer's product data providing product descriptions, technical data and installation instructions.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. General: Comply with Division 1 Product Requirements Sections.

- B. Ordering: Comply with manufacturer's ordering instructions and lead-time requirements to avoid construction delays.

- C. Delivery: Deliver materials to specified destinations in manufacturer's or distributor's packaging undamaged, complete with installation instructions.

- D. Storage and Protection: Store off ground, under cover, protected from weather and construction activities and at temperature conditions recommended by manufacturer.

1.5 FABRICATION DIMENSIONS

- A. Field Measurements: Verify actual measurements for openings by field measurements before fabrication. Show recorded measurements on shop drawings. Coordinate field measurements and fabrication schedule with construction progress to avoid construction delays.

1.6 WARRANTY

- A. Project Warranty: Refer to Conditions of the Contract for project warranty provisions.
- B. Manufacturer's Warranty: Submit, for Owner's acceptance, manufacturer's standard warranty document. Manufacturer's warranty is not intended to limit other rights that the Owner may have under the Contract Documents.
 - 1. Warranty Period: 5 years from date of shipping.

PART 2 - PRODUCTS

2.1 MANUFACTURERS – FIRE RATED WALL ASSEMBLY

- A. Manufacturer of Framing System: GPX Architectural Series Framing as manufactured and distributed by SAFTI FIRSTM Fire Rated Glazing Solutions.
 - 1. Contact: 100 N Hill Drive, Suite 12, Brisbane, CA 94005; Telephone 888.653.3333; Web site www.safti.com
- B. Manufacturer of Glazing Material: SuperLite TM II-XL 60 as manufactured and distributed by SAFTI FIRSTM Fire Rated Glazing Solutions.
 - 1. Contact: 100 N Hill Drive, Suite 12, Brisbane, CA 94005; Telephone 888.653.3333; Web site www.safti.com
- C. Fire rated glass and framing must be provided by a single-source, US manufacturer. Distributors of fire rated glass and framing are not to be considered as manufacturers. Materials for the project should be shipped together in the same shipment on the same truck.

2.2 MATERIALS – FRAMING

- A. Fire resistive, temperature rise framing system rated for 60 minutes.
- B. Properties:
 - 1. Window/Wall Frame thickness: 2-1/2" Standard.
 - 2. Door profile thickness: 5" Standard.
 - 3. Fire resistive aluminum door capable of accommodating concealed hardware.
 - 4. Internal framing: Internal tube steel framing shall conform to ASTM A501. Formed steel retainers shall be galvanized conforming to ASTM A527.
 - 5. Insulation: The framing system shall insulate against the effects of fire, smoke and heat transfer from either side. The perimeter of the framing system to the rough opening shall be firmly packed with mineral wool fire stop insulation or appropriately rated intumescent sealant.
 - 6. Fasteners: Type recommended by manufacturer. No exposed fasteners allowed.
 - 7. Glazing accessories: The glazing material perimeter shall be separated from the perimeter framing system with approved flame retardant glazing tape. The SuperLiteTM glazing panel shall be caulked continuously around the edge to the tube steel frame utilizing neutral cure silicone. Silicone setting blocks recommended.

2.3 MATERIALS – GLASS

- A. Assemblies shall be glazed with SuperLiteTM glazing products.
- B. Properties:
 - 1. Individual Lites shall be permanently identified with a listing mark.

2. Glazing material installed in "Hazardous Locations" (subject to human impact) shall be certified to meet the applicable requirements for fire rated assemblies referenced in ANSI Z97.1 Standard for Safety Glazing Materials Used In Buildings and/or CPSC 16 CFR 1201 Safety Standard for Architectural Glazing Materials.
3. Temperature rise on the unexposed side of glazing material shall be limited to 250 degrees Fahrenheit when required.
4. Visible daylight transmission: Varies by glazing type. Must meet:

SuperLite II-XL 60	0.856
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5. STC/OITC rating: Varies by glazing type. Must meet:

Product	STC	OITC
SuperLite II-XL 60	42	39
6. Pressure glazing is acceptable.

C. Logo: Each piece of fire rated glazing shall be labeled with a permanent logo.

2.4 FABRICATION

- A. Assemblies shall be furnished unitized (should configurations and job site conditions allow).
- B. Door assemblies shall be factory prepared for field mounting of hardware.
- C. Fabrication Dimensions: Fabricate to approved dimensions. The general contractor shall guarantee dimensions within required tolerance. Obtain approved shop drawings prior to fabrication.

2.5 FINISHES

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designing finishes.
- B. Covers shall be chemically cleaned and pretreated; then, finished with:
 1. Dark Bronze Anodized finish.
- C. Protect finishes on exposed surfaces from damage by applying strippable, temporary protective covering before shipping.
- D. Variations in appearance of abutting or adjacent pieces are acceptable. Noticeable variations in the same piece are not acceptable.

2.6 DOOR HARDWARE FOR SINGLE AND PAIRED DOORS

- A. Hardware shall be supplied with the fire door. Hardware selection shall be from door manufacturer's standard recommended hardware groups as specified below. Please call manufacturer for custom hardware.
- B. Standard operating hardware for single and pair doors.

Quantity	Item	Description	Manufacturer	Finish
1	Hinges	Heavy-duty Continuous Geared OKC	Pemko	Anodized
1	Panic Device	Modern Touchbar with Surface Vertical Rods	Von Duprin 9827F w/ 996 L-trim	US26D
1	Closing Device	Heavy-duty Surface Applied Closer	LCN 4040xp	Aluminum
1	Auto Door Bottoms	420APKL	Pemko	

PART 3 - EXECUTION

3.1 MANUFACTURER'S INSTRUCTIONS

- A. Compliance: Comply with manufacturer's product data including product technical bulletins and installation instructions.

3.2 EXAMINATION

- A. Site Verification of Conditions: Verify substrate conditions, have been previously installed under other sections, and are acceptable for product installation in accordance with manufacturer's instructions. Openings shall be plumb, square and within allowable tolerances. The Architect/Engineer shall be notified of any conditions that jeopardize the integrity of the proposed fire wall/door framing system. Do not proceed until such conditions are corrected.

3.3 INSTALLATION

- A. Fire wall/door installation shall be by a licensed contractor and in strict accordance with the approved shop drawings.

3.4 CLEANING AND PROTECTION

- A. Protect glass from contact with contaminating substances resulting from construction operations. Remove such substances by method approved by manufacturer.
- B. Wash glass on both faces not more than four days prior to date schedule for inspections intended to establish date of Substantial Completion. Wash glass by method recommended by glass manufacturer.
- C. Remove temporary coverings and protection of adjacent work areas.
- D. Remove construction debris from project site and legally dispose of debris.

END OF SECTION

SECTION 08 91 00

LOUVERS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Fixed, extruded-aluminum wall louvers.

1.2 SUBMITTALS

- A. Product Data: Submit in accordance with Section 01 33 23. Include manufacturer's installation instructions.

1.3 QUALITY ASSURANCE

- A. Comply with SMACNA Architectural Sheet Metal Manual recommendations for fabrication, construction details and installation procedures.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

- A. Louver Type: Provide 5" depth stationary, wind-driven rain resistant type louvers fabricated of 6063-T6 extruded aluminum alloy, minimum 0.080" thick frame and minimum 0.060" thick blades. Product/manufacturer; one of the following:
 - Model RS-5300; Construction Specialties, Inc.
 - Model SP-537; Industrial Louvers, Inc.
 - Model IL-59; Louvers & Dampers, Inc.

2.2 MATERIALS

- A. Aluminum Sheet: ASTM B 209, Alloy 3003 or 5005 with temper as required for forming.
- B. Aluminum Extrusions: ASTM B 221, Alloy 6063-T6.
- C. Fasteners shall be aluminum. Provide types, gages and lengths to suit unit installation conditions. Use Phillips flat-head machine screws for exposed fasteners.
- D. Screens: Provide removable screens consisting of U-shaped metal for permanently securing screen mesh. Provide bird screens of 1/4" sq. mesh, 0.063" aluminum.
- E. Insulated Metal Blank-off Panel: Provide insulated metal blank-off panel (painted black) at all louver areas not utilized by mechanical ducts at mechanical rooms.
- F. Aluminum Finish: Aluminum surfaces of louvers and all their associated parts shall be Architectural Class I AA-M12C22A42 Hard Coat Color Anodic Coating Dark bronze color. Screw and bolt heads exposed to view shall be finished to match the exposed aluminum surfaces.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install the louvers in accordance with the manufacturer's recommendations. Erect to be straight and plumb with horizontal lines level. The completed installation shall be rigid and weathertight.
- B. Use concealed anchorages wherever possible.

- C. Provide concealed gaskets and flashings and install as work progresses to make installations weathertight.

END OF SECTION

SECTION 09 21 16

GYPSUM BOARD ASSEMBLIES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Metal stud wall framing.
2. Furred wall framing.
3. Metal channel ceiling framing.
4. Gypsum board partitions, ceilings, and furrings
5. Finishing of panel joints.

B. Related Sections:

1. Section 06 16 56 - Air- and Water-Resistive Sheathing Board System
2. Section 05 40 00 - Cold-Formed Metal Framing: exterior wall studs.
3. Section 07 21 00 - Building Insulation: acoustical and thermal insulation.
4. Section 07 84 00 - Firestopping.
5. Section 10 11 16 - Markerboards and Tackboards; special finish for tackable wall covering.

1.2 SUBMITTALS

A. Product Data: Submit in accordance with Section 01 33 23 - SHOP DRAWINGS, PRODUCT DATA, SAMPLES. Submit materials list of items proposed to be provided, manufacturer's data indicating compliance with specified requirements, and manufacturer's recommended installation procedures.

B. Submit diagrams of proposed control joint and expansion joint layout prior to starting work.

1.3 QUALITY ASSURANCE

A. Tolerances for Drywall: Do not exceed a variation of 1/8" in 10'-0" and 1/16" in 5'-0" from plumb, level, and flat (all directions) and do not exceed 1/16" offset of planes at joints between panels. Shim panels as necessary to comply with tolerances.

B. Perform Work in accordance with ASTM C 840, GA-216, GA-223 and GA-600.

1.4 PROJECT CONDITIONS

A. Environmental Requirements: In cold weather, maintain the temperature of the building reasonably constant at no less than 55° F. during gypsum panel application and joint finishing. Provide adequate ventilation to carry off excess moisture.

1.5 DELIVERY, STORAGE, HANDLING

A. Deliver, store, handle, and protect products in conformance with manufacturer's instructions and in accordance with Section 01 65 00 - PRODUCT DELIVERY REQUIREMENTS and Section 01 66 00 - PRODUCT STORAGE AND HANDLING REQUIREMENTS.

B. Store inside building, on sleepers, and out of water.

1.6 QUALIFICATIONS

A. Applicator: Company specializing in performing the work of this section with minimum three years documented experience.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Gypsum Board (20A): ASTM C 1396. Provide Type X fire-rated; 48"w x 5/8" thick by maximum permissible length gypsum board with tapered edges. Product/manufacturer; one of the following:
CertainTeed Type X; CertainTeed Gypsum
ToughRock Fireguard X Gypsum Board: G-P Gypsum Corp.
Fire-Shield Gypsum Wallboard; National Gypsum Co.
Sheetrock Brand Firecode X Gypsum Panel; USG Corporation
- B. Water- and Mold-Resistant Gypsum Board: ASTM C 1396. Provide Type X, water and mold resistant; 48"w x 5/8" thick by maximum permissible length gypsum board with tapered edges. Gypsum board to be covered with ceramic tile in toilets, EWC alcoves, and other wet areas (except showers) shall be specially processed moisture-resistant gypsum board. Product/manufacturer; one of the following:
M2Tech Type X; CertainTeed Gypsum
ToughRock Fireguard X Mold-Guard Gypsum Board: G-P Gypsum Corp.
Gold Bond XP Fire-Shield Gypsum Wallboard; National Gypsum Co.
Sheetrock Brand Mold Tough Firecode X Gypsum Panel; USG Corporation
- C. Studs: ASTM C 645. Non-loadbearing channel type roll-formed from minimum 25 gauge electro- or hot-dipped galvanized steel.
1. Provide 20 gauge studs at interior ceramic tile partitions.
2. Provide 18 gauge studs, per SECTION 05 40 00 - COLD-FORMED METAL FRAMING, at all X-bracing.
- D. Slotted Top Track: Sliptrack Systems, SLP-TRK®, (phone 888.475.7875 web site: www.sliptrack.com).
1. 25 ga thick, to ASTM A653/A653M, Grade 33 with a minimum yield point of 33,000 psi, electro- or hot-dipped galvanized steel.
2. 2-1/2" down-standing legs with 1/4" wide by 1-1/2" high slots spaced at 1" on center.
3. Track width shall match stud size by manufacturer's standard length.
4. Fasteners: ASTM C 1002, self-drilling, self-tapping screws.
- E. Furring, Framing and Accessories: Provide in conformance with ASTM C 645, GA-216, and GA-600 and as follows:
1. Cold Rolled Channels: 3/4", 1-1/2" and 2" x 9/16", 16 gauge, steel channels prime painted.
2. Furring Channels: ASTM 645, 7/8" deep x 1-1/4" face, roll-formed from 25 gauge electro-galvanized steel and furnished with galvanized wire clips.
3. Resilient Furring: 1/2" deep x 2" x 1-1/4" screw flange, 25 gage, galvanized with one leg attached only, Style RC-1 PRO™ as manufactured by ClarkDietrich Building Systems.
- F. Fasteners: ASTM C 514 for nails and C 1002 for screws as follows:
1. Inserts, clips, bolts, nails or other screws as recommended by wallboard manufacturer, of type and size to suit application and to rigidly secure materials in place.
2. Self-drilling, self-tapping bugle head screws for use with power drive tool.
3. Screws: Drywall Screws, Type S Bugle Head.
4. Metal framing to structure: Power driven screw fasteners to withstand 190 lb. single shear resistance and 200 lb. bearing force when drive through structural head or base and without exceeding allowable design stress in runner, fastener, or structural support.
5. Metal to metal: 3/8", Type S or S-12, pan head screws.
6. Gypsum board to sheet metal application: Type S Bugle Head screws.
7. Gypsum board to gypsum board application: Type G screws.
- G. Adhesive: Utilize adhesive meeting requirements of GA-216 over metal framing.
- H. Accessories:
1. Runners: ASTM C 645, channel type sections roll-formed from electro-galvanized steel with unhemmed edges. Same gauge as studs with which used.
2. Hangers: No. 8 gauge annealed, galvanized wire.
3. Tie Wire: No. 16 gauge annealed, galvanized wire.
4. Trim: Galvanized steel corner reinforcements, edge trim angles and casings; USG No. 200 series.
5. Reinforcing Tape: 2-3/16" minimum width, cross laminated, spark perforated fiber tape.
6. Joint Compound: Quick-drying, polyindurate-type, pre-fill material.
7. Joint Topping: Vinyl base all-purpose finishing material.
8. Acoustical Sealant: A one-part acrylic base sealant designed for use with drywall construction.

9. Edge Sealant: USG Sheetrock Brand W/R Sealant for use in high-moisture room areas.
10. Control Joints: Roll-formed zinc control joints with 1/4" slot (USG #093).

I. Special Trim: Final Forms I and II, special trim pieces as detailed on drawings as manufactured by Gordon.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Workmanship: The completed gypsum wallboard surfaces shall be smooth, level or plumb, and acceptable to the finish material applicators. All joint treatment on exposed wallboard shall be invisible after painting.
- B. Ceiling Furring:
1. Install in accordance with ASTM C 754, GA-216, GA-223 and GA-600 and manufacturer's instructions.
 2. Space ceiling hangers 48" o.c. along runner channels and within 6" of ends of channel runs. Wrap or saddle-tie hangers around the runner channels to prevent twisting.
 - a. Under steel construction, wrap hangers around or clip or bolt hangers to a structural steel member (not steel deck).
 - b. Under bar joists suspend hangers from top chord or from bottom chord at panel points only.
 - c. Under ductwork, employ trapeze system of hangers to support ceiling. Do not suspend hangers from ducts, piping or conduit.
 3. Erect runner channels at 48" o.c. maximum and locate a channel within 4" of each parallel wall. Level channels with hangers taut and do not make kinks or bends in the hangers as a means of leveling. At channel splices, overlap ends 12" with flanges interlocked; secure each end with tie wire.
 4. Erect furring channels at 16" o.c. for 1/2" thick gypsum or 24" o.c. for 5/8" thick gypsum board and at right angles to runner channels or main support members; secure with clips or saddle-tie to supports with tie wire. Make end splices by nesting channels 8" and wire tying each end.
 5. At light troffers or other openings that interrupt the runner or furring channels, install additional reinforcing to restore lateral stability of the grillage.
 6. No part of the suspended grillage (main runners and cross furring) shall be permitted to come in contact with abutting masonry walls and partitions.
- C. Wall Furring: For gypsum wallboard over masonry, space furring channels vertically at 24" o.c. maximum and attach with power driven anchors through alternate wing flanges (staggered), spaced 24" o.c. Make end splices with 8" nested laps anchored to wall with two fasteners in each wing. Where necessary, install furring with adjustable furring brackets and 1/2" x 3/4" steel channels to which the furring channels shall be clipped or tied.
- D. Partitions:
1. Follow recommendations of U.S. Gypsum Co., "Gypsum Construction Handbook".
 2. Install studding in accordance with ASTM C 754, GA-216, GA-223 and GA-600.
 3. Erect partitions with studs aligned to be plumb and true. Anchor studs top and bottom with runners, shoes and clips.
 4. Attach floor runners to concrete slabs using shielded screws or power driven fasteners. Locate fasteners at corners and at runner ends and spaced not to exceed 24" o.c.
 5. Under drywall ceilings, attach metal runner to ceiling and position studs to engage the ceiling runner. Elsewhere, extend studs above the ceiling and brace securely to the floor above or roof structure above with a continuous top runner and channel braces unless specifically detailed otherwise. Where studs extend more than 24" above finished ceiling line, provide either 5/8" gypsum board on both sides of studs or horizontal bracing at 16" o.c. attached with mechanical fasteners to both flanges of studs.
 6. For fire rated partitions and where specifically detailed or noted, extend studs full height to the floor or roof structure above.
 7. Space studs as shown and noted but not more than 16" o.c. Locate studs not more than 2" from abutting partitions and partition corners. Anchor studs to runner flanges with positive screw engagement where located at corners and at door frame jambs.
 8. At door frame jambs of doorways up to 4'-0" wide, double the studs or reinforce with 20 gauge steel studs. At jambs of doorways over 4'-0" wide, reinforce with two 20 gauge steel studs placed back to back. Fasten reinforcing studs to the anchor clips on each door frame with bolts or screws. Place horizontally over each frame a cut-to-length section of runner track; attach with screws to the adjacent vertical studs.
 9. In chase wall construction, set studs opposite each other with the flanges in the same direction and cross brace between the rows of studs with three 12" high pieces of gypsum board or three pieces of metal stud attached to each pair of studs at the quarter points with drive screws.
 10. Double the studs at vertical control joints in partitions.

11. Brace partitions to top chord of the structure above with 20 ga. diagonal braces at 4'-0" o.c. minimum. Where floor to structure height exceeds 16'-0", in addition to extending and fastening studs to structure, add 20 ga. stud diagonal braces at 4'-0" o.c. minimum.
- E. Slotted Top Track: Install slotted track in strict accordance with manufacturer's written instructions and recommendations.
1. Secure studs to slotted top track with #8 wafer-head screws.
 2. Maintain minimum deflection gap of 0.65 inch between top of stud and top of slotted track.
 3. Limit vertical movement to 1 inch, plus or minus 1/2 inch.
- F. Sealant Application: Caulk those gypsum drywall partitions which have sound attenuation blankets, serving as sound barriers.
1. Apply sealant in two continuous beads underneath runners at the floor and ceiling and where runners are used at partition intersections with dissimilar wall construction.
 2. Fill with sealant the grooves around the edges of wallboard at the floor, ceiling, and intersections with dissimilar walls.
 3. Caulk fully the openings around all cut-outs at electrical boxes, heating ducts and the like.
- G. Wallboard Application:
1. Apply gypsum wallboard first to the ceilings and then to the partitions. Use maximum practical lengths to minimize end joints. Fit ends and edges closely but not forced together.
 2. For single-layer ceiling application, apply wallboard with the long dimension either parallel or at right angles to the framing members. All abutting ends and edges shall occur over framing members, except in horizontal application. Stagger end joints in adjacent rows.
 3. For single-layer wall application with a ceiling height of 8'-2" or less, use either the horizontal or the vertical application method. With a ceiling height over 8'-2" and for fire-rated partitions, use only the vertical application method without any exposed horizontal joints. Stagger the vertical joints on opposite sides of a partition. Extend wallboard full height to the floor or roof structure above where so detailed.
 4. Fasten wallboard firmly to studs and furring channels with power-driven drywall screws. Gypsum board shall extend to within 1/4" of floor line. Drive screw heads close without cutting the surface paper or fracturing the core. Maximum screw spacing shall be 12" o.c. for ceilings and 16" o.c. for partitions. For fire-rated partitions, maximum spacing shall be 12" o.c. Do not drive screws closer than 3/8" from any edge.
 5. For two-layer wall application, apply the base layer of wallboard vertically; attach with screws spaced 16" o.c. Apply the face layer vertically with joints offset 24" from base layer joints; attach with adhesive and 1-5/8" screws spaced 16" o.c.
 6. Wallboard joints in single layer or in face layer of two layer applications shall not occur within 12" of the corners of door frame, window frames, and openings larger than 12" x 12", unless control joints are installed at the corners.
 7. Accurately cut and fit abutting ends, edges and holes for pipes and electrical fixtures. Support the edges of gypsum wallboard at cutouts and openings.
 8. Reinforce exposed external corners with metal corner reinforcement.
 9. Where wallboard surfaces abut dissimilar intersecting surfaces such as metal and masonry, trim the meeting edge with a metal trim angle held approximately 1/4" away from the intersecting surface. Caulk the joint full with sealant; tool smooth.
 10. After application, check all gypsum wallboard for loose fasteners; drive tight any found loose.
- H. Control Joints:
1. Isolate gypsum wallboard surfaces with control joints where specifically detailed and where the following conditions exist:
 - a. Partition or furring run exceeds 30 feet without a corner or a ceiling-height door frame.
 - b. Ceiling dimensions exceed 50 feet in either direction.
 - c. Construction changes within the plane of the partition.
 - d. Each side of column furring within a partition run.
 - e. Above each door jamb from head to top of partition.
 - f. At each side of furr downs.
 2. Locate control joints in partitions at less-than-ceiling-height door frames with control joints extending to the ceiling from both top corners.
 3. Make joints with roll-formed zinc control joints (USG #093) with 1/4" slot.
 - a. Do not install roll-formed joint behind ceramic tile. Provide a 1/4" wide gap in the substrate only.
 - b. At acoustical partitions, seal behind the joints with acoustical sealant.
 4. Back-block ceiling control joints with face panel strips laid over the joints.
 5. At acoustical partitions, seal behind partition control joints with batt acoustical insulation stuffed between the doubled studs.

- I. Edge Sealing: On wallboard partitions to be covered with ceramic tile, treat cut edges, holes, corner joints, and intermediate joints with edge sealant before installation of wallboard panels. Treat all fastener heads with edge sealant after installation. Caulking of openings through ceramic tile is specified in SECTION 09 30 13 - CERAMIC TILING.
- J. Joint Treatment:
 - 1. Finish the joints in exposed wallboard, wallboard which is to be covered with vinyl wall covering and carpet wall covering, and wallboard in sound partitions to deck. Joints in wall board to be covered with ceramic tile shall be filled but may be left unfinished.
 - 2. Fill the V-grooves between boards with quick drying joint compound. Wipe joints clean of excess compound and allow to harden.
 - 3. Apply a thin layer of joint topping to joints. Immediately embed tape reinforcement over joints, follow with a skim coat of compound.
 - 4. Apply joint topping over the tape to fill flush with the board surface.
 - 5. Apply joint topping over the fill coat and feather out smoothly beyond fill coat edge. Sand between coats as necessary to provide a smooth surface ready for painting.
 - 6. Fill screw head depressions flush with three coats of compound.
 - 7. Finish metal corner reinforcements and edge and control joint trim with two or three coats of joint compound, using edge of trim as a screed to secure a smooth, flat finish.
- K. Special Finishes for Gypsum Board Surfaces:
 - 1. Areas Designated with Special coating or glossy finish: Examine substrates and installation conditions to ensure surface conditions meet or exceed a Level 5 Finish per ASTM C840 and GA-214-Recommended Levels of Gypsum Board Finish. Recess nails and screws. Repair irregular tape joints, sand and remove dust. Ensure gypsum wallboard surfaces scheduled to receive dry-erase coatings are properly primed with recommended primer.
 - 2. Areas Designated with Tackable Wall Covering: Examine substrates and installation conditions to ensure surface conditions meet or exceed a Level 4 finish, per ASTM C840 and GA-214-Recommended Levels of Gypsum Board Finish.
 - 3. Permanent lighting should be installed and operational for inspection of these areas prior to application of wall finish.

3.2 TOLERANCES

- A. Maximum variation from true flatness: 1/8" in 10 feet in any direction.

END OF SECTION

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SECTION 09 21 19

GYPSON BOARD SHAFT WALL ASSEMBLIES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Gypsum board shaft wall systems.
- B. Related Sections:
 - 1. Section 09 21 16 - Gypsum Board Assemblies.

1.2 SYSTEM DESCRIPTION

- A. Performance Requirements, General: Provide gypsum board shaft wall systems complying with performance requirements specified, as demonstrated by pretesting manufacturer's corresponding stock systems.
- B. Fire-Resistance Ratings: Provide materials and construction which are identical to those of assemblies whose fire resistance has been determined per ASTM E 119 by Underwriters' Laboratories, Inc., including those incorporating elevator door and other framing.
- C. Structural Performance Characteristics: Provide gypsum board shaft wall systems engineered to withstand the following lateral design loadings (air pressures), applied transiently and cyclically, for maximum heights of partitions required, within the following deflection limits, verified by pretesting for deflection characteristics:
 - 1. Lateral Loading: 5 psf.
 - 2. Deflection Limit: L/240.
- D. Sound Attenuation Performance: Provide gypsum board shaft wall systems designed and pretested to achieve an STC rating of 39 for sound transmission class per ASTM E 90.

1.3 SUBMITTALS

- A. General: Submit in accordance with SECTION 01 33 23 - SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Product Data: Include data indicating compliance with fire resistance, structural performance, and acoustical performance requirements.

1.4 QUALITY ASSURANCE

- A. Single Source Responsibility: Obtain products for gypsum board shaft wall systems from a single manufacturer.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials in original packages, containers or bundles bearing brand name and identification of manufacturer or supplier.
- B. Store materials inside under cover and keep them dry and protected against damage from weather, direct sunlight, surface contamination, corrosion, construction traffic and other causes. Neatly stack gypsum boards flat to prevent sagging.
- C. Handle gypsum boards to prevent damage to edges, ends and surfaces. Do not bend or otherwise damage metal corner bead, trim, track, and studs.

1.6 PROJECT CONDITIONS

- A. Comply with requirements for environmental conditions, room temperatures and ventilation specified in SECTION 09 21 16 - GYPSON BOARD ASSEMBLIES.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

- A. Provide gypsum board shaft wall systems as manufactured by one of the following:
G-P Gypsum Corp.
National Gypsum Co.
United States Gypsum Co.

2.2 MATERIALS

- A. Steel Framing: ASTM C 645, I, C-H or double E stud shape with sectional properties computed to conform with AISI "Specification for Design of Cold-Formed Steel Structural Members."
- B. Gypsum Shaftwall Board: ASTM C 1396, Type X, 1" thickness, liner panel or coreboard designed for shaft wall construction, with moisture-resistant paper facings.
- C. Gypsum Wallboard: ASTM C 1396, Type X, 5/8" thickness, with tapered edges to receive finish joint treatment.
- D. Gypsum Backing Board for Multi-Layer Applications: ASTM C 1396 or, where backing board is not available from manufacturer, gypsum wallboard, ASTM C 1396, Type X, edge configuration as standard with manufacturer.
- E. Trim Accessories: Provide cornerbeads, edge trim and control joints of material and, for edge trim, shapes specified in SECTION 09 21 16 - GYPSUM BOARD ASSEMBLIES and complying with ASTM C 1047 and gypsum board shaft wall manufacturer's recommendations.
- F. Gypsum Wallboard Joint Treatment Materials: Provide materials complying with ASTM C 475, ASTM C 840, recommendations of gypsum board shaft wall manufacturer for the application indicated, and as specified in SECTION 09 21 16 - GYPSUM BOARD ASSEMBLIES.
- G. Miscellaneous Materials: Provide auxiliary materials for gypsum board shaft wall systems of the type and grade recommended by the manufacturer of the system and as follows:
1. Laminating Adhesive: Special adhesive or joint compound recommended for laminating gypsum boards.
2. Gypsum Board Screws: ASTM C 1002.
3. Runner Fasteners: Low-velocity tool-driven fasteners of type, size and materials required to withstand loading conditions imposed on shaft wall system without exceeding allowable design stress of runner, fastener or structural substrate in which anchor is embedded.
4. Concealed Acoustical Sealant: Nondrying, nonhardening, nonskinning, nonstaining, gunnable synthetic rubber sealant.

PART 3 - EXECUTION

3.1 INSTALATION

- A. General: Install gypsum board shaft wall systems to comply with performance and other requirements indicated as well as with manufacturer's installation instructions and the following:
1. ASTM C 754 for installation of steel framing.
2. SECTION 09 21 16 - GYPSUM BOARD ASSEMBLIES for application and finishing of gypsum wallboard.
- B. Install supplementary framing, blocking and bracing to support gravity and pullout loads of fixtures, equipment, services, heavy trim, furnishings and similar work which cannot be adequately supported directly by regular framing of gypsum board shaft wall system.
1. Support elevator hoistway door frames independently of shaft wall framing system, or reinforce system in accordance with system manufacturer's instructions.
- C. At penetrations in shaft wall, maintain fire resistance rating of entire shaft wall assembly by installing supplementary fire protection behind boxes containing wiring devices, elevator call buttons, elevator floor indicators, and similar items.

- D. Isolate shaft wall system from transfer of structural loading to system, both horizontally and vertically. Provide slip or cushioned type joints to attain lateral support and avoid axial loading.
- E. Seal gypsum board shaft walls at perimeter of each section which abuts other work and at joints and penetrations within each section. Install acoustical sealant to withstand dislocation by air pressure differential between shaft and external spaces; comply with manufacturer's instructions and ASTM C 919.

END OF SECTION

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SECTION 09 30 13

CERAMIC TILING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Ceramic tile and marble thresholds.
- B. Related Sections:
 - 1. Section 07 92 00 - Joint Sealants.
 - 2. Section 09 21 16 - Gypsum Board Assemblies.
 - 3. Section 09 30 16 - Quarry Tile.

1.2 SUBMITTALS

- A. General: Submit in accordance with SECTION 01 33 23 - SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Samples: Submit tile samples of the same size scheduled for each particular type of tile required.
- C. Certificate: Furnish one master grade certificate on ceramic tile executed prior to delivery of the tile to the site.

1.3 QUALITY ASSURANCE

- A. Standard: Ceramic tile shall be Standard Grade complying with the requirements of ANSI A 137.1. Deliver tile to the project site in grade sealed containers.

1.4 PROJECT CONDITIONS

- A. Environmental Limitations: Do not install tile until construction in spaces is completed and ambient temperature and humidity conditions are being maintained.
- B. Do not install adhesives in a closed, unventilated environment.
- C. Maintain 50°F. during installation of mortar materials.

1.5 MAINTENANCE

- A. Extra Materials: Upon completion of work, deliver to the Owner's maintenance facility one box for each type, field color, pattern, and size of ceramic tile and one box of each type, accent color, pattern, and size of ceramic wall tile installed. Furnish maintenance materials from same manufactured lot as materials installed and enclose in protective packaging with appropriate identifying labels.

PART 2 - PRODUCTS

2.1 TILE

- A. Ceramic tile and trim as manufactured by **American Olean, Dal-Tile Corp., Interceramic, and Crossville Ceramics** shall set all standards in the areas of trim shapes availability, tile size, color, pattern, and texture.
- B. Provide factory made fitters and trim shapes required for a finished installation. Keep job-cut fitters and trim shapes to a minimum. Provide bullnose tile at horizontal and vertical tile edges.
- C. Ceramic and Porcelain Tile: Manufacturers, products, colors, and finishes shall be as scheduled in SECTION 09 99 00 – COLOR SCHEDULE.

2.2 MORTAR MATERIALS

- A. Portland Cement: ASTM C 150, domestic manufacture.
- B. Dry-Set Mortar: ANSI A 118.1, factory sanded mortar mix.
- C. Latex-Portland Cement: ANSI A 118.15, flexible mortar consisting of cement-based mix and latex additive.
- D. Adhesive: ANSI A 136.1, Type I, prepared organic adhesive.
- E. Grout:
 - 1. Floor:
 - a. ANSI A118.7, latex modified dry-set High Performance Cement Grout or commercial waterproof cement grout. Provide Ultracolor Plus FA as manufactured by MAPEI or approved equivalent by Custom Building Products or Laticrete. Color(s) shall be selected by Architect.
 - b. ANSI A118.3; epoxy grout at food service areas, restrooms, and associated areas. Provide Kerapoxy CQ as manufactured by MAPEI or approved equivalent by Custom Building Products or Laticrete. Color(s) as selected by Architect.
 - 2. Walls: Modified acrylic, premixed Mastic Grout or dry-set grout complying with ANSI A118.7, color(s) as selected by Architect from Custom Building Products, Laticrete, Mapei or approved equal. If Contractor elects to provide dry-set grout, the installation shall be damp cured.
- F. Lime: ASTM C 207, Type S, hydrated lime.
- G. Sand: ASTM C 144, clean, masonry sand.
- H. Water: Clean and potable.
- I. Reinforcement: 1-1/2" x 17 gage galvanized woven steel wire fabric or 2 x 2 x 16/16 gage galvanized welded steel wire fabric.

2.3 SETTING BED MORTAR

- A. Mix one part Portland cement and 4 parts damp sand, by volume. Hydrated lime may be added for plasticity in an amount not to exceed 1/10 part by volume.
- B. Large Format and Heavy Tile Mortar: Provide Ultraflex LFT (medium bed mortar) as manufactured by MAPEI or approved equivalent.
 - 1. High content of dry polymer
 - 2. Nonsag and nonslump formula.
 - 3. Meets the highest ANSI rating of ANSI A118.15.

2.4 ADHESIVE/WATERPROOF MEMBRANE

- A. Urethane Waterproofing and Tile-setting Adhesive: One-part liquid-applied urethane in a consistency suitable for trowel application and intended for use as both waterproofing and tile-setting adhesive in a two-step process. Product/manufacturer; one of the following:
 - Hydroment Ultra-Set; Bostik
 - Deck-Seal 1000; Southern Grouts & Mortars, Inc.
- B. Reinforcing: Woven glass fiber scrim, 2" wide roll.
- C. Large Format and Heavy Tile Waterproofing/Crack Isolation Membrane: Provide Mapelastic Aquadefense as manufactured by MAPEI or approved equivalent. Include Reinforcing fabric at change of planes and at drain areas.

2.5 CRACK ISOLATION MEMBRANE

- A. General: Manufacturer's standard product that complies with ANSI A118.12 for standard performance and is recommended by the manufacturer for the application indicated.
 - 1. Contractor's Option: Provide either tile manufacturer's standard product as stated above, or the following product:

- a. Chlorinated Polyethylene Sheet: Non-plasticized elastomer with non-woven polyester laminated to both sides, nominal 0.030" thickness. Product/manufacturer; NobleSeal CIS; Noble Co.

2.6 ACCESSORIES

- A. Metal Floor Transition Trim: Provide RENO-U and RENO-TK protective edge trim by Schluter Systems L.P. Finish shall be as scheduled in SECTION 09 99 00 - COLOR SCHEDULE. Height as required to flush out with top of tile flooring.
- B. Metal Edge Trim: Provide JOLLY aluminum edge trim by Schluter Systems L.P. Color/finish shall be as scheduled in SECTION 09 99 00 - COLOR SCHEDULE.
- C. Metal Corner and Top Cap Trim: Provide RONDEC corner trim by Schluter Systems L.P. Color/finish shall be as scheduled in SECTION 09 99 00 - COLOR SCHEDULE.
- D. Cove-Shaped Aluminum Trim (14F): Provide DILEX-AHK, and DILEX profile trim, by Schluter Systems L.P., with integrated trapezoid-perforated anchoring leg, connected at a 90-degree angle by a cove-shaped section with 3/8" radius that forms the visible surface. Provide all matching inside and outside corners, connectors, and end caps. Material and Finish shall be as scheduled in SECTION 09 99 00 - COLOR SCHEDULE. Height(s) as required.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Sweep concrete slab surfaces clean and free of dirt and debris. Remove oil, grease, paint, and dried mortar.
- B. Shower Pan Membrane Installation:
 1. Coat surface to receive membrane waterproofing with a minimum 3/16" thick coat of bond coat adhesive and in accordance with manufacturer's recommendation and ANSI A 108.5.
 2. Provide PVC solvent cement welding of all seams and penetrations including drains.
 3. Provide factory fabricated pre-molded inside and outside corners.
- C. Shower Wall Tile Base: At showers, install tile backer board. Apply with un-cut long edge at bottom of work. Fasten boards to steel stud framing with Type S bugle head drywall screws spaced 6" o.c. Space fasteners at least 3/8" from edge of board.
- D. Install crack isolation membrane to comply with ANSI A108.17 and manufacturer's written instructions and recommendations to produce membrane bonded securely to substrate.

3.2 INSTALLATION

- A. General Workmanship:
 1. Center and balance areas of tile, if possible.
 2. Do not make an excessive amount of cuts. Usually, no cuts smaller than half size should be made. Make all cuts on the outer edges of the field.
 3. Smooth cut edges. Install tile without jagged or flaked edges.
 4. Fit tile closely where edges will be covered by trim, escutcheons or other similar devices.
 5. The splitting of tile is expressly prohibited except where no alternative is possible.
 6. Maintain the heights of tilework in full courses to the nearest obtainable dimension where heights, given in feet and inches, are not required to fill vertical spaces exactly.
 7. Make corners of all tile flush and level with corners of adjacent tile, with due allowance to tolerances for tile as specified in ANSI A137.1.
 8. Keep all joint lines straight and even width, including miters.
 9. Thoroughly back-up with thin-set bonding material all thin-set units, molded or shaped pieces; secure firmly in place.
 10. Thoroughly back-up with mortar-bed mix thick-bed nosings, coves, curbing, gutters, flat tile and trimmers, molded or shaped pieces; secure firmly in place.
 11. Bond coat mix shall not be used to back-up thick-bed trim and angles. Coat all thick-bed trim shapes with 1/32" to 1/16" of bond coat mix.
 12. Finish floor and wall areas level and plumb with no variations exceeding 1/8" in 8' from the required plane.

13. Install accessories in tile work to be evenly spaced, properly centered with tile joints, and level, plumb and true to the correct projection. Install accessories at locations and heights designated.
14. Finished tile work shall be clean. Replace pitted, chipped, cracked and scratched tiles.

B. Setting Floor Tile - Conventional:

1. Set floor tile in straight joint pattern using Portland cement mortar in conformance with ANSI A 108.1.
2. Where tile is to be installed over waterproofing membrane, place wire reinforcing and mortar bed over the membrane. Lap reinforcing one full mesh and support so that it is completely embedded in the mortar bed.
3. Place mortar bed, tamp firmly and screed to true planes and proper slopes. While still plastic, trowel a bond coat of cement paste over the mortar bed or dust a thin layer of dry cement over the mortar bed and work lightly until damp.
4. Set tile firmly on the mortar bed with close, uniform joints. Press and thoroughly beat in tile while the mortar bed is still plastic. Bring surfaces to true planes at the proper position of elevation. Slope tile down to floor drains. Make any adjustment of tile before initial set of the mortar takes place.

C. Setting Floor Tile - Thinset:

1. Set floor tile in straight joint pattern using dry-set cement mortar in conformance with ANSI A 108.5.
2. Mix and apply dry-set mortar in conformance with the manufacturer's recommendations. Cover surface evenly and comb with a notched trowel not more than 10 minutes before applying tile.
3. Set tile before initial set of the mortar has taken place. Press and beat tile firmly into place to establish proper and complete bond. Joints shall be close and uniform.

D. Setting Wall Tile:

1. Set base and wall tile over masonry in straight joint pattern using dry-set cement mortar in conformance with ANSI A 108.5.
2. Set base and wall tile of size less than 12" x 12" over gypsum wallboard in straight joint pattern using organic adhesive in conformance with TCA W242 and ANSI A 108.4.
3. Set base and wall tile of size more than 12" x 12" over gypsum wallboard in straight joint pattern using Latex Portland cement mortar in conformance with TCA W243 and ANSI A 108.5.
4. Surfaces to be tiled shall be dry, firm and proper for bond.
 - a. Treat gypsum wallboard surfaces with a primer-sealer; caulk openings around pipes and fixtures with a non-hardening waterproof sealant.
 - b. Apply leveling coat of sanded dry-set mortar over irregular surfaces if and as required to secure plumb, flat surfaces for the application of tile.
5. Mix and apply mortar and adhesive in conformance with best trade practice and the recommendations of the manufacturer of the materials used. Cover surfaces evenly, with no bare spots, and comb with a notched trowel within 10 minutes of applying tile.
6. Apply tile before skinning of the adhesive or mortar has taken place. Press and beat firmly into place to obtain at least 75 percent contact area of adhesive or mortar on the tile back.
7. If tile is face mounted, remove paper and glue before the adhesive or mortar is firmly set; adjust tiles that are out of line.
8. Provide control joints at all inside corners of wall tile areas. Install sealant in joint. Color as selected by Architect.

E. Setting Floor Tile - Adhesive/Waterproof Membrane:

1. At second and third floor levels set floor tile in straight joint pattern using adhesive/waterproof membrane in conformance with ANSI A108.13 and waterproofing manufacturer's written instructions and recommendations.
2. All vertical penetrations and surfaces shall receive integral flashing made by coating both the vertical and horizontal surfaces with 30-50 mils of adhesive/waterproof membrane. Extend not less than 4" up and out from the juncture. Allow to set and then embed woven glass fiber scrim and re-coat with 50-75 mils of adhesive/waterproof membrane.
3. Apply adhesive/waterproof membrane using a serrated mason's trowel at a rate to achieve a thickness of not less than 1/16". Cove tile shall be placed first, followed by floor tile.
4. Set tile as the adhesive/waterproof membrane is spread. Press and beat tile firmly into place to establish proper and complete bond. Joints shall be close and uniform.

F. Grouting:

1. Force a maximum amount of grout into the joints.
2. Clean the joints of cushion-edge tile to depth of cushion. Fill joints of square-edge tile flush with face of tile.
3. Fill all gaps and skips. Mortar shall not show through grouted joints.
4. Finished grout shall be uniform in color, smooth, and without voids and low spots.

5. Grout joint width as recommended by tile manufacturer.
6. Damp cure Portland cement grout for at least 72 hours.

G. Wall Control Joints:

1. Provide a caulked control joint at same width as grout joints, minimum of 1/8".
2. After tile work and grout are dry, clean the open control joint and roll-in foam rod stock to leave a joint depth of 1/4".
3. Fill the joint with primerless one-part acrylic polymeric sealant. Color shall be as selected by Architect.
4. Tool the sealant smooth.
5. Where tile on wallboard abuts tile on masonry, provide a 1/4" caulked control joint to separate the two areas.

H. Joints at Frames: Where ceramic tile abuts frame, provide a minimum 1/8" caulked expansion joint to separate tile from the frame.

1. After tile work and grout are dry, clean the joint at the frame.
2. Fill the joint with primerless one-part acrylic polymeric sealant.
3. Color shall be as selected by Architect.
4. Tool the sealant smooth.

I. Metal Floor Transition Trim:

1. Provide at transition of ceramic floor tile to lower flooring material (e.g. vinyl composition tile, exposed concrete, etc.) where no marble threshold is detailed.
2. Install as detailed on drawings.
3. Set transition trim prior to installing ceramic floor tile.
4. Set tile up tight to transition trim with a factory cushion edge. Trim shall be flush with top of ceramic tile.
5. After tile work and grout are dry, clean the joint between the trim and the tile.
6. Fill joint between trim and ceramic floor tile with sealant to match grout.

J. Metal Corner [and Top of Wainscot] Trim:

1. Provide at all outside corners [and top of wainscot] of ceramic wall tile.
2. Set metal corner trim prior to installing wall tile.
3. Set tile up to corner trim with a factory cushion edge. Provide a 1/8" joint between tile and trim. Trim shall be flush with faces of ceramic tile.
4. After tile work and grout are dry, clean the joint between the trim and the tile.
5. Fill joint with sealant to match grout.

3.3 CLEANING

A. When the work of other trades is completed, clean down tile and marble surfaces and leave in first class condition.

1. The use of wire brushes or acids is expressly prohibited.
2. Replace cracked, broken, and chipped tile with new units.
3. Correct uneven and stained joints.

END OF SECTION

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SECTION 09 51 00

ACOUSTICAL CEILINGS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Acoustical panels and exposed suspension systems for ceilings.

1.2 SUBMITTALS

- A. Samples: Submit in accordance with Section 01 33 23 - SHOP DRAWINGS, PRODUCT DATA, SAMPLES. Submit a 12" x 12" sample of each type of acoustic panel. Submit a 6" long sample of each component of each type of exposed suspension system.

1.3 QUALITY ASSURANCE

- A. Erector Qualifications: This work shall be performed by an experienced erector approved by the acoustical material manufacturer.
- B. Pre-ceiling conference:
1. Prior to start of ceiling grid installation, convene pre-ceiling conference at project site.
 2. Attendance is required by Contractor, installer, and Architect.
 3. Review specifications and drawings of ceiling installation and layout.

1.4 PROJECT CONDITIONS

- A. Environmental Requirements:
1. Before acoustical work is started, all wet work such as concrete and plastering shall be completed and thoroughly dried out.
 2. Acoustical ceiling shall not begin until building has been closed to the weather and suitable mechanical ventilation is supplied to maintain condition ranges of 60°F. to 85°F. at not more than 70% R.H. These conditions shall be maintained prior to, during, and after installation.
 3. Acoustical panels shall be unpacked and allowed to stabilize for a period of 72 hours, in the environment as defined above, prior to installation.
- B. Work Sequence:
1. Do not start acoustical work until mechanical and electrical work to be covered up has been inspected and approved.
 2. Coordinate the related work of other trades involved in the ceiling installation.

1.5 DELIVERY, STORAGE AND HANDLING

- A. Store tile and panel cartons open at each end to stabilize moisture content.

1.6 WARRANTY

- A. Acoustic Lay-in Panels: Submit manufacturer's standard 10-year warranty against sagging or warping (defined as greater than 1/8" measured in the panel center) from the date of installation.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. (22A) Acoustical Lay-in Panels: ASTM E 1264, mineral fiber panels, Class A (non-combustible) and having an NRC range of min. 0.50-0.60.
1. Sizes: 24" x 24" x 5/8"
 2. Design: Fine, non-directional fissured surface.
 3. Finish: Washable factory applied vinyl latex paint.
 4. Edges: Square.
 5. Product/manufacturer; standard panels:
Fine Fissured Humiguard; Armstrong World Industries, Inc.
Fine Fissured Safetone; CertainTeed Corporation
Radar ClimaPlus; USG Interiors, Inc.
- B. (22B) Vinyl Covered Lay-In Gypsum Board Panels: Provide fine texture white vinyl faced gypsum board panels.
1. Sizes: 24" x 24" x 1/2"
 2. Product/manufacturer; one of the following:
Vinylrock X CRF; Certain Teed Corporation
Sheetrock™ Lay-in Ceiling Panel ClimaPlus; USG Interiors, Inc.
- C. (22C) Acoustical Lay-in Panels - Extra High NRC: ASTM E 1264, fiberglass panels, Class A (non-combustible) and having an NRC range of min. 0.90 or better, CAC of 26, and Articulation Class of 200.
1. Sizes: 24" x 24" x 1"
 2. Color: Color(s) shall be as selected by Architect.
 3. Basis of Design: Armstrong Optima 3352.
 4. Acceptable Manufacturers
Armstrong World Industries, Inc.
CertainTeed Corporation
USG Interiors, Inc.
- D. Suspension System; Acoustic Lay-in Panels: Exposed type for panel ceilings as manufactured by the ceiling panel manufacturer or one of the following:
Armstrong World Industries, Inc.
CertainTeed Corp.
Chicago Metallic Corp./Rockfon
USG Interiors, Inc.
1. Components shall be roll-formed from steel to meet ASTM C 635 and conform to the requirements for Intermediate duty structural classification. Exposed main tee runners shall be double web with capped face.
 2. Components shall be electro-zinc coated or hot-dip galvanized and exposed surfaces shall have white enamel finish.
 3. System shall be designed and sized to support the ceiling assembly with a maximum deflection of L/360 of the span.
 4. Color shall be white to match color of lay-in panels.
- E. Suspension System: Vinyl Covered Gypsum Board Ceilings: ASTM C 635, heavy duty, 15/16" hot dipped galvanized steel, with aluminum cap with white finish. Product/manufacturer: one of the following:
Prelude Plus XL Fire Guard Environmental Tee System; Armstrong World Industries
DXLA DONN Brand Acoustical Suspension System; USG Interiors, Inc.
- F. Hangers: 12 gage annealed and galvanized steel wire.
- G. Hold-down Clips: UHDC Universal Hold Down Clip by Armstrong.
- H. Column Rings: Prefabricated clamp rings to support suspended ceiling, as manufactured by Fry Reglet.

PART 3 - EXECUTION

3.1 INSPECTION

- A. Examine areas to receive acoustical treatment for conditions that will adversely affect the execution and quality of work. Designate any areas of potential interference between ceiling components and components of other trades. Do not start this work until unsatisfactory conditions are corrected.

3.2 CEILING INSTALLATION

- A. General: Installation procedures shall meet or exceed the manufacturer's recommendations and ASTM C 636.
 - 1. Lay out each area so that the panel patterns are symmetrical, joints parallel to walls and borders generally equal in width.
 - 2. Coordinate the patterns with ceiling lights and grilles in conformance with the reflected ceiling plans and as directed.
 - 3. Verify types and sizes of light fixtures and grilles to be accommodated and arrange the work accordingly.
- B. Suspension: Locate main and cross tee runners to form the indicated patterns.
 - 1. Use a laser leveling method to direct-suspend the main tees with hangers spaced not more than 48" o.c.
 - 2. Provide hangers within 6" of the corners of recessed lighting fixtures.
 - 3. Under steel construction, wrap hangers around or clip or bolt hangers to a structural steel member (not steel deck).
 - 4. Under bar joists, suspend hangers from top chord or from bottom chord at panel points only.
 - 5. Under ductwork, employ trapeze system for hanging ceiling.
 - 6. Do not suspend hangers from ducts, piping, conduit, or fireproofing membrane.
 - 7. Use a laser beam system to level the main tee runners to within 1/8" in 12 ft. Level with hangers taut; do not make kinks or bends in hangers as a means of leveling.
- C. Moldings: Install finish channel and angle moldings where ceilings abut walls, furrings and other intersecting vertical surfaces.
 - 1. Moldings shall be in long lengths, secured to adjoining surfaces with at least two fasteners for each piece or more as may be required. Pull the molding snugly against the vertical surface without any gaps.
 - 2. No molding length shall be less than 3 ft. except at short offsets.
 - 3. Use prefabricated corner pieces where possible to eliminate field mitering.
- D. Lay-in Panels: Install the acoustic panels in the exposed suspension system with bottom surfaces flush and in a true, level plane.
 - 1. Hold-down clips are required at all vinyl covered gypsum panels for cleaning purposes.
 - 2. Provide hold-down clips at lay-in panels within 6' of exterior exits.
- E. Access: Provide access through acoustic panel ceilings with one or more access locations in each room to maintain a maximum spacing of 30 ft. between access panels.

3.3 TOLERANCES

- A. Variation from flat and level surface: 1/8 inch in 10 ft.
- B. Variation from plumb of grid members caused by eccentric loads: Two degrees (2°) maximum.

3.4 ADJUSTING AND PATCHING

- A. Replace damaged members of exposed suspension system. Replace ceiling board and tile that is damaged, installed improperly, or shows visible signs of sagging.

3.5 CLEANING

- A. After installation, clean soiled and discolored surfaces. Remove damaged units and replace with new.

END OF SECTION

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SECTION 09 54 23

LINEAR METAL CEILINGS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Complete suspended linear metal ceiling system
- B. Related Sections:
 - 1. Section 07 21 00 - Building Insulation
 - 2. Section 09 51 00 - Acoustical Ceilings
 - 3. Section 09 99 00 - Color Schedule
 - 4. Division 21 - Fire Suppression
 - 5. Division 23 - Heating, Ventilating, and Air Conditioning
 - 6. Division 26 - Electrical

1.2 SUBMITTALS

- A. Product Data: Manufacturer's complete product information and installation instructions for each type of product specified.
- B. Samples for Initial Selection: For components with factory-applied color and other decorative finishes.
- C. Samples for Verification: For each component indicated and for each exposed finish required, prepared on Samples of size indicated below:
 - 1. Linear Metal Ceiling: Set of 12-inch long Samples of each type and color and a 12-inch long spliced section.
 - 2. Suspension System Members: 12-inch long Sample of each type, including main runner and 4 foot cross tees.
 - 3. Exposed Molding and Trim: Set of 12-inch long Samples of each type, finish, and color.
 - 4. End Cap and Panel Splice: Full size.
- D. Coordination Drawings: Provide reflected ceiling plans drawn to scale and showing the following:
 - 1. Linear pattern
 - 2. Joint pattern
 - 3. Ceiling suspension system
 - 4. Method of attaching hangers to building structure
 - 5. Ceiling-mounted items including light fixtures, diffusers, grilles, speakers, sprinklers, and access panels
 - 6. Ceiling perimeter and penetrations through ceiling: Trim and moldings
 - 7. Minimum Drawing Scale: 1/4 inch = 1 foot
 - 8. Maintenance Data: For finishes to include in maintenance manuals

1.3 QUALITY ASSURANCE

- A. Installer Qualifications: A company with at least 3 years' experience in installing linear metal ceiling systems on projects with requirements similar to this project.
- B. Source Limitations: Single-source responsibility: Provide acoustical panel units and grid components by a single manufacturer.
- C. Surface-Burning Characteristics: Complying with ASTM E 1264 for Class A materials, as determined by testing identical products according to ASTM E 84 by UL or another testing and inspecting agency acceptable to authorities having jurisdiction.
- D. Mockups: Construct a mockup on the Project Site to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.
 - 1. Approved mockups may become part of the completed Work if approved by Architect.
- E. Pre-installation Conference: Schedule and conduct conference at Project Site, with Architect present. Coordinate linear ceiling work with installers of related work affected by linear ceiling installation.

LINEAR METAL CEILINGS

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Receive linear ceiling units and accessories at the Project Site in Manufacturer's original, unopened packages. Store units in a fully enclosed and environmentally conditioned space protected from damage by moisture, humidity, temperature extremes, direct sunlight, surface contamination, and other causes.
- B. Allow linear ceiling units to reach room temperature before installation.
- C. Carefully handle acoustical ceiling units, suspension system components, and accessories to avoid damage to components and finishes.

1.5 PROJECT CONDITIONS

- A. Interior Locations: Do not install linear metal ceilings until spaces are enclosed and weathertight, wet work in installation areas is complete and dry, all above ceiling work is complete and inspected, and ambient temperature and humidity conditions are maintained at the levels indicated for when occupied for its intended use.
 - 1. Climate condition range of 60°F to 85°F with relative humidity of not more than 70%.
- B. Exterior Locations: Do not install linear metal ceilings until all fascia trim and exterior wall finish(s) are installed and final cleaning has occurred.

1.6 COORDINATION

- A. Coordinate layout and installation of linear metal pans and suspension system with other construction that penetrates ceilings or is supported by them, including light fixtures, HVAC equipment, fire-suppression system, and partition assemblies.

1.7 EXTRA MATERIALS

- A. Provide Owner with extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
- B. Linear Metal Ceiling Components: Quantity of each panel, carrier, accessory, and exposed molding and trim equal to 2 percent of quantity installed.

1.8 WARRANTY

- A. Linear Metal Panels: Submit a written warranty executed by the manufacturer, agreeing to repair or replace all panels that fail during the warranty period. Failures include, but are not limited to the following:
 - 1. Linear Metal Panels: Sagging and warping.
 - 2. Suspension Grid System: Rusting and manufacturer's defects.
- B. Warranty Period:
 - 1. Linear Metal panels: One (1) year from date of project Substantial Completion.
 - 2. Grid: One (1) year from date of project Substantial Completion.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

- A. Basis of Design: Provide MetalWorks Linear metal ceiling system with custom trims and complete suspension system as manufactured by Armstrong World Industries, Inc.
- B. Other acceptable Products/Manufacturers:
 - USG, ParalinePlus Linear Metal System
 - Innovative Architectural Solutions, Linea - Strip System

2.2 SUSPENSION SYSTEM

- A. Metal Suspension System: Provide ceiling manufacturer's standard metal suspension system of type and finish indicated, and complying with applicable ASTM C 635 requirements.
 - 1. Provide system complete with carriers, splice sections, connector clips, alignment clips, leveling clips, hangers, molding, trim, retention clips, load-resisting struts, fixture adapters, and other suspension components required to support ceiling units and other ceiling-supported construction.
 - 2. Wire Hangers, Braces, and Ties: 12 gage hanger wire
 - 3. Carrier Splices: Same metal, profile, and finish as indicated for carriers.
 - 4. Contrast Filler Strip Black: 96" x 1/4" x 1/16"
 - 5. Color: Dark color (not white/light) as selected by Architect.
- B. Stabilizer Channels, Tees, and Bars: Manufacturer's standard components for stabilizing main carriers at regular intervals and at light fixtures, air-distribution equipment, access doors, and other equipment; spaced as standard with manufacturer for use indicated; and factory finished in color as selected by Architect.
- C. Edge Moldings and Trim: Provide exposed members of metal and finish matching linear metal panels as required to
 - 1. Comply with seismic requirements of authorities having jurisdiction
 - 2. Conceal edges of penetrations through ceiling
 - 3. Conceal ends of pans and carriers
 - 4. Provide fixture trim and adapters
 - 5. Provide fascia at changes in ceiling height
 - 6. Accommodate other conditions encountered
 - 7. Carrier Molding: 120" x 1" x 1". Color as selected by Architect.

2.3 FABRICATION

- A. Linear Metal Planks:
 - 1. Planks (23A-1): Perforated, pattern M2 - MicroPerforated
 - 2. Planks (23A-2): Unperforated
- B. Plank Size: 6x96 inches x 5/8-inch thick
- C. Classification: Units complying with Fire Class – Class A, ASTM E 1264 for:
 - 1. Interior type: Perforated
 - 2. Exterior type: Unperforated
- D. Fabrication:
 - 1. Plank Edge Detail: Square, with extended flange 15/16-inch.
 - 2. End Caps Finish: Match planks.
 - 3. Suspension-System Main-Carrier Material: Hot-dipped galvanized steel. Dark color as selected by Architect.
 - 4. Acoustical Insulation: At interior perforated planks, provide 1 inch thick black colored acoustical insulation above planks to achieve a system NRC of .75-.85
- E. Exterior Locations: Unperforated
 - 1. Provide an exterior linear metal ceiling system that is identical to systems that have been successfully tested and approved by a qualified testing and inspecting agency to resist wind uplift pressures calculated according to ASCE-7, according to geographical location, and 120 mph 3 second gust windspeed zone with an Importance Factor of 1.15 based on IBC requirements.
 - 2. Finish exterior planks on both sides

2.4 LINEAR METAL PLANKS

- A. Sheet Metal Characteristics: For metal components exposed to view in the completed Work, provide materials with smooth, flat surfaces without blemishes. Do not use materials with exposed pitting, seam marks, roller marks, roughness, stains, or discolorations.
 - 1. Aluminum Sheet: Electrogalvanized steel – thickness 0.024 to 0.028-inch.
 - 2. Noise Reduction Coefficient (NRC): ASTM C 423, minimum 0.70; Classified with UL label on product carton
 - 3. Color as selected by Architect.

- B. Plank Fabrication: Manufacturer's standard units of size, profile, and edge treatment indicated, formed from metal indicated to snap on and be securely retained on carriers without separate fasteners, and finished to comply with requirements indicated.
 - 1. Splices: Construction and finish same as planks, in length according to manufacturer; with finish to match panels.
 - 2. Moldings and Trim: Provide manufacturer's standard moldings and trim for exposed members, and as indicated or required, for edges and penetrations of ceiling, around fixtures, at changes in ceiling height, and for other conditions; of same metal and finish as linear metal ceiling pans.

2.5 ACCESSORIES

- A. Plank End Caps: Fabricate to fit and conceal exposed ends of planks.
- B. Access Panels: If access must be provided at metal ceiling, provide manufacturer's access door kit, including door hinge assembly, retainer clip, and retainer bar, assembled with ceiling panels and carrier sections into access doors of required size, permitting upward or downward opening. Confirm location(s) of access panels with Architect prior to installation or ceiling modification.
- C. All sprinkler head coverings shall be as selected by architect to match ceiling (not White).
- D. All Linear Diffuser imbedded in ceiling shall be color as selected by Architect.

2.6 GENERAL FINISH REQUIREMENTS

- A. Comply with NAAMM *Metal Finishes Manual for Architectural and Metal Products* for applying and designating finishes.
- B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- C. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.
- D. Coated Aluminum Finish: Manufacturer's powder coat finish complying with coating manufacturer's written instructions for surface preparation, pretreatment, application, baking, and minimum dry film thickness. Colors as scheduled in SECTION 09 99 00 - COLOR SCHEDULE.
- E. Finish exterior planks on both sides.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, including structural framing and substrates to which linear metal ceilings attach or abut, with Installer present, for compliance with requirements specified in this and other Sections that affect ceiling installation and anchorage and with requirements for installation tolerances and other conditions affecting performance of linear metal ceilings.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Measure each ceiling area and establish layout of acoustical units to balance border widths at opposite edges of each ceiling. Avoid use of less than half width units at borders, and comply with reflected ceiling plans. Coordinate panel layout with mechanical and electrical fixtures.
- B. Coordination:
 - 1. Furnish layouts for preset inserts, clips, and other ceiling anchors specified in other Sections.
 - 2. Furnish devices to other trades for installation well in advance of time needed for coordination.

3.3 INSTALLATION

- A. Follow manufacturer's written installation instructions
- B. Install suspension and ceiling system according to manufacturer's instructions and ASTM C 636, and with the authorities having jurisdiction.
- C. Install wall moldings at intersection of suspended ceiling and vertical surfaces. Miter corners where wall moldings intersect or install corner caps.
- D. Reveal Edge Panels: Cut and reveal or rabbet edges at border areas and vertical surfaces.
- E. Install acoustical panels in coordination with suspension system, with edges resting on flanges of main runner and cross tees. Cut and fit panels neatly against abutting surfaces. Support edges by wall moldings.
- F. Exterior Locations:
 - 1. Do not install linear metal ceilings until wall finishes in the installation area have been installed and final cleaning has occurred.
 - 2. Do not install at exterior locations until all prefinished metal fascia, coping and gutters have been installed, but before downspouts penetrating the linear metal ceiling system are attached.

3.4 CLEANING

- A. Clean exposed surfaces of linear metal ceilings, including trim and edge moldings after removing strippable, temporary protective covering if any.
- B. Comply with manufacturer's written instructions for stripping of temporary protective covering, cleaning, and touchup of minor finish damage.
- C. Remove and replace ceiling components that cannot be successfully cleaned and repaired to permanently eliminate evidence of damage, including dented and otherwise damaged units.

END OF SECTION

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SECTION 09 54 26

LINEAR WOOD CEILING GRILLES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Concealed suspension system for Linear Wood Ceiling Panels.
 - 2. Wood grille ceiling panels for concealed suspension system.
 - 3. Trim and accessories.
 - 4. Restraints for suspended ceiling system.

- B. Related Work in Other Sections:
 - 1. Division 1 - "General Conditions" for substitution requests, submittals, etc.
 - 2. Section 09 51 00 - Acoustical Ceilings.
 - 3. Division 15 - "Mechanical" for work to be coordinated with ceiling.
 - 4. Division 16 - "Electrical" for light fixture coordination.

1.2 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Manufacturers other than those listed in Paragraph 2.1 are required to submit for approval prior to bidding per Section One.

- B. Installer Qualifications: Engage an experienced Installer, approved by wood ceiling manufacturer, who has completed panel ceilings similar in species, design, and extent to that indicated for this Project and with a record of successful in-service performance.

- C. Inspection: All work must pass inspection and approval of architect, as well as the local codes and regulations or authorities having jurisdiction.

- D. Single-Source Responsibility for Wood Ceiling System: Obtain each type of Linear Wood Ceiling Panels from a single fabricator, with in-house Shop Drawing capabilities, in-house assembly and finishing capabilities, and with resources to provide products of consistent quality in appearance and physical properties without delaying the project.

- E. Single-Source Responsibility for Suspension System: Obtain each type of suspension system from a single source with resources to provide products of consistent quality in appearance and physical properties without delaying project.

- F. Pre-Installation Conference: Conduct conference at Project site to comply with requirements of Division 1 Section "Project Meetings."

1.3 SUBMITTALS

- A. General: Submit each item in this Section according to the Conditions of the Contract and Division 1 Specification Sections.

- B. Product Data: For each type of product specified.

- C. Samples: For verification of each type of exposed finish required, prepared on samples of size indicated below. Where finishes involve normal color and texture variations, include sample sets showing the range of variations expected.
 - 1. 12" x 18" samples of each panel type, pattern, and color.

1.4 SHOP DRAWINGS & COORDINATION WITH OTHER TRADES

- A. Shop Drawings: Provide Shop Drawings/Coordination Drawings for all ceilings, which should include RCP and product details. Coordinate Linear Wood ceiling panels layout and installation of wood panels and suspension system components with other construction elements that penetrates ceilings or is supported by them, including light fixtures, HVAC equipment, fire-suppression system components, partition assemblies and all perimeter conditions.

1.5 PROJECT CONDITIONS

- A. Space Enclosure and Environmental Limitations: Do not install wood panel ceilings until spaces are enclosed and weatherproof, wet-work in spaces is completed and dry, work above ceilings is complete, and ambient temperature and humidity conditions are being maintained at the levels indicated for Project when occupied for its intended use.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Delivery & Unloading: Coordinate crate sizes, weights, unloading options, and delivery schedule with manufacturer prior to fabrication. Deliver wood panels and suspension system components to Project site in original, unopened packages and store them in a fully enclosed space where they will be protected against damage from moisture, direct sunlight, surface contamination, and other mistreatment.
- B. Acclimatization: Before installing wood panels, permit them to reach room temperature and a stabilized moisture content (at least 72 hours) per AWI standards.
- C. Handling: Handle Linear Wood Ceiling Panels carefully to avoid chipping edges or damaging units in any way.
- D. Protection:
1. Personnel: Follow good safety and industrial hygiene practices during handling and installing of all products and systems, with personnel to take necessary precautions and wear appropriate protective equipment as needed. Read related literature for important information on products before installation. Contractor to be solely responsible for all personal safety issues during and subsequent to installation; architect, specifier, owner, and manufacturer will rely on contractor's performance in such regard.
 2. Existing completed work: Protect completed work above suspension system from damage during installation of suspension system components.

1.7 EXTRA MATERIALS/WARRANTIES

- A. Extra Materials: Furnish extra materials described below that match products installed, are packaged with protective covering for storage, and are identified with labels clearly describing contents.
1. Linear Wood Ceiling Panels: Furnish quantity of full-size units equal to 2.0 percent of amount installed.
 2. Suspension System Components: Furnish quantity of each component equal to 2.0 percent of amount installed.
- B. Warranties: Provide owner with a (1) year warranty for material and workmanship on all installed products.
1. Manufacturers: All materials, wood ceiling and grid, shall be warranted for (1) one year for material and workmanship.
 2. Installer: All work shall be warranted for (1) year from final acceptance of completed work.

PART 2 - PRODUCTS

2.1 LINEAR WOOD CEILING PANELS AND SUSPENSION SYSTEM

- A. General: The following manufacturer is basis of design:
1. 9Wood, Inc. (www.9wood.com): 1100 Cross Piece Grille.
- B. Or equal, as prior approved by architect.

2.2 LINEAR WOOD CEILING PANELS

- A. (24D) Basis of Design: 9Wood, Inc. Linear Series 1000
1. Wood Panels: 1100 Cross Piece Grille, SKU 1126-3
 - a. Species: Western Hemlock
 - b. Member Size: 1-3/8" (width) x 5-1/4" (depth)
 - c. Edge Profile: Square
 - d. Reveal: 1" reveal between panels
 - e. Members/LF: 3 Members/LF
 - f. Assembly Style: T-Bar Reveal Clip
 - g. Fire Rating: Class 1(A) Fire Rating
 - h. Finish: Oak Stain
 - i. Reveal Scrim: Black reveal scrim to cover entire back. Nothing showing between.

LINEAR WOOD CEILING GRILLES

2.3 METAL SUSPENSION SYSTEMS, GENERAL

- A. Metal T-Grid Suspension System: Provide standard interior Metal Heavy Duty 15/16" suspension T-Grid system using Main Runners, Cross-tees, and Wall Angle, with structural classifications, and black finishes and that comply with applicable ASTM C 635 requirements. Comply with all applicable seismic codes and ordinances. Provide 3 grille members per linear foot (1126-3)
 - 1. Perimeter Conditions:
 - a. Floating Open Reveal
 - b. Continuous Wall Angle. Metal in color as selected by Architect.
- B. Attachment Devices: Size for 3 times the design load indicated in ASTM C 635, Table 1, Direct Hung unless otherwise indicated.
- C. Wire, Braces, Ties, Hanger Rods, Flat Hangers and Angle Hangers: Provide wires, rods and hangers that comply with applicable ASTM specifications.

2.4 ACCESSORIES WITHIN CEILING

- A. All sprinkler head coverings shall be as selected by architect to match ceiling (not White).
- B. All Linear Diffuser imbedded in ceiling shall be color as selected by Architect.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. General: Examine substrates and structural framing to which ceilings attach or abut, with installer present, for compliance with requirements specified in this and other sections that affect ceiling installation and anchorage. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Coordination: Furnish layouts for cast-in-place anchors, clips, and other ceiling anchors whose installation is specified in other Sections.
- B. Layout: Measure each ceiling area and establish the layout of Linear Wood Ceiling Panels to balance border widths at opposite edges of each ceiling. Avoid using less-than-half-width panels at borders, and conform to the layout shown on reflected ceiling plans in accordance with wood ceiling manufacturer's approved Shop Drawings.

3.3 INSTALLATION

- A. General: Install to comply with manufacturer's instructions and CISCA "Ceiling Systems Handbook."
- B. Attachments: Suspend ceiling hangers from building's structural members per manufacturer's instructions and in compliance with all local codes and regulations.
- C. Installation of Metal T-Bar Grid: Install, align, brace, tie-off, mount, handle interferences, and space suspension T-Grid in accordance with suspension manufacturer's instructions and in compliance with all local codes and regulations.
- D. Installation of Wood Grille: Install wood grille ceiling panels in accordance with manufacturer's installation instructions and in compliance with all local codes and regulations. Install with undamaged edges and fitted accurately to suspension system runners and edge moldings. Scribe and cut panels at borders and penetrations to provide a neat, precise fit, as required.
- E. Suspension Runners: Install suspension system runners so they are square and securely interlocked with one another. Install number and use on-center spacing per wood ceiling manufacturer's instructions, as indicated on approved Shop Drawings and in compliance with all local codes.

3.4 CLEANING

- A. General: Clean exposed wood surfaces. Comply with manufacturer's instructions for cleaning and touchup of minor finish damage. Remove and replace wood ceiling components that cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.

END OF SECTION

SECTION 09 54 28

LINEAR LAMINATE / METAL CEILING SYSTEM

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
1. Perforated linear laminate / metal ceiling panels
 2. Acoustical backing.
 3. Suspension assemblies
 4. Accessories; provide other necessary items including devices for attachment overhead construction, secondary members, splines, splices, connecting clips, wall connectors, wall angles required for a complete installation.
 5. Supplemental support framing: Provide fully engineered secondary framing as required to meet code, conforming to layout shown in drawings, to support direct-hung metal ceilings suspension system.
 6. Coordinate layout and installation of items penetrating or being installed in ceiling systems with responsible trades.
- B. Related Sections / Work:
1. Sections 05 40 00 - Cold-Formed metal Framing
 2. Sections 09 21 19 - Gypsum Board Assemblies
 3. Sections 09 51 00 - Acoustical Ceilings
 4. Sections 09 91 00 - Painting
 5. Division 23 - Heating, Ventilating and Air Conditioning
 6. Division 26 - Electrical

1.2 SUBMITTALS

- A. Product Data: Manufacturers product data for each type of product specified in this section.
- B. Product Certification: Manufacturer's certifications that products comply with specified requirements and governing codes including product data, laboratory test reports and research reports showing compliance with specified standards.
- C. Shop (Coordination) Drawings: Submit shop drawings for reflected ceiling plans (RCP's), drawn to scale, and coordinating penetrations and ceiling mounted items. Show the following details:
1. Reflected ceiling plan including joint patterns & details.
 2. Ceiling suspension system plan with appropriate components, suggested hanger locations & details.
 3. Method of attaching suspension system hangers to building structure as coordinated by installer.
 4. Ceiling-mounted items including: light fixtures, air outlets and inlets, speakers, sprinklers, and other interfaces. Coordinate all appliances to be installed in ceiling system. Product selection shall be compatible with ceiling system.
 5. Special moldings at walls, column penetrations, and other junctures of acoustical ceilings with adjoining construction.
 6. Framing and support details for work supported by ceiling suspension system.
 7. List of materials, dimensions, hanger fastenings and any special details.
 8. Minimum drawing scale: 1/8" = 1'-0".
 9. Provide full scale drawings of perforation patterns. Provide minimum 1"=1'-0" scale layout for each panel type showing perforation layout and orientation as required.
 10. Shop drawings shall originate from manufacturer. Subcontractor drawings will not be acceptable, except to show attachment to structure.
 11. Where requested by architect, provide engineered drawings with direction from consulting SE confirming design integrity to the satisfaction of specification requirement.
 12. Coordinate with other work supported by, adjacent to or penetrating through the ceiling system.
- D. Samples for Verification: Provide the following of each type of ceiling assembly indicated; in sets for each color, texture, and pattern specified, showing the full range of variations expected in these characteristics. Submit samples for each type specified.
1. 12-inch square, (acoustical) metal pan units.
 2. 12-inch long samples of each exposed molding or trim.
 3. 12-inch long samples of each suspension component.
 4. 12-inch long samples of sound-absorptive fabric layer.

- E. Qualification Data: For firms and persons specified in "Quality Assurance". Provide documents to demonstrate their capabilities and experience. Include lists of at least 5 completed projects with project names and addresses, names and addresses of Architects and employers, and other information specified.

1.3 QUALITY ASSURANCE

- A. Unless accepted otherwise by the Architect, use manufacturer and installers that employ a Quality Management System complying with the program described in ISO 9001-2008, or similar system.
- B. Installer
 - 1. To certify a minimum 5 years' experience installing similar systems and scope to those specified or approved in written form by "Basis of Design" manufacturer.
 - 2. Provide list of at least 5 successful installations with similar products and scope. Include names and contact numbers of Architect and employer for reference.
- C. Manufacturer
 - 1. To certify a minimum of 5 years' experience as a manufacturing enterprise engaged in sales and production of similar products to those specified.
 - 2. Provide support documentation including name and date of similar projects completed. Include names and contact numbers of Architect and employers for reference.
 - 3. Manufacturer shall be single source, original equipment, engineering and design, and shall be the fabricator and supplier of appropriate major components. Broker / Package of components will not be acceptable.
- D. Fire-Test-Response Characteristics: Provide metal ceilings that comply with the following requirements:
 - 1. The panels are made from a non-combustible aluminum core and tested in accordance with ASTM E84. Class A (0-25 flame spread) Surface-burning characteristics of acoustical metal pan ceilings per IBC Chapter 8 Section 803.
- E. Mock-Ups: Before releasing linear metal ceilings, if requested, construct mock-ups for each form of construction and finish required to verify selections made under sample submittals and to demonstrate aesthetic effects and qualities of materials and execution. Build mock-up to comply with the following minimum requirements, using materials indicated for completed work.
 - 1. Locate mock-ups in the location and of the size indicated or, if not indicated, as directed by the Architect. Minimum mock-up size to be 10'x 10' unless otherwise specified.
 - 2. Notify Architect seven days in advance of the dates and times when mock-ups will be constructed.
 - 3. Demonstrate the proposed range of aesthetic effects and workmanship.
 - 4. Site Coordination Mock-up:
 - a. For approval of assembly, sequence of installation, coordination of trades involved, including ceiling panel types and shapes.
 - b. Sized large enough to include a minimum of 2 adjacent panels Demonstrating interface work of fire protection sprinklers, lighting, mechanical diffusers, anchoring method at steel structure; adjacent vertical wall; skylight and fascia, trim and accessories.
 - 5. Obtain Architect's approval of mock-ups before starting construction of acoustical laminate / metal pan ceilings. Submit detailed shop drawing illustrating extent and scope of mock-ups. Do not proceed without approval of these drawings.
 - 6. Maintain mock-ups during construction in an undisturbed condition as a standard for judging the completed work.
 - a. When directed, demolish and remove mock-ups from project site
 - b. Approved mock-ups in an undisturbed condition at the time of initial Acceptance may become part of the completed work, subject to Architect / Employer approval.
- F. Pre-installation Conference: Conduct conference at Project site as directed by the project Architect.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Deliver acoustical metal ceiling units and suspension system components in original, unopened packages clearly labeled with the following information: name of manufacturing source and location; product type, description and quantity; clients name and shipping address.
- B. Store components in a fully enclosed space where they will be protected against physical damage from direct moisture, significant change in humidity, direct sunlight, significant change in temperature, surface contamination, and any other preventable cause.

- C. Exercise care in handling components to prevent damage to the surfaces and edges and prevent distortion or other physical damage. Comply with prescribed stacking instructions to prevent damage to the components. Panel's protective layer to be removed only after installation is complete to help prevent panel surface damage.

1.5 PROJECT CONDITIONS

- A. Environmental Limitations
 - 1. Do not install acoustical metal pan ceilings until after spaces are enclosed and weather tight and after wet work and work above ceilings is complete and accepted by project Architect.
 - 2. Maintain environmental conditions within limits recommended by manufacturer for optimum results.
 - a. Maintain within a temperature range of 50-100 degrees.
 - b. Maintain within a 20%-60% relative humidity.
- B. Do not install products in exterior space unless the system has been specifically designed and approved for exterior application.
- C. If the project is located within range of moisture associated with large bodies of water (fresh or salt), necessary materials shall be finished with coatings appropriate to condition of use.

1.6 WARRANTY

- A. Provide specified manufacturer warranty against defects in workmanship.
- B. This warranty shall remain in effect for a minimum period of one (1) year from date of installation.

1.7 MAINTENANCE & EXTRA MATERIALS

- A. Maintenance Instructions: Provide manufacturers standard maintenance and cleaning instructions for finishes provided.
- B. Extra Materials: Furnish extra materials described below that match products installed, are packaged with protective covering for storage, and are identified with labels describing contents. Only typical system components are included with attic stock.
 - 1. Metal Ceiling Pan Units: Full-size units equal to 1 percent (1%) of amount installed.
 - 2. Ceiling Suspension System Components: Quantity of each grid and exposed component equal to 1 percent (1%) of amount installed.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Basis of design Ceilings Plus - 6711 E. Washington Blvd., Los Angeles, CA 90040. 800-822-3411 – www.ceilingplus.com or approved equivalent.
- B. Supply specified item or comply with SECTION 01 62 00 - PRODUCT OPTIONS. Specified manufacturer's standard of quality and manufacturing tolerances shall be the criteria for evaluating equivalent products. Substitution shall be equal to or of better quality than the specified product in the opinion of the Architect.

2.2 MATERIALS

- A. Ceiling Type MCG - Ceilings Plus "Barz" – Perforated; Sarante finish as scheduled in SECTION 09 99 00 - COLOR SCHEDULE.
 - 1. All panels are to be manufactured from single sheets of aluminum selected for surface flatness, smoothness and freedom from surface blemishes where exposed to view in a finished unit. Do not use material where the exposed surface exhibit pitting, seam marks, roller marks, stains, discolorations, or variations in flatness exceeding those permitted by referenced standards for stretcher-leveled aluminum alloy sheets.
 - 2. The individual linear members are to be die formed from a single sheet of aluminum, to dimensions as noted on drawings, with integral top return and end flanges. Each individual linear aluminum members shall be straight and square within 1/32" over 10'. Twisting or bowing of linear members is not acceptable. Objectionable deflection will not be tolerated. No indentations, marks or defacing of the exposed surface of the metal ceiling panel will be allowed. Roll forming shall not be allowed.

3. Panel material shall be primed aluminum sheet type 3105 series alloy that has up to 90% recycled content. It shall be machine stretcher-leveled and a minimum of .040" thickness, or greater if required, so that the panel deflection does not exceed L/360.
4. Individual linear members shall be factory attached to torsion spring backer supports (cassette assemblies). Each panel (cassette) assembly shall have minimum two backer supports (three backer supports for lengths greater than 60"), creating a modular panel assembly with minimum 1/4" reveals between panel ends.
5. No fasteners of any kind shall be visible on exposed face surfaces of ceilings or support tees. Down-light openings, sprinkler holes and miscellaneous penetrations shall be carefully field cut as required.
6. The Barz finish shall be:
 - a. "Saraté" PVC free, laminate that is permanently bonded to the aluminum sheet with formaldehyde free, water based adhesive of minimum bond strength of 425 psi @ 25 degrees C.
7. Linear member size and spacing shall be per architectural drawings.
8. Panel sizes are 3" wide x 5" tall x 72" or 96" long per Architect.
9. End Profile: Linear Barz end joints are reveal condition unless specified otherwise integral enclosures. Linear members shall have integral ends in single piece.
10. Barz to be perforated unless otherwise noted.
11. Sound-Absorptive Fabric Layer: Provide manufacturer's acoustic fabric sized to fit and laminated to concealed surface of panel. Material shall be both non-flammable and sound-absorptive.
 - a. Fire Class shall be Class A, with surface-burning characteristics for flame-spread rating of 25 or less and smoke developed rating of 50 or less. Provide independent accredited lab test results showing compliance with Class A rating as per ASTM E84.
 - b. Achieve absorption value up to .95 NRC. Provide independent accredited laboratory test results illustrating compliance with acoustical requirements as per ASTM C423.
 - c. Provide recycled cotton, "Ultrasorb" in sufficient thickness to achieve up to 0.95 NRC rating specified.
 - d. Install acoustical pads to fit the cavity of the linear members, unless otherwise directed by the Architect.
12. The plenum shall be 100% accessible. Every cassette must be removable. Progressive panel access is not acceptable. Heavy duty torsion springs and steel clip assemblies to be mounted to every cassette for downward access, without potential for damage to cassette face or hinge assembly. Hinge assembly shall be mounted to every cassette with minimum two flush to face, counter sunk chamfered fasteners. Attaching torsion spring directly to cassette with fastener will not be acceptable.
13. All Barz with visual exposure where row terminates shall have integral end returns.
14. Provide and install matching finish trim on each side of each suspended area.

2.3 METAL SUSPENSION SYSTEMS. GENERAL

- A. Metal Suspension Standard: Provide panel manufacturer's metal suspension systems of types, structural classifications, materials, and finishes indicated that comply with applicable ASTM C635 requirements.
 1. Main and cross runners to be specified manufactures Standard "Heavy Duty" tee bar (as per ASTM C635).
 2. Face of main and cross runners to be factory finished matte black.
 3. Face of main runners to be factory slotted to receive torsion springs.
 4. Provide suspension system made from steel sheet
- B. Suspension Systems: Provide complete suspensions systems with main runners, cross runners, hangers, trim molding, seismic retention clips, load resisting struts and other suspension components required to support ceiling and other ceiling supported construction. Some of these parts may be supplied by the installer to achieve a complete system.
- C. Attachment Devices: Size for five times design load indicated in ASTM C 635, Table 1, "Direct-Hung", unless otherwise indicated.
 1. Provide anchor, for use in the particular application, as approved by the "Structural Engineer of record".
 2. Structural substrate, as indicated to support attachment device, also to be approved by the "Structural Engineer of record".
 3. Anchors specified must provide corrosion resistance as per metal type and application.
 - a. Anchors into Concrete (with or without steel deck)
 - 1) Pre-installed – Cast in Place Anchors
 - 2) Post-installed - Expansion Anchors
 - 3) Post-installed – Chemical Anchors
 - 4) Post-installed – Powder Actuated Fasteners
 - b. Anchors into Wood
 - 1) 1/4" min diameter with 1-1/4" minimum penetration
 - c. Anchors into Steel
 - 1) Clip or Clamp

- 2) Shot Pin
- d. Anchors into Steel Deck: "Structural Engineer of record" and the Professional Engineer retained to provide structural documents in order to coordinate detailing shall be required to provide anchoring device.
- 4. "Direct-Hung" Suspensions Systems: System composed of main runners supported by hangers attached directly to building structure.
- 5. "Indirect-Hung" Suspension Systems: System composed of main runners connected to carrying channels that are attached by hangers to building structure, and complying with the following requirements:
 - a. Hangers: Type and metal standard with ceiling system manufacturer, sized to comply with structural classification indicated.
 - b. Wire Hangers, where applicable, Braces, and Ties: Provide wires complying with the following requirements:
 - 1) Zinc-Coated Carbon-Steel Wire: ASTM A 641 (ASTM A 641M), Class 1 zinc coating, soft temper.
 - 2) Size: Select wire diameter so its stress at three times hanger design load (ASTM C635, Table 1, Direct Hung) will be less than yield stress of wire, but provide not less than 2mm diameter wire.
 - 3) Extruded Aluminum members shall comply with ASTM B209
 - c. Hanger Rods: Mild steel, zinc coated or protected with rust-inhibitive paint.
 - d. Flat Hangers: Mild steel, zinc coated or protected with rust-inhibitive paint.
 - e. Angle Hangers: Angles with legs not less than 22mm wide, formed with 1mm thick, galvanized steel sheet complying with ASTM A 653/A 653M, G90 coating designation, with bolted connections.

2.4 FINISHES, GENERAL

- A. Comply with "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes. Provide manufacturers standard factory-applied finish for type of system indicated unless specified otherwise.
- B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipment.
- C. Appearance of finished work: Noticeable variation in same piece is not acceptable.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and structural framing to which acoustical metal panels attach or abut, with Installer present, for compliance with requirements specified in this and other Sections that affect installation and anchorage, and other conditions affecting performance of metal panel ceilings.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Coordination: Furnish layouts for cast-in-place anchors, clips, and other ceiling anchors whose installation is specified in other Sections.
- B. Measure each ceiling area and establish layout of acoustical metal pan units to balance border widths at opposite edges of each ceiling. Avoid using less-than-half-width units at borders, and comply with layout shown on reflected ceiling plans.
- C. Survey substrate for wall attachment to assure squareness and proper elevation for wall panel installation.

3.3 INSTALLATION

- A. General: Install ceilings, per manufacturers shop drawings provided, per manufacturer's written instructions and to comply with publications referenced below.
 - 1. CISCA "Ceiling Systems Handbook.
 - 2. Standard for Ceiling Suspension System Installations - ASTM C636.
 - 3. Standard for Ceiling Suspension Systems Requiring Seismic Restraint - ASTM E580
 - 4. IBC (International Building Code) standard for Seismic Zone for local area.

- B. Suspend ceiling hangers from building's approved structural substrates and as follows:
 - 1. Install hangers plumb and free from contact with insulation or other objects within ceiling plenum that are not part of supporting structure or of ceiling suspension system.
 - 2. Splay hangers only where required to miss obstructions; offset resulting horizontal forces by bracing, counter-splaying, or other equally effective means.
 - 3. Where width of ducts and other construction within ceiling plenum produce hanger spacings that interfere with location of hangers at spacing required to support standard suspension system members, install supplemental suspension members and hangers in form of trapezes or equivalent devices. Size supplemental suspension members and hangers to support ceiling loads within performance limits established by referenced standards and publications.
 - 4. Where used secure wire hangers to ceiling suspension members and to supports above with a minimum of three tight turns. Connect hangers directly either to structures or to inserts, eye screws, or other devices that are secure; that are appropriate for substrate; and that will not deteriorate or otherwise fail due to age, corrosion, or elevated temperatures.
 - 5. Space hangers not more than 48 inches on center, along each member supported directly from hangers, unless otherwise indicated; and provide hangers not more than 8 inches from ends of each member. Supply supporting calculations from licensed Structural Engineer verifying hanger spacing meets all requirements, when spacing exceed those recommended.
 - 6. Fine level grid to 1/8 inch in 10 feet from specified elevation(s), square and true.
 - 7. Adjust suspension system runners so they are square (within .5 degree from 90 degrees) and securely interlocked with one another. Remove and replace dented, bent, or kinked members.
- C. Secure bracing wires to ceiling suspension members and to supports acceptable to Architect / Engineer and or inspector. Suspend bracing from building's structural members and / or structural deck, as required for hangers, without attaching to permanent metal forms, steel deck, or steel deck tabs, unless directed otherwise.
- D. Install edge moldings and trim of type indicated at perimeter of acoustical ceiling area and where necessary to conceal edges of acoustical metal pan. Method of edge trim attachment and design of edge trims to be approved by Architect.
 - 1. Screw attach moldings to substrate at intervals not more than 18" O.C. and not more than 6" from ends, leveling with ceiling suspension system to a tolerance of 1/8" in 10'. Miter corners accurately and connect securely.
 - 2. Do not use exposed fasteners, including pop rivets, on moldings and trim without prior written approval or unless detailed otherwise.
- E. Scribe and cut metal panel units for accurate fit at penetrations by, other work through ceilings. Stiffen edges of cut units as required to eliminate evidence of buckling or variations in flatness exceeding referenced standards for stretcher-leveled metal sheet.
- F. Install metal panel units in coordination with suspension system.
 - 1. Align joints in adjacent courses to form uniform, straight joints parallel to room axis in both directions, unless otherwise indicated. Install directionally patterned or textured panels in directions indicated on approved shop drawings. Panel-joints shall flow smoothly and in a straight line within 1/8" in 10'. Intersections shall be continuous.
 - 2. Fit adjoining units to form flush, tight joints. Scribe and cut units for accurate fit at borders and around construction penetrating ceiling.
 - 3. Remove panels from protective packaging only when space is completely clean and free of airborne particles. Use white cotton gloves for final installation of panels into grid system.

3.4 ADJUSTING AND CLEANING

- A. Adjust ceiling components to provide a consistent finish and appearance in conformity with established tolerances and requirements.
- B. Clean exposed surfaces of acoustical metal panel ceilings and walls. Comply with manufacturer's written instructions for cleaning and touchup of minor finish damage.
- C. Remove and replace work that cannot be successfully cleaned and repaired to permanently eliminate evidence of damage, including dented and bent units.

END OF SECTION

SECTION 09 65 13

RESILIENT BASE

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Rubber base and accessories.

1.2 SUBMITTALS

- A. Samples: Submit in accordance with SECTION 01 33 00 – SUBMITTAL PROCEDURES. Submit manufacturer's standard color samples of each accessory, full height or width by not less than 2" length.

1.3 DELIVERY

- A. Deliver materials to the project site in unbroken containers and cartons bearing the manufacturer's labels.
B. Deliver resilient materials to an acclimatized building at least 48 hours for installation of rubber products.

1.4 PROJECT CONDITIONS

- A. Environmental Requirements: Maintain the temperature inside the building reasonably constant at not less than 65°F. for 48 hours before installation, during installation, and for 48 hours after installation.
B. After installation, maintain temperatures within range recommended by manufacturer, but not less than 55°F. or more than 95°F.

1.5 WARRANTY

- A. Rubber Base Warranty: Provide Standard 2-year manufacturers' warranty that materials is free from manufacturing defects.

1.6 MAINTENANCE

- A. Extra Materials: Upon completion of work, deliver to the project site not less than one box for each 50 boxes or fraction thereof, for each type, color, pattern, and size installed. Furnish maintenance materials from same manufactured lot as materials installed and enclose in protective packaging with appropriate identifying labels.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Rubber Base (14B-1): ASTM F 1861, Type TS (rubber, vulcanized thermoset), Style Cove (with top-set toe), 1/8" thick, 4" high, color(s) as selected by Architect. Furnish base in manufacturer's continuous rolls. Outside corners shall be factory formed pre-molded units matching base in color and finish. Product/manufacturer; one of the following:
Wallflowers® Premium Wall Base; Flexco
Baseworks™ Thermoset Rubber Wall Base; Johnsonite
Pinnacle Type TS Rubber Base; Roppe Rubber Corp.
NO SUBSTITUTIONS
- B. Thick Rubber Base (14B-2): ASTM 1861, Type TP (thermoplastic rubber), 3/8", 4-1/2" high.
1. Basis of Design: Provide "Contours Profile PV4060 Candid" as manufactured by Roppe.
2. Color(s) as scheduled in SECTION 09 99 00 - COLOR SCHEDULE.
- C. Adhesive: Moisture-resistant type recommended by flooring manufacturer.
- D. Cleaner: Neutral, chemical cleaner designed to be safe to use on any surface not damaged by water.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas to receive base and accessories for conditions that will adversely affect the execution and quality of work. Do not start this work until unsatisfactory conditions are corrected.

3.2 INSTALLATION

- A. Applying Rubber Base:
 - 1. Install coved base after the floor tile, mat, and carpet have been laid. Do not use less than manufacturer's continuous rolls, except where required for last piece in any one run of wall length.
 - 2. Apply base with adhesive covering 100% of the back surface, not just in spots. Apply adhesive with a notched trowel. Use headless brads in addition to adhesive where required. Use preformed outside corners and miter inside corners. Joints shall be tight.
 - 3. Fit joints tight and vertical. Maintain minimum measurement of 18 inches between joints.

3.3 PROTECTION

- A. Repair or replace damaged surfaces that are soiled or scarred in a manner acceptable to the Owner.

3.4 CLEANING

- A. Clean in accordance with Section 01 77 00 – CLOSEOUT PROCEDURES.
 - 1. Remove excess adhesive and other foreign matter from base.
 - 2. Scrub base with cleaner in conformance with manufacturer's instructions and rinse.
 - 3. Replace defective or loose material.

END OF SECTION

SECTION 09 66 23.16

EPOXY-RESIN TERRAZZO FLOORING

PART 1 - GENERAL

SUMMARY

- A. Section Includes: Synthetic terrazzo flooring.
- B. Related Sections:
 - 1. Section 03 30 00 - Cast-in-Place Concrete.
 - 2. Section 07 92 00 - Joint Sealants.
 - 3. Section 09 66 23.17 - Precast Epoxy Resin Terrazzo Stair Treads.

SUBMITTALS

- C. Samples
 - 1. Submit samples consisting of one 12" x 12" samples of specified mixture with colors as selected by Architect, with saw cut to permit breaking into 6" x 12" pieces. If required by Architect, provide additional samples with slight variation in color and/or proportion of granite chip mixture.
 - 2. One piece of approved sample will be retained by Architect for comparison with finished work.
 - 3. Submit sample of divider strip showing finish.
- D. Shop Drawings: Submittal to include terrazzo installation requirements. Include plans, sections, component details, and relationship to other work. Show layout of the following:
 - 1. Divider strips.
 - 2. Control-joint strips.
 - 3. Accessory strips.
 - 4. Abrasive strips.
 - 5. Stair treads, risers, and landings.
 - 6. Precast terrazzo jointing and edge configurations.
 - 7. Terrazzo patterns.
- E. Product Data:
 - 1. Submit product literature for divider and control joint strips and expansion joints.
 - 2. Submittal shall include manufacturer's maintenance recommendations. Include recommendations for proper neutral cleaner and sealers for use on epoxy terrazzo flooring.
- F. Concrete Slab Testing
 - 1. Alkalinity and Adhesion Testing:
 - a. Submit result of pH tests.
 - b. Submit written documentation of acceptable pH levels of selected flooring manufacturer.
 - c. Submit letter from flooring manufacturer stating that floor alkalinity is acceptable and manufacturer will issue warranty.
 - d. Proceed with installation only after substrates pass testing.
 - 2. Relative Humidity Probe Tests:
 - a. Submit results for in situ relative humidity probe tests.
 - b. Submit date and time measurements were made.
 - c. Submit locations and depth of probe holes.
 - d. Submit temperature and relative humidity in each probe hole.
 - e. Submit ambient air temperature.
 - f. Acceptable relative humidity is typically 75% or less. Submit written documentation of tolerances for selected flooring manufacturer. Proceed with installation only after substrates have relative humidity percentage stated as acceptable by manufacturer.
 - g. Submit letter from flooring manufacturer stating that relative humidity is acceptable and manufacturer will issue warranty.
 - 3. Anhydrous Calcium Chloride Testing
 - a. Submit time and date of placement and retrieval.
 - b. Submit ambient air temperature and humidity during test duration
 - c. Submit manufacturer's instructions and relative technical data.
 - d. Acceptable moisture emission rates are typically 3 lbs. per 1000 sq. ft. or less, in 24 hours. Submit written documentation of tolerances for selected flooring manufacturer. Proceed with installation only after substrates have maximum moisture-vapor-emission rate as stated by manufacturer.

- e. Submit letter from flooring manufacturer stating that floor moisture emission rates are acceptable and manufacturer will issue warranty.

QUALITY ASSURANCE

- G. Acceptable Supplier: Materials furnished shall meet The National Terrazzo and Mosaic Association (NTMA) Guide Specifications.
- H. Installer Qualifications: The applicator performing this work shall be licensed/certified by the manufacturer of the flooring system, and both shall share jointly the responsibility for the flooring performance as specified. Submit written declaration of joint responsibility and proof of previous satisfactory performance by the applicator using this flooring system.

PROJECT CONDITIONS

- I. Environmental Requirements: Building areas where flooring are to be installed shall be heated to maintain surface and ambient temperatures at not less than 50°F during application and until the flooring has cured. Proper ventilation shall be maintained during application and curing.
- J. Protection: Protect adjacent surfaces from damage resulting from this work. If necessary, mask or cover adjacent surfaces, fixtures, equipment and the like by suitable means.

PART 2 - PRODUCTS

MANUFACTURERS

- A. Epoxy Terrazzo (16A): Product/manufacturer; one of the following:
 - Terrazzo 1100; General Polymers Corp.
 - Terra-Res; National Terrazzo Tile and Marble, Inc.
 - MasterPiece ETS; Polymerica Inc.
 - Quadset Epoxy Terrazzo; Quadrant Chemical Corp.
 - Tectura Designs, ph. 800-388-8728, Website: www.tecturadesigns.com
 - Terroxy Resin Systems Epoxy Matrix; Terrazzo & Marble Supply Co.

MATERIALS

- B. Full Coverage Flexible Membrane: Provide Terroxy® Iso-Crack or approved equal.
- C. Matrix: Two-part 100% solids thermosetting epoxy resin. Reference SECITON 09 99 00 - COLOR SCHEDULE.
- D. Aggregate: Hard, washed domestic granite having a minimum of flats and flakes. All chips size 0 as per NTMA grading standards. Reference SECTION 09 99 00 - COLOR SCHEDULE.
- E. Primer: Synthetic resin compound recommended by the manufacturer of the flooring system for the existing substrates.
- F. Thin-Set Terrazzo Finishing Grout: Thin-set terrazzo resin manufacturer's resin-based finishing grout.
- G. Colors shall be as scheduled in SECTION 09 99 00 - COLOR SCHEDULE. Provide custom design as indicated on the drawings.
- H. Strips: Stop and divider strips of white-zinc alloy.
- I. Colorants: Non-fading colorants. Reference SECTION 09 99 00 - COLOR SCHEDULE.
- J. Cleaner: Chemically neutral cleaner with pH factor between 7 and 12 that is biodegradable, phosphate free, and recommended by cleaner manufacturer for use on epoxy terrazzo.

- K. Epoxy Terrazzo Sealer: Slip-resistant (min. 0.5) and stain-resistant water based surface sealer that is chemically neutral with pH factor between 7 and 12, does not affect color or physical properties of terrazzo type indicated, is recommended by sealer manufacturer for this use, and complies with NTMA Guide Specification for epoxy terrazzo.

PHYSICAL PROPERTIES

- L. Furnish Architect with a pre-qualification report from an approved Testing Laboratory using the test methods and achieving results on cured test samples equal to or better than those listed hereinafter:

PROPERTY	TEST METHOD	RESULTS
Compressive Strength	ASTM D 695	10,000 psi min.
Tensile Strength	ASTM D 638	3,000 psi
Tensile Elongation	ASTM D 638	5% min.
Impact Strength	Fall ball, 2 lbs. 12" x 12" x 1/4"	16 ft. lbs. without chipping, cracking or indentation
Bond Strength	ASTM D 790	300 psi - 100% concrete failure
Flexural Strength, Cured Binder	ASTM D 790	10,000 psi
Flammability	ASTM D 635	Self extinguishing, Extent of burning; 0.25 inches
Resistance to Elevated Temperature	MIL D 3134-F paragraph 4.7.5	No measurable flow
Thermal Coefficient of Linear Expansion	ASTM D 696	25 x 10-6 inch per inch per degree Fahrenheit Temp. range-12°F to 140°F
Linear Shrinkage	ERF-64	0.001"
Hardness	ASTM D 2240	60-85
Fading Resistance	ASTM E 188	No discoloration at 48 hrs.

PART 3 - EXECUTION

SURFACE PREPARATION

- A. Concrete Slabs:
1. Provide sound concrete surface free of laitance, glaze, efflorescence, curing compounds, form release agents, dust, dirt, grease, oil and other contaminants incompatible with terrazzo.
 - a. Prepare concrete mechanically by shot blasting. Surface preparation results should achieve a CSP3-CSP5 profile according to International Concrete Repair Institute Guideline No. 03732.
 - b. Repair or level damaged and deteriorated concrete.
 - c. Repair cracks and non-expansion joints greater than 1/16" wide.
- B. Verify that concrete substrates are visibly dry and moisture-vapor emissions are within acceptable levels according to manufacturer's written instructions.
- C. Testing of concrete slabs
1. Anhydrous Calcium Chloride Testing
 - a. Conduct anhydrous calcium chloride testing per ASTM F1869, modified to include testing over concrete containing lightweight aggregate.

- b. Environmental requirements of area to be tested are to match that of the finished floor covering. Doors, windows, roofing, etc. must be installed and the temperature of the building controlled to a finished building atmosphere. Ensure interior building climate is 75 degrees F \pm 10 degrees F and 50% Relative Humidity \pm 10% for 72 hours prior to, and throughout the duration of the tests.
 - c. The number of test kits required is determined by the square footage of areas scheduled to receive finish flooring. A minimum of three test kits are required in the first 1,000 sq. ft. a minimum of one test kit per each additional 1,000 sq. ft. with consideration given to separation of test areas. Time of exposure is a minimum of 60 hours and a maximum of 72 hours.
 - d. A prepackaged calcium chloride test kit is equipped with a sealed dish of anhydrous calcium chloride, a metering dome with gasket and instructions.
 - 1) Clean substrate in area to be tested by removing dust solvent, paint, wax, oil, grease, residual adhesive, adhesive removers, curing, sealing, hardening, or parting compounds, alkaline salts, excessive carbonation, or laitance, mold mildew and other foreign materials.
 - 2) Weigh the tape sealed dish on a gram scale with 1/10th gram gradation. Record start weight, date and time on dish's label and instruction document.
 - 3) Unseal dish and expose test according to preprinted test kit instructions.
 - 4) Allow 60 to 72 hours of exposure. Retrieve test dish re-seal and re-weigh according to instructions.
 - 5) Provide a diagram of the building, with calculations, documenting each test location with its results in writing.
 - e. Acceptable moisture emission rates are typically 3 lbs. per 1000 sq. ft. or less, in 24 hours; however, submit written tolerances for selected flooring manufacturer. Proceed with installation only after substrates have maximum moisture-vapor-emission rate as stated by manufacturer.
 - f. Submit letter from flooring manufacturer stating that floor moisture emission rates are acceptable and manufacturer will issue warranty.
2. In Situ Relative Humidity Probe Test:
- a. Conduct in situ relative humidity probe testing per ASTM F2170.
 - b. Concrete floor slabs shall be at the service temperature and the occupied air space above the slab shall be at the service temperature service relative humidity for at least 48 hours before taking relative humidity measurements in the concrete slab.
 - c. Perform 3 tests for the first 1,000 sq/ft. and a minimum of 1 test for every 1,000 sq/ft. thereafter.
 - d. For slabs on-grade and below-grade choose a testing location within 3 feet of each exterior wall.
 - e. Drill probe holes 40% into depth of slab for slabs drying from the top only and 20% into the slab for slabs drying from top and bottom.
 - f. Remove dust from hole using vacuum cleaner and allow 72 hours to achieve moisture equilibration within hole before taking relative humidity measurements.
 - g. After inserting probe allow necessary amount of time for probe to reach temperature equilibrium before measuring relative humidity.
 - h. Use the relative humidity probe to measure the ambient air temperature and relative humidity above the slab in the vicinity of the hole.
 - i. Proceed with installation only after substrates pass testing.
 - j. Submit letter from flooring manufacturer stating that floor relative humidity percentage is acceptable and manufacturer will issue warranty.
3. Alkalinity and Adhesion Testing
- a. Conduct pH test per ASTM F710.
 - b. Test for alkalinity prior to installation of flooring materials.
 - c. pH levels shall not exceed the written recommendation of the flooring manufacturer and the adhesive manufacturer.
 - d. A pH range of 5-9 is optimum, not to exceed 9 pH. Submit written acceptable pH levels of selected flooring manufacturer.
 - e. Proceed with installation only after substrates pass testing.
 - f. Submit letter from flooring manufacturer stating that floor alkalinity is acceptable, and manufacturer will issue warranty.

D. Priming: When surfaces are clean and completely dry, apply a thin coat of primer with roller, brush, squeegee or trowel. Do not spray.

APPLICATION

E. General: Overall thickness of synthetic terrazzo floor shall be ¼". Installation shall be by trained mechanics and performed in conformance with the printed instructions issued by the system manufacturer.

F. Divider and Control-Joint Strips:

1. Locate divider strips in locations indicated on shop drawings.

2. Install control-joint strips back to back and directly above concrete-slab control joints and in locations indicated on shop drawings.
 3. Install control-joint strips with 1/4-inch gap between strips, and install sealant in gap.
 4. Install strips in adhesive setting bed without voids below strips, or mechanically anchor strips as required to attach strips to substrate, as recommended by strip manufacturer.
- G. Laying Topping:
1. Mix the two part epoxy material in the mechanical mixer. Add granite chips and continue mixing only until all chips are wet.
 2. Spread, screed and trowel epoxy-chip compound over area to a uniform thickness that will net 1/4" after grinding.
 3. Seed trowelled surface with additional chips in same proportions as contained in terrazzo mix.
 4. Install curing material per manufacturer's recommendations.
 5. Allow topping to cure overnight without applying any type of curing agent.
- H. Grinding, Grouting and Surfacing:
1. Grind first with a 24 grit or finer carborundum stone, following with a 100 grit or finer stone. Wash surface with water, clean residue from voids and remove excess water.
 2. Hand apply an epoxy grout using an identical color as used in topping, working grout into voids. When grout begins to set, rub to consolidate into voids and remove excess.
 3. Cure grout.
 4. Fine Grinding:
 - a. Grind surface with a 120 grit carborundum stone until all grout is removed from surface.
 - b. Upon completion, terrazzo shall show a minimum of 70% of marble chips.

CLEANING AND PROTECTION

- I. Cleaning and Sealing: Clean surface with cleaner compound and rinse with water. When surface is dry, apply sealer according to manufacturer's instructions and buff.
- J. Protect the finished floor after final grinding and sealer has been applied to the terrazzo surfaces.
- K. Provide "Builder Board with Liquid Shield", tape all seams with Seam Tape. Perimeter Tape not required. If perimeter tape is used, it shall be Painters Tape."

END OF SECTION

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SECTION 09 66 23.17

PRECAST EPOXY RESIN TERRAZZO STAIR TREADS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Perform all work required to complete, as indicated by the Contract Documents and furnish all supplementary items necessary for the proper installation of Precast Terrazzo Stair Treads.
2. Setting material, grouts, sealants and caulks
3. Installation of precast epoxy terrazzo stairs.

B. Related Sections:

1. Section 05 50 00 - Metal Fabrications: Installation of steel stairs to receive precast epoxy terrazzo

1.2 SUBMITTALS

A. Shop Drawings

1. Submit shop drawings of all precast Epoxy terrazzo items showing detail sections and profile for all precast items. Details shall show all reinforcing and special hardware for fastening.

B. Samples

1. Submit maximum of 3 samples 6" x 6" size for all color.
2. Submit two copies of NTMA maintenance literature.
3. Quality Assurance and Procedure Program

C. Performance Requirements

1. Compressive Strength 4000 psi.
2. Flexural Strength 600 psi.

D. Certification

1. Suppliers shall furnish certification attesting that materials meet specification requirements.

1.3 QUALITY ASSURANCE

A. NTMA Standards: Comply with specified provisions and recommendations of the National Terrazzo & Mosaic Association, Inc. (NTMA).

B. Manufacturer's Instructions: In addition to specified requirements, comply with precast terrazzo manufacturer's instructions and recommendations for substrate preparation, materials storage, mixing and application, finishing and curing.

C. Qualifications: Precast Terrazzo Manufacturer and Trade Contractor must have a minimum of 5 years of successful experience on projects of similar magnitude and complexity to that indicated project. Manufacturer and contractor to be prequalified by Architect prior to bidding. Failure to prequalify will void bid.

D. Manufacturer to supply a written Quality Assurance Program and Procedure manual.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Packaging and Shipping: Precast terrazzo to be palletized and shrink wrapped, delivered in original unopened packaging with legible manufacturer identification, including size, piece number, quantities, manufacturer date and inspector initials.

B. Storage and Protection: Precast terrazzo to be stored indoors, in a climate controlled environment, sheltered from moisture in original packaging. Protect from damage by other trades.

C. Report all damage due to shipment immediately.

1.5 PROJECT CONDITIONS

- A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by the setting materials manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

1.6 WARRANTY

- A. Manufacturer/Installer shall warrant installed system for a period of 1 year from date of substantial completion against failure of workmanship and materials.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturers:
 - Tectura Designs, ph. 800-388-8728, Website: www.tecturadesigns.com
 - Terroxy Resin Systems Epoxy Matrix; Terrazzo & Marble Supply Co.
- B. Substitutions: Drawings and specifications are based on manufacturer's proprietary literature from Wausau Tile, Inc. Manufacturers having equivalent products shall comply with minimum levels of material specifications and detailing indicated on the drawings and specified herein.

2.2 MATERIAL REQUIREMENTS

- A. Epoxy Resin as manufactured by Tectura Designs. Color as scheduled in SECTION 09 99 00 - COLOR SCHEDULE.
- B. Aggregates: All aggregates to meet ASTM C-33 specifications, cleaned and properly graded to size. Aggregate shall be blended to meet individual project requirements. Reference SECTION 09 99 00 - COLOR SCHEDULE
- C. Marble chips, size to conform with NTMA gradation standards. Color as scheduled in SECTION 09 99 00 - COLOR SCHEDULE
- D. Abrasive Inserts: Shall consist of three lines of silica sand and black epoxy.
- E. Caulks & Sealants
 - 1. Urethane or Polyurethane Sealant
 - 2. Color to be selected by Architect from standard color pallet.
- F. Cleaner: Liquid neutral chemical cleaner, with pH factor between 7 and 8, of formulation recommended by sealer manufacture for type of precast terrazzo used and complying with NTMA requirements.
- G. Sealer: Colorless, slip and stain-resistant penetrating sealer with pH factor between 7 and 8, that does not affect color or physical properties of precast terrazzo surface. Flash point (ASTM D56): 80 degrees F, Minimum.

2.3 MANUFACTURED UNITS

- A. Sizing Tolerances
 - 1. All units to conform to shop drawings with a 1/16" tolerance in dimension.
- B. Precast Surfaces and Edges:
 - 1. All exposed edges to be ground and polished with a minimum of 1/16" bevel.
 - 2. All finished surfaces to be ground and polished, free of holes and to have overall uniformity in matrix and aggregate.
 - 3. All precast epoxy terrazzo finished surfaces to be sealed with a sealer approved by manufacturer.

PART 3 - EXECUTION

3.1 INSPECTION

- A. Examine areas to receive precast terrazzo for the following:
 - 1. Defects in existing work.
 - 2. Deviations beyond allowable tolerances for the substrate.
- B. Start work only when all defects have been corrected by others.

3.2 INSTALLATION

- A. Setting
 - 1. Setting methods will vary per product. Set accurately as shown on the approved shop drawings. Contact your setting material manufacturer with any questions on proper bonding of all materials.
- B. Setting Methods
 - 1. Weld attachment: Contact manufacturer for recommended welding guidelines as provided by the structural engineer. DO NOT run a continuous weld when attaching terrazzo to avoid over-heating and cracking of the terrazzo.
 - 2. Bolt attachment: Only use bolt-in option if weld attachment cannot be used. Do not over-tighten bolts to avoid cracking of the terrazzo.
 - 3. All thinset materials, whether cement or epoxy based, will require a full setting bed be applied to all appropriate surfaces of the precast terrazzo, vertical and horizontal, where contact is made with the substrate or structural base.
 - 4. Alignment of precast should be straight and true to all dimensions. It may not vary more than 1/8" in length, height or width.
 - 5. Install anchors as shown on details, if required.
 - 6. Fill joints between with manufacturer -approved caulk or as specified.
- C. Protection:
 - 1. Upon completion, the work shall be ready for final inspection and acceptance by owner or owner agent.
 - 2. General Contractor shall protect the finished work from the time the terrazzo contractor completes the work.
- D. Finish:
 - 1. All precast epoxy terrazzo finished surfaces to be sealed with a sealer approved by manufacturer.

END OF SECTION

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SECTION 09 67 23

RESINOUS FLOORING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Decorative epoxy-resin flooring consisting of colored quartz aggregate in an epoxy matrix.
- B. Related Sections:
 - 1. Section 09 62 05 - Moisture Vapor Emission and Alkalinity Control.

1.2 SUBMITTALS

- A. Product Data: For each type of product specified. Include manufacturer's technical data, installation instructions, and recommendations for each resinous flooring component required.
- B. Samples for Verification: Of each resinous flooring system required, 6 inches square, applied by Installer for this Project to a rigid backing, in color, texture, and finish indicated. Where finishes involve normal color and texture variations, include Sample sets showing the full range of variations expected.
- C. Installer Certificates: Signed by manufacturer certifying that installers comply with specified requirements.
- D. Material Test Reports: From a qualified independent testing agency indicating and interpreting test results of the resinous flooring's reaction to chemicals and other reagents and substantiating compliance with requirements.
- E. Material Certificates: In lieu of material test reports, when permitted by Architect, signed by manufacturers certifying that materials furnished comply with requirements.
- F. Concrete Slab Testing
 - 1. Alkalinity and Adhesion Testing:
 - a. Submit result of pH tests.
 - b. Submit written documentation of acceptable pH levels of selected flooring manufacturer.
 - c. Submit letter from flooring manufacturer stating that floor alkalinity is acceptable, and manufacturer will issue warranty.
 - d. Proceed with installation only after substrates pass testing.
 - 2. Relative Humidity Probe Tests:
 - a. Submit results for in situ relative humidity probe tests.
 - b. Submit date and time measurements were made.
 - c. Submit locations and depth of probe holes.
 - d. Submit temperature and relative humidity in each probe hole.
 - e. Submit ambient air temperature.
 - f. Acceptable relative humidity is typically 75% or less. Submit written documentation of tolerances for selected flooring manufacturer. Proceed with installation only after substrates have relative humidity percentage stated as acceptable by manufacturer.
 - g. Submit letter from flooring manufacturer stating that relative humidity is acceptable and manufacturer will issue warranty.
 - 3. Anhydrous Calcium Chloride Testing
 - a. Submit time and date of placement and retrieval.
 - b. Submit ambient air temperature and humidity during test duration
 - c. Submit manufacturer's instructions and relative technical data.
 - d. Acceptable moisture emission rates are typically 3 lbs. per 1000 sq. ft. or less, in 24 hours. Submit written documentation of tolerances for selected flooring manufacturer. Proceed with installation only after substrates have maximum moisture-vapor-emission rate as stated by manufacturer.
 - e. Submit letter from flooring manufacturer stating that floor moisture emission rates are acceptable and manufacturer will issue warranty.

1.3 QUALITY ASSURANCE

- A. Installer Qualifications: Engage an experienced installer (applicator) who has specialized in installing resinous flooring similar in material, design, and extent to that indicated for this Project and who is acceptable to resinous flooring manufacturer. Engage an installer who is certified in writing by resinous flooring manufacturer as qualified to install resinous flooring systems specified.
- B. Source Limitations: Obtain primary resinous flooring materials, including primers, resins, hardening agents, and sealing or finish coats, through one source from a single manufacturer. Provide secondary materials including patching and fill material, joint sealant, and repair materials of type and from source recommended by manufacturer of primary materials.
- C. Field Samples: On floor area selected by Architect, provide full-thickness resinous flooring system samples that are at least 48 inches square to demonstrate texture, color, thickness, chemical resistance, cleanability, and other features of each resinous flooring system required. Simulate finished lighting conditions for review of in-place field samples.
 - 1. If field samples are unacceptable, make adjustments to comply with requirements and apply additional samples until field samples are approved.
 - 2. After field samples are approved, these surfaces will be used to evaluate resinous flooring.
 - 3. Obtain Architect's approval of field samples before applying resinous flooring.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials in original packages and containers, with seals unbroken, bearing manufacturer's labels indicating brand name and directions for storage and mixing with other components.
- B. Store materials to comply with manufacturer's written instructions to prevent deterioration from moisture, heat, cold, direct sunlight, or other detrimental effects.

1.5 PROJECT CONDITIONS

- A. Environmental Limitations: Comply with resinous flooring manufacturer's written instructions for substrate temperature, ambient temperature, moisture, ventilation, and other conditions affecting resinous flooring installation.
- B. Lighting: Provide permanent lighting or, if permanent lighting is not in place, simulate permanent lighting conditions during resinous flooring installation.
- C. Close spaces to traffic during resinous flooring application and for not less than 24 hours after application, unless manufacturer recommends a longer period.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Basis of Design: Stonhard, Inc. (phone 800.257.7953 web site: www.stonhard.com)
- B. Available Manufacturers: Subject to compliance with requirements, products that may be incorporated into the Work Include, but are not limited to:
 - Dex O-Tex, Division of Crossfield Products Corp. (phone 310.886.9100 web site: www.dexotex.com)
 - Dur-A-Flex, Inc. (phone 800.253.3539 web site: www.dur-a-flex.com)
 - General Polymers, Inc., Division of Sherwin-William (phone 800.543.7694 web site: www.generalpolymers.com)
 - Harris Specialty Chemicals, Inc. (phone 800.322.7825)
 - Key Resin Company (phone 888.943.4532 web site: www.keyresin.com)
 - Neogard, Division of Jones-Blair (phone 800.321.6588 web site: www.neogard.com)
 - Stonhard (phone 800.257.7953 web site: www.stonhard.com)

2.2 MATERIALS

- A. Resinous Flooring (15C): Basis of Design shall be Stontec ERF as manufactured by Stonhard, Inc. Resinous floor surfacing system consisting of primer; body coat(s) including resin, hardener, aggregates, and colorants, if any; and sealing or finish coat(s).
1. Reinforcing Membrane: Manufacturer's flexible resin recommended for crack isolation to help prevent substrate cracks from reflecting through resinous flooring.
 2. Color and Pattern: As scheduled in SECTION 09 99 00 - COLOR SCHEDULE for resinous flooring complying with requirements indicated.
 3. Total Thickness of Body Coat(s): As recommended by manufacturer for system compliance with requirements.
 4. System Thickness: Minimum 1/8 inch.
 5. Wearing Surface: Antislip.
 6. Base: 4 inch high integral cove base.
 7. System Components: Manufacturer's standard components that are compatible with each other and as follows:
 - a. Primer:
 - 1) Material Basis: Stonhard Standard Primer
 - 2) Resin: Epoxy
 - 3) Formulation Description: (2) two component 100 percent solids.
 - 4) Application Method: Squeegee and roller.
 - 5) Number of Coats: (1) one.
 - 6) Aggregates: Broadcast quartz into wet primer coat.
 - b. Body Coat(s):
 - 1) Material Basis: Stonshield Undercoat.
 - 2) Resin: Epoxy.
 - 3) Formulation Description: (3) three component solvent free epoxy.
 - 4) Application Method: Notched squeegee.
 - a) Thickness of Coats: 25-30 mils with standard primer coat
 - b) Number of Coats: (1) One.
 - c. Broadcast:
 - 1) Material Basis: Stontec Flakes
 - 2) Formulation Description: Large Decorative flake of 1/4"
 - 3) Type: Tweed (chips to be mixed in Mfg. facility)
 - 4) Finish: Broadcast to rejection.
 - 5) Number of Coats: one.
 - d. Topcoat:
 - 1) Material Basis: Stonkote CE4
 - 2) Resin: Epoxy.
 - 3) Formulation Description: (2) component, UV stable, solvent free epoxy.
 - 4) Type: Clear.
 - 5) Finish: Gloss.
 - 6) Number of Coats: Two.
 8. Physical Properties: Provide resinous flooring system with the following minimum physical property requirements when tested according to standard test methods indicated:
 - a. Tensile Strength: 5,200 psi per ASTM D 638.
 - b. Flexural Strength: 4,000 psi per ASTM D 790.
 - c. Flexural Modulus of Elasticity: 1.7×10^6 psi per ASTM D 790.
 - d. Hardness: .85-.900, Shore D per ASTM D 2240.
 - e. Linear Coefficient of Thermal Expansion: 17×10^{-6} in./in.°F per ASTM C 531.
 - f. Impact Resistance: Exceeds 160 in.-lbs. per ASTM D-4060, CS-17.
 - g. Abrasion Resistance: 0.03 gm maximum weight loss per ASTM D4060. CS-17.
 - h. Flammability: Class I per ASTM E 648.
- B. Accessory Materials
1. Patching and Fill Material: Resinous product of or approved by resinous flooring manufacturer and recommended by manufacturer for application indicated.
 2. Joint Sealant: Type recommended or produced by resinous flooring manufacturer for type of service and joint condition indicated.

PART 3 - EXECUTION

3.1 PREPARATION

- A. General: Prepare and clean substrate according to resinous flooring manufacturer's written instructions for substrate indicated. Provide clean, dry, and neutral substrate for resinous flooring application.
- B. Testing of concrete slabs
1. Anhydrous Calcium Chloride Testing
 - a. Conduct anhydrous calcium chloride testing per ASTM F1869, modified to include testing over concrete containing lightweight aggregate.
 - b. Environmental requirements of area to be tested are to match that of the finished floor covering. Doors, windows, roofing, etc. must be installed and the temperature of the building controlled to a finished building atmosphere. Ensure interior building climate is 75 degrees F \pm 10 degrees F and 50% Relative Humidity \pm 10% for 72 hours prior to, and throughout the duration of the tests.
 - c. The number of test kits required is determined by the square footage of areas scheduled to receive finish flooring. A minimum of three test kits are required in the first 1,000 sq. ft. a minimum of one test kit per each additional 1,000 sq. ft. with consideration given to separation of test areas. Time of exposure is a minimum of 60 hours and a maximum of 72 hours.
 - d. A prepackaged calcium chloride test kit is equipped with a sealed dish of anhydrous calcium chloride, a metering dome with gasket and instructions.
 - 1) Clean substrate in area to be tested by removing dust solvent, paint, wax, oil, grease, residual adhesive, adhesive removers, curing, sealing, hardening, or parting compounds, alkaline salts, excessive carbonation, or laitance, mold mildew and other foreign materials.
 - 2) Weigh the tape sealed dish on a gram scale with 1/10th gram gradation. Record start weight, date and time on dish's label and instruction document.
 - 3) Unseal dish and expose test according to preprinted test kit instructions.
 - 4) Allow 60 to 72 hours of exposure. Retrieve test dish re-seal and re-weigh according to instructions.
 - 5) Provide a diagram of the building, with calculations, documenting each test location with its results in writing.
 - e. Acceptable moisture emission rates are typically 3 lbs. per 1000 sq. ft. or less, in 24 hours; however, submit written tolerances for selected flooring manufacturer. Proceed with installation only after substrates have maximum moisture-vapor-emission rate as stated by manufacturer.
 - f. Submit letter from flooring manufacturer stating that floor moisture emission rates are acceptable and manufacturer will issue warranty.
 2. In Situ Relative Humidity Probe Test:
 - a. Conduct in situ relative humidity probe testing per ASTM F2170.
 - b. Concrete floor slabs shall be at the service temperature and the occupied air space above the slab shall be at the service temperature service relative humidity for at least 48 hours before taking relative humidity measurements in the concrete slab.
 - c. Perform 3 tests for the first 1,000 sq/ft. and a minimum of 1 test for every 1,000 sq/ft. thereafter.
 - d. For slabs on-grade and below-grade choose a testing location within 3 feet of each exterior wall.
 - e. Drill probe holes 40% into depth of slab for slabs drying from the top only and 20% into the slab for slabs drying from top and bottom.
 - f. Remove dust from hole using vacuum cleaner and allow 72 hours to achieve moisture equilibration within hole before taking relative humidity measurements.
 - g. After inserting probe allow necessary amount of time for probe to reach temperature equilibrium before measuring relative humidity.
 - h. Use the relative humidity probe to measure the ambient air temperature and relative humidity above the slab in the vicinity of the hole.
 - i. Proceed with installation only after substrates pass testing.
 - j. Submit letter from flooring manufacturer stating that floor relative humidity percentage is acceptable and manufacturer will issue warranty.
 3. Alkalinity and Adhesion Testing
 - a. Conduct pH test per ASTM F710.
 - b. Test for alkalinity prior to installation of flooring materials.
 - c. pH levels shall not exceed the written recommendation of the flooring manufacturer and the adhesive manufacturer.
 - d. A pH range of 5-9 is optimum, not to exceed 9 pH. Submit written acceptable pH levels of selected flooring manufacturer.
 - e. Proceed with installation only after substrates pass testing.
 - f. Submit letter from flooring manufacturer stating that floor alkalinity is acceptable and manufacturer will issue warranty.

- C. Concrete Substrates: Provide sound concrete surfaces free of laitance, glaze, efflorescence, curing compounds, form-release agents, dust, dirt, grease, oil, and other contaminants incompatible with resinous flooring.
 - 1. Mechanically prepare substrates as follows:
 - 2. Mechanically prepare with the use of Diamond grinding equipment to provide surface sound concrete surfaces free of laitance, glaze, efflorescence, curing compounds, form-release agents, dust, dirt, grease, oil, and other contaminants incompatible with resinous flooring. Or,
 - 3. Shot-blast surfaces with an apparatus that abrades the concrete surface, contains the dispensed shot within the apparatus, and recirculates the shot by vacuum pickup or Diamond Grind with a dust free system.
 - 4. Comply with ASTM C 811 requirements, unless manufacturer's written instructions are more stringent.
 - 5. Repair damaged and deteriorated concrete according to resinous flooring manufacturer's written recommendations.
- D. Resinous Materials: Mix components and prepare materials according to resinous flooring manufacturer's written instructions.
- E. Use patching and fill material to fill holes and depressions in substrate according to manufacturer's written instructions.
- F. Treat control joints and other nonmoving substrate cracks to prevent cracks from reflecting through resinous flooring according to manufacturer's written recommendations.

3.2 APPLICATION

- A. General: Apply components of resinous flooring system according to manufacturer's written instructions to produce a uniform, monolithic wearing surface of thickness indicated.
 - 1. Coordinate application of components to provide optimum adhesion of resinous flooring system to substrate and optimum intercoat adhesion.
 - 2. Cure resinous flooring components according to manufacturer's written instructions. Prevent contamination during application and curing processes.
 - 3. At substrate expansion and isolation joints, provide joint in resinous flooring to comply with resinous flooring manufacturer's written recommendations.
 - 4. Apply joint sealant to comply with manufacturer's written recommendations.
- B. Apply primer over prepared substrate at manufacturer's recommended spreading rate.
- C. Apply reinforcing membrane to substrate cracks or entire substrate surface as recommended by manufacturer.
- D. Apply self-leveling slurry body coat(s) in thickness indicated.
- E. Broadcast aggregates and, after resin is cured, remove excess aggregates to provide surface texture indicated.
- F. Integral Cove Base: Apply cove base mix to wall surfaces adjacent floor applications unless otherwise indicated. Round internal and external corners. Install cove base according to manufacturer's written instructions and details including taping, mixing, priming, troweling, sanding, and topcoating of cove base.
- G. Body coat: Mix base material according to manufacturer's recommended procedures. Uniformly spread mixed material over previously primed substrate using manufacturer's installation tool. Roll material with strict adherence to manufacturer's installation procedures and coverage rates.
- H. Broadcast: Immediately broadcast decorative flakes into the body coat. Strict adherence to manufacturer's installation procedures and coverage rates is imperative.
- I. First Sealer: Remove excess un-bonded flakes by lightly brushing and vacuuming the floor surface. Mix and apply sealer with strict adherence to manufacturer's installation procedures.
- J. Second sealer: Lightly sand first sealer coat. Mix and apply second sealer coat with strict adherence to manufacturer's installation procedures.

3.3 TERMINATIONS

- A. Chase edges to “lock” the coating system into the concrete substrate along lines of termination.
- B. Penetration Treatment: Lap and seal coating onto the perimeter of the penetrating item by bridging over compatible elastomer at the interface to compensate for possible movement.
- C. Trenches: Continue coating system into trenches to maintain monolithic protection. Treat cold joints to assure bridging of potential cracks.
- D. Treat floor drains by chasing the coating to lock in place at point of termination.

3.4 JOINTS AND CRACKS

- A. Treat control joints to bridge potential cracks and to maintain monolithic protection.
- B. Treat cold joints and construction joints to and to maintain monolithic protection on horizontal and vertical surfaces as well as horizontal and vertical interfaces.
- C. Vertical and horizontal contraction and expansion joints are treated by installing backer rod and compatible sealant after coating installation is completed. Provide sealant type recommended by manufacturer for traffic conditions and chemical exposures to be encountered.

3.5 FIELD QUALITY CONTROL

- A. Material Sampling: Owner may at any time and any number of times during flooring application require material samples for testing for compliance with requirements.
 - 1. Owner will engage an independent testing agency to take samples of materials being used. Material samples will be taken, identified and sealed, and certified in presence of Contractor.
 - 2. Testing agency will test samples for compliance with requirements, using applicable referenced testing procedures or, if not referenced, using testing procedures listed in manufacturer’s Product Data.
 - 3. If test results show installed materials do not comply with specified requirements, pay for testing, remove noncomplying materials, prepare surfaces coated with unacceptable materials, and reapply flooring materials to comply with requirements.

3.6 CLEANING AND PROTECTION

- A. Cure resinous flooring materials in compliance with manufacturer's directions, taking care to prevent contamination during stages of application and prior to completion of curing process. Close area of application for a minimum of 24 hours.
- B. Protect resinous flooring from damage and wear during the remainder of construction period. Use protective methods and materials, including temporary covering, recommended in writing by resinous flooring manufacturer.
- C. Clean resinous flooring not more than 4 days before dates scheduled for inspections intended to establish date of substantial completion in each project area. Use cleaning materials and procedures recommended in writing by resinous flooring manufacturer.

END OF SECTION

SECTION 09 68 00

CARPETING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Carpet, including the following:
 - 1. Surface preparation.
 - 2. Glue down carpeting on floor surfaces.
 - 3. Accessories, including edge strips.
- B. Related Sections:
 - 1. Section 09 65 13 - Resilient Base: rubber base.

1.2 SUBMITTALS

- A. Submit in accordance with SECTION 01 33 23 - SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Product Data: Include manufacturer's installation instructions.
- C. Concrete Slab Testing
 - 1. Alkalinity and Adhesion Testing:
 - a. Submit result of pH tests.
 - b. Submit written documentation of acceptable pH levels of selected flooring manufacturer.
 - c. Submit letter from flooring manufacturer stating that floor alkalinity is acceptable and manufacturer will issue warranty.
 - d. Proceed with installation only after substrates pass testing.
 - 2. Relative Humidity Probe Tests:
 - a. Submit results for in situ relative humidity probe tests.
 - b. Submit date and time measurements were made.
 - c. Submit locations and depth of probe holes.
 - d. Submit temperature and relative humidity in each probe hole.
 - e. Submit ambient air temperature.
 - f. Acceptable relative humidity is typically 75% or less. Submit written documentation of tolerances for selected flooring manufacturer. Proceed with installation only after substrates have relative humidity percentage stated as acceptable by manufacturer.
 - g. Submit letter from flooring manufacturer stating that relative humidity is acceptable and manufacturer will issue warranty.
 - 3. Anhydrous Calcium Chloride Testing
 - a. Submit time and date of placement and retrieval.
 - b. Submit ambient air temperature and humidity during test duration
 - c. Submit manufacturer's instructions and relative technical data.
 - d. Acceptable moisture emission rates are typically 3 lbs. per 1000 sq. ft. or less, in 24 hours. Submit written documentation of tolerances for selected flooring manufacturer. Proceed with installation only after substrates have maximum moisture-vapor-emission rate as stated by manufacturer.
 - e. Submit letter from flooring manufacturer stating that floor moisture emission rates are acceptable and manufacturer will issue warranty.
- D. Samples for verification purposes in manufacturer's standard size, showing full range of color, texture, and pattern variations expected. Secure samples from material to be used for the work. Submit the following:
 - 1. 12" square samples of each type of carpet material required.
 - 2. 12" long samples of each type of exposed edge striping and accessory item.
- E. Seaming Diagrams: Submit to the Architect for review.
 - 1. Contractor shall be responsible for conformance with the drawings and specifications relative to the installation.
 - 2. Architect's review will cover the sizes of the pieces and location of seams, but not dimensions or quantities.
 - 3. All length seams and cross joints necessary to the layout of the carpet shall be shown on the seaming diagrams.

- F. Maintenance Manual: Provide 2 copies of a printed maintenance manual, written by the carpet manufacturer's Technical Service Department delivered to the Owner at the project site. Include the following:
 - 1. Methods for maintaining carpet, including cleaning and stain-removal products and procedures and manufacturer's recommended maintenance schedule.
 - 2. Precautions for cleaning materials and methods that could be detrimental to carpet.

1.3 QUALITY ASSURANCE

- A. Manufacturer: Company specializing in carpet manufacturing with 5 years minimum experience.
- B. Installer Qualifications: An experienced installer with 3 years minimum documented experience in carpeting installations of similar scope.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Delivery: Carpet shall be delivered to the project site in mill wrappings. Each roll shall have register number tags attached or register number stenciled on bale.
- B. Store materials for 3 days prior to installation in the areas of installation to achieve temperature stability.

1.5 PROJECT CONDITIONS

- A. Measurements: Dimensions supplied on the drawings are approximate. Contractor shall carefully check dimensions and other conditions affecting his work in the field and shall be responsible for proper installation.

1.6 ENVIRONMENTAL REQUIREMENTS

- A. Temperature and Humidity: Carpet must be installed when the indoor temperature is between 65°F. and 95°F. with a maximum relative humidity of 65%. If ambient temperatures are outside these parameters, the installation must not begin until the HVAC system is operational and these conditions are maintained at least 48 hours before, during, and 72 hours after completion.
- B. Provide sufficient lighting.

1.7 WARRANTIES

- A. Manufacturer's Lifetime warranty, non-prorated, against product failure covering all costs including freight, labor, and material for the following:
 - 1. Edge Ravel - wet or dry.
 - 2. Back delamination, wet or dry.
 - 3. Loss of 20 lb. average tuft bind - wet or dry.
 - 4. Static protection - 3.0 KV when tested under the Standard Shuffle Test, 70 F - 20% RH
 - 5. Wear - No more than 10% face yarn loss.
 - 6. Adhesive failure.
- B. Installation Warranty: 5-Year Warranty, non-prorated, against installation related failure covering all costs including freight, labor, and material.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Carpet (17A): Provide "5A242 Escape" from the "Off the Grid Collection" as manufactured by ShawContract. Carpet shall meet the following minimum requirements, NO EXCEPTIONS:
 - 1. Color: Reference SECTION 09 99 00 - COLOR SCHEDULE.
 - 2. Construction: Multi-Level pattern cut/loop
 - 3. Surface Texture: Multilevel and loop pile.
 - 4. Yarn Weight: 26 oz. per sq. yard minimum.
 - 5. Gauge: 1/10 minimum.
 - 6. Density: 5,538 per cubic yd. minimum (per ASTM D-5848).
 - 7. Face Yarn: 100% branded nylon, Type 6 or Type 6,6. 100% Bulk Continuous Filament (BCF)
 - 8. Stain Resistance: AATCC-175, must pass Acid Red 40 spot test with an 8 or better.

9. Dye System: Solution dyed.
 10. Backing: 100% thermoplastic composite (no latex or urethanes). Backing system must provide a 100% moisture barrier.
 11. Width: 12-foot broadloom.
 12. Appearance Retention; one of the following:
 - a. ASTM D-7330 Method for Assessment of Surface Appearance Change in Pile Yarn Floor Coverings (Hexapod Test): Minimum 3.0 rating for heavy traffic.
 - b. ASTM D5417 Vetterman Drum Test for 22,000 cycles. A minimum rating of 3.0 using CRI TM-101 Reference Scale.
- B. Substrate Filler: As recommended by adhesive and carpet manufacturer; compatible with substrate.
- C. Adhesive: As recommended by the carpet manufacturer.
- D. Edge Strips: Reference Floor Transition Schedule in Drawings and SECTION 09 99 00 - COLOR SCHEDULE.
- E. Miscellaneous Materials: Types of seam sealers, thread, and other accessory items recommended by the carpet manufacturer and installer for the conditions of installation and use.

PART 3 - EXECUTION

3.1 INSPECTION

- A. Before commencement of work the Contractor shall inspect the floors to receive carpet to determine the condition of those surfaces, and shall furnish and apply suitable primer and otherwise prepare floor surfaces in accordance with the carpet manufacturer's instruction.

3.2 PREPARATION

- A. Delay installation until surrounding work, including painting, has been completed. Vacuum substrate immediately prior to carpet installation, and remove deleterious substances which would interfere with installation or be harmful to the work.
- B. Ensure floors are level, with maximum surface variation of 1/4 inch in 10 feet noncumulative. Inspect subflooring for cracks, holes, abrasions, rough spots, ridges, or other conditions which will adversely affect execution and quality of work.
- C. Ensure concrete floors are free from scaling and irregularities and exhibit neutrality relative to acidity and alkalinity.
- D. Use an approved cementitious filler to patch cracks, small holes, and for leveling.
- E. Notify Architect in writing of conditions which will prevent satisfactory completion of work. Do not proceed until such defects are entirely corrected. Application or installation of carpet shall constitute acceptance of sub-floors.
- F. Relaxing/Conditioning Carpet: To minimize wrinkling and buckling, and to facilitate installation, carpet shall be unrolled and allowed to relax in the installation area for a minimum of 72 hours (vinyl-back carpet) at a temperature between 65°F. and 95°F. Carpet must be adequately protected from soil, dust, moisture and other contaminants.
- G. Testing of concrete slabs
1. Anhydrous Calcium Chloride Testing
 - a. Conduct anhydrous calcium chloride testing per ASTM F1869, modified to include testing over concrete containing lightweight aggregate.
 - b. Environmental requirements of area to be tested are to match that of the finished floor covering. Doors, windows, roofing, etc. must be installed and the temperature of the building controlled to a finished building atmosphere. Ensure interior building climate is 75 degrees F \pm 10 degrees F and 50% Relative Humidity \pm 10% for 72 hours prior to, and throughout the duration of the tests.
 - c. The number of test kits required is determined by the square footage of areas scheduled to receive finish flooring. A minimum of three test kits are required in the first 1,000 sq. ft. a minimum of one

- test kit per each additional 1,000 sq. ft. with consideration given to separation of test areas. Time of exposure is a minimum of 60 hours and a maximum of 72 hours.
- d. A prepackaged calcium chloride test kit is equipped with a sealed dish of anhydrous calcium chloride, a metering dome with gasket and instructions.
 - 1) Clean substrate in area to be tested by removing dust solvent, paint, wax, oil, grease, residual adhesive, adhesive removers, curing, sealing, hardening, or parting compounds, alkaline salts, excessive carbonation, or laitance, mold mildew and other foreign materials.
 - 2) Weigh the tape sealed dish on a gram scale with 1/10th gram gradation. Record start weight, date and time on dish's label and instruction document.
 - 3) Unseal dish and expose test according to preprinted test kit instructions.
 - 4) Allow 60 to 72 hours of exposure. Retrieve test dish re-seal and re-weigh according to instructions.
 - 5) Provide a diagram of the building, with calculations, documenting each test location with its results in writing.
 - e. Acceptable moisture emission rates are typically 3 lbs. per 1000 sq. ft. or less, in 24 hours; however, submit written tolerances for selected flooring manufacturer. Proceed with installation only after substrates have maximum moisture-vapor-emission rate as stated by manufacturer.
 - f. Submit letter from flooring manufacturer stating that floor moisture emission rates are acceptable and manufacturer will issue warranty.
2. In Situ Relative Humidity Probe Test:
- a. Conduct in situ relative humidity probe testing per ASTM F2170.
 - b. Concrete floor slabs shall be at the service temperature and the occupied air space above the slab shall be at the service temperature service relative humidity for at least 48 hours before taking relative humidity measurements in the concrete slab.
 - c. Perform 3 tests for the first 1,000 sq/ft. and a minimum of 1 test for every 1,000 sq/ft. thereafter.
 - d. For slabs on-grade and below-grade choose a testing location within 3 feet of each exterior wall.
 - e. Drill probe holes 40% into depth of slab for slabs drying from the top only and 20% into the slab for slabs drying from top and bottom.
 - f. Remove dust from hole using vacuum cleaner and allow 72 hours to achieve moisture equilibration within hole before taking relative humidity measurements.
 - g. After inserting probe allow necessary amount of time for probe to reach temperature equilibrium before measuring relative humidity.
 - h. Use the relative humidity probe to measure the ambient air temperature and relative humidity above the slab in the vicinity of the hole.
 - i. Proceed with installation only after substrates pass testing.
 - j. Submit letter from flooring manufacturer stating that floor relative humidity percentage is acceptable and manufacturer will issue warranty.
3. Alkalinity and Adhesion Testing
- a. Conduct pH test per ASTM F710.
 - b. Test for alkalinity prior to installation of flooring materials.
 - c. pH levels shall not exceed the written recommendation of the flooring manufacturer and the adhesive manufacturer.
 - d. A pH range of 5-9 is optimum, not to exceed 9 pH. Submit written acceptable pH levels of selected flooring manufacturer.
 - e. Proceed with installation only after substrates pass testing.
 - f. Submit letter from flooring manufacturer stating that floor alkalinity is acceptable and manufacturer will issue warranty.

3.3 INSTALLATION

- A. Install carpet using the direct cement method.
1. Comply with carpet manufacturer's written instruction and recommendations. Maintain direction of pattern and texture throughout the entire building. Do not seam weft to warp, except as directed by Architect.
 2. Extend carpet under open-bottomed and raised-bottom obstructions, and under removable flanges of obstructions. Extend carpet into closets and alcoves of rooms indicated to be carpeted, unless another floor finish is indicated for such spaces. Extend carpet under movable furniture and equipment.
 3. Install carpet wall to wall, using continuous lengths and as broad widths as possible to minimize the placement of seams in traffic lanes. Cut edges shall be trued and appropriately treated to form invisible and non-raveling joints where exposed.
 4. Edges of carpet abutting vertical surfaces shall fit tight and meet against such materials. Where carpet edges are not concealed by thresholds or other materials use vinyl edge strips.
 5. In corridors, run carpet length parallel to the corridor walls. At corridor intersections, carpet shall change direction.
 6. Installed carpet shall be free of spots, dirt or soil, and shall be without tears, frayed or pulled tufts. Carpet surfaces shall be smooth and tight, without wrinkles and open seams.

- B. Check matching of carpet before cutting and ensure there is no visible variation between dye lots.
- C. Double-cut carpet seams, where required, in manner to allow proper seam and pattern match. Ensure cuts are straight and true and unfrayed.
- D. Seams
 1. Install in accordance with approved seam layout using a minimum of seams. Where possible and practical, locate seams in areas of least amount of traffic.
 2. Do not use small carpet fill strips.
 3. Do not place seams perpendicular to doors or entries.
 4. Cross joints necessary due to layout of areas shall be at absolute minimum and shall be indicated on shop drawings.
 5. Cross joints necessary due to length of rolls received shall be placed, in the cutting, to avoid occurrence at conspicuous locations, near doors or at pivot points, and shall be approved prior to seaming.
 6. Join seams in recommended manner so as not to detract from the appearance of the carpet installation and decrease its life expectancy. Ensure seams are straight, not overlapped or peaked and free of gaps.
 7. Chemically or mechanically weld seams with manufacturer's recommended seam sealer as stated in installation instructions. Make sure the seams are fully sealed/welded.
 8. Roll with appropriate roller for complete contact of hardback carpet with mill-applied adhesive to sub-floor.
 9. When recommended by manufacturer, backing should be rolled according to manufacturer's instructions to assure transfer of the adhesive between floor and carpet backing.
 10. When required by the manufacturer's warranty, the manufacturer's recommended seam sealer must be applied to cut edges of carpet to prevent seam failure.
- E. Vacuum clean substrate. Spread adhesive in quantity recommended by manufacturer after primer application to ensure proper adhesion over full area of installation. Apply only enough adhesive to permit proper adhesion of carpet before initial set.
- F. Lay carpet on floors with the run of the pile in same direction of anticipated traffic. Lay carpet on stairs with run of the pile in opposite direction of anticipated traffic to avoid peeking of backing at nosing.
- G. Do not change run of pile in any one room or from one room to next where continuous through a wall opening.

3.4 CLEANING

- A. Remove excess adhesive from floor, base, and wall surfaces without damage.
- B. Clean and vacuum carpet surfaces.

3.5 PROTECTION

- A. Prohibit traffic from carpet areas for 24 hours after installation.

END OF SECTION

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SECTION 09 68 13

TILE CARPETING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Carpet tile, including the following:
 - 1. Surface preparation.
 - 2. Glue down carpeting on floor surfaces.
 - 3. Walk-off carpeting.
 - 4. Accessories, including edge strips.
- B. Related Sections:
 - 1. Section 03 30 00 - Cast-In-Place Concrete.
 - 2. Section 09 65 13 - Resilient Base.

1.2 SUBMITTALS

- A. Product Data: Submit in accordance with SECTION 01 33 23 - SHOP DRAWINGS, PRODUCT DATA AND SAMPLES.
 - 1. Provide manufacturer's installation instructions, including manufacturer's approved adhesive to be used for installation of carpet tile.
 - 2. Provide certification of manufacturer's approval of adhesive.
- B. Product data for each type of carpet material and accessory required. Products proposed must meet or exceed the specifications identified in this section. Submit manufacturer's technical specifications, published standard warranty, attached comparative checklist, and the following manufacturer's test reports:
 - 1. Methenamine Pill Test (DOC FF #1-70), Rating Pass.
 - 2. Flooring Radiant Panel Test, NFPA-253, ASTM E 648.
 - 3. Smoke Density, NBS Smoke Density Chamber NFPA-258, 450 or less.
 - 4. Static Test, AATCC Test Method 134-1979, 2.5KV or below under standard test conditions 70°F., 20% R.H.
- C. Samples for verification purposes in manufacturer's standard size, showing full range of color, texture, and pattern variations expected. Prepare samples from material to be used for the work. Submit the following:
 - 1. 12" square samples of each type of carpet material required.
 - 2. 12" long samples of each type of exposed edge striping and accessory item.
- D. Maintenance Manual: Provide 2 copies of a printed maintenance manual, written by the carpet manufacturer's Technical Service Department delivered to the Owner at the project site. Include the following:
 - 1. Methods for maintaining carpet tile, including cleaning and stain-removal products and procedures and manufacturer's recommended maintenance schedule.
 - 2. Precautions for cleaning materials and methods that could be detrimental to carpet tile.
- E. Concrete Slab Testing
 - 1. Alkalinity and Adhesion Testing:
 - a. Submit result of pH tests.
 - b. Submit written documentation of acceptable pH levels of selected flooring manufacturer.
 - c. Submit letter from flooring manufacturer stating that floor alkalinity is acceptable and manufacturer will issue warranty.
 - d. Proceed with installation only after substrates pass testing.
 - 2. Relative Humidity Probe Tests:
 - a. Submit results for in situ relative humidity probe tests.
 - b. Submit date and time measurements were made.
 - c. Submit locations and depth of probe holes.
 - d. Submit temperature and relative humidity in each probe hole.
 - e. Submit ambient air temperature.
 - f. Acceptable relative humidity is typically 75% or less. Submit written documentation of tolerances for selected flooring manufacturer. Proceed with installation only after substrates have relative humidity percentage stated as acceptable by manufacturer.
 - g. Submit letter from flooring manufacturer stating that relative humidity is acceptable and manufacturer will issue warranty.

3. Anhydrous Calcium Chloride Testing
 - a. Submit time and date of placement and retrieval.
 - b. Submit ambient air temperature and humidity during test duration
 - c. Submit manufacturer's instructions and relative technical data.
 - d. Acceptable moisture emission rates are typically 3 lbs. per 1000 sq. ft. or less, in 24 hours. Submit written documentation of tolerances for selected flooring manufacturer. Proceed with installation only after substrates have maximum moisture-vapor-emission rate as stated by manufacturer.
 - e. Submit letter from flooring manufacturer stating that floor moisture emission rates are acceptable and manufacturer will issue warranty.

1.3 QUALITY ASSURANCE

- A. Manufacturer: Company specializing in carpet manufacturing with 5 years minimum experience.
- B. Installer: Company specializing in installing carpet with minimum five years (5) documented experience and must be certified by manufacturer specified. Use for installation only personnel who are skilled in the work required, familiar with the manufacturer's recommended methods required for installation.
- C. Installer Qualifications: An experienced installer with 3 years minimum documented experience in carpeting installations of similar scope.
- D. Manufacturer's technical representative to visit project site once carpet installation has begun and shall provide written certification letter indicating that the carpet installation is in accordance with manufacturer's recommendations.
- E. Manufacturer's representative shall provide training session with Owner's maintenance personnel regarding care and cleaning procedures for completed carpet installation.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Delivery: Carpet tile shall be delivered to the project site in manufacturer's standard boxes. Each box shall have register number permanently attached to box.
- B. Store materials for 3 days prior to installation in the areas of installation to achieve temperature stability.

1.5 SITE CONDITIONS

- A. Measurements: Dimensions supplied on the drawings are approximate. Contractor shall carefully check all dimensions and other conditions affecting his work in the field and shall be responsible for proper installation.

1.6 ENVIRONMENTAL REQUIREMENTS

- A. Temperature and Humidity: Carpet must be installed when the indoor temperature is between 65°F. and 95°F. with a maximum relative humidity of 65%. If ambient temperatures are outside these parameters, the installation must not begin until the HVAC system is operational and these conditions are maintained at least 48 hours before, during, and 72 hours after completion.
- B. Provide sufficient lighting.
- C. Manufacturer to off gas carpet at their facilities prior to shipping to job site.
- D. Ventilate installation area during installation and three (3) days after installation.
- E. Ventilation: During installation, maintain fresh air ventilation using exhaust fans, and be operating the ventilation system at full capacity. Always exhaust air to the outside and avoid re-circulation. After installation, maintain fresh air ventilation for 48 to 72 hours at normal room temperatures by operating the ventilation or exhaust fan system at full capacity.

1.7 OPERATION AND MAINTENANCE DATA

- A. Submit operation and maintenance data under provisions of SECTION 01 78 23 - OPERATION AND MAINTENANCE DATA.

- B. Include maintenance procedures, recommended maintenance materials and suggested schedule for cleaning and shampooing.

1.8 WARRANTIES

- A. Manufacturer's Lifetime Commercial Limited warranty, non-prorated, against manufacturing defects covering all costs including freight, labor, and material for the following:
1. Edge Ravel - wet or dry.
 2. Back delamination, wet or dry.
 3. Loss of 20 lb. average tuft bind - wet or dry.
 4. Static protection - 3.0 KV when tested under the Standard Shuffle Test, 70 F - 20% RH
 5. Wear - No more than 10% face yarn loss.
 6. Adhesive failure.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Carpet Tile (17B-1): Provide "5T216 Seek Tile" from "Off the Grid Collection" as manufactured by ShawContract. Carpet shall meet the following minimum requirements, NO EXCEPTIONS:
1. Color shall be as scheduled in SECTION 09 99 00 - COLOR SCHEDULE.
 2. Size: 12" x 48"
 3. Surface Texture: Multi-Level Pattern Cut/Loop.
 4. Yarn Weight: 26 oz. per sq. yard minimum.
 5. Gauge: 1/10 minimum.
 6. Density: 6,367 Per cubic yd. minimum (per ASTM D-5848).
 7. Face Yarn: 100% branded nylon, Type 6 or Type 6,6. 100% Bulk Continuous Filament (BCF)
 8. Stain Resistance: AATCC-175, must pass Acid Red 40 spot test with an 8 or better.
 9. Dye System: Solution dyed.
 10. Backing: 100% thermoplastic composite (no latex or urethanes). Backing system must provide a 100% moisture barrier.
 11. Appearance Retention; one of the following:
 - a. ASTM D-7330 Method for Assessment of Surface Appearance Change in Pile Yarn Floor Coverings (Hexapod Test): Minimum 3.0 rating for heavy traffic.
 - b. ASTM D5417 Vetterman Drum Test for 22,000 cycles. A minimum rating of 3.0 using CRI TM-101 Reference Scale.
- B. Carpet Tile (17B-2): Provide "5T217 Discover Tile" from "Off the Grid Collection" as manufactured by ShawContract. Carpet shall meet the following minimum requirements, NO EXCEPTIONS:
1. Color shall be as scheduled in SECTION 09 99 00 - COLOR SCHEDULE.
 2. Size: 12" x 48"
 3. Surface Texture: Multi-Level Pattern Cut/Loop.
 4. Yarn Weight: 26 oz. per sq. yard minimum.
 5. Gauge: 1/10 minimum.
 6. Density: 6,783 Per cubic yd. minimum (per ASTM D-5848).
 7. Face Yarn: 100% branded nylon, Type 6 or Type 6,6. 100% Bulk Continuous Filament (BCF)
 8. Stain Resistance: AATCC-175, must pass Acid Red 40 spot test with an 8 or better.
 9. Dye System: Solution dyed.
 10. Backing: 100% thermoplastic composite (no latex or urethanes). Backing system must provide a 100% moisture barrier.
 11. Appearance Retention; one of the following:
 - a. ASTM D-7330 Method for Assessment of Surface Appearance Change in Pile Yarn Floor Coverings (Hexapod Test): Minimum 3.0 rating for heavy traffic.
 - b. ASTM D5417 Vetterman Drum Test for 22,000 cycles. A minimum rating of 3.0 using CRI TM-101 Reference Scale.
- C. Carpet Tile (17B-3): Provide "1380102500 Cubic" from "Honor Roll Collection" as manufactured by Interface. Carpet shall meet the following minimum requirements, NO EXCEPTIONS:
1. Color shall be as scheduled in SECTION 09 99 00 - COLOR SCHEDULE.
 2. Size: 19.69" x 19.69"
 3. Surface Texture: Tufted Textured Loop.
 4. Yarn Weight: 18 oz. per sq. yard minimum.
 5. Gauge: 1/12 minimum.
 6. Density: 6,968 Per cubic yd. minimum (per ASTM D-5848).
 7. Face Yarn: 100% branded nylon, Type 6 or Type 6,6. 100% Bulk Continuous Filament (BCF)

8. Stain Resistance: AATCC-175, must pass Acid Red 40 spot test with an 8 or better.
 9. Dye System: Solution dyed.
 10. Backing: 100% thermoplastic composite (no latex or urethanes). Backing system must provide a 100% moisture barrier.
 11. Appearance Retention; one of the following:
 - a. ASTM D-7330 Method for Assessment of Surface Appearance Change in Pile Yarn Floor Coverings (Hexapod Test): Minimum 3.0 rating for heavy traffic.
 - b. ASTM D5417 Vetterman Drum Test for 22,000 cycles. A minimum rating of 3.0 using CRI TM-101 Reference Scale.
- D. Walk-Off Carpet (19C): Provide Abrasive Action II, Style 02578, with Powerbond Vinyl Cushion manufactured by Tandus. Carpet shall meet the following minimum requirements, NO EXCEPTIONS:
1. Color shall be as scheduled in SECTION 09 99 00 - COLOR SCHEDULE.
 2. Construction: Accuweave® Patterned Loop.
 3. Face Weight: 24 oz. per sq. yard.
 4. Gauge: 1/12.
 5. Stitches per Inch: 8.0
 6. Pile Height Average: 0.187 Inch
 7. Fiber System: TDX Nylon
 8. Dye Method: Solution Dyed.
 9. Soil Stain Protection: Ensure
 10. Size: 6' Roll.
- E. Substrate Filler: As recommended by adhesive and carpet tile manufacturer; compatible with substrate.
- F. Substrate Primer and Sealer: Type as recommended by carpet tile manufacturer.
- G. Adhesive: Moisture-resistant type as recommended by the carpet tile manufacturer.
- H. Edge Strips: Reference Transition Schedule in Drawings and 09 99 00 - COLOR SCHEDULE.

PART 3 - EXECUTION

3.1 INSPECTION

- A. Before commencement of any work the Contractor shall inspect the floors to receive carpet tile to determine the condition of those surfaces and shall furnish and apply suitable primer and otherwise prepare floor surfaces in accordance with the carpet tile manufacturer's instruction.

3.2 PREPARATION

- A. Testing of concrete slabs
1. Anhydrous Calcium Chloride Testing
 - a. Conduct anhydrous calcium chloride testing per ASTM F1869, modified to include testing over concrete containing lightweight aggregate.
 - b. Environmental requirements of area to be tested are to match that of the finished floor covering. Doors, windows, roofing, etc. must be installed and the temperature of the building controlled to a finished building atmosphere. Ensure interior building climate is 75 degrees F \pm 10 degrees F and 50% Relative Humidity \pm 10% for 72 hours prior to, and throughout the duration of the tests.
 - c. The number of test kits required is determined by the square footage of areas scheduled to receive finish flooring. A minimum of three test kits are required in the first 1,000 sq. ft. a minimum of one test kit per each additional 1,000 sq. ft. with consideration given to separation of test areas. Time of exposure is a minimum of 60 hours and a maximum of 72 hours.
 - d. A prepackaged calcium chloride test kit is equipped with a sealed dish of anhydrous calcium chloride, a metering dome with gasket and instructions.
 - 1) Clean substrate in area to be tested by removing dust solvent, paint, wax, oil, grease, residual adhesive, adhesive removers, curing, sealing, hardening, or parting compounds, alkaline salts, excessive carbonation, or laitance, mold mildew and other foreign materials.
 - 2) Weigh the tape sealed dish on a gram scale with 1/10th gram gradation. Record start weight, date and time on dish's label and instruction document.
 - 3) Unseal dish and expose test according to preprinted test kit instructions.
 - 4) Allow 60 to 72 hours of exposure. Retrieve test dish re-seal and re-weigh according to instructions.

- 5) Provide a diagram of the building, with calculations, documenting each test location with its results in writing.
 - e. Acceptable moisture emission rates are typically 3 lbs. per 1000 sq. ft. or less, in 24 hours; however, submit written tolerances for selected flooring manufacturer. Proceed with installation only after substrates have maximum moisture-vapor-emission rate as stated by manufacturer.
 - f. Submit letter from flooring manufacturer stating that floor moisture emission rates are acceptable and manufacturer will issue warranty.
2. In Situ Relative Humidity Probe Test:
 - a. Conduct in situ relative humidity probe testing per ASTM F2170.
 - b. Concrete floor slabs shall be at the service temperature and the occupied air space above the slab shall be at the service temperature service relative humidity for at least 48 hours before taking relative humidity measurements in the concrete slab.
 - c. Perform 3 tests for the first 1,000 sq/ft. and a minimum of 1 test for every 1,000 sq/ft. thereafter.
 - d. For slabs on-grade and below-grade choose a testing location within 3 feet of each exterior wall.
 - e. Drill probe holes 40% into depth of slab for slabs drying from the top only and 20% into the slab for slabs drying from top and bottom.
 - f. Remove dust from hole using vacuum cleaner and allow 72 hours to achieve moisture equilibration within hole before taking relative humidity measurements.
 - g. After inserting probe allow necessary amount of time for probe to reach temperature equilibrium before measuring relative humidity.
 - h. Use the relative humidity probe to measure the ambient air temperature and relative humidity above the slab in the vicinity of the hole.
 - i. Proceed with installation only after substrates pass testing.
 - j. Submit letter from flooring manufacturer stating that floor relative humidity percentage is acceptable and manufacturer will issue warranty.
 3. Alkalinity and Adhesion Testing
 - a. Conduct pH test per ASTM F710.
 - b. Test for alkalinity prior to installation of flooring materials.
 - c. pH levels shall not exceed the written recommendation of the flooring manufacturer and the adhesive manufacturer.
 - d. A pH range of 5-9 is optimum, not to exceed 9 pH. Submit written acceptable pH levels of selected flooring manufacturer.
 - e. Proceed with installation only after substrates pass testing.
 - f. Submit letter from flooring manufacturer stating that floor alkalinity is acceptable and manufacturer will issue warranty.
- B. Delay installation until all surrounding work, including painting, has been completed. Vacuum substrate immediately prior to carpet tile installation and remove all deleterious substances which would interfere with installation or be harmful to the work.
- C. Ensure floors are level, with maximum surface variation of 1/4 inch in 10 feet non-cumulative. Inspect subflooring for cracks, holes, abrasions, rough spots, ridges, or other conditions which will adversely affect execution and quality of work.
- D. Ensure concrete floors are free from scaling and irregularities and exhibit neutrality relative to acidity and alkalinity.
- E. Use an approved cementitious filler to patch cracks, small holes and for leveling.
- F. Notify Architect in writing of any condition which will prevent satisfactory completion of work. Do not proceed until such defects are entirely corrected. Application or installation of carpet tile shall constitute acceptance of sub-floors.

3.3 INSTALLATION

- A. General: Comply with CRI Carpet Installation Standard 2011, "Modular Carpet." (Tiles)
- B. Lay carpet tile on floors with directions and patterns as directed by Architect in the field.
- C. Cut and fit carpet tile to butt tightly to vertical surfaces, permanent fixtures, and built-in furniture including cabinets, pipes, outlets, edgings, thresholds, and nosings. Bind or seal cut edges as recommended by carpet tile manufacturer.

- D. Extend carpet tile under open-bottomed and raised-bottom obstructions, and under removable flanges of obstructions. Extend carpet tile into closets and alcoves of rooms indicated to be carpeted, unless another floor finish is indicated for such spaces. Extend carpet tile under all movable furniture and equipment.
- E. Vacuum clean substrate. Spread adhesive in quantity recommended by manufacturer after primer application to ensure proper adhesion over full area of installation. Apply only enough adhesive to permit proper adhesion of carpet tile before initial set.

3.4 CLEANING

- A. Remove excess adhesive from floor, base and wall surfaces without damage.
- B. Clean and vacuum carpet tile surfaces.

3.5 PROTECTION

- A. Prohibit traffic from carpet tile areas for 24 hours after installation.

END OF SECTION

SECTION 09 72 16

VINYL-COATED FABRIC WALL COVERING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Vinyl-coated fabric wall covering.
- B. Related Sections:
 - 1. Section 09 21 16 - Gypsum Board Assemblies: taping and bedding of gypsum board.

1.2 SUBMITTALS

- A. Samples: Submit in accordance with Section 01 33 23 - Shop Drawings, Product Data, and Samples. Submit 6" square samples of each type of vinyl wall covering.
- B. Certificate: The manufacturer of the proposed vinyl wall covering shall furnish to the Architect written certification that the material shipped to the project will meet the physical and performance requirements listed below. Certification from a dealer or distributor will not be acceptable.
- C. Maintenance Instructions: Submit copies of the vinyl wall covering manufacturer's printed instructions for maintenance of the installed work.

1.3 QUALITY ASSURANCE

- A. Applicator Qualifications: Work shall be performed by a skilled applicator having at least five years' experience in the installation of vinyl wall covering.
- B. Source Quality Control: Flame spread rating of the material shall be determined by ASTM E 84. Each roll of goods delivered to the project shall bear Underwriters' Laboratories labels.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Vinyl Wall Covering (28A); Basis of Design: Provide "The Strand"; Tri-Kes Studio Source,
 - 1. Type II/Class A; supported vinyl material shall consist of a pigmented and mildew inhibited polyvinyl chloride fused to cotton fabric. Wall covering shall have a flame spread rating of 25 or less when tested in accordance with ASTM E 84.
 - 2. Color shall be as scheduled in SECTION 09 99 00 - COLOR SCHEDULE.
- B. Adhesive: Vinyl paste as recommended by the wall covering manufacture.
- C. Substrate Filler: As recommended by adhesive and vinyl wall covering manufacturers; compatible with substrate.
- D. Substrate Primer and Sealer: Type as recommended by vinyl wall covering manufacturer.

PART 3 - EXECUTION

3.1 INSPECTION

- A. Examine areas to receive vinyl wall covering for conditions that will adversely affect the execution and quality of work. Do not start this work until unsatisfactory conditions are corrected.

3.2 PREPARATION

- A. Clean surfaces to receive vinyl wall covering, including dirt, grease, oil, other contaminants. Surfaces shall be dry, smooth, and clean. Protrusions or low spots must be sanded or filled, as needed, to achieve a smooth surface.
- B. Acclimatize wall covering materials by removing them from packaging in the installation areas not less than 24 hours before installation.
- C. Remove electrical plates and covers, light fixture trims, and similar items.

3.3 INSTALLATION

- A. Applying Wall Covering: Follow the manufacturer's printed instructions for cutting and installing vinyl wall covering.
 - 1. Use fabric panels in exact order as they are cut from rolls; use rolls in consecutive order. Apply paste to the fabric back using a roller or paste brush.
 - 2. Trim deeply textured patterns, or patterns on which strip must be matched, on the worktable. Use a metal straight edge and sharp blade.
 - 3. Handle smooth, non-match patterns by pasting strips on the wall, overlapping the edge and "double cutting" through both thicknesses. Use thin metal strip between wall and material when cutting to avoid gouging the wall.
 - 4. Use stiff-bristled brush or flexible broad knife to eliminate air pockets and to secure the wall covering to the wall surface.
 - 5. Fill in spaces above doors and similar areas in sequence from the roll.
 - 6. Remove excess adhesive from each seam as it is made. Use sponge dampened with warm water. Wipe seam clean with dry cloth towel.
 - 7. Examine each seam carefully when completed. Trim additional selvage where required to achieve a color and pattern match at seams.
 - 8. Install seams vertical and plumb at least 6" from outside corners and 6" from inside corners, unless a change of pattern or color exists at corner. No horizontal seams are permitted.
 - 9. Except on match patterns, hang panels by reversing alternate strips.
 - 10. The installed fabric shall be secure, smooth, and clean without wrinkles, gaps or overlaps.

3.4 CLEANING

- A. Clean vinyl wall covering with mild soap powder dissolved in warm water, and remove excess adhesive at joints and on adjacent surfaces.
- B. Replace vinyl wall covering that cannot be successfully cleaned or that is applied to defective substrate surfaces.
- C. Reinstall electrical plates and covers, light fixture trims, and similar items.

END OF SECTION

SECTION 09 72 21

SANITARY WALL PANELS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Pre-finished fiberglass reinforced panels (FRP).

1.2 SUBMITTALS

- A. General: Submit in accordance with Section 01 33 23 - SHOP DRAWINGS, PRODUCT DATA, SAMPLES.
- B. Samples: Submit sample of each type of panel.
- C. Maintenance Instructions: Submit copies of the manufacturer's printed instructions for maintenance of the installed work.

1.3 QUALITY ASSURANCE

- A. Manufacturer: Company specializing in manufacturing commercial pre-finished panels with 5 years documented experience.
- B. Applicator Qualifications: Work shall be performed by a skilled applicator having at least 5 years' experience in the installation of pre-finished panels.
- C. Source Quality Control: Flame spread rating of the material shall be determined by ASTM E 84. Each roll of goods delivered to the project shall bear Underwriters' Laboratories labels.

1.4 REGULATORY REQUIREMENTS

- A. Conform to applicable building code for flame spread/fuel contribution/smoke development ratings when tested to ANSI/ASTM E 84.

1.5 ENVIRONMENTAL CONDITIONS

- A. Building should be fully enclosed prior to installation with sufficient heat and ventilation.
- B. Room temperature during installation must be 70°F. or above.
- C. Panels should be allowed to equalize to the moisture in the room environment prior to installation.

1.6 DELIVERY AND STORAGE

- A. Materials should be stored lying flat, under cover and protected from the elements. Panels should be allowed to acclimate to the room conditions for 48 hours prior to installation.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Prefinished Panels
 - 1. Provide FRP Panels as manufactured by Marlite or approved equivalent.
 - 2. Finish: Color and finish as scheduled in SECTION 09 99 00 - COLOR SCHEDULE.
- B. Moldings and Trim Pieces: Inside Corner, Division and End Cap moldings. Provide all moldings required for a complete installation.
- C. Adhesive: Type and brand recommended by the panel manufacturer.

- D. Sealant: Silicone sealant as recommended by the panel manufacturer.

PART 3 - EXECUTION

3.1 INSPECTION

- A. Examine areas to receive panels for conditions that will adversely affect the execution and quality of work. Do not start this work until unsatisfactory conditions are corrected.
- B. Verify that substrate surfaces are clean, dry, solid, straight, and free from drywall dust, bumps, projections, loose plaster, or paint.
- C. Beginning of installation means acceptance of substrate.

3.2 INSTALLATION

- A. Applying Panels: Follow the manufacturer's printed instructions for cutting and installing panels.
 1. Moldings can be applied by coated lath nails and/or adhesive. If nails only are used, backing materials must have nail holding capabilities or nails must be long enough to penetrate into furring or framing.
 2. All panel edges inside and outside corners are to finished with moldings appropriate to that purpose.
 3. All molding channels and joints between the system and different materials will be sealed with silicone sealant.
 4. Adhesive will be applied in strict accordance with the manufacturer's instructions and under conditions recommended as appropriate to the specific adhesive being used.
 5. Do not make panel joints directly over drywall joints.
 6. Do not fit panels too tightly in moldings. Allow at least 1/8" in all channels for panel expansion after installation is completed.

3.3 CLEANING

- A. Clean panels with mild soap and water to remove excess adhesive/sealant at joints and on adjacent surfaces.

3.4 PROTECTION

- A. Protect finished installation under provisions of Section 01 66 00 - PRODUCT STORAGE AND HANDLING REQUIREMENTS.

3.5 DEFECTS

- A. Replace panels applied to defective substrate surfaces. Correct defects in completed installation.

END OF SECTION

SECTION 09 84 13

FIXED SOUND-ABSORPTIVE/SOUND-REFLECTIVE PANELS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes: Acoustical wall panel system.

1.2 SUBMITTALS

A. General: Submit in accordance with SECTION 01 33 23 – SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.

B. Shop Drawings: Submit proposed layout of coverage by acoustical panels, details of proposed mounting method.

C. Samples:

1. Submit a minimum size of 12" x 12" sample of each proposed panel, to include specified facing, proposed edge detailing and a mounting element.
2. Submit manufacturer's available sample selections of fabric or color for Architect's selection and approval.

D. Certification: Submit manufacturer's certificates of flame spread rating of selected fabric facings or products, and independent laboratory tests of sound absorption coefficients for products in thickness specified.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Acoustical Wall Panels (24A): Provide wall treatment of QuietSpace® Panel from thermally bonded polyester containing not less than 45% recycled material as manufactured by Autex www.autexacoustics.com or approved equivalent.

1. Panel shall be 4' x 8' x 1 inch, nom. depth.
2. ASTM E-84, Class A FS:0 - SD: 10.
3. NRC shall 0.85.

B. Hardware: Manufacturer's standard concealed mounting hardware consisting of panel, wall and leveling clips.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine walls for conditions that would prevent proper installation of acoustical products and report such conditions to the Architect for correction.

B. Do not proceed until defective conditions are corrected.

3.2 INSTALLATION

A. Securely install acoustical panels aligned plumb and square, with uniform, tight butt joints between adjacent panels, in accordance with manufacturer's written directions.

B. Contractor shall remove packing material, construction debris, tools and equipment from site upon completion of work, leaving each installation clean and acceptable for use and occupancy by Owner.

END OF SECTION

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SECTION 09 91 00

PAINTING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: On-the-job painting and finishing of exterior and interior surfaces.
1. Included: Paint and finish the following materials, fittings, and equipment items which are exposed-to-view.
 - a. Iron, steel, and galvanized metal.
 - b. Wood.
 - c. Concrete masonry units.
 - d. Interior concrete ceiling and beam surfaces.
 - e. Gypsum board.
 - f. Interior caulked joints.
 - g. Portland cement plaster.
 - h. Bare and insulation covered piping and ductwork, conduit, hangers, grilles and registers, and primed metal surfaces and factory-finished surfaces of mechanical and electrical equipment.
 2. Do not paint prefinished items, concealed surfaces, finished metal surfaces, operating parts, and labels, including the following:
 - a. Factory-finished metal lockers and finished light fixtures.
 - b. Architectural aluminum and stainless steel.
 - c. Interior concrete floors and steps and all exterior concrete.
 - d. Acoustic panel ceilings, unless noted on drawings.
 - e. Pre-finished cabinets.
 - f. Operating parts: Moving parts of operating mechanical and electrical equipment, such as: valve and damper operators, linkages, sensing devices, motor and fan shafts
 - g. Labels: UL, FM, or other code-required labels or equipment name, identification, performance rating, or nomenclature plates.
 3. Contractor shall examine the drawings for mechanical and electrical work, and all materials installed throughout the building which require painting shall be painted under this section of the specifications.
- B. Related Sections:
1. Section 05 12 00 - Structural Steel Framing: shop priming of structural steel.
 2. Section 05 21 00 - Steel Joists: shop priming of steel joists.
 3. Section 05 50 00 - Metal Fabrications: shop priming of metal fabrications.
 4. Section 09 99 00 - Color Schedule.

1.2 SYSTEM DESCRIPTION

- A. For purposes of this painting specification, the following areas and spaces are not considered finished, occupied areas and there will be no painting therein except for doors and frames and as may be specifically scheduled in article paint schedule.
1. Mechanical chases.
 2. Spaces above suspended ceilings.
 3. Elevator hoistways.

1.3 SUBMITTALS

- A. Samples:
1. Submit in accordance with SECTION 01 33 23 - SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
 2. Submit two 8-1/2" x 11" samples of each paint color scheduled on the color schedule prepared by the Architect. Samples shall be on heavy cardboard and shall be made with the actual mixed paints to be used on the project.
 3. Samples for Initial Selection of each type of texture finish product.
- B. Paint Schedule: If painting materials other than those specified are proposed for use, submit a complete schedule of the materials to be substituted. This schedule, in triplicate, shall be in the same form as the paint schedule included in this section, and shall list materials by manufacturer, brand name, and type for each surface to be finished.

- C. Federal law requires renovation firms (including sole proprietorships) to be certified and requires individuals to be trained in the use of lead-safe work practices. Contractors who perform renovation, repairs, and painting jobs shall:
 - 1. Provide a copy of your EPA lead training certificate.
 - 2. Show what lead-safe methods you will use to perform the job.
 - 3. Provide references from at least three recent jobs involving projects before 1978.
 - 4. Keep records to demonstrate that you and your workers have been trained in lead-safe work practices and that you follow lead-safe work practices on the job.
- D. Close-out Schedule: Upon completion of work, furnish a full schedule of paint types, brand names, location of purchase, color numbers, and location each color is installed.

1.4 QUALITY ASSURANCE

- A. Product Manufacturer: Company specializing in manufacturing quality paint and finish products with 3 years' experience.
- B. Applicator: Company specializing in commercial painting and finishing with 2 years' experience.
- C. Product Labels: Include manufacturer's name, type of paint, stock number, color and label analysis on label of containers.
- D. Single Source Responsibility: Provide primers and other undercoat paint produced by same manufacturer as final coats. Use only thinners approved by paint manufacturer and use only within recommended limits.
- E. V.O.C. (Volatile Organic Compound) Compliance: Products listed in the schedules and/or substitutes proposed for use by Contractor must be formulated to meet all applicable ordinances and regulations regarding maximum V.O.C. content. Utilize products which have been specially formulated to meet such requirements.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Delivery: Deliver materials in original containers with seals unbroken and labels intact.
- B. Storage: Contractor shall designate a specific space at the project site for storing and mixing materials. Protect this space and repair all damage resulting from use. Do not store kerosene nor gasoline in this space. Remove oily rags at the end of each day's work.

1.6 PROJECT CONDITIONS

- A. Environmental Requirements: Maintain the temperature inside the building at not less than 60°F. during painting and finishing.
- B. Provide continuous ventilation and heating facilities to maintain surface and ambient temperatures above 65°F. for 24 hours before, during, and 48 hours after application of finishes, unless required otherwise by manufacturer's instructions.
- C. Minimum application temperatures for latex paints: 45°F. for interiors; 50°F. for exterior; unless required otherwise by manufacturer's instructions.
- D. Minimum application temperature for varnish and finishes: 65°F. for interior or exterior, unless required otherwise by manufacturer's instructions.
- E. Provide lighting level of 80 ft.-candles measured mid-height at substrate surface.
- F. Do not apply paint in snow, rain, fog, or mist; or when the relative humidity exceeds 85%; or to damp or wet surfaces; unless otherwise permitted by the paint manufacturer's printed instructions. Painting may be continued during inclement weather only if the areas and surfaces to be painted are enclosed and heated within the temperature limits specified during application and drying periods of 24 hours between coats and 72 hours after final coat.
- G. Protection: Provide sufficient drop cloths to fully protect adjacent finished work.

1.7 PRECAUTIONS

- A. Do not store paints, oils, thinners and other flammable items inside the building. They shall be stored in approved containers when not in actual use during the painting job. The fire hazard shall be kept at a minimum.
- B. Take precautions to protect the public and construction workers during the progress of the work.
- C. Furnish a temporary fire extinguisher of suitable chemicals and capacity, located near flammable materials.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

- A. Provide paint as manufactured by one of the following:
 - Kelly-Moore Paint Co. (<http://www.kellymoore.com>)
 - PPG Paints (<http://www.ppgpaints.com>)
 - The Sherwin-Williams Co. (<http://www.sherwin.com/default.asp>)
- B. Materials described are based on the specifications of the above listed manufacturers and are given to designate the quality of materials required. Materials of best quality grade are representative of the standard of quality required. Materials not displaying manufacturer's identification as a first line, best-grade product will not be acceptable.
- C. Colors: The Architect has prepared a color schedule; reference SECTION 09 99 00 - COLOR SCHEDULE. Regardless of which brand of paint is selected for use the Contractor shall intermix and blend as required to obtain an exact match to each color on the color schedule.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that surfaces and substrate conditions are ready to receive work as instructed by the product manufacturer.
- B. Examine surfaces scheduled to be finished prior to commencement of work. Report to Architect any condition that may potentially affect proper application.
- C. Measure moisture content of surfaces using an electronic moisture meter. Do not apply finishes unless moisture content of surfaces are below the following maximums:
 - 1. Gypsum wallboard: 12 percent.
 - 2. Interior located wood: 15 percent, measured in accordance with ASTM D 4442.
 - 3. Concrete: 12 percent.
 - 4. Masonry: 12 percent.
 - 5. Plaster: 12 percent
- D. Test shop-applied primers for compatibility with subsequent cover materials.
- E. Perform the following Test procedure prior to painting. This will determine if Passivators exist on galvanized metal. This procedure is not necessary on galvanized metal with G 90 Paint Grip.
 - 1. Prepare a solution by dissolving 20 grams of copper sulfate in one liter (1000 grams) of water. Copper sulfate crystals may be purchased at most drug stores.
 - 2. Solvent wash a small area per the procedure of SSPC-SP1.
 - 3. Sand a small washed area using emery cloth.
 - 4. Using a cotton swab saturated with the copper sulfate solution, apply a swipe to both sanded and unsanded washed areas.
 - 5. If the sanded and unsanded surfaces turn black at the same time and that time is less than 10 seconds, there is no passivation on the surface other than light oil, and a normal degreasing/cleaning operation is sufficient preparation prior to the coating application. If the unsanded surface turns slower than the sanded surface, or not at all, a passivator of some type is present on the surface. If neither surface turns, the surface is probably an alloy of zinc or some other metal.

6. If the galvanized steel has been treated or passivated, the treatment or passivator must be removed by brush blasting. If this method is prohibited by environmental regulations, then chemical etching with Amchem's GALVAPREP SG-3 will be acceptable, if previously approved by the Architect. The chemical etching manufacturer's procedures should be followed carefully.
7. If the surface is determined to be an alloy by this test procedure, notify Architect and adhesion tests of the proposed coating applied over the proposed surface preparation must be conducted.
8. If no passivators are present, wash galvanized metal surfaces with mineral spirits to remove residual grease and oil.

F. Beginning of installation means acceptance of existing surfaces and substrate.

3.2 PREPARATION

- A. Perform preparation and cleaning procedures in accordance with coating manufacturer's instructions for each substrate condition.
- B. Fill open joints, cracks and crevices on steel buck frames with metal putty and sand smooth before painting.
- C. Sand woodwork surfaces smooth before priming.
- D. Coat pine knots and pitch streaks with shellac before painting.
- E. Putty nail holes after the prime coat.
- F. Remove hardware and accessories, plates, lighting fixtures and similar items which are not to be finish-painted or provide adequate surface-applied protection for these items in place.
- G. Uncoated steel and iron surfaces: Remove grease, scale, dirt, and rust. Where heavy coatings of scale are evident, remove by wire brushing or sandblasting; clean by washing with solvent. Apply a treatment of phosphoric acid solution, ensuring weld joints, bolts, and nuts are similarly cleaned. Spot prime paint after repairs.
- H. Shop primed steel surfaces: Sand and scrape to remove loose primer and rust. Feather edges to make touch-up patches inconspicuous. Clean surfaces with solvent. Prime bare steel surfaces.

3.3 APPLICATION

- A. Workmanship shall be of the highest quality. Mix and use paint materials in accord with the manufacturer's directions. Spread materials evenly, flow smoothly, and brush out without sags or runs.
- B. Provide finish coats which are compatible with primer paints used. Provide barrier coats over incompatible primers where required.
- C. When undercoats, stains or other conditions show through final paint coat, apply additional coats until paint film is of uniform color and sheen.
- D. Finish the insides of wood cabinets, including backs of cabinet doors, as scheduled for the fronts and ends.
- E. Between coats, sand enamel and lacquer finish on wood and metal surfaces to produce a smooth, even finish. Use #220 grit sandpaper or finer.
- F. Tint priming coats and undercoats to approximate shade of final coat to assure uniformity of color in the finish. Touch up suction spots and "hot spots" before applying the last coat to produce an even result in the finish coat.
- G. Exposed ductwork, piping and conduit in finished, occupied areas shall be painted the same color as the wall or ceiling against which it is installed, unless otherwise noted.
- H. Apply the finish coat on gypsum board, plaster, and concrete surfaces with rollers.
- I. On concrete masonry unit wall surfaces without a block filler, apply the first coat of paint with a spray gun.

3.4 TOUCH UP AND CLEAN

- A. Touching Up: On completion, carefully touch up all holidays, marred and damaged spots, and work over all surfaces that have been repaired by other trades.
- B. Cleaning: Remove spilled, splashed, and splattered paint from all surfaces. Do not mar surface finish of item being cleaned.
- C. Reinstall the items removed under the provisions of paragraph above.

3.5 PAINT SCHEDULE

- A. The products listed below represent top of the line products of The Sherwin-Williams Co. Equivalents by Kelly-Moore Paint Co. and PPG Paints will also be acceptable.
SW The Sherwin-Williams Co.
- B. Interior Metal
 - 1. Steel door frames, borrowed light frames, and vision panel frames in doors, hollow metal doors, and ladders.
 - 1 primer coat
SW Pro Industrial Pro-Cryl Universal Primer, B66-310 Series
 - 2 finish coats
SW ProMar 200 Zero VOC Interior Latex Semi-Gloss, B31-2600 Series.
 - 2. Grilles, diffusers and registers in walls and ceilings.
 - 1 finish coat
KM 1620--Kel-Cote Alkyd Eggshell Enamel
PPG Speedhide Alkyd Lo-Sheen, 6-90
SW ProMar 200 Alkyd Eg-Shel Enamel, Series B33 W 200
 - 1. Other exposed iron and steel.
 - 1 primer coat
SW Pro Industrial Pro-Cryl Universal Primer, B66-310 Series
 - 1 finish coat
SW ProMar 200 Zero VOC Eg Shel, Series B20-2600 Series.
 - 2. Metal ductwork, hangers, supports and brackets.
 - 1 primer coat
SW Pro Industrial Pro-Cryl Universal Primer, B66-310 Series
 - 1 finish coat
SW ProMar 200 Zero VOC Eg Shel, Series B20-2600 Series.
 - 3. Items of mechanical and electrical machinery and equipment.
 - 1 finish coat
SW Pro Industrial Zero VOC Waterborne Catalyzed Epoxy, B73-300 Series
- C. Interior Wood
 - 1. Plywood walls.
 - 1 primer coat
SW Preprite ProBlock Latex Primer/Sealer, B51W20
 - 2 finish coats
SW Proclassic Waterborne Acrylic Semi-Gloss Enamel, Series B31
 - 2. Inside of cabinet drawers.
 - 3. Inside of cabinet drawers.
 - 1 finish coat SW WoodClassics Waterborne clear satin polyurethane, A-68 Series
 - 4. Hardwood millwork, doors, and trim.
 - 1 coat stain; color as selected by Architect.
 - 1 coat clear sanding sealer
 - 2 coats clear satin polyurethane
- D. Interior Concrete Masonry (At sound absorbing concrete masonry unit blocks, do not paint fibrous fillers)
 - 1. Concrete masonry unit walls scheduled to have Epoxy Paint.
 - 1 filler coat
SW PrepRite Block Filler, B25W25
 - 2 finish coats
SW Pro Industrial Zero VOC Waterborne Catalyzed Epoxy, B73-300 Series

2. Concrete masonry unit walls in Mechanical Rooms.
 - 2 finish coats
SW ProMar 200 Zero VOC Eg Shel, Series B20-2600 Series.
 3. Other concrete masonry unit walls.
 - 1 filler coat
SW PrepRite Block Filler, B25W25
 - 2 finish coats
SW Pro Industrial 0 VOC Semi-Gloss Acrylic, B66-650 Series
- E. Interior Concrete
1. Concrete beams and ceilings.
 - 1 filler coat
SW PrepRite Block Filler, B25W25
 - 1 finish coat
SW ProMar 200 Zero VOC Flat, B30-2600 Series.
- F. Gypsum Wallboard
1. Gypsum board ceilings and furr downs.
 - 1 texture coat
USG Multi-Purpose Texture - Sprayed Splatter - Light Finish Texture
PPG Speedhide Acrylic Texture Coating 4-50
 - 1 primer coat
SW ProMar 200 Zero VOC Interior Latex Primer, B282W600
 - 2 finish coats
SW PrMar 200 Zero VOC Flat,B30-2600 Series.
 2. Gypsum board walls scheduled to have Epoxy Paint.
 - 1 primer coat - fine sanded texture
SW ProMar 200 Zero VOC Interior Primer, B28W2600
 - 2 finish coats
SW Pro Industrial Zero VOC Waterborne Catalyzed Epoxy, B73-300 Series
 3. All other gypsum board walls.
 - 1 texture coat
USG Multi-Purpose Texture - sprayed splatter medium-light finish texture
PPG Speedhide Acrylic Texture Coating 4-50
 - 1 primer coat
SW ProMar 200 Zero VOC Interior Latex Primer, B28W2600
 - 2 finish coats
SW ProMar 200 Zero VOC Interior Latex Semi-Gloss B31-2600 Series
- G. Interior Caulked Joints
1. Caulking
 - 2 finish coats
SW Pro Industrial 0 VOC Semi-Gloss Acrylic, B66-650 Series
- H. Exterior Metal
1. Steel door frames and hollow metal doors.
 - 1 primer coat
SW Pro Industrial Pro-Cryl Universal Primer, B66-310 Series
 - 2 finish coats
SW Pro Industrial 0 VOC Gloss Acrylic, B66-600 Series
 2. Steel pipe, conduit, hangers supports and brackets.
 - 1 primer coat
SW Pro Industrial Pro-Cryl Universal Primer, B66-310 Series
 - 2 finish coats
SW Pro Industrial 0 VOC Gloss Acrylic, B66-600 Series
 3. Galvanized steel lintels, ladders, ductwork, flashings, roof hatches, tubular steel downspouts, scuppers, and ventilators. (Reference test procedure for Passivators)
 - 1 primer coat
SW Pro Industrial Pro-Cryl Universal Primer, B66-310 Series
 - 2 finish coats
SW Pro Industrial 0 VOC Gloss Acrylic, B66-600 Series
 4. Items of mechanical and electrical machinery and equipment, including mechanical and electrical equipment on the roof which are 12" above roof line and are not concealed by a screen.
 - 1 finish coat
SW Pro Industrial 0 VOC Gloss Acrylic, B66-600 Series

- 5. Cast iron downspout boots.
 - 1 primer coat
 - SW Pro Industrial Pro-Cryl Universal Primer, B66-310 Series
 - 1 finish coat
 - SW Pro Industrial Zero VOC Acrylic, B66-600 Series

- I. Exterior Concrete Masonry Units
 - 1 filler coat
 - SW Heavy Duty Block Filler, B42 W 46
 - 2 finish coats
 - SW A-100 Exterior Flat, A6-100 Series

END OF SECTION

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SECTION 09 99 00

COLOR SCHEDULE

THE COLOR SCHEDULE IS ISSUED AS A REFERENCE FOR COLOR SELECTIONS ONLY. THE COLOR SCHEDULE SHALL NOT TAKE PRECEDENCE OVER THE INDIVIDUAL SPECIFICATION SECTIONS. IF THERE IS A DISCREPANCY BETWEEN SPECIFICATION FINISHES AND COLOR SCHEDULE, NOTIFY ARCHITECT PRIOR TO ORDERING MATERIAL.

PROJECT NAME - New Central Administration Building Eagle Mountain-Saginaw I.S.D.	PROJECT NO. 1847.00 DATE 20-Oct-2020 REVISED 20-Oct-2020
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MARK	COLOR KEY	ITEM	SPEC. SECTION	MANUFACTURER/ DESCRIPTION	REMARKS
1A	1A	SEALED MONOLITHIC CONCRETE	03 30 00	AS SPECIFIED	
1C	1C	PEDESTRIAN TRAFFIC COATING	07 18 13	AS SPECIFIED COLOR: GRAY	
3H	3H-1	4" X 12" PORCELAIN TILE	09 30 13	MFG: Crossville STYLE: Color By Numbers COLOR: Tea For Two WT02 Satin	Field Tile in Kitchen
	3H-2	4" X 12" PORCELAIN TILE	09 30 13	MFG: Crossville STYLE: Color By Numbers COLOR: 1812 Overture WT18 Satin	Accent Tile in Kitchen
	3H-3	4" X 12" PORCELAIN TILE	09 30 13	MFG: Crossville STYLE: Color By Numbers COLOR: Sixth Sense WT06 Satin	Accent Tile in Kitchen
	3H-4	4" X 12" PORCELAIN TILE	09 30 13	MFG: Crossville STYLE: Color By Numbers COLOR: Eight Days a Week WT08 Satin	Accent Tile in Kitchen
3L	3L-1	12" X 24" PORCELAIN TILE	09 30 13	MFG: Crossville STYLE: Retro Active 2.0 Patterns COLOR: RET01 Antico Taupe PTN	Wet Wall Tile in all Restrooms
	3L-2	12" X 24" PORCELAIN TILE	09 30 13	MFG: Daltile STYLE: Reminiscent COLOR: Souvenir Gray RM22	Floor Tile in group Restrooms & open break areas
	3L-3	12" X 24" PORCELAIN TILE	09 30 13	MFG: Crossville STYLE: Retro Active 2.0 Patterns COLOR: RET04 Empress White PTN	Wall Tile in all Restrooms
3N	3N	8" X 40" PORCELAIN TILE	09 30 13	MFG: Interceramic STYLE: Wildwood COLOR: Acorn Beige	Floor tile in break rooms, corridors, and work rooms.

New Central Administration Building
Eagle Mountain-Saginaw ISD
Fort Worth, Texas

MARK	COLOR KEY	ITEM	SPEC. SECTION	MANUFACTURER/ DESCRIPTION	REMARKS
3R	3R-1	PORCELAIN MOSAIC 12"x12"	09 30 13	MFG: Concept Surfaces STYLE: West 57th COLOR: HWS05 Gray Muretto	Typical backsplash wall tile at break rooms & wet areas
	3R-2	PORCELAIN MOSAIC 12"x12"	09 30 13	MFG: Daltile STYLE: Reminiscent COLOR: Souvenir Gray RM22	Floor Tile in single user Restrooms
	G1	GROUT	09 30 13	LATICRETE COLOR: T. B. D.	For Tile 3H
	G2	GROUT	09 30 13	LATICRETE COLOR: 03 Silk	For Tile 3L-3
	G3	GROUT	09 30 13	LATICRETE COLOR: 34 Sandstone	For Tile 3L-1
	G4	GROUT	09 30 13	LATICRETE COLOR: 60 Dusty Grey	For Tile 3L-2, 3R-1 & 3R-2
	G5	GROUT	09 30 13	LATICRETE COLOR: 60 Dusty Grey	For Tile 3L-2 & 3R-2
	G6	GROUT	09 30 13	LATICRETE COLOR: 30 Sand Beige	For Tile 3N
4C	4C	CAST STONE	04 72 00	AS SPECIFIED	- REMARKS
4E	4E -1	NATURAL STONE MASONRY	04 43 00	AS SPECIFIED	Natural Stone in lobbies, corridors, and other feature areas
	4E -2	NATURAL STONE MASONRY	04 43 00	MFG: Continental Cut Stone STYLE: Texas Cordova Shell FINISH: Honed	On ground level lobby & Unti C Lobby
4F	4F	FIBER CEMENT PANELS	07 46 46	MFG: American Fiber Cement COLOR: Cembrit Patina 070 Flint	
6A	6A	CONCRETE MASONRY UNITS - PAINT	04 20 00 or 04 22 00	AS SPECIFIED	- REMARKS
12A	12A-1	WOOD PANELING	06 40 00	MFG: Impression Veneers STYLE: Linea Natural Veneers COLOR: Oak	Wood panels in Boardroom and both lobbies - if custom CNC, sample cannot be obtained
	12A-2	WOOD PANELING - Perforated	06 40 00	MFG: Impression Veneers STYLE: Linea Natural Veneers COLOR: Oak	Wood panels in Boardroom - if custom CNC, sample cannot be obtained
12B	12B	WOOD BASE	06 40 00	AS SPECIFIED	- REMARKS
12C	12C	WOOD TRIM	06 40 00	AS SPECIFIED	- REMARKS

MARK	COLOR KEY	ITEM	SPEC. SECTION	MANUFACTURER/ DESCRIPTION	REMARKS
12F	12F	PLYWOOD - PAINTED	06 10 00 or 06 40 00	AS SPECIFIED	- REMARKS
12G	12G	SANITARY WALL PANELS	09 72 21	MFG: Marlite STYLE: Pebbled Texture COLOR: P-100 White	Janitor Mop Sink
14B	14B-1	RUBBER BASE - COVERED	09 65 13	MFG: Roppe STYLE: Pinnacle COLOR: 178 Pewter	Typical base
	14B-2	RUBBER BASE - COVERED	09 65 13	MFG: Roppe STYLE: Contours Profile PV4060 COLOR: 178 Pewter	Millwork Base at Stone Transitions
15C	15C	RESINOUS FLOORING	09 67 23	MFG: Stonhard STYLE: Stontec COLOR: Shenandoah Buff Large Flake	Floor in Discovery Labs and Kitchen
16A	16A-1	EPOXY TERRAZZO FLOORING	09 66 23.16	MFG: Terrazzo & Marble COLOR: 10-2059	Field White Terrazzo flooring
	16A-2	EPOXY TERRAZZO FLOORING	09 66 23.16	MFG: Terrazzo & Marble COLOR: 14GG-012	Accent Terrazzo flooring
	16A-3	EPOXY TERRAZZO FLOORING	09 66 23.16	MFG: Terrazzo & Marble COLOR: 13-581	Accent Terrazzo flooring
16B	16B	PRECAST TERRAZZO TREADS AND RISERS	09 66 23.17	MFG: Terrazzo & Marble COLOR: 10-2059	Terrazzo stair treads and risers
17A	17A	CARPET	09 68 00	MFG: Shaw Contract STYLE: Off The Grid Escape 5A242 COLOR: Slope 15518	Boradloom carpet in Boardroom Dias Platform
17B	17B-1	12" X 48" CARPET TILE	09 68 13	MFG: Shaw Contract STYLE: Off The Grid Seek Tile 5T216 COLOR: Slope 15518	Typical carpet tile
	17B-2	12" X 48" CARPET TILE	09 68 13	MFG: Shaw Contract STYLE: Off The Grid Discover Tile 5T217 COLOR: Slope 15518	Accent carpet tile
	17B-3	20" X 20" CARPET TILE	09 68 13	MFG: Interface STYLE: Cubic COLOR: 6395 Construction	Accent carpet tile
19C	19C	WALK-OFF CARPET	09 68 13	MFG: Tarkett/Tandus Centiva STYLE: Abrasive Action II 02578 COLOR: Winter Gray 19103	Walk off carpet tile in Lobby Vestibues
20A	P-1	GYPSUM WALLBOARD - PAINT	09 21 16	AS SPECIFIED	

MARK	COLOR KEY	ITEM	SPEC. SECTION	MANUFACTURER/ DESCRIPTION	REMARKS
20EP	P-1	GYPSUM WALLBOARD - EPOXY PAINT	09 21 16	AS SPECIFIED	
21ES	P-5	EXPOSED STRUCTURE - PAINT	09 91 00	AS SPECIFIED	
22A	22A	2' X 2' ACOUSTIC LAY-IN PANELS	09 51 00	AS SPECIFIED	
22B	22B	2' X 2' VINYL COATED LAY-IN PANELS	09 51 00	AS SPECIFIED	
22C	22C	2' X 2' ACOUSTIC LAY-IN PANELS	09 51 00	AS SPECIFIED	High NRC Tiles
23A	23A-1	LINEAR METAL CEILING - PERFORATED	09 54 23	MFG: Armstrong STYLE: MetalWorks Linear COLOR:	Interior metal ceiling
	23A-2	LINEAR METAL CEILING - NON-PERFORATED	09 54 23	MFG: Armstrong STYLE: MetalWorks Linear Exterior COLOR:	Exterior metal ceiling
23B	23B	LINEAR METAL CEILING - SLATS	09 54 28	MFG: Ceilings Plus STYLE: Bars COLOR: S-25 Natural Ovang Sarante	Wood look metal slats in Dais
24A	24A-1	ACOUSTIC WALL PANELS	09 84 13	MFG: Autex STYLE: QuietSpace COLOR: Civic	Field color Acoustic Wall Panels in Lobbies, and other office spaces
	24A-2	ACOUSTIC WALL PANELS	09 84 13	MFG: Autex STYLE: QuietSpace COLOR: Fawn	Accent color Acoustic Wall Panels in Lobbies, and other office spaces
24D	24D	ACOUSTIC WOOD GRILLE (Ceiling)	09 54 26	MFG: 9-Wood STYLE: 1100 Cross Piece Grille, SKU 1126-3 COLOR: Stain to match 12A	Wood grille ceiling in Lobbies, Corridors, and other office spaces
28A	28A	VINYL WALL COVERING	09 72 16	MFG: Tri Kes Studio Source STYLE: The Strand COLOR: BX4731 Mineral	Field color Vinyl Wall Covering in corridors
28F	28F	TACKABLE WALL COVERING	10 11 16	MFG: Koroseal STYLE: Walltalker TacWall COLOR: Quarry SMS21821	Tackable Wall Covering in Office spaces
		INTERIOR PAINT			
	P-1	INTERIOR PAINT	09 91 00	MFG: Sherwin Williams COLOR: SW7516 Kestrel White	Typical White wall paint
	P-2	INTERIOR PAINT	09 91 00	MFG: Sherwin Williams COLOR: SW9168 Elephant Ear	Accent Gray wall paint & Typical HM Doors & Frames
	P-3	INTERIOR PAINT	09 91 00	MFG: Sherwin Williams COLOR: SW7007 Ceiling Bright White	Typical White ceiling paint

MARK	COLOR KEY	ITEM	SPEC. SECTION	MANUFACTURER/ DESCRIPTION	REMARKS
	P-5	INTERIOR PAINT	09 91 00	MFG: Sherwin Williams COLOR: SW7675 Sealskin	Accent paint to match dark bronze, all exposed structure and other accents
		EXTERIOR PAINT			
	P-6	EXTERIOR PAINT	09 91 00	MFG: Sherwin Williams COLOR: SW6991 Black Magic	Accent paint to match dark bronze
		PLASTIC LAMINATE			
	PL-1	PLASTIC LAMINATE-CABINETS	06 40 00	MFG: Formica COLOR: Millennium Oak 5887-NT	Typical Plastic Laminate faced doors, cabinet fronts, toe kicks, and knee space
	PL-2	PLASTIC LAMINATE-COUNTERTOPS	06 40 00	MFG: Formica COLOR: Flax Gauze 7708-58	Typical work room and print area countertops
	PL-3	PLASTIC LAMINATE-Skyfold Panels	06 40 00	MFG: Formica COLOR: Basalt Slate 3690-34	Bottom panels of Skyfold Partition in Boardroom
	PL-4	PLASTIC LAMINATE-ACCENT	06 40 00	MFG: Formica COLOR: Earth Terre 5342-58	Accent at Dais in Boardroom
		SOLID SURFACE			
SLD	SLD	SOLID SURFACE	06 40 00	MFG: Corian COLOR: Sand Storm	Typical restroom and break room countertops
		MISCELLANEOUS			
		DOORS AND DRAWER PULLS AT MILLWORK	06 40 00	COLOR: Brushed Stainless Steel	- REMARKS
		VINYL J-MOLD TRIM	09 65 00	MFG: Burke Mercer STL: 040 Round Cap - 1/8" COLOR:	
QZ	QZ	QUARTZ SOLID SURFACE	12 36 61.19	MFG: Corian COLOR: Venetia Cream	Micro Market, Boardroom, and Reception desk countertops
MSW	MSW	METAL SLAT WALL	06 40 00	MFG: Megawall STYLE: Aluminum Slatwall 3" O.C. COLOR: White	In Discovery Labs
		RAMMED EARTH		AS SPECIFIED	
		AIR DEVICES		Color selected from MFG Anodized finishes	
		PREFINISHED METAL ROOF	07 41 20	AS SPECIFIED	

MARK	COLOR KEY	ITEM	SPEC. SECTION	MANUFACTURER/ DESCRIPTION	REMARKS
		PREFINISHED METAL WALL PANELS	07 42 13	AS SPECIFIED	
		PREFINISHED METAL COPING	07 62 00	AS SPECIFIED	
		PREFINISHED GUTTERS & DOWNSPOUTS	07 62 00	AS SPECIFIED	
		EXPANSION JOINT ASSEMBLIES	07 95 13	COLOR: White	Ceiling and Wall locations only
		EXPANSION JOINT ASSEMBLIES	07 95 13	COLOR: TBD	Floor locations only
		PREFINISHED STOREFRONT	08 41 13	COLOR: Dark Bronze	
		PREFINISHED GLAZED ALUMINUM CURTAIN WALL	08 44 13	COLOR: Dark Bronze	
		EXTERIOR DOOR PULLS AND PUSH BARS	08 71 00	AS SPECIFIED	
		LOUVERS	08 91 00	AS SPECIFIED	
	TR-1	METAL CORNER TRIM & TILE TOP CAP	09 30 13	MFG: Schluter Systems STYLE: RONDEC FINISH: Dark Bronze	Tile Outside Corner Trim & Top Cap
	TR-2	METAL CORNER TRIM	09 30 13	MFG: Fry Reglet Product Number: WCTOSC FINISH: T. B. D.	Outside Corner Trim at all Vinyl Wall Covering locations. Color to be selected by Architect from the manufacturer's selection of colors.
	TR-3	METAL TRANSITION STRIP	09 30 13	MFG: Schluter Systems STYLE: RENO-TK FINISH: Dark Bronze	Porcelain To Carpet
	TR-4	METAL TRANSITION STRIP	09 30 13	MFG: Schluter Systems STYLE: RENO-U FINISH: Dark Bronze	Porcelain To Concrete & Carpet to Concrete
	TR-5	METAL TRANSITION STRIP	09 30 13	MFG: Schluter Systems STYLE: RENO-TK FINISH: Dark Bronze	Terrazzo To Carpet
	TR-6	METAL EDGE TRIM	09 30 13	MFG: Schluter Systems STYLE: Jolly FINISH: Dark Bronze	Edge trim at all exposed edges of finishes, typical.
AB	AB-1	METAL COVE BASE	09 30 13	MFG: Schluter Systems STYLE: DILEX FINISH: Dark Bronze	Porcelain Wall to Floor
	AB-2	METAL COVE BASE	09 30 13	MFG: Schluter Systems STYLE: DILEX-AHKA FINISH: Dark Bronze	Porcelain Wall to Non-Tile Floor
	AB-3	METAL COVE BASE	09 30 13	MFG: Schluter Systems STYLE: Designbase DB SL 110 EB FINISH: Stainless Steel	Stainless Steel base at millwok and walls in workrooms, breakrooms, and wet areas except for restrooms.

MARK	COLOR KEY	ITEM	SPEC. SECTION	MANUFACTURER/ DESCRIPTION	REMARKS
		METAL ROUND COLUMN COVERS	05 58 13	MFG: Moz Designs STYLE: CC100 Round FINISH: Brushed Stainless #4	Column covers in Units A & C Lobbies
		INTERIOR ROOM IDENTIFICATION - SIGNS	10 14 00	AS SPECIFIED	
		SOLID PHENOLIC TOILET COMPARTMENTS	10 21 15	MFG: Metpar STYLE: Phenolic Thru Color COLOR: Dove Grey D92	
		FOLDING PANEL PARTITIONS	10 22 39	MFG: Modernfold	In training rooms, Reference elevation for finishes
		FOLDING PANEL PARTITIONS	10 22 39	MFG: Skyfold	In Boardroom, Reference elevation for finishes
		CORNER GUARDS	10 26 13	AS SPECIFIED COLOR: Stainless Steel	In Kitchen & outside corners at 28A Vinyl Wallcovering locations
		FIRE EXTINGUISHER CABINET	10 44 13	AS SPECIFIED	
		LOCKERS	10 51 13	COLOR: Gray	In Discover Labs
		HORIZONTAL BLINDS	12 21 13	MFG: Hunter Douglas COLOR: Bronze Matte	
		ROLLER WINDOW SHADES - 1%	12 24 13	MFG: Mechoshades STYLE: EcoVeil COLOR: Black/Brown 0954	Boardroom only
		ROLLER WINDOW SHADES - 5%	12 24 13	MFG: Mechoshades STYLE: EcoVeil COLOR: Black/Brown 1354	Typical exterior windows
		LABORATORY CASEWORK - METAL	12 35 53	MFG: Kewaunee COLOR: #78 Snow White	
		LABORATORY CASEWORK - EPOXY RESIN COUNTERTOP	12 35 53	MFG: Kewaunee COLOR: Grey	
		ELEVATOR (HYDRAULIC)	14 24 00	MFG: Thyssenkrupp COLOR: T. B. D.	

1.01 COLOR SCHEDULE GENERAL NOTES

- A. N, S, E, W directions are based on plan north up on the construction documents.
- B. Finishes shall continue to inside corner, unless noted otherwise.
- C. Sealants shall be color to match adjacent material - typical.
- D. At ceilings with exposed structure, all exposed elements shall be painted the scheduled color, including mechanical ductwork and electrical wiring and devices.
- E. At painted CMU base, color shall match the wall above.

1.02 COLOR SCHEDULE - NOTES BY NUMBER

1,

1.03 PLASTIC LAMINATE COLOR INFORMATION

A. TYPICAL CASEWORK

- 1, Millwork cabinet body, doors, and drawer fronts shall be PL-1
- 2, Countertop shall be PL-2

B. MILLWORK AT RECEPTION DESK

- 1, Millwork cabinet body, doors, and drawer fronts shall be PL-1
- 2, Countertop shall be PL-2

C. INTERIOR PLASTIC LAMINATE-CLAD WOOD DOORS

- 1, Plastic faced interior doors shall be PL-1

D. WINDOW SILLS

- 1, Window sills shall be PL-2

1.04 PAINT COLOR INFORMATION

A. INTERIOR PAINT

- 1, All interior sealants shall be painted to match adjacent wall

2, HOLLOW METAL DOOR FRAMES:

- a. Door frames and vision panel frames shall be painted P-2, except as noted below:
 - ii. Exterior hollow metal doors: Paint exterior face of door frame to match P-5. Paint interior door frame to match P-2.
- b. At doors frames with 2 different colors, transition color at inside corner of door stop, on the door side of the stop.

3, GLAZED OPENING FINISH SCHEDULE

- a. Hollow metal glazed openings shall be painted P-2.

B. EXTERIOR PAINT

- 1, Steel plates and angles at masonry openings shall be painted to match the stone they are carrying
- 2, Electrical and mechanical devices mounted on the wall shall match the masonry or surface finish where it occurs
- 3, Bollards at dumpster enclosures shall be safety yellow

END OF SECTION

SECTION 10 11 16

MARKERBOARDS AND TACKBOARDS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Glass markerboards.
 - 2. Tackable wall covering.
- B. Related Requirements:
 - 1. Section 06 10 00 - Rough Carpentry; wood grounds.
 - 2. Section 09 21 16 - Gypsum Board Assemblies; special finish for tackable wall covering.

1.2 SUBMITTALS

- A. General: Submit in accordance with SECTION 01 33 23 - SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES
- B. Product Data: Include complete manufacturer's catalog cuts and data sheets of anchors, fasteners, colors (photographic reproductions are not acceptable) and installation requirements.
- C. Shop Drawings:
 - 1. Include types of units provided, location within each room, and length of each unit.
 - 2. Include dimensioned elevation drawings of each board assembly indicating joint locations and type of joint where required, and board mounting distances from floors.
 - 3. Include cross-section details showing each type of product and components; trim, face, core, backing materials and thickness, and key to elevations.
 - 4. Show anchorage details.
 - 5. Show installation details.
- D. Samples: Submit a 12" x 12" sample of each type of markerboard and tackable surface. Submit a 6" long sample of each component of exposed trim.
- E. Quality Control Submittals:
 - 1. Test Reports: Copies of test reports, from certified testing agency, verifying that products have been tested and meet the specified performance requirements.

1.3 OPERATION AND MAINTENANCE DATA

- A. Submit under provisions of SECTION 01 78 23 - OPERATION AND MAINTENANCE DATA.
- B. Maintenance Data: Include data on regular cleaning, and stain removal.

1.4 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

1.5 FIELD MEASUREMENTS

- A. Verify that field measurements are as indicated on shop drawings.

1.6 WARRANTY

- A. Assembled Units: Manufacturer's standard 10-year warranty against defects in materials and workmanship.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. (MB) Glass Markerboards: Provide Magnetic Glass Markerboards and brushed stainless edge grips for stand-off mount as manufactured by Claridge Products and Equipment, Inc.
 - 1. 1/4" tempered, low-iron, extra clear, safety writing glass with polished edges
 - 2. Back-painted with specially formulated fade resistant, water resistant, and heat resistant paint in color as selected by Architect.
- B. Tackable Wall Surface: Provide Walltalkers® Tac-Wall®: Uni-color resilient homogeneous tackable linoleum surface consisting of linseed oil, granulated cork, rosin binders, and dry pigments calendered onto natural burlap backing. Color shall extend through thickness of material.
 - 1. Color as scheduled in SECTION 09 99 00 - COLOR SCHEDULE.
- C. Adhesive: Flash-proof type furnished or recommended by the manufacturer.

2.2 FABRICATION

- A. Fabricating Boards: Markerboards shall be factory formed units up to 16'-0" one piece in length. Boards too large to be factory framed shall be assembled on the job to match the factory-built boards.
 - 1. Make up boards in single sheets without joints where possible. Horizontal joints are not acceptable.
 - 2. Manufacturer's labels shall not be exposed to view.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verification of Conditions:
 - 1. Verify surfaces to receive units are true and plumb. Report unsuitable conditions to the responsible contractor for correction prior to installation.
 - 2. Verify moisture and temperature levels of substrate and environment have stabilized.

3.2 INSTALLATION

- A. Erecting Units: Install markerboards in conformance with the manufacturer's instructions using continuous wall hangers.
 - 1. Install by standoff edge mounts per manufacturer's instructions.
 - 2. The installed boards shall be flat, plumb, square and rigid.
 - 3. Mounting Height: From finished floor to bottom of chalkrail shall be 36" for adult-only locations.
- B. Erecting Tackable Wall Surface: Cut tack wall to fit the surfaces.
 - 1. Comply with manufacturer's printed installation instructions.
 - 2. Cut sheets to size including a few inches of overage. Allow sheets to lay flat for at least twenty-four hours prior to the application. Mark roll direction and sequence on the backside of each sheet. Hang sheets in sequence as cut from the roll, do not reverse sheets.
 - 3. Permanent HVAC system should be set to 68 degrees Fahrenheit (20 degrees Celsius) for at least seventy-two hours prior to, during, and after the installation.
 - 4. Back roll each sheet prior to the installation to release curl memory.
 - 5. For seamed applications, using a seam and strip cutter remove the factory edge of one sheet. Using the same tool, overlap and trace cut the mating edge of the second sheet. Repeat this step for as many sheets as required for the job.
 - 6. Scribe, cut, and fit material to butt tightly to adjacent surfaces, built-in casework, and permanent fixtures and pipes.
 - 7. Apply adhesive with a 1/16 inch square notch trowel to the area to receiving the sheet (apply enough for one sheet at a time).
 - 8. Work from top to bottom then side to side. Roll sheet firmly into adhesive for positive contact and to remove air bubbles.
 - 9. Remove adhesive residue immediately after each panel is hung with a mild soap/water solution and a soft cloth/sponge.

3.3 CLEANING

- A. Remove crates, cartons and rubbish from the premises and leave the rooms broom clean. Clean down board surfaces to leave them in perfect condition.
- B. Tackable Wall Surface:
 - 1. Clean wallcovering using a sponge with a neutral pH cleaning solution. Do not use abrasive cleaners. Rinse thoroughly with water and let dry before using.
 - 2. It is important to remove adhesive while wet.

END OF SECTION

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SECTION 10 14 00

IDENTIFYING DEVICES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Building dedication plaque, cast aluminum letters, and room identification signs.
- B. Related Sections:
 - 1. Section 01 21 00 - Allowances.

1.2 SUBMITTALS

- A. General: Submit in accordance with SECTION 01 33 23 - SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Samples: Submit manufacturer's complete line of color samples, 1" x 3", for initial color selection.
- C. Invoices: Submit certified copies of invoices indicating description and quantity of signs delivered and installed.
- D. Template: Submit full-size template drawing for approval:
 - 1. Aluminum letter size, stock, spacing, anchorage devices, etc.
 - 2. Building Dedication Plaque.

1.3 PRE-INSTALLATION CONFERENCE

- A. Pre-installation Meeting: Contractor shall schedule a pre-installation meeting at the project site with the Architect, Contractor and building letter installer for approval of template field layout prior to beginning of installation.

1.4 QUALITY ASSURANCE

- A. Interior signs shall be provided by a single source with at least five years' experience successfully providing signs of similar type and scope.
- B. Signs shall comply with the Texas Accessibility Standards (TAS) and other laws and ordinances of authorities having jurisdiction. Braille shall be Grade II, having dimensions as required to meet TAS.

1.5 PACKING, DELIVERY, AND STORAGE

- A. Deliver components correctly packaged to prevent damage. Pack modules and back-up plates unassembled to allow for mechanical mounting of backplate to wall with concealed fasteners.
- B. Individually and clearly identify each sign number, type, location to be installed, mounting instructions, and other pertinent information.

1.6 WARRANTY

- A. Cast Aluminum Letters: Provide 5-year manufacturer's warranty.

PART 2 - PRODUCTS

2.1 BUILDING DEDICATION PLAQUE

- A. Provide building dedication plaque as selected by Architect by allowance.

2.2 CAST ALUMINUM LETTERS

- A. Basis of Design: A.R.K. Ramos Architectural Signage Systems, 1-800-725-7266, website: www.arkramos.com)
- B. Type: Custom fabricated letters and numbers in sizes and fonts shown on drawings. Letters to be cast aluminum with brushed dark bronze anodized finish.
1. Signs to read: Heights, fonts and letters as shown on drawings
- C. Material: Manufacturer's standard aluminum alloy for casting. Screws shall be stainless steel.
- D. Fabrication:
1. Letters shall be cast with smooth flat faces, sharp corners, true lines and accurate profiles.
 2. Cast letters shall be free of pits, scale, and holes, or other defects and faces shall be mechanically finished to a satin texture.
 3. Provide at least two points of attachment for each letter.
- E. Pre-cleaning: Immerse the letters in hot alkaline cleaner to remove contamination.
- F. Color Anodic Finish: Manufacturer's standard dark bronze anodic coating, 0.018 inch or thicker, over a satin (directionally textured) mechanical finish.

2.3 INTERIOR IDENTIFICATION GRAPHICS

- A. Acrylic plaque signs as manufactured by ASI Sign Systems, Inc. (8181 Jetstar Drive, Suite 100, Irving, Texas, 75063) or approved equivalent.
1. Panel Type: Manufacture face panels utilizing an 1/8" integral acrylic panel and back panel utilizing a 3/16" clear gloss acrylic backplate.
 2. Face panel tactile and Grade 2 Braille graphics shall be raised a minimum of 1/32".
 3. Treat the face panel to assure paint adhesion.
 4. Colors to be selected by Architect to meet ADA requirements for contrast.
 5. Characters and background of signs shall have eggshell, non-glare finish.
 6. Sign edges shall be painted to match background where not integral color.
 7. Sign edges are to be smooth and free of saw marks and imperfections.
 8. Sign design and typeface shall be as indicated on drawings.
 9. Lettering shall be computer generated, accurately reproducing the letterform.
 10. Provide matching coverplate for signs mounted on glass.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Building Dedication Plaque: Install building dedication plaque plumb and square in strict compliance with manufacturer's instructions.
- B. Erecting Letters: Erect interior and exterior letters straight and level where shown on drawings.
1. Attached to face brick: Secure with threaded stud anchors set in non-staining, quick setting cement. Letters shall be flush mounted to masonry surfaces.
 2. Attached to CMU/Concrete/Stone walls: Secure letters to CMU wall with stainless steel threaded rods and non-staining, quick setting cement. Letters shall be flush mounted to masonry surfaces.
- C. Identification Graphics:
1. On hard surfaces (i.e. ceramic tile, masonry, or plastic laminate), install room identification signs plumb and square with the "Tuff-bond" silicone adhesive furnished by the manufacturer (foam tape is not allowed).
 2. On painted gypsum wallboard or vinyl wallcovering, install room identification signs on backing plates with the "Tuff-bond" silicone adhesive furnished by the manufacturer (foam tape is not allowed).
 - a. The backing plate shall be 1/8" thick and shall be the same size as the face panel.
 - b. Screw the backing panel into molly bolts in the wall with two countersunk, flathead screws.
 3. Tactile characters on signs shall be located 48 inches minimum above the finish floor or ground surface, measured from the baseline of the lowest tactile character and 60 inches maximum above the finish floor or ground surface, measured from the baseline of the highest tactile character.

4. Unless noted otherwise, install signs on latch side of the door such that clear floor space of 18 inches minimum by 18 inches minimum, centered on the tactile characters, is provided beyond the arc of any door swing between the closed position and 45 degree open position.
5. Installation shall comply with ADA requirements.
6. For signs mounted on glass, install matching coverplate on opposite side of glass and aligned with the sign.

3.2 CLEANING

- A. On completion, clean exposed surfaces and leave free of defects.
- B. Do not use abrasives.

3.3 COORDINATION

- A. Contractor shall coordinate the installation of the identifying devices with other trades involved in the project.

3.4 DAMAGE

- A. An identifying device which is scratched or defaced will be rejected.

END OF SECTION

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SECTION 10 21 15

SOLID PHENOLIC TOILET COMPARTMENTS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Solid phenolic toilet compartments.
- B. Related Sections:
 - 1. Section 06 10 00 - Rough Carpentry: wood blocking for bracket attachments.
 - 2. Section 10 28 00 - Toilet Accessories.

1.2 SUBMITTALS

- A. General: Submit in accordance with SECTION 01 33 23 – SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Product Data:
 - 1. Include complete manufacturer's catalog cuts and data sheets of hardware, anchors, fasteners, and installation requirements.
 - 2. Submit literature documenting that the partition door latch meets Texas Accessibility Standards (TAS) requirements.
- C. Shop Drawings: Include drawings for fabrication and erection of toilet compartment assemblies which are not fully described in manufacturer's data.
- D. Samples: Submit a sample, 6" by 6", of each finish and color selected (photographic reproductions of color are not acceptable).

1.3 SEQUENCING AND SCHEDULING

- A. Coordinate work with placement of suspension members and anchorage devices. Supply rough-in data in sufficient time for concealed preparatory to be conducted.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

- A. Provide floor-mounted, overhead-braced toilet compartments. Product/manufacturer; one of the following:
 - Concord; Accurate Partitions Division, Kinkead Industries, Inc.
 - Embassy; Global Steel Products Corp.
 - Corinthian; Metpar Corp.
 - Academy; The Sanymetal Products Co., Inc.

2.2 MATERIALS

- A. Solid phenolic core with melamine facing on both sides, fused to substrate without visible glue line or seam. Provide units with eased edges and with minimum 3/4-inch thick doors and pilasters and minimum 1/2-inch thick panels and screens.
 - 1. Color(s) as scheduled in SECTION 09 99 00 - COLOR SCHEDULE.
- B. Pilaster Shoes: ASTM A 167, Type 302/304 stainless steel of one-piece construction, 3" high, finish to match hardware.
- C. Headrails: Extruded, polished anodized aluminum in anti-grip profile.

2.3 FABRICATION

- A. Fabricate flush compartment panels, pilasters, and doors to the layout indicated with the following minimum dimensions.
 - 1. Where grab bars are indicated, provide a min. 32" wide (clear opening) door.
 - 2. At other locations, standard compartments shall have a 24" wide in-swinging door, unless specifically detailed and dimensioned otherwise.
 - 3. Doors and compartments panels 58" in length with a 12" clearance between floor and bottom of panels and doors. Pilasters shall be floor mounted, overhead braced, 82" high
- B. Hardware: Provide hardware and fittings for compartment system of chrome-plated cast non-ferrous metal alloy, chrome-plated brass, or polished stainless steel. Stirrup brackets only may be heat-treated extruded aluminum with bright anodized finish.
 - 1. Hinges: Full length extruded aluminum in bright dip anodized finish or 14 gauge stainless steel continuous piano hinge. Hinges shall be fastened with stainless steel screws.
 - 2. Brackets: Heavy duty aluminum (6463-T5 alloy) full length continuous wall brackets.
 - 3. Latches: Fully mortised concealed type with steel bolt and provision for emergency access and paddle handle on accessible stalls.
 - 4. Strikes and Keepers: Wrap-around type with rubber bumper, mounted with through bolts.
 - 5. Coat hooks with rubber bumpers for in-swinging doors.
 - 6. Pulls: Provide pulls adjacent to the latch on both sides of the toilet partition door. Furnish with wall bumpers where required to prevent doors from striking wall.
 - 7. Fasteners: Vandal proof (one-way) screws and sex bolts of chrome-plated brass or stainless steel for all exposed locations.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine conditions and proceed with Work in accordance with SECTION 01 31 00 - PROJECT MANAGEMENT AND COORDINATION.
- B. Check areas scheduled to receive partitions for correct dimensions, plumbness of walls, soundness of wall surfaces, location of built-in framing/anchorages/bracing, and other conditions that would affect proper installation of holding brackets and anchorage or suspension devices.
- C. Verify spacing of plumbing fixtures to assure compatibility with installation of partitions.

3.2 INSTALLATION

- A. Install compartments rigid, straight, plumb, and with horizontal lines level. Drilling, cutting, and fitting to room finish shall be concealed in the finished work. Clearance at vertical edges of doors shall be uniform from top to bottom, and doors shall be free of warp and wind. Provide clearances of not more than 1/2" between pilasters and panels, and not more than 1" between panels and walls.
 - 1. Attach dividing compartments to the back wall with full length continuous wall brackets, and at the front to the pilasters with two heavy two-eared stirrup brackets. Use two one-eared brackets at corners. The use of U-type brackets is not acceptable.
 - 2. Attach overhead braces to walls with heavy saddle-type brackets.
 - 3. Attach pilasters to floor with 3/8" threaded studs, washers, lock nuts, expansion shields (minimum of 2" penetration into concrete), and pilaster brackets. Level, plumb, and tighten the installation with the leveling device. Conceal the floor anchorage and bases with pilaster shoe assembly having concealed snap-down action on a concealed hold-down clip. Exposed fasteners on shoe will not be permitted.
 - 4. Provide a 12" clearance between floor and bottom of compartment panels and doors.

3.3 ADJUST AND CLEAN

- A. Adjusting: Adjust hardware just prior to final acceptance. Doors shall operate freely.
 - 1. For out-swinging doors, adjust hinges to hold doors closed.
 - 2. For in-swinging doors, adjust hinges to hold doors open at 30°.
- B. Cleaning: Remove protective masking and clean surfaces, leaving them free of soil and imperfections.

END OF SECTION

SOLID PHENOLIC TOILET COMPARTMENTS

SECTION 10 22 39

FOLDING PANEL PARTITIONS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Manually operated, folding panel partition.
- B. Related Work:
 - 1. Section 05 50 00 - Metal Fabrications: Steel framing to support partition track.
 - 2. Section 06 10 00 - Rough Carpentry: Wood blocking for partition track.

1.2 SUBMITTALS

- A. Shop Drawings:
 - 1. Submit in accordance with SECTION 01 33 23 - SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
 - 2. Submit shop drawings of partition layout. Include details of track, trolleys, and hardware. Indicate loading to be imposed in the supporting structure. Show all anchorage, accessory items, caulking, and finishes.
- B. Product Data:
 - 1. Submit data describing partition fabrication and installation, including hardware.
 - 2. Submit finish data.
 - 3. Submit laboratory acoustical performance test report, written by the test facility.

1.3 QUALITY ASSURANCE

- A. Flame Spread Rating: Provide partitions with a Class "A" flame-spread rating when tested in accordance with ASTM E 84.

1.4 WARRANTY

- A. Provide written warranty by manufacturer of operable partitions agreeing to repair or replace any components with manufacturing defects.
 - 1. Warranty period: Two (2) years.

PART 2 - PRODUCTS

2.1 PARTITIONS

- A. Type: Modernfold "Acoustic-Seal" Paired Panel #932 manually operated, flat panels hinged in pairs, top supported with operable floor seals.
- B. Sound Transmission Class (STC): STC rating shall be 50 in rooms with acoustical insulation in walls when tested in accordance with ASTM E 90 for test in 14'-0" x 9'-0" opening.
- C. Panel Construction:
 - 1. Panels shall be 3.25" thick.
 - 2. Panel Skin: Minimum 21 ga. roll-formed steel wrapping around the panel edge. Panel skins shall be lockformed and welded directly to the frame for unitized construction.
 - 3. Panel Finish:
 - a. Provide magnetic markerboards through center of wall panels with vinyl wall covering at top and bottom of panels.
 - b. Vinyl wall covering as selected by Architect from manufacturer's standard wall covering.
 - c. The writable surface shall be 48" high.

- D. Sound Seals:
 - 1. Vertical: Interlocking sound seals in each panel edge.
 - 2. Horizontal:
 - a. Top closure seals shall be continuous multi-finger vinyl.
 - b. Provide automatic operable bottom seal. Seal shall automatically drop as panels are positioned.
- E. Single Pass Doors: Matching pass door same thickness and appearance as panels. ADA-compliant pass door to be trimless and equipped with friction latch and flush pulls for panic operation. No threshold will be permitted.
- F. Pocket Doors: Acousti-Seal Pocket Doors by Modernfold, Inc., with same construction, finish, and appearance as the adjacent panels.
 - 1. Pocket Door configuration shall be manually operated and bi-fold hinged to a jamb on one side as required.
 - 2. Panels shall be nominal 3-inch thick in manufacturer's standard width. All panel horizontal and vertical framing members fabricated from minimum 18-gage formed steel with overlapped and welded corners for rigidity. Frame is designed so that full vertical edges of panels are of formed steel and provide concealed protection of the edges of panel skin.
 - 3. Panel skin and face shall be same as the adjacent panels.
 - 4. Panel hinges shall be full leaf butt hinges, attached directly to panel frame with welded hinge anchor plates within panel to further support hinge mounting to frame. Hinges mounted into panel edge or vertical astragal are not acceptable.
 - 5. Pocket Door hanging weight shall not exceed 9 lbs./square foot.
- G. Provide #17 suspension system consisting of a continuous roll formed 11 ga. steel track. Each panel shall be supported by a all-steel 4-wheel ball bearing trolley.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Partitions shall be installed by the manufacturer's authorized factory trained representative and shall achieve the specified sound rating.
 - 1. Secure ceiling tracks to steel framing.
 - 2. Erect the partitions in a substantial manner to be straight and plumb.

3.2 ADJUST AND CLEAN

- A. Adjust partitions and hardware, and leave in perfect working order. Clean exposed surfaces and leave free of defects.

END OF SECTION

SECTION 10 26 13

CORNER GUARDS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Corner guards.
- B. Related Sections:
 - 1. Section 09 21 16 - Gypsum Board Assemblies: gypsum board walls.
 - 2. Section 09 30 13 - Ceramic Tile: ceramic tile aluminum corner guards.

1.2 SUBMITTALS

- A. Product Data: Submit in accordance with SECTION 01 33 23 – SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.

1.3 WARRANTY

- A. Provide manufacturer's limited lifetime warranty against material and manufacturing defects on stainless steel corner guards

PART 2 - PRODUCTS

2.1 CORNER GUARDS

- A. Aluminum Corner Guards: Provide "WCTOSC" 1/8" drywall corner guard Fry Reglet Wall Cover Trim Outside Corner, as manufactured by Fry Reglet Corporation. Length of corner guard shall be from 4" above finish floor to 7'-0". Aluminum shall be extruded 6063 T5, with chemical conversion coating, anodized in color as selected by Architect.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install corner guards in/on wall using manufacturer's anchoring devices, tape, and mudding and in compliance with manufacturer's instructions. Install true and plumb.

3.2 PROTECTION AND CLEANING

- A. Protect surfaces from damage during construction.
- B. At completion of the installation, clean all surfaces.

END OF SECTION

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SECTION 10 28 00

TOILET ACCESSORIES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Toilet accessories.
- B. Related Sections:
 - 1. Section 10 21 15 - Solid Phenolic Toilet Compartments.

1.2 SUBMITTALS

- A. Product Data:
 - 1. Submit in accordance with SECTION 01 33 23 – SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
 - 2. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.
 - 3. Include anchoring and mounting requirements, including requirements for cutouts in other work and substrate preparation.

1.3 QUALITY ASSURANCE

- A. Products: Provide products of the same manufacturer for each type of accessory unit and for units exposed in the same area.
 - 1. Stamped names or labels on exposed faces of units will not be permitted.
 - 2. Provide locks where specified, with the same keying for all accessory units in the project.

1.4 COORDINATION

- A. Accessibility Standards: Coordinate accessory locations with other work to prevent interference with clearances required for access under Texas Accessibility Standards (TAS), Architectural Barriers Act-- Article 9102, Vernon's Texas Civil Statutes and Texas Government Code, Chapter 469.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

- A. Toilet accessories shall be of the quality manufactured by Bobrick Washroom Equipment, Inc. and are listed by Bobrick catalog numbers for convenience in identification. The use of a catalog number as a description of an item shall be taken to include the description or specification for the item in the manufacturer's catalog.
- B. Toilet Accessories: Equivalent items of the following manufacturers are acceptable:
 - American Specialties, Inc.
 - Bradley Corp.
 - General Accessory Manufacturing Co. (GAMCO)
 - McKinney/Parker Washroom Accessories Corp.

2.2 BASIC MATERIALS

- A. Stainless Steel: ASTM A 666, Type 304 with No. 4 satin finish.
- B. Brass: ASTM B 19, leaded and unleaded flat products; ASTM B 16, rods, shapes, forgings, and flat products with finished edges; ASTM B 30 castings.
- C. Sheet Steel: ASTM A 1008, cold rolled, commercial quality.
- D. Galvanized Steel Sheet: ASTM A 653, G60 (Z180).

- E. Chromium Plating: ASTM B 456, Service Condition Number SC 2 (moderate service), nickel plus chromium electro-deposited on base metal.
- F. Mirror Glass: ASTM C 1036, Type I, Class 1, Quality q3, nominal 1/4" thick, with silvering, electroplated copper coating, and protective organic coating complying with ASTM C 1036.
- G. Galvanized Steel Mounting Devices: ASTM A 153, hot-dip galvanized after fabrication.
- H. Fasteners: Screws, bolts, and other devices of same material as accessory unit, tamper and theft resistant when exposed, and of galvanized steel when concealed.
- I. Keys: Provide universal keys for access to accessories for servicing and resupplying. Provide minimum of six keys.

2.3 ACCESSORIES

- A. Toilet Tissue Dispensers (A): B2888
- B. Grab Bars (B1 and B2): Model B-6806, lengths as shown on drawings
- C. Mirrors (C): Model B-290 2436..
- D. Paper Towel Dispenser/Waste Receptacles (E): Model B-3944
- E. Sanitary Napkin Disposal Units (F): Model B-270.
- F. Soap Dispensers, Lavatory- or Counter-Mounted (G2): Model B-822.
- G. Mop and Broom Holders (J): Model B-223 x 36.
- H. Baby Changing Station (P1): Model KB110-SSRE baby changing station by Koala Kare Products.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install accessories according to manufacturers' written instructions and recommendations, using fasteners appropriate to substrate and recommended by manufacturer. Install units level, plumb, and firmly anchored in locations and at heights indicated. Adhesive mountings and plastic rawl plug mounts will not be acceptable.
- B. Secure mirrors to walls in concealed, tamper-resistant manner with special hangers, toggle bolts, or screws. Set units level, plumb, and square.
- C. At toilets with wheelchair compartments all toilet accessories shall be installed so that operating areas such as coin slots, pushbuttons, openings for towels, cups and waste are not more than 48" above finished floor for frontal approach.
- D. Attach dispensers and cabinets to steel stud partitions with suitable hollow wall screw anchors. Attach dispensers and cabinets to masonry partitions with stainless steel expansion shields and machine screws.
- E. Attach sanitary napkin disposal units and toilet tissue dispensers to toilet partition panels with stainless steel or chrome plated through bolts and hex cap nuts.
- F. Install grab bars to withstand a downward load of at least 250 lbf. Attach grab bars to toilet partition panels with stainless steel through bolts and plated hex cap nuts. Attach grab bars to steel stud partitions with connector assemblies to steel anchors fastened to studs. Attach grab bars to masonry partitions with stainless steel expansion shields and machine screws.

3.2 ADJUSTING AND CLEANING

- A. Adjust accessories for unencumbered, smooth operation and verify that mechanisms function properly. Replace damaged or defective items.
- B. Remove temporary labels and protective coatings.
- C. Clean and polish exposed surfaces according to manufacturer's written recommendations.

END OF SECTION

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SECTION 10 44 13

FIRE EXTINGUISHERS AND CABINETS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes: Fire extinguishers and fire extinguisher cabinets.

1.2 DEFINITIONS

A. Where indicated on the drawings the abbreviation "F.E.C." defines a fire extinguisher and cabinet and the abbreviation "F.E." is for fire extinguisher without cabinet.

1.3 SUBMITTALS

A. General: Submit in accordance with SECTION 01 33 23 - SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.

B. Product Data: Include physical dimensions, operational features, color and finish, anchorage details, material descriptions and type of hardware.

C. Shop Drawings: Include rough-in measurements, locations, and details for cabinets.

1.4 OPERATION AND MAINTENANCE DATA

A. Submit under provisions of SECTION 01 78 23 - OPERATION AND MAINTENANCE DATA.

B. Maintenance Data: Include test, refill or recharge schedules and re-certification requirements.

1.5 QUALITY ASSURANCE

A. Single Source Responsibility: Obtain products in this Section from one manufacturer.

B. Certifications

1. Provide extinguishers which are U.L. listed and bear the U.L. "Listing Work" for type, rating, and classification.
2. Conform to NFPA-10 requirements for extinguishers.
3. Provide units conforming with ANSI/UL 711.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver, store and handle products in accordance with SECTION 01 65 00 - PRODUCT DELIVERY REQUIREMENTS and SECTION 01 66 00 - PRODUCT STORAGE AND HANDLING REQUIREMENTS.

B. Store extinguishers in protected location until after final cleaning is completed.

1.7 PROJECT/SITE CONDITIONS

A. Environmental Requirements: Do not store products subject to freeze damage in environments where damage could occur.

PART 2 - PRODUCTS

2.1 FIRE EXTINGUISHERS

- A. Provide multi-purpose dry chemical type fire extinguisher, 10 lbs. nominal capacity. Provide manufacturer's standard hook type bracket where fire extinguishers are noted without cabinets. Product/manufacturer; one of the following:
 - Cosmic 10E; J.L. Industries, Div. of Activar, Inc.
 - MP10; Larsen's Manufacturing Co.
 - Wing 10HB; Modern Metal Products
 - Model 3010; Potter-Roemer

- B. At Kitchen provide wet chemical type fire extinguisher with a Class K UL rating. Provide manufacturer's standard wall mounting bracket. Product/manufacturer; one of the following:
 - Saturn 15 Model, JL Industries, Inc., Div. of Activar, Inc.
 - WC-6L Series Wet Chemical, Larsen's Manufacturing Co.
 - 3260; Potter-Roemer/B260; Amerex

2.2 FIRE EXTINGUISHER CABINETS

- A. Provide clear anodized aluminum trim and door. Doors shall be solid with vertical window and have continuous piano hinge. "Fire Extinguisher" vertical ascending silk-screened lettering in red. Product/manufacturer; one of the following:
 - Fire-FX 1027V10 Academy; J.L. Industries
 - FS AL2409-R4 Vertical Duo, Clear Acrylic; Larsen's Manufacturing Co.
 - "Alta" Series No. 7043-DV-6; Potter-Roemer.

2.3 MOUNTING BRACKETS

- A. Mounting Brackets: Manufacturer's standard steel, designed to secure fire extinguisher to wall or structure, of sizes required for type and capacity of fire extinguisher indicated, with plated or baked-enamel finish. Color shall be red.

- B. Identification: Identify bracket-mounted fire extinguishers with the words "FIRE EXTINGUISHER" in red letter decals applied to mounting surface. Orientation shall be horizontal.

2.4 FABRICATION

- A. Form body of cabinet with tight inside corners and seams.

- B. Predrill holes for anchorage.

- C. Form perimeter trim and door stiles by welding, filling, and grinding smooth.

- D. Hinge doors for 180° opening with continuous piano hinge. Provide nylon roller type catch.

2.5 FINISHES

- A. Extinguisher: Red enamel.

- B. Cabinet Trim and Door: Clear anodized aluminum

- C. Cabinet Interior: White enamel.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install fire extinguisher cabinets at locations indicated in accordance with the manufacturer's instructions. Install level, plumb, secure. Install fire extinguisher cabinets with operable part of extinguisher at 48" above finished floor.

- B. Install fire extinguishers within cabinets on mounting brackets, placed in such a manner that operating instructions face outward.
- C. Mounting Brackets: Fasten mounting brackets to surfaces, square and plumb. Apply identification decals above bracket-mounted fire extinguishers.
- D. Service, charge (if required), and tag each fire extinguisher not more than five calendar days prior to substantial completion.
- E. Maintain design of fire-rated partitions associated with cabinets.

END OF SECTION

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SECTION 10 51 13

METAL LOCKERS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Metal lockers and locker benches.
- B. Related Sections:
 - 1. Section 03 30 00 - Cast-in-Place Concrete; concrete in base.
 - 2. Section 06 10 00 - Rough Carpentry; wood sleepers and wood blocking.
 - 3. Section 06 40 00 - Architectural Woodwork; solid phenolic benches.
 - 4. Section 09 67 23 - Resinous Flooring; resinous flooring base.

1.2 SUBMITTALS

- A. General: Submit in accordance with SECTION 01 33 23 - SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Product Data: Submit complete manufacturer's catalog cuts and data sheets of hardware, anchors, fasteners and installation requirements.
- C. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work. Show sloping tops, filler panels and other accessories. Include locker identification system.
- D. Samples: Submit color chips (photographic reproductions of color are not acceptable).

1.3 QUALITY ASSURANCE

- A. Uniformity: Provide each type of metal locker as produced by a single manufacturer, including necessary mounting accessories, fittings, and fastenings.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Do not deliver metal lockers until spaces to receive them are clean, dry, and ready for metal locker installation.
- B. Store and protect lockers under provisions of SECTION 01 66 00 - PRODUCT STORAGE AND HANDLING REQUIREMENTS.
- C. Protect locker finishes and adjacent surfaces from damage during installation.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

- A. General Lockers: Materials and methods described are based on the specifications of **Penco Products, Inc.** (www.pencoproducts.com) and are given to designate the quality of materials and workmanship required. Equivalent lockers as manufactured by one of the following will be acceptable:
 - Art Metal Products, Div Fort Knox Storage Co. (www.artmetalproducts.com)
 - List Industries, Inc. (www.listindustries.com)
 - Lyon Metal Products, Inc. (www.lyonmetal.com)
- B. Athletic Lockers: Materials and methods described are based on the specifications of **List Industries, Inc.** (www.listindustries.com) and are given to designate the quality of materials and workmanship required. Equivalent lockers as manufactured by one of the following will be acceptable:
 - DeBourgh (www.all-american-lockers.com)
 - Lyon Metal Products, Inc. (www.lyonmetal.com)
 - Penco (www.pencoproducts.com)

2.2 QUIET-TYPE LOCKERS (TYPE LK-A and LK-AA)

- A. Sheet metal shall be smooth cold-rolled steel, ASTM A 1008, at least 16 gauge for doors and frames and 24 gauge for bodies. Nuts and bolts shall be cadmium plated.
- B. Construction: Doors shall be adequately flanged at edges. Door frames of channel shapes shall be securely welded together. A formed steel, sound deadening, insulated reinforcing panel shall be welded inside door. Provide recessed handles and continuous door strikes at jambs. Provide rubber silencers on each latching hook. Fabricate to swing 180°.
 - 1. Hinges: Heavy-duty, not less than 0.050" thick steel, full-loop, 5 knuckle, tight pin, 2" high. Provide at least 3 hinges for each door over 42" high and at least 2 hinges for each door 42" high or less.
- C. Locks:
 - 1. Recessed handle with provisions for Owner-furnished padlocks.
 - 2. Provide handicapped accessible latches on accessible lockers.
- D. Trim: 16 gage steel filler strips to cover spaces between lockers and adjacent walls at ends of rows and elsewhere as may be required. Provide finished end panels (no holes) for exposed ends of locker rows. Finish to match lockers.
- E. Equipment: Furnish each locker with the following items.
 - 1. Double-tier Locker:
 - a. One double prong hook and not less than two single-prong wall hooks.
 - b. At handicapped accessible lockers, hat shelf, hooks and handle with locker or hasp must be no higher than 48" from finish floor
 - c. At handicapped accessible lockers, locker bottom must be a minimum of 15" from finish floor. If locker bottom is lower than 15" from finish floor, provide internal shelf at a minimum of 15" above finish floor.
- F. Continuous Sloping Tops: Not less than 18-gage sheet steel, approximately 25° pitch, in lengths as long as possible. Provide closures at ends. Finish to match exterior of lockers.
- G. Finish: Chemically pre-treat metal with degreasing and phosphatizing process. Apply baked-on enamel finish to all surfaces, exposed and concealed, except plates and non-ferrous metal. Lockers shall be one custom color exterior and shall be manufacturer's standard color interior. Colors as scheduled in SECTION 09 99 00 - COLOR SCHEDULE.
- H. Number Plates: Aluminum with black filled numbers, fastened with rivets to the top of the front face of the locker door, not in the recess. Number lockers consecutively as directed by Owner.

2.3 ATHLETIC LOCKERS (TYPES LK-B and LK-BA)

- A. Provide all welded construction athletic lockers. Nuts, bolts, screws, and pop-rivets will not be allowed.
 - 1. Doors: 14 ga. diamond perforated, 1" double bends on both sides and single 7/8" bend at top and bottom. Latch hooks shall be located directly across from hinges.
 - 2. Vertical dividers: 3/4" 13 ga. flattened expanded metal framed by 16 ga. hollow "T" sections designed to conceal sharp edges of divider with entire assembly mig welded. Dividers shall have channel bracing at the bottom forming a rigid frame for each locker unit.
 - 3. Solid backs shall be 18 ga. cold rolled sheet steel.
 - 4. Hinges: Provide heavy-duty hinges for side opening doors, not less than 13 gauge thick steel, full-loop, 7 knuckle, tight pin, 3-1/2" high. Provide at 2 hinges for each door.
 - 5. Provide multi-tier lockers as indicated.
- B. Locks:
 - 1. Recessed handle with provisions for Owner/Student-furnished padlocks.
 - 2. Provide handicapped accessible latches on accessible lockers.
- C. Trim: 16 gage steel filler strips to cover spaces between lockers and adjacent walls at ends of rows and elsewhere as may be required. Provide finished end panels for exposed ends of locker rows. Finish shall match lockers.

- D. Equipment: Furnish each locker with the following items.
 - 1. At handicapped accessible lockers, hat shelf, hooks and handle with locker or hasp must be no higher than 48" from finish floor
 - 2. At handicapped accessible lockers, locker bottom must be a minimum of 15" from finish floor. If locker bottom is lower than 15" from finish floor, provide internal shelf at a minimum of 15" above finish floor.
- E. Continuous Sloping Tops: Not less than 16-gage sheet steel, approximately 25° pitch, in lengths as long as possible. Provide closures at ends. Finish to match exterior of lockers.
- F. Finish: Chemically pre-treat metal with degreasing and phosphatizing process. Apply baked-on enamel finish to all surfaces, exposed and concealed, except plates and non-ferrous metal. Custom colors shall be selected by Architect. Interior, exterior, and all parts of locker shall be the same color.
- G. Number Plates: Aluminum with black filled numbers, fastened with rivets to the top of the front face of the locker, not in the recess. Number lockers consecutively as directed by Owner.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine walls, floors, and support bases and verify that bases are properly sized and located. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. General: Install level, plumb, and true; shim as required, using concealed shims.
- B. Anchor locker runs at ends and at intervals recommended by manufacturer, but not more than 36" o.c. The use of sheet metal screws for assembly and installation is not allowed.
- C. Accessories: Fit exposed connections of trim, fillers, and closures accurately together to form tight, hairline joints, with concealed fasteners and splice plates.

3.3 ADJUST AND CLEAN

- A. Clean, lubricate, and adjust hardware. Adjust doors and latches to operate easily without binding.
- B. Protect metal lockers from damage, abuse, dust, dirt, stain, or paint.
- C. Touch-up marred finishes or replace metal lockers that cannot be restored to factory-finished appearance. Use only materials and procedures recommended or furnished by metal locker manufacturer.

END OF SECTION

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SECTION 10 75 00

FLAGPOLES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Flagpoles and flags.
- B. Related Sections:
 - 1. Section 32 13 13 - Concrete Paving: concrete for flagpole base.

1.2 SUBMITTALS

- A. Product Data: Submit in accordance with SECTION 01 33 23 - SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES. Submit product data for flags.
- B. Shop Drawings: Submit in accordance with SECTION 01 33 23 - SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES. Include manufacturer's installation instructions.

1.3 PERFORMANCE REQUIREMENTS

- A. Structural Performance: Provide flagpole assemblies, including anchorages and supports, capable of withstanding the effects of wind loads, determined according to NAAMM FP 1001, "Guide Specifications for Design of Metal Flagpoles".
- B. Basic Wind Speed: 120 mph; 3-second gust speed at 33 feet above ground.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

- A. Provide flagpoles as manufactured by one of the following:
 - American Flagpole; a Kearney-National Inc. Co.
 - Baartol Co., Inc.
 - Concord Industries, Inc.
 - Ewing International
 - Morgan-Francis Div.; Original Tractor Cab Co., Inc.
- B. Provide flags as manufactured in the United States as supplied by United States Flag Store or supplied locally by In the Wind (phone 817.626.3524).

2.2 FLAGPOLES

- A. Pole: Concealed halyard, cone tapered aluminum.
 - 1. Material: Seamless alloy 6063-T6 aluminum tubing uniformly cone tapered.
 - 2. Height: 30'-0" exposed.
 - 3. Finish: Dark bronze anodized.
- B. Fittings: Furnish fittings equal to the following:
 - 1. Anodized aluminum ball: Sized to match pole butt diameter.
 - 2. Concealed Halyard Revolving Truck: Dark bronze anodized.
 - 3. Winch: Stainless steel, mounted inside flagpole shaft, removable crank handle, gearless, and self-locking. Stainless steel aircraft cable shall be of sufficient length to allow halyard to be lowered for fastening or removing both flags from ground level.
 - 4. Counterweight: Heavy coated with neoprene, attached to a retainer sling.
 - 5. Access Door: Reinforced door with six tumbler cylinder lock.
 - 6. Collar: Spun aluminum, same finish as flagpole, 14" diameter, 2-1/2" high.
 - 7. Two-Flag Arrangement: Provide two beaded retaining loops (one at the bottom of each flag) and four swivel snaps per flagpole, of bronze with neoprene or nylon covers.

- C. Foundation Tubes: Standard weight steel pipe having self-centering fins, centering bolts, and lightning ground spike. Hot-dip galvanize the assembly after fabrication.

2.3 FLAGS

- A. United States Flag: American Flag 4ft x 6ft Valley Forge Koralex II 2-Ply Sewn Polyester as supplied by United States Flag Store (phone 877.734.2458 web site: www.united-states-flag.com). Flag shall be manufactured in the United States.
- B. Texas Flag: Texas Flag 4ft x 6ft Sewn Polyester as supplied by United States Flag Store (phone 877.734.2458 web site: www.united-states-flag.com). Flag shall be manufactured in the United States.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Paint portions of pole below grade with heavy coat of bituminous paint.

3.2 INSTALLATION

- A. Set foundation tube accurately and hold in position until concrete is placed.
- B. Install flagpole and fittings in accord with shop drawings and manufacturer's instructions.
- C. Reeve the halyard through the truck sheave and connect the free ends together as recommended by the pole manufacturer to form a closed loop halyard.
- D. Deliver United States flag and Texas flag to the Owner at project site.

3.3 ADJUSTING

- A. Adjust fittings for smooth operation of halyard.

END OF SECTION

SECTION 10 82 13

EXTERIOR SCREEN GATES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Steel screen gates at Dumpster/Chiller Enclosure Gates.
- B. Related Sections:
 - 1. Section 03 33 00 - Cast-in-place concrete.

1.2 SUBMITTALS

- A. Product Data: Submit in accordance with Section 01 33 23. Include installation instructions for fence posts, fabric, gates, and accessories.
- B. Erection and detail shop drawings will be provided showing layout and location of all component parts. Panel sizes, clips, gates, gate hardware, attachment details, base requirements and panel installation bolts will be enumerated on the drawings. Installation bolts will be supplied by the installer (not by manufacturer). Drawings will need to be approved by customer prior to fabrication.

1.3 QUALITY ASSURANCE

- A. Provide fences as complete units controlled by a single source, including necessary erection accessories, fittings and fastenings.

1.4 WARRANTY

- A. The polyester-coated hot-dip galvanized metal is guaranteed not to crack, peel or blister for a period of 7 years.

PART 2 - PRODUCTS

2.1 PRODUCT/MANUFACTURER

- A. Dumpster/Chiller Enclosure Gates: Basis of Design: Provide Shadow Shadow 100 --- horizontal design, 100% direct --- visual screening, metal fencing with double swing gates, as manufactured by Ametco Manufacturing Corp. (ph. 800-321-7042) or approved equivalent.

2.2 MATERIALS

- A. Electro-forge welded steel fencing that is hot-dip galvanized (ASTM 123) and then powder polyester coated.
- B. 100% view-blocking louver. 3/32" thickness formed sheet metal louvers (may be positioned horizontally, vertically or inverted in horizontal position to effectively block sight lines from below). Louvers positioned and held in place by 5/32" round crossbars forming a 1-13/16" x 5-7/32" mesh. Custom engineered panel system banding/framing/mounting clips per fabrication detail.
- C. The steel bars have a yield strength of 36,000 psi and a tensile strength of 58,000 psi. Post yield and tensile strengths are similar to steel bars.
- D. Gates:
 - 1. Gate frames are fabricated from steel tubes.
 - 2. Swing gates are furnished with posts, hinges, padlockable slide bolt, and padlockable cane bolt.
- E. Finish: Powder coat finish: Color as selected by Architect.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Do not begin installation and erection before final grading is completed.
- B. Installation of fence shall be by skilled fence erector and on lines and grades indicated.

3.2 INSTALLATION

A. Fence Posts:

1. Fence posts shall be of sufficient length to allow for setting into concrete footers.
2. The standard fence post spacing 78³/₄" apart; however, special spacings shall be used when required.
3. In-ground posts shall be set in concrete in holes 12" diameter for terminal posts and 10" in diameter for intermediate posts.
4. Concrete should be 6" deeper than the posts. Deeper and wider settings may be necessary in some locations.
5. After fence is plumb and level, pour concrete grouting into holes.

B. Swing Gates:

1. It is important that gate posts have substantial footings and be installed plumb.
2. Level concrete shall be cured before hanging gates.
3. Most gates will be bolted with slotted holes to the post--adjust shim to level gate as required.

END OF SECTION

SECTION 10 99 00

MISCELLANEOUS SPECIALTIES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Knox Box.
 - 2. Knox FDC Caps.
- B. Related Sections:
 - 1. Section 06 10 00 - Rough Carpentry; blocking.
 - 2. Division 26 - Electrical; connection to Security System.

1.2 SUBMITTALS

- A. General: Submit following items in accordance with SECTION 01 33 23 - SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Product Data: Include complete manufacturer's catalog cuts and data sheets, complete parts list, installation requirements, and all pertinent performance characteristics and criteria.
- C. Shop Drawings: Indicate materials, construction, sizes, quantities, finishes, and installation details.

1.3 QUALITY ASSURANCE

- A. Products: Provide products of the same manufacturer throughout the project.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, handle, and protect products in accordance with SECTION 01 65 00 - PRODUCT DELIVERY REQUIREMENTS and SECTION 01 66 00 - PRODUCT STORAGE AND HANDLING REQUIREMENTS.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Knox Box: Fire/Rapid Entry System as manufactured by The Knox Company.
 - 1. Model 3200 RTS with 3200 RMK Recessed Mounting Kit.
 - 2. Model 3200, surface mounted.
- B. Knox FDC Caps:
 - 1. Model 3043 bright stainless cover as manufactured The Knox Co. in size as required by plumbing drawings and as required by jurisdiction. [use for siamese FDC caps]
 - 2. Model 5001/5002 StorzGuard hard-anodized aluminum cover as manufactured by The Knox Co. in size as required by plumbing drawings and as required by jurisdiction.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Prepare substrate surfaces as recommended by manufacturer.

3.2 EXAMINATION

- A. Verify that surfaces and conditions are ready to receive work of this Section.
- B. Notify Architect of any existing conditions which will adversely affect execution.

- C. Beginning of execution will constitute acceptance of existing conditions.

3.3 INSTALLATION

A. Knox Box:

1. Surface Mounted:

- a. Mount the Knox Box unit with the yellow mounting marker pointing up so that the small moisture drain hole is on the bottom side.
- b. Use a small level to plumb the box square.
- c. Use at least 4 mounting fasteners (Carriage Bolts, etc.) of 5/16" diameter, bolting completely through solid, secure wall. The Knox Box unit may also be welded in place. NOTE: Do not mount unit on drywall, plywood, pressboard or any other limited strength materials.
- d. To install door, first attach retaining chain through the hole in the chain tab on the back side of the door and close link with pliers. Door should be inserted bottom side first so that tail piece fits over bottom of door frame. Top of door will now swing shut.

2. Recessed Mounting:

- a. The Mounting Kit may be set in place during construction of the masonry wall. Wiring conduit may be connected through one or several knock-out holes in the shell housing. Care should be taken to insure that the front of the shell housing, including the cover plate and screw heads, are flush with the finish wall. The shell housing should be plumbed with a level. Leave cover and screws in place until the KNOX-BOX unit is ready to be mounted inside. The five (5) mounting studs may be replaced with bolts or longer studs if required. Do not over tighten mounting nuts, as they may distort the outside flange. With the housing held firmly in place, drill two (2) 1/8" holes through the form wall and the housing front cover. Insert screws and pull housing tight against the form wall. Remove screws before removing form.
- b. Model 3200-RTS is shipped with a door tamper switch mounted in place. Before mounting, carefully remove the door tamper switch and set aside. This will give clear access to inside mounting holes. Do not allow the upper right-hand fastener to extend too far into the box so as to interfere with the door tamper switch. The alarm wiring to the tamper switch should be pulled tight so that any attempt to force box out of wall will break the wire or pull terminals loose. Push-On type terminals are supplied for connection to tamper switch. Tamper switch can be connected for either open or close circuits.

- B. Knox FDC Caps: Install FDC caps on the fire hydrants [and siamese connections] in strict compliance with manufacturer's written instructions and recommendations.

3.4 ADJUSTING

- A. Adjust and fit items to be flush with adjacent construction.
- B. Fasten or adhere for tight connections and joints.

3.5 PROTECTION

- A. Protect the completed work from damage. Replace damaged items which cannot be repaired. Protect finished installation in accordance with SECTION 01 66 00 - PRODUCT STORAGE AND HANDLING REQUIREMENTS.

3.6 CLEANING

- A. Upon completion of the building, clean the area.
- B. Perform final cleaning in accordance with SECTION 01 74 13 - PROGRESS CLEANING.

END OF SECTION

SECTION 11 31 00

APPLIANCES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Appliances.
- B. Related Sections:
 - 1. Section 06 40 00 - Architectural Woodwork: millwork.
 - 2. Section 12 32 16 - Manufactured Plastic-laminate-clad Casework
 - 3. Division 22 - Plumbing: plumbing rough-in.
 - 4. Division 26 - Electrical: electrical rough-in.

1.2 SUBMITTALS

- A. General: Submit in accordance with SECTION 01 33 23 - SHOP DRAWINGS, PRODUCT DATA AND SAMPLES.
- B. Product Data: Include list of optional features, operating characteristics, and dimensions of individual appliances.
- C. Operating and Maintenance Manuals: Provide per SECTION 01 78 23 - OPERATION AND MAINTENANCE DATA.
- D. Shop Drawings: Submit rough-in drawings showing dimensioned locations of electrical and plumbing stub-outs for appliances.

1.3 QUALITY ASSURANCE

- A. Regulatory Requirements: Provide electrical components required as part of appliances that are listed and labeled by UL and that comply with applicable NEMA standards.
- B. Accessibility Standards: Where appliances are required to comply with accessibility requirements, comply with Texas Accessibility Standards (TAS) and ICC A117.1 Accessible and Usable Buildings and Facilities (International Building Code).

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

- A. Appliances shall be of the quality manufactured by Whirlpool Corp. and U-Line Corp. and are listed by Whirlpool and U-Line catalog numbers for convenience in identification. The use of a catalog number as a description of an item shall be taken to include the description or specification for the item in the manufacturer's catalog. Equivalent items of the following manufacturers are acceptable:
 - Hotpoint
 - GE Appliances
 - KitchenAid
 - Maytag

2.2 EQUIPMENT

- A. Dishwasher: Provide Model No. GDT225SSLSS, stainless undercounter dishwasher as manufactured by GE Appliances. Stainless steel tall tub, Energy Star, delay wash, and 51dba. Height adjustable from 32-1/4" (ADA height) to 34-5/8" (Standard height). Dishwasher shall meet NSF/ANSI 184 requirement for reaching a final rinse temperature of 150°F.
- B. Countertop/Recessed Wall Microwave: Provide Model No. WMC30516H as manufactured by Whirlpool. Fingerprint Resistant Stainless Steel, 1.6 Cu.Ft., 1200 watts, sensor cooking, recessed glass turntable, including 30" trim kit.

C. Refrigerators:

1. Refrigerator: Provide Model WRS321SDHZ as manufactured by Whirlpool. Color shall be fingerprint-resistant stainless steel, 21 Cu.Ft. (Refrigerator-14/Freezer-7), side-by-side, auto defrost, and factory installed automatic ice maker.
2. Refrigerator (2) in Discovery Lab Prep Rooms: Provide Model WRT311FZD as manufactured by Whirlpool. Color shall be fingerprint-resistant stainless steel, 20 Cu.Ft. (Refrigerator-14/Freezer-6), freezer-on-top, auto defrost, include optional automatic ice maker.

D. Undercounter Refrigerator; Accessible Counter Height: Provide Model No. ADA24RGL as manufactured by U-Line. 24" glass door with stainless frame, 5.4 Cu.Ft.

E. Undercounter Ice Maker: Provide nugget, Manitowoc Model No. RNS-0244A, (air-cooled). Uses 12 gals. of water for up to 172 lbs per day. Bin stores 40 lbs.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine roughing-in for piping systems to verify actual locations of piping connections before appliance installation. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. General: Comply with manufacturer's written instructions.

B. Built-in Appliances: Securely anchor units to supporting cabinets or countertops with concealed fasteners. Verify that clearances are adequate for proper functioning and rough openings are completely concealed.

C. Freestanding Appliances: Place units in final locations after finishes have been completed in each area. Verify that clearances are adequate to properly operate appliances.

3.3 CLEANING AND PROTECTION

A. Test each item of appliances to verify proper operation. Make necessary adjustments. Verify that accessories required have been furnished and installed.

B. Remove packing material from appliances and leave units in clean condition, ready for operation.

C. Protection: Protect the completed work from damage.

END OF SECTION

SECTION 11 40 00
FOODSERVICE EQUIPMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The general provisions of the Contract, including General and Supplementary Conditions and General Documents, apply to the Work specified in this Section.

1.2 SUMMARY OF THE WORK

- A. Location:
Eagle Mountain Saginaw Administration Building
Fort Worth, Texas
- B. Approval of Working Surface: any contractor performing work over the work of other contractors shall notify the Architect of any unsatisfactory conditions. Beginning of work by any contractor shall constitute acceptance of the previous work.
- C. Checking Dimensions at Site: before ordering any materials or doing any work, verify all measurements of the building and be responsible for the correctness of them. No extras will be allowed for variations from drawings in existing conditions or for work performed under this contract. Any discrepancies found shall be submitted to the Architect or Foodservice Consultant for instructions before proceeding.
- D. Cutting and Patching: No excessive cutting will be permitted, nor shall any structural members be cut without the written approval of the Architect. Each Contractor shall leave all chases and openings straight, true and of the proper size in his work as may be necessary for the proper installation of his and other contractors' work. After such work has been installed, he shall carefully fit around, close up, repair, patch and point up same as directed, to the entire satisfaction of the Architect.
- E. Cooperation: the General Contractor, all other contractors and all subcontractors shall coordinate their work with all adjacent work and shall cooperate with all other trades to facilitate the general progress of the work. Each trade shall afford all the other trades every reasonable opportunity for installation of their work and storage of their material.
- F. Inspection and Tests: Architect, Owner, Foodservice Consultant and their representative shall at all times have access to the work whether it is in preparation or progress. Provide proper and safe facilities for such access and inspection.
- G. Fees, Permits and Inspections: secure and pay fees for all permits, licenses and inspections as required by all authorities having jurisdiction. Give all notices and comply with all laws, ordinances, rules, regulations and contract requirements bearing on the work.

1.3 SCOPE

- A. Include the Work specified, shown or reasonably inferable as part of Foodservice Equipment. Portions of this Work may be subcontracted to those qualified to do such work, as may be necessary because of jurisdictional trade agreements and restrictions.
- B. The General Contractor is responsible for Related Work specified in other Sections: i.e. final plumbing, electrical and mechanical connections. The Foodservice Equipment Contractor is responsible for all internal connections when specified.

- C. Specifications and drawings have been prepared to form the basis for procurement, erection, startup and adjustment of all equipment in this contract. Plans and specifications shall be considered as mutually explanatory and work required by one, but not by the other, shall be performed as though required by both. Items required by one, but not by the other shall be provided as though required by both. Work shall be accomplished as called for in specifications and shown on drawings, so that all items of equipment shall be completely functional for purpose for which they were designed. When there is any discrepancy between drawings and specifications, bidders should seek clarification of any discrepancies from the Architect/Consultant prior to bidding.
- D. Should the drawings disagree in themselves, or the specifications with the drawings, the better quality, more stringent, and/or greater quantity of the work or materials shall be completed without additional costs to the Owner.

1.4 RELATED WORK SPECIFIED IN OTHER SECTIONS

- A. Slab depressions, reinforced concrete wearing bed and interior finished floor with coved base at prefabricated cold storage assemblies: Divisions 03/09.
- B. Concrete or masonry platforms with finished top and coved base at perimeter, for raised setting of foodservice equipment: Divisions 03/09.
- C. Slab depressions to receive stainless steel drain trench liner/grate assemblies (provided under this Section): Division 03.
- D. Dwarf-wall at exposed front/ends of cafeteria serving counters with finish as selected by Architect.
- E. Corner guards: Division 09.
- F. PVC or EMT Conduit with pull-wire and wide-sweep bends for refrigerant piping to remote foodservice equipment refrigeration systems: Division 22/26.
- G. Empty EMT conduit with pull-wire and wide-sweep bends for interconnect cables between LAN and POS terminals, change-makers, pre-check units, printers, CPU's, etc.: Division 26.
- H. Supply and exhaust fans for foodservice equipment and exhaust hoods: Division 23.
- I. Roughing in and final connection of mechanical, electrical, and plumbing systems to foodservice equipment and cold storage assemblies by Divisions 22/23/26
- J. Millwork /Casework Fixtures by Division 06.

1.5 QUALITY ASSURANCE

- A. In addition to complying with applicable laws, statutes, building codes and regulations of public authorities, comply with the following:
 - 1. National Sanitation Foundation (all equipment to bear label).
 - 2. National Electric Code.
 - 3. Underwriters' Laboratories, Inc. (all applicable equipment to bear label).
 - 4. American Gas Association Laboratories.
 - 5. National Fire Protection Association.
 - 6. Americans with Disabilities Act.
 - 7. Food and Drug Administration HAACP Guidelines.

8. International Conservation Code.
 9. Environmental Protection Agency
- B. Furnish certification of regularly manufactured equipment listing or classification by Underwriter's Laboratories, Inc. with initial submittal.

1.6 SUBSTITUTIONS

- A. Equipment items or components specified are intended to be the Basis of Bid. All other brands, including any additional names, which may be listed as "Alternates" or "Approved Equal," must conform with the specifications, size, accessories, function, etc. of the first-named brand and be subject to Paragraph C-03 of this Article.
- B. Proposed Substitutions:
1. Submitted no less than 14 calendar days prior to Bid Date.
 2. Submit proposed substitutions with catalog data and/or manufacturer's shop details indicating all modifications required to conform with specified brand.
 3. List of deviations must include listing of equipment name, model number, accessories and features with deviation(s) noted for both specified and proposed alternate equipment. Equipment without listed deviation(s) will be considered to be furnished as specified.
- C. Substitutions with prior approval:
1. Submitted on Bidder's letterhead attached to Proposal Form with individual additive/deductive amounts stipulated and the documentation required in Paragraph B02.
 2. Owner reserves the right to accept or reject any or all substitution proposals before execution of Contract.
 3. Provide all design/engineering services required to make adjustments in space, systems, utilities, etc. and pay all additional costs of utilities, construction or professional services that may be incurred due to the acceptance of any substitution.
- D. All appliances within common group or category (e.g., refrigerators, kettles, ovens, etc.): same manufacturer.

1.7 INTERPRETATION OF DOCUMENTS

- A. During Bidding: contractor's, supplier's or vendor's questions and comments pertaining to Construction Document's clarity or intent will be addressed by addendum.
- B. Subsequent to Award:
1. Confirmation of Construction Document requirements will be provided by Clarification Bulletin.
 2. Request For Information Bulletins submitted by Contractor: contain Contractor's proposed resolution.

1.8 WARRANTY

- A. Provide a written warranty for a period of one year from the date of Substantial Completion, including extended four-year replacement warranty on compressor bodies.

- B. Components of equipment subject to replacement prior to one-year's use (such as refrigerator door gaskets) and those items which may fail due to improper or inadequate periodic maintenance by the Owner/Operator (such as an uncleaned refrigeration system condenser) are not intended to be included within the scope of the Warranty.
- C. Refrigeration Systems/Equipment: one-year free service available within twenty-four hours of notification.
- D. Furnish three copies of a list of all equipment and their respective local service agencies, indicating the address, telephone number and name of person to contact. Whenever possible, the service agencies selected shall be factory-authorized for the equipment assigned.
- E. Provide following for refrigeration systems/equipment, unless specified otherwise:
 - 1. One (1) year free service available within twenty-four hours of notification, for refrigeration systems.
 - 2. Provide five (5) year manufacturer's registered written replacement, warranty certificate, covering compressor bodies. Warranty to cover labor costs for first year.
 - 3. Provide ten (10) year manufacturer's registered written replacement/repair, warranty certificate, covering walk-in panels. Warranty to cover defects in material and workmanship. Warranty to cover labor costs for first year.
 - 4. Provide one (1) year parts and labor warranty for all parts of refrigeration system(s) and walk-in cooler(s) and freezer(s), not otherwise covered herein.
- F. All above stated warranty periods are from date of Substantial Completion.

1.9 SUBMITTAL DATA

- A. Special Requirements: the following are in addition to any general requirements given elsewhere in the Documents.
- B. Submittal Requirements:
 - 1. Kitchen Equipment Contractor to furnish two (2) hard copies of all submittal drawings, two (2) hard copies of the brochures, Adobe PDF files on CD or via email of all submittals as indicated within the General Specifications.
 - 2. Submittal data can be submitted electronically, in PDF format only, printed to scale, if acceptable by the Architect.
 - 3. All shop drawings, rough in drawings, manufacturer drawings, and custom fabricated drawings to be included within one (1) complete submittal package.
 - 4. Reviewed submittals are to be printed as required for each trade by the General Contractor and/or Kitchen Contractor.
 - 5. Foodservice Design Professionals requires a minimum 10 business day review period after receipt of complete submittal package. Review period subject to size and scope of project.
- C. Brochure Format (for regularly-manufactured equipment and components):
 - 1. Front and rear protective cover with labeled project name.
 - 2. Brochure index: indicate functional Area/Room number, item number, quantity, description and manufacturer.
 - 3. A separate flysheet for each component or item of equipment, indicating: item number, name, quantity, manufacturer, optional equipment, modifications, special instructions and utility requirements. An item of equipment or assembly containing more than one buyout sub-assembly or component shall have the secondary item listed in parenthesis beside the primary item name. For example: Serving Counter (hot food well).
 - 4. Catalog specification sheet and manufacturer's drawing.

D. Shop Drawings (Rough-In Drawings):

1. Separate drawing sheets: same size as Contract Drawings (Contract Drawings are not to be traced or reproduced). Submittal drawings are to be provided by Kitchen Equipment Contractor and not reproduced from Contract Documents. Any reproduced submittal drawings will be rejected.
2. 1/4" scale drawing of fixed/movable Foodservice Equipment and pre-fabricated Cold Storage Assemblies with itemized schedules.
3. Special Conditions Drawings, sizing and locating the following conditions:
 - a. Slab depressions, cores, sleeves or block-outs (cold storage assemblies, drain trenches, piping, etc.).
 - b. Concrete or masonry platforms.
 - c. Pipe sleeves or roof jacks.
 - d. Wall-openings or block-outs for pass-through equipment, recessed control panels, in-wall fire-protection system components, etc.
 - e. Blocking grounds or anchor plates required in walls for equipment support/attachment.
 - f. Above-ceiling hanger assemblies for support of exhaust hoods, utensil-racks, etc.
 - g. Access panels in walls or ceiling for service of equipment.
 - h. Ceiling pockets or recesses for unusually high equipment.
 - i. In-wall carriers for wall-hung or cantilevered equipment.
4. Electrical rough-in drawing.
5. Plumbing/mechanical rough-in drawing.
6. Required information:
 - a. All fixed and movable Foodservice Equipment shown on Contract Drawings.
 - b. All prefabricated Cold Storage Assemblies and Conveyor/Dishtable Assemblies shown on Contract Drawings.
 - c. All general-use and convenience utilities or services indicated on Contract Drawings, including those required by or connected to equipment or devices not in this Section.
 - d. All rough-in drawings: fully dimensioned from engineering benchmark or finished-room surface to point of stub-up through floor and stub-out through wall or ceiling for all mechanical, electrical and plumbing services.
 - e. Connection number/tag system and symbols: identical to Contract Drawings.

E. Shop Drawings (Manufacturer's and Fabricator's):

1. Sheet Size: identical to Contract Drawings, drawn or plotted at 3/4" scale for plan view and elevations; 1/2" scale for sections and construction details.
2. Included information: item number, name and quantity.
3. Construction details, sections and elevations to reflect requirements of the Specifications and Drawings.
4. Indicate adjacent walls, columns and equipment.
5. Indicate plumbing and electrical schematic drawings for equipment such as: conveyors, waste systems, self-cleaning exhaust hoods, exhaust hood fire protection systems and fabricated fixtures with single electrical or plumbing connection.
6. Mechanical or electrical operating components or products integrated into a fabricated fixture: ventilation and service access required or recommended by the manufacturer, including panel size and location to permit easy lubrication, adjustment or replacement of all moving parts.

- F. All equipment and engineering rough-in plans sheet numbers are to match the contract documents. All equipment item no.'s and engineer item no.'s located on the schedules are to match the contract documents. All engineering requirements are to be updated as required to

accommodate the provided equipment and/or match the contract documents. The Kitchen Contractor is responsible for the coordination of any MEP revisions to accommodate the provided and proposed equipment. The kitchen contractor is responsible for any cost associated to equipment substitution.

1.10 SERVICE MANUAL

- A. Three copies bound in 1½” hardback, three-ring binders (as many volumes as required by scope of project) with same data as brochure at completion of installation (Refer to “Submittal Data”). Provide separate service manuals as required for each independent area within the project scope (Main Kitchen, Culinary, Concession, etc.).
- B. Each Volume: section for maintenance of finish materials (e.g., stainless steel, plastic laminates, FRP, Plexiglas, etc.).
- C. Catalog specification sheet and/or manufacturer’s shop drawings.
- D. Each Volume: index of items, manufacturer’s operating/maintenance information, replacement parts data and price lists. Provide the name, title and address of personnel at each respective manufacturer to be contacted for spare/replacement parts after warranty period.
- E. To the extent possible, provide two copies of manufacturer’s video instructional cassettes for operating, maintenance and service of equipment.
- F. Internally subdivide binder contents with permanent page dividers, logically organized by equipment item number or manufacturer name, with tab titling clearly printed under reinforced laminated plastic tabs.
- G. Electronically submitted manuals are required to follow the same formatting requirements listed above.

1.11 VERIFICATION AND COORDINATION OF PROJECT / DATA

- A. Utilities Rough-in Drawings and Field-Services within four weeks after receipt of notice-to-proceed, review Contract Drawings and Submittal Data for accuracy and completeness and notify Architect of conflicts and proposed adjustments. Coordinate work with other sub-contractors.
 - 1. Provide on-site field verification of all underground utilities prior to pouring of concrete for capacity and location, coordinate with General Contractor. Submit review to Architect and General Contractor.
 - 2. Provide on-site field verification of all other utility connections and locations, coordinate with General Contractor. Submit review to Architect and General Contractor.
- B. Review critical systems/components for application, performance and capacity and submit calculation worksheets with initial submission of brochure/rough-in drawings, with all proposed adjustments noted, including:
 - 1. Exhaust hood removal/supply air volume, velocity, static pressure, duct collar sizes and locations.
 - 2. Refrigeration Systems (compressor, condenser and evaporator) capacities/sizes, quantities and refrigerant piping distances/sizes.
 - 3. Exhaust Hood Fire Suppression Systems (nozzle locations, air handler and fuel interlocks, piping/distance limitations).
 - 4. Locations of Vacuum Breakers.

5. Conformance of Refrigerated Components/Equipment with HACCP Guidelines (e.g., salad/sandwich pans, upright/open refrigerator cabinets, salad bars) with HACCP Guidelines.
 6. Gas, water line sizes and manifold configurations.
 7. Diameter and length of flexible connector lines for fixed/movable gas appliances.
 8. Fabricated Equipment load center panels (individual and total amperage calculations and circuit balance).
 9. ADA compliance of workstations, service positions, passageways, etc.
- C. Ceiling mounted appliances/fixtures: verify and coordinate dimensions/location of support framing/hangers with General Contractor. All material and installation below 12'-0" aff.: Section 11 4000.
- D. Dimension Responsibility: obtain actual or guaranteed measurements for proper fit of equipment. All dimensions indicated in Contract Documents are approximate and are as accurate as can be determined at the time. Field-check all horizontal/vertical measurements and conditions at the building prior to fabrication or delivery of equipment and notify the Architect of all conflicts or deviation from the dimensions shown.
- E. Checking Dimensions at Site: before ordering any materials or doing any work, verify all measurements of the building and be responsible for the correctness of them. No extras will be allowed for variations from drawings in existing conditions or for work performed under this contract. Any discrepancies found shall be submitted to the Architect for instructions before proceeding.
- F. Scheduling to Fit Openings: should it become necessary to schedule construction of walls or partitions prior to delivery of fixed equipment, the equipment must be fabricated for passage through finished openings. Maintain close contact with the project and be cognizant of all conditions, including vertical handling limitations within the building (elevator cabs or openings, stairs, etc.) and possible hoisting requirements. Coordinate all procedures with General Contractor and Project Team.
- G. Refrigerated and Dry Storage Areas: verify and coordinate dimensions to accommodate scheduled modular shelf sections. Notify Architect of variance between the Contract Documents and actual conditions.
- H. Color/Pattern Selections: submit selection samples of solid polymer products, plastic laminate, paint or stain finishes and vinyl-coated surface material of equipment as selected by Owner.
- I. Movable Equipment Interface: rolling stock (pan racks, carts, dollies, dish/tray/rack dispensers) required to fit through or into fixed equipment (roll-in refrigerators, counter bodies, etc.) is to be reviewed and coordinated for compatibility at time initial of shop drawing submittal. Indicate conflicts and proposed adjustments.
- J. Relocation of Work: relocate or re-route work as required to coordinate related items free of charge if no extra work is involved.

1.12 EQUIPMENT FURNISHED / INSTALLED BY OTHERS

- A. Obtain and coordinate utility requirements of Owner-Furnished/Owner-Installed (OF/OI) equipment with the building utilities and roughing-in drawings/provisions.

- B. Coordinate physical data of OF/OI appliances or equipment and incorporate information into Submittal Drawings. Vendor- or Purveyor-Furnished equipment (e.g., coffee/tea equipment): same as OF/OI.

1.13 WORK INSTALLED BUT FURNISHED BY OTHERS

- A. Coordinate delivery/installation schedule of Owner-Furnished/Contractor-Installed (OF/CI) equipment with Owner not less than ninety (90) days before equipment requirement.
- B. Obtain and coordinate utility requirements of OF/CI equipment with the building utilities and roughing-in drawings/provisions.
- C. Receive at job-site and fully incorporate into installation procedures as if furnished under this Section.

PART 2 - PRODUCTS

2.1 FABRICATED FIXTURES MATERIAL / COMPONENTS

- A. Stainless steel sheets or shapes: 18-8, Type 302, polished to 180 grit No. 4 finish.
 - 1. Stainless steel joints and seams: heli-arc welded, free of pits and flaws, ground smooth and polished to No. 4 finish.
 - 2. The "grain" direction of horizontal stainless-steel surfaces: longitudinal, including the splashback. The polishing procedure at right-angle corners of fixtures shall provide a mitered appearance.
- B. Galvanized Iron Sheets: Armco copper bearing Zinc Grip or Zinc Grip/Paint Grip.
 - 1. Galvanized iron joints and seams: arc-welded, free of pits and flaws and ground smooth.
 - 2. Galvanized sheets or shapes: washed with mineral spirits and painted with Rustoleum gray semi-gloss enamel.
- C. Sound Deadening: Schnee Butyl Sealant ½" wide rope positioned continuously between all frame-members or contact material and underside of stainless steel surface (sinks, table tops, food wells, overshelves and undershelves). Tighten stud-bolts for maximum compression of sealant and trim excess.
- D. Plastic Laminates: color/pattern selected by Architect, in 1/16" thickness for flat surfaces: 1/32" thickness for radiused surfaces. Plastic laminates and adhesives must be N.S.F. approved (Standard No. 35).
- E. Solid Polymer products: color/pattern/material as selected by Architect in thickness as specified. Solid Polymer and adhesives must be N.S.F. approved (Standard No. 51).
- F. Casters.
 - 1. Fabricated fixtures with "Open Base" construction: Jarvis and Jarvis Model No. 5-405-113P-NSF swivel casters with grease seals on forks and wheels; Zerk fitting in swivel; two casters: Model No. E-75 Vertilock brakes. All casters: B-7" rolling bumpers with stainless steel top discs.
- G. Cutting Boards: 1/2" thick Read Products, Inc. "PolyLite" cutting board, size as indicated.
- H. Identification Plates, Labels, Tags:

1. Prohibited Information: names of suppliers, fabricators and contractors.
2. NSF Labels: required on all pieces of equipment.
3. Required Information: function or purpose of controls such as display light switches, food warmer controls, etc.
4. Plate Construction: engraved phenolic plastic, secured to equipment with epoxy cement or stainless-steel screws. Furnish samples.

2.2 PLUMBING / MECHANICAL REQUIREMENTS

A. Plumbing Fittings and Components: furnished under this Section as follows:

Note: Fitting and components described in Items 1, 2, 3,4 and 5 are furnished loose for installation by Division 22.

1. Control valves, appliance pressure regulators for water, gas and steam, and vacuum breakers: wherever required on Foodservice Equipment (chrome-plated where exposed).
2. Faucets and drains without connected overflows (unless otherwise indicated) for all sinks.
3. Specialty Foodservice water-fill faucets or hose assemblies indicated in drawings/specifications.
4. Wade Model No. W-10 Shock-Stop shock absorbers for all Foodservice Equipment with quick-opening or solenoid-operated water valves.
5. Dormont Stainless Steel Water Quick Disconnect hose, diameter per water connection size requirements, with SafetyQuick safety fitting, w/coiled restraining device, full port gas valve, antimicrobial coating, lifetime warranty.
6. Extensions of indirect waste fittings to open-sight floor sink or floor drains from sinks, under bar equipment, and food-holding components of serving counters (e.g. cold pans, hot food wells, refrigerator/freezer coils not equipped with condensate evaporators) furnished and installed by Division 22. Drains: painted with aluminum paint where exposed, type "K" copper where concealed.
7. Piping brackets and supports beneath/within fabricated equipment.
8. Closed Base Bodies: removable 18-gauge stainless steel closure panel at plumbing penetrations, under top.
9. Control valves on Open Base fixtures: mounted on 14-gauge stainless steel gusset-shaped panel with 3½" setback from counter top edge/rim to face of control handle.
10. Fill hose/faucet at support pedestals or Closed Base Body: installed in a 15" x 18" x 5" deep recessed mounting panel. Panel bottom: sloped on a 60o angle, with 3/8" stainless steel rod hanger-bracket for hose.
11. In-line water filter system:
 - a. Everpure System filters for coffee/tea brewers, icemakers, water chillers, convection steamers and beverage systems.

B. Gas-Heated Equipment Fittings and Components: furnished under this Section as follows:

1. Fixed Equipment: Dormont MFG brand "KITCF" Series gas hose kit with Quick Disconnect fitting at appliance. Approved equal: T&S Brass. Diameter per fuel volume/connection size requirements. Gas valve diameter size per fuel volume/connection size requirements.
 - a. Restraining device: heavy duty steel cable, fastened to equipment and walls, 3" to 6" shorter than equipment connector length.

C. Final Plumbing Connections Provisions.

1. Fabricated equipment containing components, fittings and/or devices indicated on Foodservice Connection Drawings to be connected to the building systems: each component, fitting or group thereof pre-piped to a utility compartment for final connection by Division 22. Refer to drawings for capacities.
 2. Field-assembled equipment (e.g., prefabricated walk-in refrigerator/freezers, exhaust hoods, warewash machines, convection ovens, etc.): plumbing components completely interconnected under this Section for final connection arrangements indicated on Utility Connection Drawings.
 3. All plumbing final connection points of equipment shall be tagged, indicating:
 - a. Item number.
 - b. Name of devices or components.
 - c. Type of utility (water, gas, steam, drain, chilled water).
- D. Ducts and Vents.
1. Exhaust hoods which are furred-in to ceiling: 2" high duct collar for final connection to duct system.
 2. Warewash machines equipped with integral vent cowls or extended hoods: furnished with 18-gauge stainless steel seamless duct risers to 6" above finish ceiling for final connection. The duct: trimmed at ceiling with 16-gauge stainless steel angle flange with all corners welded.

2.3 FOODSERVICE EQUIPMENT REFRIGERATION SYSTEMS

- A. Install complete with all refrigerant, oil, dials, dehydrators, gauges, controls required for the proper operation of the system.
- B. Self-contained or factory-installed compressors: check and adjust to proper operating temperature prescribed by FDA/HACCP.

2.4 PLUMBING TRIM

- A. Faucets: furnished for all sinks or equipment requiring open water supply.
- B. Fill Faucets: furnished for appliances requiring open water supply.
- C. Drain Fittings: furnished for all sinks or equipment requiring removal of liquids. Install specified chrome-plated or stainless-steel fittings in die-stamped openings with washers and locknuts. Solder may be used as a sealer but shall not be applied to the top surface of the drain fittings.

2.5 ELECTRICAL REQUIREMENTS

- A. All electrical systems, components and accessories within the work of this Section: certified to be in accordance with NEC 70.
- B. Electrical Fittings and Components: furnished under this Section as follows. Coordinate foodservice equipment loads, voltage and phase with building system and confirm any existing or OF/OI equipment requirements.
- C. Cord and Caps.
 1. Coordinate all Foodservice Equipment cord/caps with related receptacles.

2. All 120 volt "plug-in" equipment shall have Type SO or SJO cord and plug with ground wire fastened to frame/body of item.
3. Cord lengths for fixed equipment: adjusted to eliminate loose-hanging excess.
4. All non-fixed plug-in "buy-out" equipment: Hubbell configuration, ratings as required.
5. All mobile electrical support equipment (heated cabinets, dish carts, etc.) and counter appliances mounted on mobile stands (mixers, food cutters, toasters, coffee makers, microwave ovens, etc.): 8'-0" cord length with cord-hanger strap secured to rear of equipment or mobile stand.

D. Switches and Controls.

1. Each motor-driven appliance or electrically heated unit: equipped with control switch or starter per Underwriters' Laboratories, Inc. with low-voltage and overload protection.
2. Disposer controls recess-mounted in wall: external fittings and accessories removed from enclosure and furnished with 16-gauge stainless steel perimeter angle flange with welded corners. Install control at 4'-0" aff to bottom of enclosure.
3. Disposer controls recess-mounted in counter-splash risers: external fittings and accessories removed from NEMA 4 enclosure and furnished with 16-gauge stainless steel perimeter angle flange with welded corners. Install control at 3'-0" aff to bottom of enclosure. Provide panel with 60" long coil of Seal-Tite electrical conduit, from bottom of control panel for final field connections under Division 26.
4. Equipment which is not provided with built-in circuit breakers or fused terminal block and is indicated on Utility Connections Drawings to be directly-connected to the building electrical system: a NEMA 4 stainless steel disconnect switch furnished and installed by Division 26.
5. All remote manual starters, disconnect switches, magnetic contactors or starters and push-button stations: NEMA Type 4 enclosure; NEMA Type 1 enclosure only when installed in a Closed Base Body.

E. Heating Elements.

1. Electrically-heated equipment: thermostatic controls.
2. Water heating equipment: equipped with positive low water shut-off.

F. Receptacles and Switches.

1. Receptacles installed in vertical panels of support pedestals or Closed Base Bodies: installed in 12" x 8½" x 3" deep recessed mounting panel sloped on 60o angle and turned up to top of opening.
2. Pre-wire receptacles in closed base fixtures to a junction box installed within 6" from bottom of utility or compressor compartments.
3. Receptacles mounted on Open Base fixtures: installed on 12" x 10½" x 4½" deep 14-gauge stainless steel panel with returned ends and sloping recess. Secure panel to underframe of fixture top.
4. Pre-wire receptacles on open base fixtures to a junction box secured to a leg or mounted on underside of lower shelf. Vertical runs of wiring: made in rigid conduit or within the tubular leg.
5. Receptacles installed in/on-fabricated equipment: Hubbell, Inc. assemblies horizontally-mounted in a metal box with stainless steel cover plate.
6. Switches installed in/on-fabricated equipment: Hubbell, Inc. with metal box and stainless-steel cover plate. Switches: pre-wired to the controlled device and to a junction box installed within 6" from bottom of utility or compressor compartment. All refrigeration system switches: installed within the compressor compartment near the door opening.

7. Load centers installed in/on fabricated equipment to have all fixture components pre-wired to load center with balanced phase loading. Load center: ready for final connection by Division 26 and flush-mounted within utility compartment rear panel, set back 8" from access door. All breaker/device information: typewritten on circuit schedule in load center door (number corresponding breaker/device) with enclosed schematic wiring diagram of fixture components.
8. All receptacles to be pre-wired to cord and plug assembly and routed through overshef post at all island equipment locations, unless specified otherwise.

G. Light Fixtures.

1. Light fixtures with lamps installed in/on fabricated or field-assembled equipment: pre-wired to a junction box for final connection (continuous-run fixtures when indicated).
2. LED Display Light: install light fixtures full-length of Display Stand and Serving Shelf with stud bolts and pre-wire through support posts to an apron-mounted switch.
3. Heat Lamps: installed to underside of serving shelf assemblies. When multiple 24" heat lamps are specified, provide maximum length heat lamp chassis. Install all switches remote from lamps.
4. Cold Storage Light Fixtures: Furnished by Section 11 40 00 and installed by Div. 26. All electrical wiring and conduit provided by Div. 26. electrically connected through the hub fitting located on the top of the fixture. All horizontal conduit: above ceiling panels. Install plastic sleeve through ceiling panels for electrical conduit. Seal sleeved penetrations airtight at both sides of panel. All penetrations to be sealed by Kitchen Equipment Contractor.

H. Final Electrical Connection Provisions.

1. Fabricated equipment containing electrically-operated components or fittings indicated on Utility Connections Drawings: direct-connected, with each component, fitting or group pre-wired to a junction box for final connection by Division 26. Refer to drawings for circuit loading.
2. Fabricated equipment containing electrically-operated components and/or devices indicated: circuit-breaker load center with each component or device pre-wired to a separate circuit breaker for balanced phase loading and single final connection by Division 26.
3. Field-assembled equipment (e.g., prefabricated cold storage assemblies, exhaust hoods, warewash machines, etc.) shall have electrical components completely interconnected in this Section for final connection arrangements as indicated on Utility Connection Drawings by Division 26.
4. Pre-wire the following groups of cold storage assembly electrical devices to a top-mounted junction box for final connection by Division 26 per compartment grouping (unless otherwise indicated).
 - a. Light fixtures and switches; heated pressure-relief vent.
 - b. Door/jamb heaters.
 - c. Evaporator fans, defrost elements and drain line heaters.
5. All electrical final connection points of equipment shall be tagged, indicating:
 - a. Item number.
 - b. Name of devices on circuit.
 - c. Total electrical load.
 - d. Voltage and phase.

- I. Lamps: in all Foodservice Equipment containing light fixtures. Refrigerator or heated cabinets: All exposed LED lamps above or within a food zone: Shat-R-Shield lamps or standard lamps, sleeved with end caps.

2.6 CUSTOM - FABRICATED / ASSEMBLED UNITS

- A. Mechanical or electrical operating components or products integrated into a fabricated fixture: ventilation and service access required or recommended by the manufacturer. The service access panel(s) size and placement is to permit easy lubrication, adjustment or replacement of all moving parts and is to be indicated on fabrication shop drawings.

2.7 BAKER TABLE TOPS (Unless specified otherwise)

- A. 14-gauge 304 S/S top with 2" square turn down at front, 6" high enclosed splash at three (3) sides and rear. Brace same as "Counter/Table Tops".
- B. 1¼" x 6" high integral coved riser at rear and ends unless indicated otherwise on drawings.
- C. 16-gauge stainless steel flour-trough at free long sides, secured to underside of top. Trough: 3" diameter with eased edges/corners.

2.8 COUNTER / TABLE TOPS

- A. 14-gauge stainless steel; all free edges turned down 2" with ¾" tight hem at bottom. Free corners: rounded on ¾" radius.
- B. Marine edges: turned up ½" on 45° angle and turned down 2" with ¾" tight hem at bottom.
- C. Cafeteria serving counter tops at hot food stations: full-length x 3½" x ½" high raised rail at (customer's) front side with 45° integral turndown to counter surface.
- D. Tops abutting high fixtures or walls: cove up specified height and slope back 1½" at top on 45° angle; 2½" slope where piping occurs. Turn down 1" at rear of splash and close ends to bottom of top turndown. Secure splash turndown to wall with 4" long 14-gauge stainless steel "Z" clip anchored to wall, 36" o.c.
- E. Freestanding tables and all serving counter splash-risers: turned back on 90° angle with 1" turndown at rear.
- F. Brace tops with rigid-welded 1½" x 1½" x 1/8" galvanized steel angle frame at perimeter with cross bracing 2'-0" o.c. maximum. Provide 4" x 4" x 12-gauge stainless steel triangular pads where leg gusset welds to frame. Paint entire frame with Rustoleum gray semi-gloss enamel. Angle frames: secured to underside of top surfaces with ¼" studs welded 9" o.c. maximum with chrome-plated washer, lock washer and capnut. Studs: such length that cap nuts can be made-up tight, bringing top down snugly on angle frame eliminating all vibrations or "oil-canning".
- G. Tops: 1½" overhang at free sides of underframe or Closed Base Body.
- H. Mockett Model No. SG5-26 chrome-plated/plastic grommet assembly or integrally-welded stainless-steel flange or inverted gusset where service utilities or support posts penetrate or abut tops, ground and polished to match top. When conditions permit, provide a 1" x 1½" rectangular opening in the backsplash for service utilities in lieu of piercing the horizontal surface. Install stainless steel split-tubing at raw-edge of opening.
- I. Extend underbracing members to wall, turn down 6" and anchor to wall when specified to be mounted on leg/bracket assembly.

- J. All openings in tops: 3/16" high raised die-formed edges.
- K. All top openings for pans or inserts: 20-gauge stainless steel, watertight liners, 8½" deep, secured to underside of counter top.
- L. All "built-in" and "drop-in" counter equipment/appliances: with framing members at perimeter of opening.
- M. Scrap Container: 18-gauge stainless steel construction 6½" x 6½" x 21¾" long. Top of container: 5/8" wide x ¼" high full perimeter flange with ¼" diameter stainless steel rod bail handle. Interior vertical corners coved on ½" radius. Counter top: fitted with 6¾" square die-stamped opening.

2.9 COLD PANS

- A. 14-gauge stainless steel with ¾" coved interior welded integrally to counter top with 3/16" raised edge at perimeter of opening. Depth of Cold Pan: NSF 7 compliance.
- B. Slope bottom to required quantity of Component Hardware Model No. E16-4021 drain fittings at 48" o.c. maximum. Sleeve through insulation at drain fittings and extend common drain line into utility compartment for indirect waste connection.
- C. ½" o.d. copper refrigerant lines in serpentine patten, 1½" o.c. flattened for maximum contact. Secure tubing to underside of ¼" thick aluminum "distribution plate" installed tight to underside of frost plate area and apply cold-conductive mastic to all surfaces.
- D. Component Hardware Model No. E16-4021 drain fittings at 48" o.c. maximum, sleeved through insulation with common drain line extended into utility compartment.
- E. Heat Cable: low-wattage, full-perimeter, below counter top at edge of depression. Secure with "Z" clips, 9" o.c. and interwire with compressor switch for simultaneous operation.
- F. Enclose sides and bottom of pans with airtight 18-gauge galvanized jacket and pack with 2" fiberglass insulation set in mastic.
- G. Compressor: size as indicated or required to accommodate size of cold pan. Locate compressor in compressor compartment below unit or as indicated on drawings.
- H. Sectional 16-gauge stainless steel perforated false bottom (¼" holes, @ ¾" o.c.). Turn down 1½" all sides, weld corners and provide finger rings. False bottom sections: 24" long maximum.

2.10 DRAWERS

- A. Liners: Component Hardware Model No. S80-2020 (20" x 20"), easily removable with drawer in fully extended position.
- B. Drawer Frame: 16-gauge stainless steel flanged out at top. Weld the frame to double-paneled 16-gauge stainless steel drawer front with full-length recessed pull at top (similar profile as Garcy Model No. R-1060) with closed ends.
- C. Channel-formed horizontal pull: ¾" turndown at front and ends with ½" tight hem. Front edge of pull: flush with face of drawer. Recess behind pull: sloped up on 60o angle, terminating 1" below bottom edge of pull.

- D. Mount drawer frame on Component Hardware Model No. S26-0024 self-closing slides, with solid nylon rollers, full-depth of fixture. Secure slides to body or brackets to eliminate lateral movement in extended position. Refrigerator drawers: Component Hardware Model No. S52-2024 stainless steel slides with Delrin rollers.
- E. Drawer enclosure in an Open Base Fixture: 18-gauge stainless steel flanged out at top for attachment to underside of tabletop. Lower edge of enclosure is flanged in toward open bottom. Mount drawer slides to enclosure and brace as required. Face of enclosure is to be same length and height of drawer face. Provide $\frac{3}{4}$ " deep offset in front of enclosure and $2\frac{1}{2}$ " from underside of table top for flush-fitting appearance. Drawer enclosure on freestanding fixture: full-depth of table framing.
- F. Drawer enclosure in a Closed Base Fixture: completely partitioned from adjoining area. Drawer front: flush-fitting with face of body.
- G. Drawer Liners other than tool/utility: Bread Drawer: Component Hardware Model No. S83-2020; Refrigerated Drawer: Component Hardware Model No. S81-1520 stainless steel liner.
- H. Cash Drawer: integral stainless steel body, 3" deep.

2.11 FOOD WELLS (UNLESS SPECIFIED OTHERWISE)

- A. Food Warmer Controls: remote-mounted in sloping recessed apron panel. Control panel is recessed $2\frac{1}{2}$ " from bodyline at top of 60o slope, 1" at lower edge. Terminate slope angle $2\frac{1}{2}$ " below counter top. Mount panel on concealed piano hinge at bottom edge; secure with screws at upper corners.
- B. Manifold all warmer drains and extend to within utility compartment for indirect waste connection. Install valve in drain line and extend handle through compartment door.
- C. Removable 18-gauge stainless steel closure panel at underside of warmers.
- D. 14-gauge stainless steel plate/utensil shelf full-length of hot food station unless noted otherwise: 10" below counter top x 9" deep, with rear panel covered up to underside of counter top; end panels turned up square. Front of shelf: turned down $1\frac{1}{2}$ " and returned under for closure panel attachment.
- E. Food wells: Hatco Model No. HWBIBRT-FULD insulated food warmer (1200 watts, 208 volts, single phase) secured to underside of 12" x 20" die-stamped counter top openings with thermal breaker mastic rope applied at perimeter of food well flange.
- F. Soup Warmers: Hatco Model No. HWB-11QTD soup warmer secured to underside of 11" diameter die stamped counter top opening with thermal breaker mastic rope applied at perimeter of soup well flange. Maximum allowable temperature of counter top at contact surface: 120oF. Each warmer: equipped with one 11-quart stainless steel round insert and slotted cover.
- G. When specified: $\frac{5}{8}$ " deep recess in counter top full-length of pan-opening or as shown, with equal-length removable $\frac{3}{4}$ " thick Read Products "PolyLite" cutting board sections, 42" long maximum. Recess and board: spaced 2" from front edge of pan opening and extended to leading edge of counter top.

2.12 SINKS

- A. 14-gauge stainless steel; all interior corners (horizontal/vertical) coved on $\frac{3}{4}$ " radius. $1\frac{1}{2}$ " wide double-walled partitions with flat tops between compartments.

- B. Continuous exterior panels of multiple-compartment sinks: 14-gauge stainless steel filler panel welded, ground and polished between compartments.
- C. Sinks (with overflow): score and slope sink bottom 1/2" to die-stamped opening fitted with Component Hardware Model No. D50-7215 rotary drain with connected overflow and tailpiece. 14-gauge stainless steel bracket: welded to sink bottom for drain stem with 1 1/2" handle clearance.
- D. Where sinks are installed in fixture with Closed Base Body, provide a Component Hardware Model No. D50-7215 rotary drain with connected overflow and tailpiece. (Sinks with dimension larger than 20" x 20" in Closed Base Body will not have overflow fitting.) 14-gauge stainless steel bracket: welded to sink bottom with T & S Model No. BL-4740-1 guide bushing. Install on shortened drain stem, one T & S Model No. BL-4710-1 remote control stem assembly only (length as required) with Model No. 113-L universal joint and white blank button. Set drain control handle in Cambro Model PSB-6 bowl with bottom omitted (dress raw edge) to permit passage of drain handle. Secure bowl in utility compartment door or body panel with clear silicone.
- E. When single-hole deck-mounted faucets are specified, install overflow fitting in sidewall of sink compartment and provide ell-fitting in connecting tubing.
- F. Flush Covers when specified: 1/2" thick Read Products, Inc. "Richlite" cutting board, size as indicated. Support clips: 1/4" stainless steel rod 2" long, formed at 45° with two 3/4" leg ends (1/4" long threaded ends). Insert rod-clips through tight-clearance holes in sink, seal watertight and secure with stainless steel acorn-nuts or tack-weld at exterior of sink wall. Set support clips 1/2" below top. Provide 14-gauge stainless steel channel or angle support frame to store covers when not in use. Cover holder: adjacent to sink compartment, below counter top or under drawer assembly.

2.13 TRAYSLIDES (UNLESS OTHERWISE SPECIFIED)

- A. Trayslides: 12" wide, solid 16-gauge stainless steel turned up 2" at rear behind counter top turndown; turned down 4" at front and free ends, unless otherwise indicated.
- B. Three 1/4" high die-formed inverted "vee" ridges at 4" o.c., 2" from leading edge, terminating 2" from ends of trayslide with tapered ridge-ends.
- C. Ridges formed on radius: equal-length segments with 2" separation between chords.
- D. Secure trayslides to counter-top/body frame, same as "Counter Tops." Enclose exposed underside of trayslide with 18-gauge stainless steel.
- E. When indicated, project trayslides 2" beyond serving counter top and return the full-width of serving counter at free ends.
- F. All trayslides to be provided and mounted per ADA requirements.

2.14 DISHTABLES

- A. Soiled/clean dishtable: 14-gauge stainless steel; free edges covered up 3" with 1 1/2" diameter rolled rim and bullnosed corners.
- B. Edge of dishtables next to high fixtures or walls: covered up 10" and sloped back 1 1/2" on 45° angle; 2 1/2" slope where piping occurs. Turn down 1" at rear of splash and secure to wall with 4" long 14-gauge stainless steel "Z" clips anchored to wall, @ 36" o.c.

- C. Exposed rear splash: 16-gauge stainless steel finish panel from top of splash to bottom edge of rolled rim with welded vertical joint at end. Secure panel with concealed attachment and install bracing 24" o.c.
- D. Cove all interior corners (horizontal/vertical) on $\frac{3}{4}$ " radius and slope tables 1/8" per foot to sinks, scuppers or warewash machines, maintaining level crown/splash.
- E. Brace dish tables with 1" x 4" 12-gauge stainless steel channels down centerline of top and between each pair of legs, with closed ends. Bracing: secured to underside of dishtable with $\frac{1}{4}$ " studs welded 6" o.c. maximum, with chrome-plated washer, lock washer and cap nut. Studs: such length that the cap nuts can be made up tight, bringing the dishtable down on the channel-members, eliminating all vibration and "oil-canning."
- F. Integrally-welded stainless steel flange or inverted gusset where service utilities or support posts penetrate or abut tops; ground and polished to match top.
- G. Hose Bibb: Chicago Model No. 305VBRCF; mounted on 12-gauge stainless steel flange or inverted gusset bracket with $\frac{3}{8}$ " stainless steel rod hose hanger.
- H. Extend underbracing members to wall, turn down 6" and anchor to wall when specified to be mounted on leg/bracket assembly.
- I. Paper-Drop Opening: 9" square with 4" integral chute having hemmed bottom edge. Slope dishtable top 1" toward opening, forming a 16" square tapered deposit point.
- J. Accessible Tray-Drop Opening: 10" x 18" with integral 16-gauge stainless steel seamless chute sloped on 45° angle toward center of mobile soak sink position.

2.15 DISH / TRAY DEPOSIT ASSEMBLY

- A. 14-gauge stainless steel deposit shelf, size as indicated. Extend shelf through opening, flush with public side of partition, height as required by local code authorities. Turn shelf down 1" at front with $\frac{3}{4}$ " return at bottom (either scribed into partition or forming reveal). Shelf: 1" square turndown at rear long side, integral with conveyor slider pan, tray-accumulator or dishtable. Extend rear/end splash to align with head of deposit station opening. Modify rolled rim at the operator's side of the tray drop window to have a 3" rolled rim.
- B. 18-gauge stainless steel window frame with perimeter flange channel-formed 1" x $\frac{3}{4}$ " at both sides of wall. Weld all corners of frame and install with concealed attachment. Align/abut one jamb of frame with end splash of conveyor slider pan or dishtable whenever adjacent.

2.16 UTENSIL - WASH COUNTERS

- A. 14-gauge stainless steel; all free edges coved up 3" with $1\frac{1}{2}$ " diameter rolled rim and bullnosed corners.
- B. Edges of utensil-wash counters next to high fixtures or walls: coved up 10" and sloped back $1\frac{1}{2}$ " on 45° angle; $2\frac{1}{2}$ " slope where piping occurs. Turn down 1" at rear of splash and secure back splash to wall with 4" long 14-gauge stainless steel "Z" clip anchored to wall @ 36" o.c. Vacuum breaker pockets: 4" long square turnback sections, aligned with slope breakline.

- C. Exposed Rear Splash: 16-gauge stainless steel finished panel from top of splash to bottom edge of rolled rim with welded vertical joint at end of splash and 1/2" turnback at bottom of panel. Secure panel with concealed attachment and install bracing 24" o.c.
- D. Cove all interior corners (horizontal/vertical) on 3/4" radius and slope tables 1/8" per foot, maintaining level crown.
- E. Brace utensil-wash counters with 1" x 4" 12-gauge stainless steel channels down centerline of top and between each pair of legs, with closed ends. Bracing: secured to underside of dishtable with 1/4" studs welded 6" o.c. maximum, with chrome-plated washer, lock washer and cap nut. Studs: such length that the cap nuts can be made up tight, bringing the dishtable down on the channel-members, eliminating all vibration and "oil-canning."
- F. Integrally welded stainless steel flange or inverted gusset where service utilities or support posts penetrate or abut tops: ground and polished to match top.
- G. Extend underbracing members to wall, turn down 6" and anchor to wall when specified to be mounted on a leg/bracket assembly.
- H. Hose Bibb: Chicago Model No. 305VBRFCF; mounted on 12-gauge stainless steel flange or inverted gusset bracket with 3/8" stainless steel rod hose-hanger.

2.17 DOORS

- A. 18-gauge x 1" stainless steel double pan-formed welded construction, insulated with 1" thick polyurethane boards. Seal perimeter joint of pans. Offset lower horizontal framing member of Closed Base Body to align flush access door with bottom of Body.
- B. Channel-formed full-length horizontal recessed pull: 3/4" turndown at front and ends with 1/2" tight hem. Front edge of pull: flush with face of door. Recess behind pull: sloped up on 60o angle and terminated 1" below bottom edge of pull.
- C. Door Hardware:
 - 01. Two Component Hardware Model No. M75-1002 stainless steel hinges (notch door/jamb at hinge location).
 - 02. Component Hardware Model No. 35-2000 concealed Magnetic Catch.
 - 03. Component Hardware Model No. D30-4780 lock in upper free corner of door.
- D. Louvered opening: cutout opening size as indicated, turn in 1" and weld. All corners: ground and polished.
 - 01. Full-height 18-gauge stainless steel louver with 1" vanes at 45°, 1/2" spacing. Perimeter channel-formed frame: 1 1/2" x 1".
45° x 1" x 1/2" x opening width plus 1/2" 18-gauge stainless steel louver.
 - 02. Tack weld tab of louver flange to back panel of door.
- E. Drain handle opening: 6" diameter hole through double pan to accommodate Cambro Model No. PSB-6 Bowl.
 - 1. Secure bowl to door panel with clear silicone.
 - 2. Omit bottom of bowl. Dress raw edges of opening for passage of drain handle.
 - 3. Exposed insulation at penetration of door pan: painted black.
- F. Sliding Doors: fabricate same as Paragraph "A."

1. Aluminum Sliding Door Track: Component Hardware Model No. B57-0000 Series, length as required. Secure to angle frame at top of underside.
 2. Front/rear door sheaves: stainless steel $\frac{3}{4}$ " side mounted door hangers; two (2) required per door.
 3. Recessed Vertical Pull at Upper Corner of Door: Component Hardware Model No. P63-1012.
 4. By-Passing Door Guides secured to bottom shelf: Component Hardware Model No. B62-1093.
 5. Door Stop at bottom edge of door: Component Hardware Model No. B60-1086.
- G. Offset lower horizontal framing member of Closed Base Body/utility compressor compartment to align door flush with bottom of Body.

2.18 CLOSED BASE BODIES

- A. Frame: rigid-welded $1\frac{1}{2}$ " x $1\frac{1}{2}$ " x $\frac{1}{8}$ " galvanized steel angle forming a continuous structure around the top and bottom perimeters of the fixture, a post at each corner, studs spaced 48" o.c. maximum. Top of frame is cross-braced with $1\frac{1}{2}$ " angles, 2'-0" o.c. maximum.
- B. 18-gauge stainless steel panels and trim with concealed attachment. All seams: welded, ground and polished.
- C. Exposed Vertical Corners: rounded on $\frac{3}{4}$ " radius. Closed Base Bodies adjacent to walls or fixtures: square corners.
- D. Vertical and horizontal channel members at shelf interior or drawer enclosures, such as corners and center mullions: closed and sealed
- E. Closed Base Bodies set on finished masonry platforms: closed and caulked at underside of equipment overhang and bolted to platform. Body overhang of platform: 1" at free ends 2" at front and exposed rear sides.
- F. Closed Base Bodies not set on platform: Component Hardware Model No. A54-2-6, 6" legs spaced 5'-0" o.c. maximum.

2.19 COMPRESSOR COMPARTMENTS

- A. Same material as Closed Base Bodies with back and end partitions; omit bottoms only.
- B. 10-gauge steel slide out support: channel frame on full extension slides with 125 lb. minimum capacity secured to fixture frame with anti-vibration mountings for maximum sound deadening. Closed Base Body on solid platform: front-to-back slide out support channels set 4" above bottom for air circulation.
- C. Access Door: 18-gauge stainless steel double-pan type with channel formed horizontal recessed pull full length of top (similar profile as Garco Model No. R-1060) with closed ends. Channel-formed horizontal pull: $\frac{3}{4}$ " turndown at front and face of door. Recess behind pull slopes up on 60o angle, terminating 1" below bottom edge of pull. Offset lower horizontal framing member of Closed Base Body to align flush access door with bottom of body. Door hardware: two Component Hardware Model No. M75-1002 stainless steel hinges (notch door/jamb at hinge locations) and Component Hardware Model No. 35-2000 concealed magnetic catch.

- D. Access Doors Louver: full-height, with 1½" x 1" x 18-gauge stainless steel channel-formed frame with welded corners. 18-gauge stainless steel louver. Submit sample of design for approval.

2.20 UTILITY COMPARTMENTS

- A. Closed Base Bodies or Pedestal Supports: fitted with utility compartments wherever piping or wiring is required in/on the fixture.
- B. Same material as Closed Base Bodies with full-height back and end partitions. Omit bottoms except at hose-reel locations.
- C. Access Doors: 18-gauge stainless steel double-pan type with channel formed horizontal recessed pull full-length of top (similar profile to Garcy Model No. R-1060) with closed ends. Channel-formed horizontal pull: ¾" turn down at front of door, recess behind pull slopes up on 60o angle, terminating 1" below bottom edge of pull. Offset the lower horizontal framing member of the Closed Base Fixture to permit flush alignment of door with face and bottom edge of body. Door hardware: two Component Hardware Model No. M75-1002 stainless steel hinges (notch door/jamb at hinge locations) and one Component Hardware Model No. 35-2000 concealed magnetic catch.
- D. No shelves of Closed Base Fixtures are to be penetrated.

2.21 UTENSIL RACKS

- A. Rack: ¼" x 2" 300 series stainless steel flat bar with No. 4 finish, fully welded and formed to match shape shown on drawings. Lowest band: 7-6 aff, unless otherwise indicated.
- B. Ceiling Mount Supports: 1-5/8" diameter 16-gauge stainless steel tubing from band to 18" above ceiling. Anti-sway bracing above ceiling: 1½" unistrut members. Tubing penetrations at ceiling: Component Hardware Model No. A16-0206 stainless steel gussets.
- C. Table Mount Supports: 1-5/8" diameter 16-gauge stainless steel tubing extended thru counter top. Secure to closed base framing or crossrail/undershelf on open base fixture. Tubing penetrations of counter tops: integrally welded stainless steel inverted gusset.
- D. Utensil Rack Hooks: Component Hardware Model No. J77-4401 stainless steel hooks spaced 8" o.c. maximum.
- E. Electrical Receptacle: NEMA No. 5-20-R or as noted. Mount in fully welded 3½" x 5½" x 3" 14-gauge stainless steel enclosure with ½" radius corners. Stainless steel cover plate to fit specified receptacle. Pre-wire thru tubular support for final connection above ceiling by Division 26.

2.22 CASHIER / SERVING COUNTERS

- A. Exterior Body Panels when specified: ¾" thick marine grade hardwood plywood with plastic laminate or solid polymer in Architect's selection of color/pattern at all exposed surfaces; backing sheet where concealed.
- B. Position, size and finish horizontal or vertical reveal as directed by Architect.
- C. Secure panels to counter body framing in concealed manner. Install removable panels with "Z" clips overlapping body framing members.

- D. Hinged doors in exterior body panel(s): Grass Model No. 1200VZ or 1200VZ8 self-closing hinges. Three (3) required per door; Grass Model No. G/HRZ base plate at each hinge; Ives Model No. TM820 concealed push latch at each door. Confirm Model No. and provide samples with submittal.
- E. Cashier counter to have 16-gauge s/s intermediate shelf, turned down 1 1/2" with tight hem at front. Cove up 2" at rear and sides. Brace undershelf with 1" x 4" 14-gauge stainless steel channel at longitudinal centerline. Provide outlet for power/data within body located above intermediate shelf.

2.23 OPEN BASE STRUCTURES

- A. 1-5/8" o.d. x 16-gauge seamless stainless-steel tubing legs beveled at bottom. 1 1/4" o.d. crossrails fully-welded (360o smooth and polished) to legs at 10" aff, o.c.
- B. Top of Leg: inserted in Component Hardware Model No. A20-0206 gusset fully-welded to table frame or sink bottom.
- C. Bullet Foot: Component Hardware Model No. A10-0851.
- D. Freestanding fixtures requiring utility connections: Component Hardware Model No. A10-0854 flanged feet at the fixture corners, anchored to floor with non-corrosive bolts.
- E. Table Bases: maximum leg spacing of 6'-0" o.c.; dishtable and utensil wash counter bases at 5'-0" o.c.
- F. Open Base equipment specified to be supported by brackets at the rear side only (not completely cantilevered): tubular legs at front side only with Component Hardware Model No. A10-0854 flanged feet anchored to floor with non-corrosive bolts. Front-to-back crossrail: fitted into Component Hardware Model No. A20-0406 circular gusset secured to wall with non-corrosive bolts.

2.24 UNDERSHELVES

- A. Open Base Structures: 16-gauge stainless steel turned down 1 1/2" with tight hem at bottom. Notch all corners to fit tubular legs and weld from underside to completely fill gap; grind and polish. Cove up 2" at rear or ends adjacent to wall, columns, refrigerators, etc. The turn up at freestanding fixtures is to be hemmed tight to bottom of turndown. Brace undershelf with 1" x 4" 14-gauge stainless steel channel at longitudinal centerline and at each intermediate pair of legs.
- B. Open Base Structure specified to be supported by brackets at rear side only (not completely cantilevered): 16-gauge stainless steel turned down 1 1/2" at free sides with tight hem at bottom edge. Notch all corners to fit tubular legs as required and weld from underside to completely fill gap; grind and polish. Cove up 2" at rear ends, as indicated. Fill gap at front to back rail, grind and polish. Brace undershelf with 1" x 4" x 1" 14-gauge stainless steel channel at longitudinal centerline between front to back rails.
- C. Closed Base Fixtures: 16-gauge stainless steel turned down 1 1/2" at front. Front edge of bottom shelf: turned back and sealed to finished masonry platform or boxed for leg application. Center shelf has 3/4" tight hem.
 - 1. Shelves: turn up square at ends (coved up at rear only) to the shelf above or counter top flanged out for attachment with no open spaces at interior.

2. All shelf partitions at exposed ends of cabinet bodies or interiors: free of exposed framing members.
3. Reinforce shelves with full-length 1" x 4" x 14-gauge stainless steel closed hat channel.
4. Unless otherwise noted, all closed base undershelves are to be 22" deep, clear.
5. Fully weld smooth and polish, the vertical seam of shelf turndown/turn up with face of body partition.
6. Seal the vertical seam of square turn-in at exposed interior of open shelf sections.

2.25 ANCHOR PLATES / WOOD GROUNDS

- A. Behind finish surface wherever building wall, partitions or ceiling construction will not accommodate direct attachment of equipment such as overshelves, wall cabinets, hose reels, utensil racks, exhaust hoods, display cases, etc. Material and installation by General Contractor. Location and coordination with trades by Section 11 4000.
- B. Anchor Plates: not less than 12" x 12" x ¼" thick steel, secured to the structure above or behind the finished surface, positioned at attachment points.
- C. Wood Grounds: length required by fixture, component or device, 24" wide x ¾" thick plywood secured to partition system prior to gypsum board installation.
- D. Above ceiling supports: structural shapes (4" x 8.0 lb. channel) suspended from structure. Maximum height 15'-0" aff. size: width of equipment x length of equipment plus 6'-0". Cross bracing at 6'-0" on center maximum.

2.26 OVERSHELVES

- A. 16-gauge stainless steel with free edges turned down 1" with ½" tight hem at bottom. ¾" radius at free corners.
- B. Turn up 2" raw at walls and sides with horizontal coved corner at rear. Round front corners of turn up on ¾" radius.
- C. Where shelf width exceeds 12" width, reinforce with ½" x 4" x 14-gauge stainless steel closed hat channel full-length of shelf.
- D. Wall-Mounted Shelves: 16-gauge stainless steel brackets 48" o.c. maximum, set in 6" from ends.
- E. Freestanding Shelves: where splash is required at free overshelves, turn up square 2" at ends, cove up at rear and hem tight to lower edge of front turndown. Weld exposed corners.
 1. Freestanding overshelves: 16-gauge stainless steel cantilevered brackets at rear of table; double-cantilevered brackets at center of table. Posts for cantilevered overshelves are 1-5/8" o.d. x 16-gauge stainless steel secured to underframe, 4'-0" o.c. Ends of shelves: secured to adjacent wall/fixture or mounted on 1¼" diameter stainless steel posts.
 2. Freestanding overshelves not on cantilevered brackets: 1¼" o.d. x 16-gauge stainless steel posts, each pair at 4'-0" o.c., maximum.
- F. Baker Table Overshelves: supported at 18" above top with 1¼" o.d. stainless steel tubular supports with channel shoe secured to risers.
- G. Glass/Cup Rack Overshelf at Dishtables: 14-gauge stainless steel with 1½" deep "vee" trough at free long sides with 1" tight hem at inside of trough. Provide a ½" marine edge at free ends; 4" splash at wall. Suspend shelf at 18" above dishtable surface on posts/brackets anchored

to dishtable frame/wall at rear; 1" o.d. stainless steel tubing supports from structure above ceiling at front edge, 60" o.c./each end.

1. Install at both ends, 1/2" stainless steel drain-tube (connecting both vee-troughs) extended to dishtable surface through splash turnback.
2. Rack-rest: horizontal full-length 1-5/8" o.d. stainless steel tubing supported at 10" o.c. above shelf (8" o.c. for double service shelf) by 1 1/4" o.d. stainless steel tubing with closed ends. Support tubing: welded, ground and polished, spaced 60" o.c.
3. Rack-rest supports to wall: 4" x 4" x 10-gauge stainless steel flange plates welded to support tubing. Anchor flanged plates to blocking ground with non-corrosive bolts.

2.27 DRAIN TRENCH LINER / GRATING

- A. Liners: 14-gauge stainless steel in sizes as indicated.
- B. Interior of liners: 6" deep with all interior corners (horizontal/vertical) coved on 3/4" radius; sloped and scored 1" to integrally welded Component Hardware Model No. D34-Y011 basket drain assemblies @ 48" o.c., fitted with 6" long welded tailpiece. Stainless steel safety chain: connected to basket strainer assembly and top of liner wall.
- C. Liners: 1" wide perimeter shoulder at the top, turned up flush with finished floor, tight-hemmed back down to the shoulder level and flanged out 2" for attachment to the slab.
- D. Underside of sloping portion of liner: 2" long "Z" clips.
- E. Grating: Irving Subway Grating Type DD removable fiberglass grating.
 1. 1 1/2" x 3/16" bearing bars.
 2. Full perimeter frame, section quantities and sizes indicated.
 3. Maximum of 2'-0" sections.
 4. Grating to be equal sizes.

2.28 WALL PANELS

- A. Wall Panels: 18-gauge stainless steel, double pan-formed 1/2" thick with internal stiffener members. Fill with USDA approved thermal insulation, full height and width of panels, attach to interior with mastic. Maximum allowable temperature at rear side of panel: 120oF.
 1. Height of panels as required: top of tile base to underside of hood, top of tile base to top cap of stub wall or top of splash to underside of hood.
 2. Level and square lower edge and sides.
 3. Butt joint all panels.

2.29 EXHAUST HOOD (Surface - Mounted Condensate)

- A. Hoods: size/shape as indicated: 18" high at interior.
- B. Body: 16-gauge stainless steel, with all seams welded, ground and polished.
- C. Continuous condensate trough at perimeter: 3" x 1".
- D. Frame top of hood with 1 1/2" angle iron assembly and suspend from structure above ceiling by 1/2" diameter steel rods, drawn tight against finished ceiling surface.

- E. Duct opening/collar as specified with stainless steel louvered grille over opening.
- F. Div. 22 to extend drain line to floor sink. Drain line to be silver painted.
- G. ½" diameter steel hanger rods at 4'-0" O.C. maximum to be by Kitchen Equipment Supplier, but they are to be anchored to supporting structure (or slab) by the General Contractor in the locations required by exhaust hood shop detail.

2.30 EXHAUST HOOD (UNLESS SPECIFIED OTHERWISE)

- A. Exhaust to be provided to meet local jurisdiction code requirements. Kitchen Equipment Contractor to verify code requirements and coordinate with Division 23.
- B. Install fire suppression system(s) in all ventilators, specified in this section. Install in accordance with manufacturer's recommendations and applicable codes or standards. Submit installation certification form to Architect.
- C. Locate chemical cylinders as indicated on drawings and install piping to exhaust hood(s) in totally-concealed manner. Set cylinders and cabinets at 7"-0" clear aff unless noted otherwise. Provide polished chrome plated tubing piping/fittings, where exposed at cylinder location and at interior of exhaust ventilator. Exposed pipe threads in/above food zone not allowed. Submit schematic diagram of installation and confirm critical distances from cylinders to nozzles.
- D. Remote manual release located in path of egress from protected exhaust hood area. Kitchen Equipment Contractor to coordinate location with local Fire Marshal requirements prior to submittal review. All conduits to be recessed within wall, SURFACE MOUNTING WILL NOT BE ACCEPTED.
- E. Provide one (1) hand held Type 'K' 6-liter fire extinguisher per Ansul system, surface wall mounted.
- E. Required quantity and sizes of mechanically-operated gas valves.
- F. Confirm interconnection of all equipment as required to insure exhaust hood and fire suppression systems are completely operational and meet local jurisdiction code requirements.
- G. ½" diameter steel hanger rods at 4'-0" O.C. maximum to be by Kitchen Equipment Supplier, but they are to be anchored to supporting structure (or slab) by the General Contractor in the locations required by exhaust hood shop detail.
- H. Provide appropriate quantity of fire suppression system as required by local jurisdiction code requirements.

2.31 HIGHLIGHTING

- A. Polish the following vertical surfaces to a No. 8 finish:
 1. Serving and display shelf turndowns.
 2. Conveyor and dish/tray deposit station turndowns/frame.
 3. Trayslide turndowns.

2.32 SHOP / FIELD JOINTS

- A. Field joints: least possible number, used only when equipment size must be limited for access into building or interior space.
- B. Stainless steel tops (including edges and splashes): fully welded, ground and polished to match adjacent surface.
- C. Vertical field joints of fixture backsplashes that are inaccessible from the back: terminate 1" above the horizontal coved corner. The remaining height of field joint: hairline butt joint with offset draw-angle behind. All horizontal/vertical draw-joints: located and noted on shop drawings.
Hairline butt joint: 1½" x 1½" x 1/8" steel angles welded to back/underside of countertop/shelf. Offset angle beyond joining metal edge ½" (min.) to provide flat backing surface for joint with angle of other joining metal edge, set for ½" space between vertical legs of angles. Bolt sections together with 5/16" machine bolts, lock washers, acorn head cap nuts, set 3" o.c.
- D. Closed Base Bodies: draw-type with hairline seam fully field-welded.
- E. Millwork: plastic laminated material joints shall be doweled, glued and draw-bolted with fasteners.
- F. Solid Polymer: surfaces drawn tight, filled, sanded and finished to match adjacent surface.

2.33 PREFABRICATED COLD STORAGE ASSEMBLIES

- A. Assembly to be FACTORY INSTALLED. Certificate or letter from the Manufacturer stating they will be the only installer will be required along with the Shop Drawings.
- B. Sectional Assemblies: size/shape indicated on drawings; 8'-6" aff unless otherwise specified. Door locations/size: exactly as shown.
- C. Sandwich Panel Insulation: Class 1 Urethane with vapor barrier, 4" thickness with mature "U" factor of .030 or lower.
- D. Wherever compartment dimension exceeds clear-span ability of ceiling panels, provide I-beam support on exterior of ceiling or spline-hangers. Install ½" diameter steel rods through beam/hangers and secure to structure above. Beams or posts within compartments are not acceptable.
- E. Reinforce prefabricated wall panels to rigid-support the door assemblies. All door jambs: furnished with replaceable full-perimeter thermostatically-controlled heater cable. Install 2" x 4" 16 gauge stainless steel hat-channel full-width of jamb with 1/8" stainless steel removable flush sill, secured with stainless steel screws and sealed watertight to channel.
- F. 8-1/2" Recessed Factory Floor Assemblies:
 - 1. 6 mil polyethylene sheets in slab recess with all joints lapped 6 inches and sealed to form a watertight seal.
 - 2. Level and square prefabricated perimeter and partition wall panels, anchored to slab recess. Protect exposed surface of panels.
 - 3. 4" manufacturer's floor with 17" high screed wall base walls.
 - 4. 15# felt slip sheet over insulation with 6" lapped joints flashed up the height of finished floor base.
 - 5. 1/2" sand leveling bed by G.C..
 - 6. Concrete flooring and tile over insulation by Divisions 03/09.

- G. 4" Recessed Exposed Factory Floor Assemblies:
1. 6 mil polyethylene sheets in slab recess with all joints lapped 6 inches and sealed to form a watertight seal.
 2. Level and square prefabricated perimeter and partition wall panels, anchored to slab recess. Protect exposed surface of panels.
 3. 4" commercial grade manufacturer's durafloor with diamond treadplate surface and marine grade plywood subfloor..
 4. 15# felt slip sheet over insulation with 6" lapped joints flashed up the height of finished floor base.
 5. 1/2" sand leveling bed by G.C.
- H. Surface Mounted Factory Floor Assemblies:
1. 4" commercial grade manufacturer's durafloor with diamond treadplate surface and marine grade plywood subfloor.
 2. 36" re-enforced diamond treadplate internal ramp.
 3. 10 gauge stainless steel threshold to provide smooth transition to interior walk-in floor.
- I. Modularm Model No. 75LC temperature monitor/alarm with sensor and probe-cord length required to extend from exterior front of assembly to a mounting position of the sensor within evaporator return air-stream. System to include built in panic alarm. System to be interconnected to building's alarm system by Division 27.
- J. LED surface-mounted light fixture, in quantity/arrangement shown on drawings. Light fixtures wired to interior and exterior temperature control panel. Light fixtures to be provided by Section 11 40 00 and installed by Division 26.
- K. Penetrations of Panels: To be sealed by factory installer with Dow Corning 3-6548 silicone RTV foam, full-depth of panel. Trim excess flush.
- L. Install closure panels and/or trim strips to building walls and ceiling with concealed attachment. Closure material: same as wall panels unless noted otherwise.
- M. Compartment Entrance Doors: 36" x 78" nominal clearance unless otherwise noted.
1. Mount hinged doors on three Kason Model No. 1346; polished chrome plated nylon cam-lift hinges.
 2. Swing doors as indicated on drawings.
 3. Defrost heater: thermostatically controlled and replaceable at full-perimeter of all doors, except when using clear Lexan doors (in addition to door jambs). Defrost heaters to be wired for continuous service.
 4. 36" high x full-length diamond aluminum treadplate at front and rear of all hinged doors.
 5. 12" x 2" engraved phenolic plastic compartment identification sign in Architect's color selection with 1" letters, mounted above door window.
 6. 14" x 24" four-panel glass view window with heater and molded non-metallic inner and outer frame. Heater to be wired for continuous service.
 7. Padlock/key provisions in door latch with interior safety release.
 8. Provide one (1) heated pressure relief port for each cooler/freezer section with separate dedicated electrical circuits. Heated pressure relief ports in freezers to be wired for continuous service. Heated pressure relief port for freezer to be located on common wall of cooler/freezer assembly, unless specified otherwise.
- N. Provide refrigeration calculations and refrigeration alarm to meet local jurisdiction code requirements.

- O. Manufacturer to provide written report upon completion of installation and start-up confirming that cold storage assembly is installed within manufactures requirements.

2.34 COLD STORAGE REFRIGERATION SYSTEMS

- A. Unit Coolers: specified quantity and model, ceiling-hung by ½" o.d. nylon bolts with stainless steel washers and nuts. Insert hanger bolts through plastic sleeve and seal penetration airtight.
 - 1. Unit cooler drain fittings: positioned as indicated on drawings. Installation of cast tee-fittings on drain pan outlet with union and cleanout plug and extension of 1" Type K copper drain line through wall panel to air-gap fitting or floor drain under this Section.
 - 2. Slope drain line ½" per foot, trap at exterior of assembly and turn down into drain. Manifold drain lines of adjacent compartments wherever possible.
 - 3. Install drain line plastic sleeve through compartment wall, seal around drain line and install stainless steel escutcheon with setscrews.
 - 4. Electric drain line heater cable (self-regulating 7 watts): on all unit coolers operating below 36oF., installed from coil drain line fitting to wall penetration under this Section. Heater cables: minimum rating of 15 watts/lineal foot, 208 volts, single phase. Wrap drain line with maximum 2" loop spacing and interwire to unit cooler for continuous operation.
 - 5. Mounted, pre-piped and pre-wired evaporator components:
 - a. Sporlan thermostatic expansion valve with external equalizer.
 - b. Shut-off valve at evaporator suction and liquid lines.
 - c. Sporlan "Catch-All" refrigerant filter/dehydrator on liquid line.
 - d. White Rogers 1609-101 adjustable thermostat with remote bulb positioned in return air-stream of evaporator.
 - e. Electrical disconnect switch in NEMA 4 enclosure.
- B. Refrigerant System Installation.
 - 1. Refrigerant Lines; Type "L" hard copper tubing. Fittings: wrought copper or brass designed for use with high temperature solder. Piping joints: made with silver solder (Sil-Fos). Piping: properly suspended from and anchored to the structure with adjustable hangers 6' o.c. maximum. Suction lines: sized to have maximum pressure drop of two pounds in medium temperature systems; one pound in low temperature system. Liquid lines: sized to give maximum pressure to prevent trapping of oil. Insulation on all suction lines: Armaflex insulation by Armstrong. ¾" thick at medium temp 1" thick at low-temp. Refrigerant lines in PVC or EMT conduit: sealed at both ends with Dow Corning 3-6548 silicone RTV foam. Exterior Refrigerant Lines to be wrapped by refrigeration system installer in self-fastening jacket of Type 3003-H14 aluminum alloy 0.016-inch thick. Provide aluminum strapping and seals for applying aluminum jacket and covers according to manufacturer's recommendations to provide completely weather-tight covering.
- C. Evacuation and Charging.
 - 1. After completion of the pressure test, the system shall be evacuated using an approved auxiliary vacuum pump. Connections for evacuation: in accordance with manufacturer's recommendations.
 - 2. Charging subsequent to the initial charge, which is contained in the condensing unit (R22 Refrigerant for medium and high temp units, R404A - Non- CFC Ozone Depletion Refrigerant on low temp units): given through the charging valve in the high side passing all of the liquid refrigerant through a charging dehydrator. All charging lines

and gauges: purged of air prior to connection with system. Refrigerant: unused and shall be delivered in clean containers. After the system is fully charged: start and place in full operation.

2.35 PRE-APPROVED KITCHEN SUPPLIERS

- A. Only the following named Subcontractors and those approved later, if any, are approved for inclusion in the Contractor's Bid.
- B. Any supplier requesting for inclusion within this bid will be required to submit AIA form 305 minimum 14 days prior to bid date for review, or as required by Architect.
 - 1. Ed Don & Company, 3501 Plano Parkway, The Colony, Texas 75056, Mr. Scott Jost, Phone: (972) 624-7460, Fax: (972) 624-7762, E-mail: scottjost@don.com
 - 2. Kirby Restaurant Supply, Mr. Billy Anderson, 809 S. Eastman Road, Longview, Texas 75602, Phone: (903) 757-2723, Fax: (903) 757-9519, Email: billya@kirbyrestaurantsup.com
 - 3. Pasco Brokerage, Inc., Mr. Bill Hollon, 2929 Custer Road, Suite 301, Plano, Texas 75075, Phone: (972) 5963350, Fax: (972) 5962817, E-mail: bhollon@pascoinc.net
 - 4. Supreme Fixtures Co., Inc., Mr. Tim Hampel, 11900 Vinny Ridge Road, P.O. Box 193655, Little Rock, AR 72219, Phone: (501) 455-2552, Fax: (501) 455-0802, E-mail: tim@supremefixture.com

2.36 PRE-APPROVED STAINLESS-STEEL FABRICATION SUPPLIERS

- A. Only the following named Subcontractors and those approved later, if any, are approved for inclusion in the Contractor's Bid.
- B. Any supplier requesting for inclusion within this bid will be required to submit AIA form 305 minimum 14 days prior to bid date for review, or as required by Architect.

PART 3 - EXECUTION

3.1 DELIVERY AND INSTALLATION

- A. Supervision: provide a competent foreman or supervisor who shall remain on the job during the entire installation.
- B. Delivery: coordinate with progress of construction and Owner's operation schedules. Unless otherwise instructed and documented by Owner or General Contractor, the following procedures apply:
 - 1. Field-Assembled Fixed Equipment integrated into the structure (e.g., cold storage assemblies, exhaust hoods, drain trench/grate assemblies, conveyor systems, ceiling-mounted utensil racks, etc.) are to be sent to the job-site when directed by the General Contractor and installed/protected accordingly.
 - 2. All other Fixed Equipment: delivered after completion of work on adjacent finished ceilings, lighting, finished floor and wall systems, including painting.
 - 3. Major Movable Equipment: delivered when possible to inventory in secured area for interim job-site storage or, if secured area is not available, when fixed equipment installation/clean-up has been completed.
 - 4. Minor appliances and loose items (e.g., pans, covers, flatware containers, etc.) delivered only when Owner is prepared to receive and inventory such items.
- C. Installation: performed by manufacturer of custom fabricated fixtures.

1. Assemble, square, level and make ready all items for the final utilities connections.
2. Cut neatly around obstructions to provide sanitary conditions.
3. Where gaps of $\frac{1}{4}$ " or less occur adjacent to or between equipment, insert rope backing and smoothly-applied General Electric construction sealant Series SE-1200 silicone mastic (white color). Mask both sides of gap for neat application of sealant and remove excess. If space exceeds $\frac{1}{4}$ ", neatly install 18-gauge stainless steel trim molding of proper shape with concealed attachment. Use epoxy cement or "Z" clips wherever possible to secure stainless steel trim. Exposed edges or corners of trim: eased and smooth.
4. Refrigeration coil drain line runs to indirect drain connection greater than 2" from face of wall or panel: either of the following field procedures.
 - a. Trench the floor and provide 6" wide x 2" deep 16-gauge stainless steel sloping (-1" to -2") trough from face of cooler/freezer wall to body of floor sink/floor drain. Trough: turned up 4" at wall; $\frac{3}{4}$ " flange with $\frac{1}{2}$ " turndown at both long sides. Set trough in waterproof mastic and seal 1" o.d. drain tube penetration into floor sink/floor drain at -2 $\frac{1}{2}$ " bff. Patch the floor to match adjacent material/surface.
 - b. Provide 12" x 6" x 2" deep 16-gauge stainless steel condensate pan mounted to cooler/freezer wall at 6" aff clear. Trench the floor and install 1" o.d. drain line from bottom of pan to body of floor sink/drain. Slope drain line $\frac{1}{4}$ " per foot and seal all connections watertight. Patch the floor to match adjacent material/surface.

D. Protection of Work:

1. Fabricated fixtures: fiberboard or plywood taped to tops and exposed body panels/components.
2. Manufactured Equipment: fiberboard or plywood taped as required by equipment shape and installation-access requirements.
3. Prohibited use of equipment: tool and materials storage, workbench, scaffold, stacking area, etc.
4. Damaged Equipment: immediately documented and submitted to Owner with Contractor's recommendation of action for repair or replacement and its impact on the Project Schedule and Contract Amount, if any.

3.2 CLEAN AND ADJUST

- A. Clean up and remove from the job site, all debris resulting from this Work as the installation progresses.
- B. Thoroughly clean and polish interior/exterior of all Foodservice Equipment, prior to demonstration and final observation, ready for Owner's use.
- C. Lubricate and adjust drawer slides, hinges, casters.
- D. Adjust pressure regulating valves, timed-delay relays, thermostatic controls, temperature sensors, exhaust hood grilles, etc.
- E. Clean or replace faucet aerators, line strainers.
- F. Touch-up damage to painted finishes.
- G. Start up and check operation of all refrigeration systems for at least 72 hours prior to acceptance.

3.3 EQUIPMENT START-UP/DEMONSTRATION

- A. Carefully test, adjust and regulate all equipment in accordance with the manufacturer's instructions and certify in writing to the Owner that the installation, adjustments and performance are in full compliance.
- B. Provide the Owner or Foodservice Operators with a thorough operational demonstration of all equipment and furnish instructions for general and specific care and maintenance. Coordinate and schedule selected items of equipment and attendees with Owner at least two weeks in advance of demonstration periods.

3.4 FINAL OBSERVATION

- A. Final observation will be made when the Contractor will certify that he has completed his work, made a thorough review of the installation/operation of each item in the contract and found it to be in compliance with the Construction Documents.
- B. Repetitive final observations (more than two) and all costs associated thereto which may be incurred due to the Contractor's failure to comply with the requirements of this Article will be invoiced to this Contractor on a \$70.00/hr. and expense basis.

PART 4 - EQUIPMENT SCHEDULE

4.1 REGULARLY-MANUFACTURED EQUIPMENT/COMPONENTS: standard finishes and accessories unless specifically deleted or superseded by the Contract Documents.

4.2 FABRICATED AND FIELD-ASSEMBLED EQUIPMENT: Arrangement and configuration as shown on Plans, Elevations and Detail Drawings.

4.3 REFER TO DRAWINGS for unit quantities and electrical or mechanical provisions required, including manufacturer's optional voltages, wattages, burner capacities, etc.

4.4 REFER TO PART 2 - PRODUCTS for accessories, fittings, requirements and procedures related to the listed buy-out and fabricated equipment.

4.5 ALTERNATE MANUFACTURER REQUIREMENTS: A specific product manufactured by the following listed pre-approved equals are acceptable only if the specific product can evidence compliance with the specified item and the contract documents:

4.6 RE-USED EXISTING EQUIPMENT

- A. Existing equipment scheduled for re-use is to be inventoried and documented that equipment is in operating condition once Kitchen Contractor has taken ownership.
- B. Provide pictures of all equipment once inventoried and issued to the architect to ensure that equipment has not been damaged.
- C. Verify locations of all equipment with owner.
- D. Existing equipment that is to be reused may be missing parts or accessories for proper and complete operation. Submit report listing all items with pricing for approval to allow complete installation.
- E. Utility disconnection and re-connection: under Divisions 22 and 26. Kitchen Contractor to verify utility requirements of existing equipment and coordinate with Kitchen Consultant as

required. All utilities not scheduled for re-use to be capped and covered by required disciplines.

- F. Disassembly, removal, transportation and relocation: under this Section and scheduled with General Contractor. Owner's representative must be present, coordinate date / time with owner.
- G. Thoroughly clean inside and out prior to relocation.
- H. Review functional parts (e.g., doors, controls, heating elements, compressors, etc.) and submit report of required repairs and estimate of cost. Any finishes or equipment damaged due to construction to be repaired as required.
- I. Existing equipment not scheduled for reuse is to be carefully removed/relocated by the Kitchen Contractor per the Owner's direction. Kitchen Contractor to coordinate date / time with General Contractor and Owner.
- J. Removal or replacement of existing equipment is to be scheduled for times of least interruption and inconvenience to the foodservice operation. Submit proposed schedule of time frame, task sequence and operation for approval prior to starting work.
- K. Kitchen Contractor to verify size and shape for all existing equipment being re-used and coordinate with Foodservice Consultant as required.
- L. Any modification(s) required/desired for re-used existing equipment to be verified by the Kitchen Contractor. All modifications must be approved by the Owner and Foodservice Consultant prior to the modifications being made.
- M. The KEC is to verify and coordinate all of the utility requirements with the construction documents as required. Refer to the general specifications re: conflicts.

4.7 FOODSERVICE EQUIPMENT

- A. All equipment to have a performance check from factory authorized personnel. Warranties will begin on the day of performance check.

ITEM NO. 102.1 COLD STORAGE MONITORING SYSTEM

QUANTITY 1

Manufacturer: Cooper Atkins
Model: Notifeye
Size and Shape: Refer to drawings
Alternate:

1. One (1) each 15501 Ethernet Gateway
2. Two (2) each 15200 Temperature Sensor.
3. Two (2) each 15230 Open/Close Sensor.
4. Two (2) each 15100-10 Temperature Sensor with 10' Air Probe
5. Two (2) each 10185 Solid Simulator Retrofit for Air Probes
6. Two (2) each 15130 Contact/Door Sensors
7. One (1) each Ethernet connection within the Manager's Office.
8. Notifeye system to be installed by KEC.
9. **Special Instruction:** Interwiring of temperature monitor panel to master building alarm system or to the Owner's network. Technology department to provide all interfacing of alarm system and

with the building alarm system. Conduit from refrigeration system to monitor by Division 26. Temperature Monitor installation at 4'-0" above finished floor. All conduit to be located above walk-in cooler/freezer ceiling. Exposed conduit is not acceptable.

ITEM NO. 103 COLD STORAGE REFRIGERATION SYSTEM

QUANTITY 1

Manufacturer: RDT
Model:
Size and Shape: Refer to drawings
Alternate:

1. Air cooled system.
2. Scroll.
3. Freezer temperature to be -10 degrees.
4. EcoSmart system on demand defrost.
5. S/S covered housing.
6. All exterior piping to be aluminum wrapped.
7. System to accommodate Item No. 102 Cold Storage Assembly.
8. System to be located on roof. Coordinate location with architectural plans. Coordinate roof mounting requirements with appropriate trades.
9. Secure to roof.
10. **Special Instructions:** Mount condensing unit on common exterior rack. Refer to Architectural and Engineering drawings for exact location of remote unit. Coordinate routing of refrigeration lines and conduit with appropriate trades. Heat tape and insulate all drain lines. General Contractor to seal all building penetrations at refrigeration lines.

ITEM NO. 104 COLD STORAGE SHELVING

QUANTITY 1

Manufacturer: Metro
Model: Metro Max Q
Size and Shape: Refer to drawings
Alternate:

1. Each unit to be four (4) tiers high with open grid mats.
2. Four (4) 86" post per unit. Provide foot plates at all posts when assembly is supplied with walk-in floor.
3. Refer to drawings for size, width and lengths.
4. Quantity Two (2) to equal One (1) lot: all shelving shown within cold storage assembly.
5. **Special Instructions:** Verify shelving requirements with approved submittal prior to ordering.

ITEM NO. 107 DRY STORAGE SHELVING

QUANTITY 1

Manufacturer: Metro
Model: MetroMax Q
Size and Shape: Refer to drawings
Alternate:

1. Each unit to be five (5) tiers high with open grid shelving.
2. Four (4) 86" posts per unit.

3. Quantity One (1) to equal One (1) Lot: all shelving shown within the dry storage room.
4. Refer to drawings for size, width and lengths.
5. **Special Instruction:** Verify shelving requirements with approved submittal prior to ordering.

ITEM NO. 112 FREEZER STORAGE ASSEMBLY

QUANTITY 1

Manufacturer: Thermo Kool
Model: ---
Size and Shape: Refer to drawings
Alternate:

1. Procurement and provision of cold storage assembly installation is to be by Horton refrigeration.
2. Assembly to be higher than standard box and increased in height by 12".
3. Manufacturer to review final installation and provide letter confirming installation meets manufacturer requirements.
4. 304 #3 finish 20 gauge stainless steel finish where exposed, 20-gauge galvanized steel where concealed.
5. Factory floor with smooth aluminum finish, recessed in slab 8 1/2". Secure floor to wall assembly with cam-lock assembly. KEC to ensure the floor assembly is level prior to the wearing bed installation.
6. Threshold to be smooth and level.
7. Interior walls to be .040" aluminum, white embossed texture on walls.
8. Ceiling to be smooth .040" aluminum baked white enamel.
9. One (1) 36" x 76" hinged doors. Doors to be 18-gauge stainless steel, type 304 (18-8), #3 finish, with heated perimeter / door jambs / windows and threshold heaters. Each door to be equipped with 3'-0" high diamond tread kick plate on both sides of doors.
10. Adjust door height as required to accommodate mobile interior shelving.
11. 18-gauge stainless-steel, type 304 (18-8), #3 finish trim where adjacent to walls.
12. Freezer One (1) lot LED light fixtures to operate in temperatures to -20 F.
13. 3'-0" high diamond tread plate at exposed surfaces. Fasten to wall with stainless steel fasteners.
14. Provide door bumper at doors.
15. Compartments to be have all electrical concealed within the walls or located above the ceiling.
16. Coordinate wall opening size with door assembly.
17. 18-gauge stainless steel, type 304 (18-8), #3 finish, wrap wall opening at door assembly.
18. Provide alarm system to include hi/low limits. Route temperature sensor to be located to the side of evaporator coil.
19. Doors to be provided with CCI Industries, Inc., Clear-VU swinging door assemblies.
20. K.E.C. to provide aluminum coved base to interior of assembly. Provide sealant between floor and wall panels.
21. All holes in assembly to be sealed by factory installer.
22. Pressure relief port to be sized per manufacturers recommendations, locate on freezer common wall.
23. **Special Instruction:** Inter-wiring of temperature monitor panel to master building alarm system or to the Owner's network. Technology department to provide all interfacing of alarm system and with the building alarm system. Conduit from refrigeration system to monitor by Division 26. Temperature Monitor installation at 4'-0" above finished floor. All conduit to be located above walk-in cooler/freezer ceiling. Exposed electrical conduit is not acceptable.

24. Provide floor to ceiling wall graphic along long wall. Contact Repographic consultants at 214-540-3954. Verify selection with architect

ITEM NO. 123 DISPOSER-CONE MOUNT

QUANTITY 1

Manufacturer: Salvajor
Model: 300-CA-ARSS
Size and Shape: Refer to drawings
Alternate: In-Sink-Erator

1. Fixed nozzle.
2. Provide T & S B-0456-04 vacuum breakers.
3. Solenoid valve.
4. Flow control.
5. Model no. ARSS-LD control panel,located per plan.
6. Auto-reverse.
7. Dejamming tool.
8. Install vacuum breaker in splash.
9. S/S cone cover.
10. Disposer cone with scrap ring.
11. Two (2) Swirl inlet located in disposer cone at a 45 degree angle.
12. **Special Instruction:**GC to pipe 1/2" cold water to disposer body and swirl inlets. Excess electrical cord to be secured to fabrication as required. Install into counter by section 114000.

ITEM NO. 124 WORKTABLE

QUANTITY 1

Manufacturer: Custom Fabricated
Model: ---
Size and Shape: Refer to drawings
Alternate:

1. Top: 14-gauge type 304 S/S top with 6" high back splash at wall and 2" turndown at free sides.
2. Open base construction.
3. Close back of splash when exposed.
4. One (1) Edlund model no. S-11 Manual can opener.
5. Coordinate with Item No. 601,648, 706, and 748

ITEM NO. 128 UTILITY CART

QUANTITY 2

Manufacturer: Lakeside
Model: 522
Size and Shape: Refer to drawings
Alternate:

1. Four (4) N.S.F. approved non-marking casters, Two (2) with brakes.
2. Extended perimeter bumper.
3. Plastic Laminate. Coordinate color with architect.

ITEM NO. 151 FIRE PROTECTION SYSTEM

QUANTITY 2

Manufacturer: Ansul
Model: R102
Size and Shape: Refer to drawings
Alternate:

1. Duct and plenum protection to exhaust hood.
2. Surface protection for cooking equipment.
3. Locate remote fire pulls as recommended by Fire Marshal.
4. One (1) lot Mechanical gas valve (maximum diameter as required). Size as required. Furnished by Section 11400, installed by Division 22. Kitchen Equipment Contractor to coordinate location with local Fire Marshal requirements prior to submittal review. All conduits to be recessed within wall, SURFACE MOUNTING WILL NOT BE ACCEPTED.
5. System to meet U.L. 300 requirements.
6. Provide one (1) hand held Type 'K' and ABC 6 liter fire extinguisher per Ansul System, surface wall mounted.
7. Exposed pipe threads are unacceptable.
8. All exposed piping to be chrome plated.
9. All hood penetrations to have U.L. listed "Quick Seal".
10. Provide phenolic I.D. labels for exhaust hood, remote fire pull, light/fan switches and fire protection system.
11. Provide a manufacturer performance test and report that verifies this system is fully operational.
12. Provide s/s cabinet as shown on plan.
13. Installer to provide one (1) Ansul system per exhaust hood, review drawings and provide systems as required.
14. **Special Instruction:** Install hand held extinguishers, maximum of 3'-2" A.F.F. to top of unit.

ITEM NO. 152 EXHAUST HOOD W MELINK

QUANTITY 1

Manufacturer: ModuServe
Model: V Banked I-CPB
Size and Shape: Refer to drawings
Alternate:

1. Provide Melink system per engineers direction . To Be provided as a complete system.
2. Hood to meet IECC2015 Energy Code.
3. V Banked filter bank exhaust hood.
4. All 18-gauge S/S construction.
5. Insulated hood end panels.
6. Hood manufacturer to perform hood balance reports, to be sent directly to FDP prior to final project completion.
7. Continuous capture.
8. Ceiling mounted supply plenum with light fixtures, coordinate conditioned/tempered air with engineer. Locate supply plenum in ceiling, coordinate location with GC as required. Coordinate final location of plenum with general contractor.
9. Recess mounted LED light fixtures on both sides of the filter bank. All exposed fire control piping to be chrome plated and all hood penetrations sealed with S/S escutcheons.
10. S/S filters and grease cup. Provide filter removal tool.

11. Ductwork and final connection to hood above ceiling to be by the Mechanical Contractor.
12. Ventilators to have adjustable make-up air damper which must remain accessible for adjustment
13. Make-up air fire dampers. Insulated make-up air plenum with 1" thick foil faced fiberglass insulation.
14. S/S filters and grease cup with filter removal tool.
15. S/S c-channel closure panel from top of hood to ceiling.
16. ½" diameter steel hanger rods at 4'-0" O.C. maximum to be by Kitchen Equipment Supplier, but they are to be anchored to supporting structure (or slab) by the General Contractor in the locations required by exhaust hood shop detail.
17. Provide pre-set temperature sensor for automatic start of exhaust fan when the condition exists where the exhaust fan is not initiated at the wall switch and the temperature in the exhaust canopy reaches 95° F. At the end of the cooking day when the fan is disengaged at the wall switch the thermostat (temperature sensor) will keep the exhaust fan on until the temperature in the exhaust canopy drops below 95° F.
18. **Special Instruction:** Refer to individual hood lengths as shown on drawings for each assembly required. Install at 6'-10" A.F.F. to bottom of hood, coordinate duct and fan requirements with Mechanical Contractor. Interconnect to wall mounted light switch by Division 16. Bulbs for light fixtures to be furnished and installed by Kitchen Equipment Contractor.

ITEM NO. 153 EXHAUST HOOD W MELINK

QUANTITY 1

Manufacturer: Mod-U-Serve
Model: W-CPB
Size and Shape: Refer to drawings
Alternate:

1. Provide Melink system per engineers direction to Be provided as a complete system.
2. Hood to meet IECC2015 Energy Code.
3. All 18-gauge S/S construction and s/s rear back at exposed surface.
4. Insulated hood end panels.
5. Hood manufacturer to perform hood balance reports, to be sent directly to FDP prior to final project completion.
6. Continuous capture.
7. Ceiling mounted supply plenum with light fixtures, coordinate conditioned/tempered air with engineer. Locate supply plenum in ceiling, coordinate location with GC as required.
8. Recess mounted LED light fixtures. All exposed fire control piping to be chrome plated and all hood penetrations sealed with S/S escutcheons.
9. 3" air space at rear of hood.
10. S/S closure panel between hoods if back to back hoods.
11. S/S filters and grease cup. Provide filter removal tool.
12. Ductwork and final connection to hood above ceiling to be by the Mechanical Contractor.
13. Ventilators to have adjustable make-up air damper which must remain accessible for adjustment
14. Make-up air fire dampers. Insulated make-up air plenum with 1" thick foil faced fiberglass insulation.
15. S/S filters and grease cup with filter removal tool.
16. S/S c-channel closure panel from top of hood to ceiling.
17. ½" diameter steel hanger rods at 4'-0" O.C. maximum to be by Kitchen Equipment Supplier, but they are to be anchored to supporting structure (or slab) by the General Contractor in the locations required by exhaust hood shop detail.

18. Provide pre-set temperature sensor for automatic start of exhaust fan when the condition exists where the exhaust fan is not initiated at the wall switch and the temperature in the exhaust canopy reaches 95° F. At the end of the cooking day when the fan is disengaged at the wall switch the thermostat (temperature sensor) will keep the exhaust fan on until the temperature in the exhaust canopy drops below 95° F.
19. **Special Instruction:** Refer to individual hood lengths as shown on drawings for each assembly required. Install at 6'-10" A.F.F. to bottom of hood, coordinate duct and fan requirements with Mechanical Contractor. Interconnect to wall mounted light switch by Division 16. Bulbs for light fixtures to be furnished and installed by Kitchen Equipment Contractor.

ITEM NO. 159 CONDENSATE HOOD

QUANTITY 1

Manufacturer: Mod-U-Serve
Model:
Size and Shape: Refer to drawings
Alternate:

1. Refer to drawings for size and location.
2. Ventilator shall be manufactured with a full perimeter gutter with drain extended to floor sink. General Contractor to extend drain to floor sink.
3. Stainless steel enclosures to ceiling at all open sides.
4. Coordinate dish machine doors with condensate hood.
5. Entire system to be in compliance with NFPA pamphlet #96 and local governing code authorities, and shall be in accordance with Division 23. Shall be U.L. listed.
6. Manufacturer to inspect system after installation to verify actual exhaust and supply air quantities and certify that performance is as designed and provide written report.
7. 1/2" diameter steel hanger rods at 4'-0" O.C. maximum to be by Kitchen Equipment Supplier, but they are to be anchored to supporting structure (or slab) by the General Contractor in the locations required by exhaust hood shop detail.
8. **Special Instruction:** Start up and performance check to be provided by Manufacturer Service Agency. Manufacturer warranty to start on this date.

ITEM NO. 173 COMBI OVEN W/ STAND

QUANTITY 1

Manufacturer: Rational
Model: ICP 6-FULL NG 208/240 V
Size and Shape: Refer to drawings
Alternate:

1. Six (6) 18" x 26" pan capacity, per unit.
2. Standard warranty: 2 year parts and labor, installation inspection/start up.
3. Doors hinged per drawings.
4. Stand with casters.
5. VarioSmoker Smoker accessory option.
6. Cleaner Tablets.
7. Care Tablets.
8. Gastronorm Grid Shelf.
9. Gastronorm CombiGrill.
10. Gastronorm Potato Baker, 1/1 size, 12" x 20".

11. Grilling & Roasting Plate.
12. KEC to coordinate pan accessories with Owner prior to ordering.
13. Four hour chef training.
14. Heat shield.
15. Installation Kit "10", per unit, article number 8720.1560US.
16. Rational offers Certified Installation of units by Commercial Kitchens.
17. System installation to be reviewed by an authorized factory installer, provide report confirming installation meets factory's requirements.
18. System to be interconnected to remote filter system. KEC to coordinate with G.C. as required.
19. Provide sizes and quantities as required: Dormont s/s water disconnect from filter to steamer,color coded for filtered and non-filtered water.
20. KEC to coordinate filtered and unfiltered water with Combi Oven, do not connect filtered water to unfiltered water connection.
21. Provide quantities and sizes required: Dormont Model #VER-KITCF-2S-48" Gas Conn. Kit, 48" long, dble. Supr-Swivel coupling with SafetyQuick safety fitting, w/coiled restraining device, full port gas valve, antimicrobial coating, lifetime warranty.
22. Special Instruction Water supply to have shut-off valve and back flow preventer furnished and installed by Division 22. Supply water to interconnect thru water filter and then to each oven. Indirect drain line to be ran outside of the footprint of the unit, coordinate location of the related floor sink.

ITEM NO. 176 PIZZA PREP TABLE - 4'-0"

QUANTITY 1

Manufacturer: Traulsen
Model: CLP-4818-SD-LR
Size and Shape: Refer to drawings
Alternate:

1. Door locks.
2. 100% front breathing condenser allowing unit to be placed against wall.
3. Set of four (4) four casters.
4. Stainless steel top, front, sides and rear.
5. Stainless steel interior.
6. Casters with brakes.
7. 8" w x length of unit Richlite cutting board.
8. One (1) garnish rack.
9. Three (3) year parts and warranty standard with unit.
10. Stainless steel finished back.
11. Adapter bar package.
12. Insulated bi-fold covers.

ITEM NO. 184 MICROWAVE - 1000 WATT

QUANTITY 2

Manufacturer: Panasonic
Model: NE-1025F
Size and Shape: Refer to drawings
Alternate:

1. Located at micro-market.

ITEM NO. 193 REACH-IN REFRIGERATOR - 2DR

QUANTITY 2

Manufacturer: Traulsen
Model: HT-232WUT
Size and Shape: Refer to drawings
Alternate: Utility

1. Anodized aluminum interior and S/S exterior.
2. Interior lights with bulbs.
3. Exterior digital thermometer.
4. Locking hardware.
5. Universal 18" x 26" and 12" x 20" pan files on 4" centers in all sections.
6. 6" high adjustable S/S legs.
7. Furnish start-up and three (3) years repair service, including parts and labor.
8. Five (5) Year compressor warranty.
9. Cord and plug assembly.
10. Half-height stainless steel doors hinged as per plan.
11. Re-hinging feature.
12. Special Condition: Excess electrical cord to be secured.

ITEM NO. 206 REFRIGERATED GRAB GO MERCHANDISER 31 1/2"

QUANTITY 1

Manufacturer: RPI Vienna
Model: VIAS2-34-R-SQ-SC-INS-CON
Size and Shape: Refer to drawings
Alternate:

1. Free standing, self contained refrigerated Grab & Go Merchandiser. Sized and located at 201.
2. Bottom of front opening to be 34" A.F.F to align with counter height.
3. Stainless steel interior.
4. Stainless steel exterior.
5. Fully insulated glass to reduce condensation.
6. Locking front doors.
7. Qty of three (3) tempered glass shelves with lights.
8. Two (2) bi-parting doors on rear.
9. Five (5) year compressor warranty.
10. Drain to floor sink. Floor sink to be located below Air Screen.
11. KEC to verify unit is 5-6' away from air vents. Coordinate in field.
12. Rear air ventilation kit.
13. Located on 8" pedestal with 6" casters.
14. Cord and plug assembly.
15. Stainless steel trim as required to seal gaps at counters.
16. Provide submittal shop drawing for review by Consultant.
17. **Special Instruction:** Start-up and calibration of unit must be by factory authorized service agency, prior to customer demonstration. K.E.C. to coordinate 18" height clearance at top of unit.

ITEM NO. 214 CASH REGISTER

QUANTITY 1

Manufacturer: Owner Furnished
Model:
Size and Shape: Refer to drawings
Alternate: ---

ITEM NO. 216 MENU BOARD

QUANTITY 2

Manufacturer: Provided by Technology
Model:
Size and Shape: Refer to drawings
Alternate:

1. Coordinate location with G.C / Architect.
2. Coordinate with Technology

ITEM NO. 217 SERVING COUNTER

QUANTITY 1

Manufacturer: MODUSERVE
Model: ---
Size and Shape: Refer to drawings
Alternate:

1. CONSTRUCTION BASE:
2. Continuous semi-open base, angle iron frame construction, with utility chase within counter. All electrical conduit and plumbing to be located within utility chase as required. Utility chase to be fully accessible from operator side of counter with removable stainless steel panels.
3. All electrical to be pre-wired to load center. Electrical to be located in electrical conduit pipe, flex conduit to be kept to a minimum. Exposed conduit will not be accepted. All wiring to be numbered at all junctions, per circuit. Wiring diagram to be provided at each load center door. All receptacles mounted in the counter to be recess mounted and labeled.
4. Cashiers station to be integral with counter, lockable cashiers drawer, under shelf to accommodate owners POS System, outlet to accommodate POS system and data line.
5. Stainless steel intermediate and undershelves where possible.
6. Dedicated receptacle to accommodate beverage merchandiser units. See plan for location. verify with owner.
7. Stainless steel legs with adjustable kick plates. Coordinate location of legs, legs to be relocated if located on floor sink assembly.
8. COUNTER COMPONENTS:
9. Dekton Stone top, submit 12" X 12" sample for Architect review.
10. Two (2) Model #MCT-HFSP1-S-CUST. Custom Heated Stone Tops. One (1) MCT-HCFSP1-S-CUST. Custom Heated / Cooled stone tops.
11. Provide grommets on countertop at future cash register location, printer and POS areas. See Plan for locations.
12. Coordinate with Item No. 804, Under-counter heated Cabinets, QTY two(2), CresCor H-337-WSUA-5D. See Plan for locations.
13. Coordinate with Item No. 808, 36", refrigerated merchandiser.
14. Coordinate with Item No. 206, Refrigerated Air Screen, RPI VIENNA GRAB AND GO # vias2-34-R-SQ-SC-INS. See Plan for locations.
15. Coordinate with Item No. 814, Printer, Owner furnished. See Plan for locations.
16. Coordinate with Item No. 176., Pizza Prep Table, Model No. TS048HT. See Plan for locations.

17. Coordinate with Item No. 711, Cup Dispenser. See plan for location.
18. Coordinate with Item No. 807. Pizza Oven, model no. WS-MS-4-RFG-1R Mt.Chucanut.
19. SNEEZE GUARDS:
20. MSU half height , Mirror finish post, 6" over shelf, secured to underside of counter.
21. COUNTER FINISHES:
22. Backer board finish installed by manufacturer to accept tile by G.C. Coordinate finish with GC, provide s/s shelf as required to accommodate finish.
23. Counters to be factory installed, manufacturer to provide floor template and coordinate with MEP, Wall at Pizza Oven and Furr down to be coordinated with GC and Architect requirements.
24. Manufacturers are to bid all items per specifications, deviations from the specified manufacturers or fabrication will not be accepted.
25. Counter template to coordinate with servery walls, furr downs, electrical and plumbing locations. KEC to coordinate installation and any site conditions with the Trade/General Contractor as required.

ITEM NO. 249 THREE COMPARTMENT SINK

QUANTITY 1

Manufacturer: Custom Fabricated
Model: ---
Size and Shape: Refer to drawings
Alternate:

1. Top: 14-gauge S/S 3" high 1-1/2" rolled rim at free sides, 10" high splash at walls.
2. Open base construction.
3. Omit rear rail at sink.
4. Three (3) 26" x 18" x 18" deep sink compartment. Coordinate location with drain overflow.
5. Two (2) T&S model no. B-0291, splash mount faucet, 12" swing nozzle, LL inlets, for ¾" hot and cold water connections.
6. Three (3) Fisher 22304 twist waste valve 3 1/2" x 2" with overflow and tailpiece. Provide 18-gauge S/S bracket for drain handle welded to sink bottom.
7. 12" deep single post mounted over shelf. Shelf mounted at 24" above .
8. Post mounted utensil rack, extend 1-5/8" diameter S/S post from back splash, turn forward 12" and weld full-length x 2" x ¼" S/S bar with Component Hardware model no. V-77-4401 S/S sliding hooks at 8" on center.
9. Omit front rail at hose bibb.
10. 16-gauge S/S under shelf as per drawings.
11. Flanged feet in front.
12. **Special Instruction:**Anchor flanged feet to floor with non-corrosive bolts. Secure wall mounted equipment / components to in wall grounds or anchor plates. Coordinate installation with the general contractor. Compartments sized to accommodate largest piece of equipment and utensils if larger than 18" x26".

ITEM NO. 251 DISHMACHINE - AM15T

QUANTITY 1

Manufacturer: Hobart
Model: AM-15-T
Size and Shape: Refer to drawings

Alternate:

1. Dual purpose dishwasher, dish/utensils, door type, tall hood, straight-thru design, S/S construction.
2. Single point connection.
3. 5.0 KW Electric tank heat.
4. Pressure regulator valve.
5. One (1) Year Extended warranty - parts and labor.
6. One (1) 8.53 KW electric booster heater.
7. One (1) Year Extended warranty on booster heater - parts and labor.
8. One (1) vent fan control.
9. Three (3) 20" x 20" Peg racks.
10. Three (3) 20" x 20" sheet pan racks.
11. Two (2) 20" x 20" combination racks.
12. **Special Instruction:**Division 22 to provide and install backflow preventor between booster heater and filter. Final connection by Division 22. Coordinate location of electrical disconnects on free wall.

ITEM NO. 254 SOILED & CLEAN DISHTABLE

QUANTITY 1

Manufacturer: Custom Fabricated
Model: ---
Size and Shape: Refer to drawings
Alternate:

1. Top: 14 -gauge type 304 S/S 3" high 1-1/2" rolled rim at free sides. 10" high splash at walls.
2. Install Disposer as shown. Notch and punch splash turn back for vacuum breaker. 12-gauge S/S bracket mounted below counter top and polished to match top of disposer control panel.
3. Provide One (1) T&S model no. B-0133-EE pre-rinse, B-0108-C spray head, two (2) B-0109-04 18" long wall bracket (dealer to cut to correct length), one (1) additional spray face model no. 108SFRK with ceramic cartridges.
4. One (1) 18" disposer cone.
5. Provide 1/2" slope in top towards dish machine per the general specifications.
6. 2 1/2" backsplash at dishmachine portion, single thickness of s/s will not be accepted.
7. **Special Instruction:**Anchor flanged feet to floor with non-corrosive bolts. Secure wall mounted equipment / components to in wall grounds or anchor plates. Coordinate installation with the general contractor.

ITEM NO. 262 HAND SINK

QUANTITY 1

Manufacturer: Advance Tabco
Model: 7-PS-54
Size and Shape: Refer to drawings
Alternate:

1. Hand Sink, wall model, 14" wide x 10" front-to-back x 5" deep bowl.
2. 3 1/2" gooseneck splash mount faucet with wrist blade operation.
3. Basket drain and wall bracket.
4. P-Trap assembly, delete open/close drain valve.

5. Soap and Towel Dispensers by Owner.
6. 12" high custom fabricated removable end splashes on sides as required by code.
7. **Special Instructions** Division 22 to provide temperature adjustment valves as required

ITEM NO. 263 REMOTE WATER FILTER SYSTEM

QUANTITY 1

Manufacturer: 3M
Model: ---
Size and Shape: Refer to drawings
Alternate:

1. Multiple filter assembly to serve all cold water equipment, including one (1) single stacked combi oven, hot water dispenser, under counter ice maker, coffee maker, tea machine and one (1) ice machine.
2. Provide two (2) sets of additional filters.
3. Assembly shall have at least 3" clearance on all sides.
4. Shall have 20" coarse filter.
5. ½ micron Fiberdyne filtration technology with scale inhibition.
6. Inlet water shut off valve, flushing valve, inlet/outlet pressure gauges and dual outlets.
7. Manufacturer to size unit to accommodate equipment as required.
8. Manufacturer to provide shop drawings showing all water connections.
9. Manufacturer to make site visits to coordinate installation by G.C.
10. Factory to provide water testing of local area to confirm requirements to accommodate manufacturers recommendations. Provide as a complete operating system, no additional cost will be provided during the installation process.
11. Reverse Osmosis system to be provided if equipment manufacturer and water quality requires additional filtering.
12. Special Instruction: Coordinate with beverage machine purveyor for filter requirements.

ITEM NO. 601 HOT WATER DISPENSER

QUANTITY 1

Manufacturer: Hatco
Model: AWD-12
Size and Shape: Refer to drawings
Alternate:

1. Water treatment system.
2. Cord and plug assembly, NEMA L6-30P.
3. Plumbing kit.
4. Stainless-steel dormont water disconnect, sized to accommodate equipment.
5. Provide grommetted hole in countertop to accommodate utility requirements.
6. Dormont S/S water line with disconnect.
7. Run from filter to water connection.
8. Special Instruction: Coordinate backflow assembly location with GC.

ITEM NO. 647 TEA BREWER - 5GAL.

QUANTITY 1

Manufacturer: Bunn
Model: ITB-DBC
Size and Shape: Refer to drawings
Alternate:

1. Two (2) Model No. TDO-4 reservoirs.
2. One (1) In-line water filter mounted in an easily accessible location.
3. Interconnect water line through remote filter system.
4. S/S water disconnect.
5. Special Instruction:K.E.C to coordinate backflow assembly requirements.

ITEM NO. 648 COFFEE BREWER

QUANTITY 1

Manufacturer: Bunn-O-Matic
Model: ICB TWIN SH 51200.0102
Size and Shape: Refer to drawings
Alternate:

1. Four (4) 1.5gal SH Server Air pots
2. Stainless steel exterior.
3. Hot water dispenser.
4. Locate per drawings.
5. Cord and plug assembly.
6. One (1) water filtration system recommended by manufacturer.
7. Stainless steel flex water disconnect provided loose to the General Contractor.
8. Interconnect thru remote filtration system.
9. Include Two (2) coffee funnels.
10. Twin drip tray kit.
11. Two (2) 2SH stands

ITEM NO. 706 UNDERCOUNTER ICE MACHINE

QUANTITY 1

Manufacturer: Scotsman
Model: CU1526
Size and Shape: Refer to drawings
Alternate:

1. Ice machine to be located below countertop, coordinate with counter as required.
2. Cube size to be small chewable ice.
3. Cord and plug assembly.
4. Prodigy floor mount kit model no. KPUFM26.
5. S/S water disconnect kit.
6. Drain to floor sink.
7. Coordinate interconnection of ice machine to remote filter system.

ITEM NO. 711 CUP DISPENSER

QUANTITY 1

Manufacturer: San Jamar
Model: CBK
Size and Shape: Refer to drawings

Alternate:

1. (2) Black trim rings.
2. Gasket pack.
3. Located in serving counter.

ITEM NO. 748 UNDERCOUNTER REFRIGERATOR 2DR

QUANTITY 1

Manufacturer: True
Model: TUC-48-ADA-HC
Size and Shape: Refer to drawings
Alternate: Traulsen

1. Stainless steel top, sides and door. NFS aluminum liner interior with S/S floor with coved base.
2. Self-contained refrigeration system.
3. 2" Casters, all with brakes.
4. Cord and plug assembly.
5. Door locks.
6. Coordinate with Item No. 124.

ITEM NO. 753 BEVERAGE DISPENSER

QUANTITY 1

Manufacturer: Purveyor
Model: ---
Size and Shape: Refer to drawings
Alternate:

1. Verify requirements with purveyor.

ITEM NO. 799 ICE MACHINE

QUANTITY 1

Manufacturer: Scotsman
Model: N0422A
Size and Shape: Refer to drawings
Alternate:

1. "Sonic"/ chewable type ice.
2. Top mounted ice machine.
3. Vari-Smart Ice Level Control.
4. See plan for location.
5. Interconnect thru remote filtration system.
6. KEC to coordinate with beverage vendor.

ITEM NO. 800 MILLWORK COUNTER

QUANTITY 1

Manufacturer: Millwork By G.C.
Model:
Size and Shape: Refer to drawings

Alternate:

ITEM NO. 801 DUAL CULINARY SUITE

QUANTITY 1

Manufacturer: Jade Range
Model: Custom
Size and Shape: Refer to drawings
Alternate:

1. Size and shape per drawings. KEC to coordinate with exhaust hood..
2. Stainless steel countertops between equipment with enclosed undershelves below.
3. WPS-11, Waldorf style plate shelf, Mirror finish, belly rail at equipment with 4 corner buckles to match. No Acorn Nuts. Submit sample for owner approval.
4. Stainless steel flu rise located behind the salamander broiler, provide crowned top at flue riser.
5. Double sided overshef, refer to drawings for size & shape.
6. 6" common stainless steel back riser and flue cover at all equipment.
7. Island Suite to be factory installed.
8. Factory to prewire the Island Suite for one (1) electrical connection. Load center to be located in a fully enclosed load center compartment.
9. Front gas manifold for the entire island suite.
10. S/S base at island suite.
11. Built-in fryer filter system.
12. Equipment to consist of: (1) open burners, oven base pass thru style, one (1) 2-bank fryer with filter system, one (1) thermostatic griddle, one (1) pass thru cheese melter, One (1) sink with faucet and one (1) end cabinet.
13. Front opening to accommodate Item no. 818.
14. S/S chase at flu to accommodate gas lines.

ITEM NO. 802 BEVERAGE COUNTER

QUANTITY 1

Manufacturer: Moduserve
Model:
Size and Shape: Refer to drawings
Alternate:

1. Close base construction.
2. 3CM countertop located at 34" A.F.F. Verify stone selection prior to bidding if not specified. Submit 12" X12" sample to architect for approval.
3. Counter front to consist of Plastic Laminate . Verify selection prior to bidding if not specified. Submit 12" X 12" sample to architect for approval.
4. Unit to be mounted on 6" stainless legs with adjustable bullet feet with removable kickplate.
5. 3CM Stone Top with 4" splash at back and side wall. Turn down top 2" at front .
6. Coordinate with item No. 811 Bag N Box System and Carbonation Tank location, Purveyor provided.
7. Coordinate with item no. 753 Beverage dispenser.
8. Coordinate with item no. 799, Ice Machine.
9. Coordinate with item no. 647, Tea Brewer.
10. Coordinate Trash and Bussing area with Architect and Owner.

11. Pipe drains lines from countertop tight under countertop to not interfere with under counter equipment.
12. Manufacturers are to bid all items per specifications, deviations from the specified manufacturers or fabrication will not be accepted.KEC to verify all make and model of beverage counter equipment prior to Fabrication for proper utilities and cutouts. Verify equipment will clear bottom of frame.
13. KEC to Coordinate floor sink location is easily accessible and unobstructed by equipment.
14. KEC to Coordinate backflow assembly location and requirements with G.C an MEP.

ITEM NO. 803 COFFEE BREWER

QUANTITY 1

Manufacturer: Bunn
Model: Axiom Twin APS Airpot Coffee Brewer
Size and Shape: Refer to drawings
Alternate:

1. Twin Airpot Model AXIOM Twin APS with Airpots.
2. Provide Four(4) 32130 3.0 liter Lever-Action Airpot.
3. Cord and plug.
4. One (1) In-line water filter mounted in an easily accessible location.

ITEM NO. 804 UNDERCOUNTER HEATED CABINET

QUANTITY 3

Manufacturer: CresCor
Model: H-137-WSUA-5D
Size and Shape: Refer to drawings
Alternate: Winston

1. Corrugated supports for 18" x 26" sheet pans.
2. Two (2) located under serving Counter. Coordinate installation with Counter Fabrication / caster locations.
3. Low Profile Casters.
4. One (1) Located in Conference room, below countertop. Coordinate with G.C. on location.
5. Corner Bumpers
6. Door Window.
7. Dedicated recessed outlet below counter.
8. Field reversible door.

ITEM NO. 805 ICE DISPENSER AND WATER

QUANTITY 1

Manufacturer: Scotsman
Model: HID312A-1
Size and Shape: Refer to drawings
Alternate:

1. KEC to confirm Sonic type Ice.
2. Cord and plug assembly, coordinate NEMA configuration with electrician.
3. Stainless steel dormont water supply hose with quick disconnect, sized to accommodate equipment.

4. Drain to floor sink.
5. 4" Adjustable legs, model no. KLP24A
6. Interconnect to remote filtration system Item No. 263.
7. Located at micro-market.
8. Special instructions:K.E.C to Coordinate with GC.

ITEM NO. 806 JANITOR CLOSET

QUANTITY 1

Manufacturer: John Boos
Model: PBJC-303084
Size and Shape: Refer to drawings
Alternate:

1. Provide PBF-SS-6 Faucet and PB-HOSE-120.
2. 18- gauge type 300 stainless-steel with #4 polish, satin finish.
3. Tamper- Proof hardware.
4. Overhead shelf for chemical storage.
5. Oversized mop sink 24" x 24" x 12" deep.
6. rear mounted mop holder with three (3) locking cams.
7. Special Instruction. Faucet location not to interfere with hanging mops

ITEM NO. 807 PIZZA OVEN

QUANTITY 1

Manufacturer: Woodstone
Model: WS-MS-4-RFG-IR MT. Chuckanut
Size and Shape: Refer to drawings
Alternate:

1. Size & shape per drawings.
2. Facade ready. Coordinate finish with Architect/G.C.
3. Confirm mantle finish with Architect.
4. 5-TBD-ACVW Secondary opening,non-vented, non-operational, air-cooled, 30" viewing window. Coordinate location with Architect.
5. Eagle Mountain Saginaw School logo in flame guard. Verify design with owner.
6. KEC to coordinate oven with Item No. 156 Exhaust Hood.
7. Radiant gas flame in dome and infrared burner under hearth.
8. Monolithic cast-ceramic floor and dome create "deep heat sink".
9. Angle iron stand.
10. 120v/50/60/1-ph, 1/1 Amps, direct wire.
11. Stainless steel large radius service panel extension.
12. Exterior to accommodate architectural finishes, refer to architects drawings.
13. WS-TL-SET-M-GAS Medium Tool Set for gas ovens, includes one (1) loading peel (12" pies and smaller), one (1) loading peel (16" pies and smaller), one (1) utility peel, one (1) medium brush set and one (1) bubble hook.
14. Loading peel tool hanger to accommodate all peels. Confirm location with Owner/GC
15. Oven tool hanger. Confirm location with Owner / G.C.
16. KEC to coordinate access panel with Architectural wall.
17. Special InstructionKitchen contractor to coordinate installation and wall requirements with GC.

**ITEM NO. 808 36" SELF-CONTAINED, REFRIGERATED UNDER-COUNTER GRAB & GO
DISPLAY**

QUANTITY 1

Manufacturer: RPI
Model: SCCB36R-CD-UC
Size and Shape: Refer to drawings
Alternate: Structural

1. Under counter grab and go beverage merchandiser, coordinate with item no. 201, serving counter.
2. Self-contained refrigeration, standard
3. 115v/60/1-ph/ 15.75 amps, cord, NEMA 5-20P
4. 5 year compressor warranty
5. Drain to floor sink.
6. Stainless steel step shelves (sham)
7. Exterior Finish: verify with Architect.
8. Security Doors, removable from front
9. 1 year Parts and Labor Warranty

ITEM NO. 809 COFFEE BREWER-DUAL DISPENSER

QUANTITY 1

Manufacturer: Bunn-O-Matic
Model: CWTF-TWIN-APS
Size and Shape: Refer to drawings
Alternate:

1. Four (4) 2.5 liter airpots with airpot rack.
2. Stainless steel exterior.
3. Hot water dispenser.
4. Locate per drawings.
5. Cord and plug assembly.
6. One (1) water filtration system recommended by manufacturer.
7. Stainless steel flex water disconnect provided loose to the General Contractor.

ITEM NO. 810 TRASH COUNTER

QUANTITY 1

Manufacturer: by Millwork
Model:
Size and Shape: Refer to drawings
Alternate:

1. MILLWORK BY ARCH

ITEM NO. 811 BAG N' BOX SYSTEM

QUANTITY 1

Manufacturer: Purveyor Furnished
Model:
Size and Shape: Refer to drawings

Alternate:

1. KEC to coordinate routing of beverage lines and installation with the G.C.
2. K.E.C to coordinate adequate spacing for CO2 tank.

ITEM NO. 812 PIZZA OVEN EXHAUST HOOD

QUANTITY 1

Manufacturer: ModuServe
Model: W
Size and Shape: Refer to drawings
Alternate:

1. Hood to meet IECC2015 Energy Code.
2. All 18-gauge S/S construction.
3. Eyebrow style Hood.
4. Insulated hood end panels.
5. Hood manufacturer to perform hood balance reports, to be sent directly to FDP prior to final project completion.
6. Continuous capture.
7. Ceiling mounted supply plenum with light fixtures, coordinate conditioned/tempered air with engineer. Locate supply plenum in ceiling, coordinate location with GC as required.
8. Recess mounted LED light fixtures. All exposed fire control piping to be chrome plated and all hood penetrations sealed with S/S escutcheons.
9. 3" air space at rear of hood.
10. S/S closure panel between hoods if back to back hoods.
11. S/S filters and grease cup. Provide filter removal tool.
12. Ductwork and final connection to hood above ceiling to be by the Mechanical Contractor.
13. Ventilators to have adjustable make-up air damper which must remain accessible for adjustment
14. Make-up air fire dampers. Insulated make-up air plenum with 1" thick foil faced fiberglass insulation.
15. S/S filters and grease cup with filter removal tool.
16. S/S c-channel closure panel from top of hood to ceiling.
17. ½" diameter steel hanger rods at 4'-0" O.C. maximum to be by Kitchen Equipment Supplier, but they are to be anchored to supporting structure (or slab) by the General Contractor in the locations required by exhaust hood shop detail.
18. Provide pre-set temperature sensor for automatic start of exhaust fan when the condition exists where the exhaust fan is not initiated at the wall switch and the temperature in the exhaust canopy reaches 95° F. At the end of the cooking day when the fan is disengaged at the wall switch the thermostat (temperature sensor) will keep the exhaust fan on until the temperature in the exhaust canopy drops below 95° F.
19. **Special Instruction:** Refer to individual hood lengths as shown on drawings for each assembly required. Install at 6'-10" A.F.F. to bottom of hood, coordinate duct and fan requirements with Mechanical Contractor. Interconnect to wall mounted light switch by Division 16. Bulbs for light fixtures to be furnished and installed by Kitchen Equipment Contractor.

**ITEM NO. 813 OLYMPUS V TURBO 48" PORTE CACHEE AIR SCREEN OPEN
MERCHANDISER**

QUANTITY 3

Manufacturer: RPI
Model: SCAS48R-V-TC-PD
Size and Shape: Refer to drawings
Alternate:

1. 1 year parts & labor warranty, standard
2. NOTE: minimum 18" clearance needed above unit for discharge
3. Smart Controller Electronic Food product Simulator probe and safety sensor.
4. Self-contained refrigeration, standard.
5. Auto locking in turbo chill mode.
6. 5 year compressor warranty (self-contained only)
7. 115/208-230v/60/1-ph, 11.3 amps, cord NEMA L14-20P
8. Rear Interior Panel & Hardware: Stainless steel, standard
9. Interior End Finish: Brushed stainless steel, standard
10. Exterior Finish: #4 stainless steel with stainless steel air grill, verify finish with architect.
11. Exterior Rear Finish: Black laminate, standard
12. 3500K LED top canopy light
13. Adjustable legs up to 6"
14. 8' cord and plug.
15. LED Shelf Lights, standard
16. Provide submittal shop drawing for review by Consultant.
17. Special Instructions: Start-up and calibration of unit must be by factory authorized service agency, prior to customer demonstration. K.E.C. to coordinate 18" height clearance at top of unit.
18. Special instruction: K.E.C to ensure placement is at least 5'6" ft away from diffusers.

ITEM NO. 814 PRINTER

QUANTITY 1

Manufacturer: OWNER FURNISHED
Model:
Size and Shape: Refer to drawings
Alternate:

1. Coordinate location with vendor.

ITEM NO. 815 AIR POT COFFEE BREWER

QUANTITY 1

Manufacturer: Bunn
Model: DUAL SH DBC BLK
Size and Shape: Refer to drawings
Alternate:

1. Provide Two (2) Bunn product number 27850.0022 Serving Canisters.
2. One (1) In-line water filter mounted in an easily accessible location.
3. Provide drip tray kits.

ITEM NO. 818 HIGH SPEED MICROWAVE

QUANTITY 1

Manufacturer: Amana
Model: AXP22

Size and Shape: Refer to drawings
Alternate:

1. Located in front facing side of culinary suite.
2. Provide 2 " clearance on sides.
3. Cord and plug assembly.
4. Set of two (2), 10" x 12" x 1" , nonstick baskets.
5. Confirm location of oven paddle with owner/ Architect.

ITEM NO. BEVERAGE COFFEE BREWER-DUAL DISPENSER

QUANTITY 1

Manufacturer: Bunn-O-Matic
Model: CWTF-TWIN-APS
Size and Shape: Refer to drawings
Alternate:

1. Four (4) 2.5 liter airpots with airpot rack.
2. Stainless steel exterior.
3. Hot water dispenser.
4. Locate per drawings.
5. Cord and plug assembly.
6. One (1) water filtration system recommended by manufacturer.
7. Stainless steel flex water disconnects provided loose to the General Contractor.

END OF SECTION

SECTION 11 52 13

PROJECTION SCREENS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Motorized projection screens.
- B. Related Sections:
 - 1. Section 09 51 00 - Acoustical Ceilings.
 - 2. Section 09 91 00 - Painting
 - 3. Division 26 - Electrical: electrical rough-in.

1.2 SUBMITTALS

- A. Shop Drawings: Submit in accordance with SECTION 01 33 23 - SHOP DRAWINGS, PRODUCT DATA AND SAMPLES. Include manufacturer's installation instructions.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Electrically Operated Green Screen Projection Screen, "Access E" as manufactured by Draper, Inc. or approved equivalent.
 - 1. Mounting: Recessed above ceiling.
 - 2. Motor: 110-120V AC, 60 HZ, 4-wire, instantly reversible, with lifetime lubrication. Motor shall be equipped with internal thermal overload protector; shall be fitted with mechanical brake to eliminate coasting; and shall be mounted on rubber vibration insulators. Entire drive unit shall be removable from case.
 - 3. Control Switch: Provide 3-position control switch which shall stop or reverse screen at any point in its operating cycle. Controls shall be furnished complete with aluminum box and cover plate in color as selected by Architect.
 - 4. Screen Fabric: Draper "Chroma Key Green", flame- and mildew-resistant. If "extra drop" is needed provide in same Chroma Key Green color
 - 5. Case: Standard primer coat of paint. Motor compartment shall be metal lined.
 - 6. Viewing Surface: 120"W x 168"L (Custom Size)
 - 7. Cut matching ceiling tile and mount to doors to be flush with ceiling.
 - 8. Screen shall be listed by U.L.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install projection screens securely anchored to provide rigid installation. Screen shall be installed in strict accordance with manufacturer's instructions.

3.2 FIELD QUALITY CONTROL

- A. Certificate: The distributor or manufacturer's representative shall certify in writing to the Owner that the installation, adjustment and performance are in accordance with the manufacturer's recommendations.

3.3 ADJUST AND CLEAN

- A. Adjusting: Carefully adjust and regulate the projection screen after installation.
- B. Protection: Protect the completed work from damage. Replace damaged items which cannot be repaired.

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- C. Cleaning: Upon completion of the building, clean the projection screen. Leave the screen free of defects and in ready-to-use condition.

END OF SECTION

SECTION 12 21 13

HORIZONTAL BLINDS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Horizontal blinds.
- B. Related Sections:
 - 1. Section 08 11 00 - Hollow Metal Doors and Frames; glazed openings.
 - 2. Section 08 41 13 - Aluminum-framed Entrances and Storefronts.
 - 3. Section 08 44 13 - Glazed Aluminum Curtain Walls.

1.2 SYSTEM DESCRIPTION

- A. Horizontal metal slat louver blinds installed at storefront, curtain wall, glazed openings, and mirrors manual control of raising and lowering by cord; blade angle adjustable by control wand. Horizontal blinds shall be indicated as "HB" on the drawings.

1.3 SUBMITTALS

- A. General: Submit in accordance with SECTION 01 33 23 - SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Product Data: Include manufacturer's catalog cuts and data sheets, and installation instructions and data certifying blinds are lead-free.
- C. Shop Drawings: Include details of attachment and schedule of each size and location.

1.4 QUALITY ASSURANCE

- A. Measurements: Provide custom size blinds for the openings or mirrors in which they are to be installed. Take careful measurements of each opening so that the blinds will fit properly. Plan dimensions shall not be used. Verify head, jamb, and sill conditions.
- B. All blinds shall be lead-free.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver products to site under provisions of SECTION 01 65 00 - PRODUCT DELIVERY REQUIREMENTS.
- B. Deliver blinds wrapped and crated in a manner to prevent damage to components or marring of surfaces.
- C. Store and protect products under provisions of SECTION 01 66 00 - PRODUCT STORAGE AND HANDLING REQUIREMENTS.
- D. Store in a clean, dry area, laid flat and blocked off ground to prevent sagging, twisting, or warping.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

- A. Horizontal Blinds: 1" wide by 0.0085" thick slat type, with valance for each blind. Product/manufacturer; one of the following:
 - Bali Classics Mini Blinds; Springs Window Fashions Division, Inc.
 - Levolor 1" (25mm) Riviera Classic Blind; Levolor Corp.

2.2 MATERIALS AND FABRICATION

- A. Head channel shall be 0.025" thick Tomized steel with a plastic type coating. Channel shall be "U" shaped, approximately 1" high by 1-9/16" wide, with flanged edges at the top.
- B. Slat supports shall be braided of polyester yarn. The vertical component shall have a diameter of not less than 0.045" nor greater than 0.066". Braiding shall be accurate to hold slats equally spaced, parallel and straight, and to assure proper tilt control and adequate overlay of slats. Provide 31 rungs per 2 feet of ladder, equally spaced. Distance between ladders shall not exceed 21". The horizontal component shall consist of not less than four cables interbraided with the vertical component.
- C. Slats shall be virgin aluminum alloy approximately 1" wide by 0.0085" thick. Slats shall have sufficient crown to prevent sagging and radius corners.
- D. Bottom rail shall be 0.023" thick Tomized steel with a plastic type coating.
- E. Tilter shall be Tomized steel of enclosed construction. Unit shall tilt the slats to any desired angle and hold them at that angle. An automatic disengagement of worm and gear shall eliminate overdrive to prevent strain or damage to wand, worm, gear, ladder or top slat. Operation shall be by wand of sufficient length and swivel for easy operation.
- F. Lift cord shall be of adequate diameter, braided of high strength synthetic fibers.
- G. Finish: The factory finish for the exposed surfaces shall be a plastic type finish coat baked on. Color shall be as selected by Architect from manufacturer's standard color range.

PART 3 - EXECUTION

3.1 INSPECTION

- A. Examine areas to receive blinds for conditions which will adversely affect the installation of the blinds. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Attach installation end brackets at each end of blind location. For blinds over 55" long or over 50 square feet in area, provide intermediate brackets.
- B. Blinds shall be mounted in brackets inside frame jambs by skilled mechanics under the supervision of an authorized representative of the manufacturer. The completed blinds shall be left clean and in perfect working order. Crates, cartons, and rubbish shall be removed from the premises; rooms shall be left broom clean.

3.3 TOLERANCES

- A. Maximum Variation of Gap at Window Opening Perimeter: 1/4".
- B. Maximum Offset From Level: 1/8".

3.4 ADJUSTING

- A. Adjust work under provisions of SECTION 01 77 00 - CLOSEOUT PROCEDURES.
- B. Adjust blinds for smooth operation.

3.5 CLEANING

- A. Clean work under provisions of SECTION 01 74 13 - PROGRESS CLEANING.

END OF SECTION

SECTION 12 24 13

ROLLER WINDOW SHADES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Roll shades.
- B. Related Sections:
 - 1. Division 26 - Electrical service and connection to motorized shades. Include custom switch plate.
 - 2. Division 27 - Communications (Technology); integration of roller shades in Board Room.

1.2 SUBMITTALS

- A. General: Submit in accordance with Section 01 33 23 - Shop Drawings, Product Data, and Samples.
- B. Product data for each type of shade specified. Include printed data on physical characteristics. Include warranty information.
- C. Shop drawings showing location and extent of shades. Show installation details at and relationship to adjoining work. Include elevations indicating shade units. Indicate locations of shade controls.
 - 1. Motorized System: Provide shade assembly and mounting details, including detailed wiring diagrams and schematics.
- D. Samples for Verification Purposes: One 18-inch-square sample of shade material for each color, texture, and pattern of shade required.
- E. Submit manufacturer's maintenance data for shades.

1.3 QUALITY ASSURANCE

- A. Installer Qualifications: Engage an experienced Installer who has specialized in installing shades similar to those required for this Project.
- B. Surface Burning Characteristics: Provide shades identical to those tested for the following fire performance characteristics as determined by testing identical products, by UL or another testing and inspecting agency acceptable to authorities having jurisdiction.
- C. Field-Constructed Mockup: Prior to installing shades, prepare mockups for each form of construction and finish required to verify selections made under sample submittals, to demonstrate aesthetic effects and to establish application quality standards.

1.4 PROJECT CONDITIONS

- A. Field Measurements: Check openings by field measurements before fabrication. Show recorded measurements on shop drawings. Coordinate fabrication schedule with construction progress to avoid delay in the work.

1.5 WARRANTY

- A. 10-year non-depreciating standard warranty on the following:
 - 1. Manually operated components.
 - 2. Shade cloth, with provision that it will not deteriorate, sag or warp and will remain fit for use for the full warranty period.
 - 3. Hardware components to be free from defects in material and workmanship under normal and proper use.
- B. Five-year warranty on the following:
 - 1. Motors.
 - 2. Electronic components.

1.6 EXTRA MATERIALS

- A. Extra Materials: Furnished from same production run as products installed, packaged with protective covering for storage, and identified with labels describing contents. Deliver extra materials to Owner.
 - 1. Shades: Furnish quantity of full-size units equal to 5 percent of amount installed.

PART 2 - PRODUCTS

2.1 PRODUCTS

- A. Provide ElectroShade™ electrically operated, group switching, regular roll, pocket-mounted units, with shade cloth falling at window side of roller, as manufactured by MechoShade Systems, Inc. (phone 214-585-0469) or approved equivalent.
 - 1. At the roller shades within the Board Room, provide serial control port for integration with the AV control system. These will be controlled from the AV touchpanel control - Reference Division 27 - Communications.
- B. Shadecloth shall meet requirements of Fed. Spec. CCC-C-521 E for fire retardancy, NFPA 701 Small-Scale and/or NFPA 701 Large-Scale requirements. Antimicrobial without topical treatment. ASTM E-84: Flame Spread 17, Smoke Density Index 118, Shadecloth seconds or shadecloth manufactured using reprocessed materials are not acceptable.
- C. Sunscreen Material:
 - 1. Shades Within Board Room: EcoVeil™ 0950 Series sunscreen, basket weave and is eco-effective. Provide 1% openness factor. Color as scheduled in SECTION 09 99 00 - COLOR SCHEDULE.
 - 2. Remainder of Shades: EcoVeil™ 1350 Series sunscreen, basket weave and is eco-effective. Provide 5% openness factor. Color as scheduled in SECTION 09 99 00 - COLOR SCHEDULE.

2.2 MATERIALS AND FABRICATION

- A. Components: Noncorrosive, self-lubricating materials.
- B. Electrical Motors: UL approved, low-voltage motor with thermal overload switch. Each motor unit sized and provided by shade fabricator for installation indicated. The motor shall be tubular asynchronous and concealed. Internal limit switches shall be readily removable without having to remove the motor or the shade-tube assembly. Each window shall require a motor. Refer to electrical and technology drawings for junction boxes and connections to digital touchpanel or keypads/switches.
 - 1. At the roller shades within the Board Room, provide serial control port for integration with the AV control system. These will be controlled from the AV touchpanel control - Reference Division 27 - Communications.
- C. Installation Fasteners: Not less than two fasteners per bracket, fabricated from metal non-corrosive to shade hardware and adjoining construction and to support shades under conditions of normal use.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine openings where shades will be installed prior to beginning installation. Verify that critical dimensions are correct and surface conditions acceptable.
 - 1. Complete all finishing operations, including painting, before beginning installation.
- B. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Install shades level and plumb in accordance with manufacturer's instructions and approved submittals, mounted not less than 1 inch from face of exterior glass.
- B. Install metal parts isolated from concrete or mortar to prevent corrosion.
- C. Install mounting brackets with at least two fasteners per bracket.

3.3 CLEANING

- A. After completing the installation, clean shade surfaces according to the manufacturer's instructions.
- B. Remove surplus materials, packaging, rubbish and debris resulting from the installation. Leave areas where installation occurred neat, clean, and ready for use.

END OF SECTION

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SECTION 12 32 16

MANUFACTURED PLASTIC-LAMINATE-CLAD CASEWORK

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
1. Plastic laminate-faced casework as shown on drawings.
 2. The fabrication and installation of standard casework components of base cabinets, wall cabinets, storage cabinets, wardrobe cabinets, shelf units and other units as indicated.
 3. The fabrication and installation of custom units, as detailed in the drawings.
- B. Related Sections:
1. Section 06 10 00 - Rough Carpentry; blocking.
 2. Section 06 40 00 - Architectural Woodwork: Special Millwork pieces.
 3. Section 08 14 23 - Plastic-laminate-faced Wood Doors
 4. Section 09 65 13 - Resilient Base; coved rubber base.
 5. Section 11 31 00 - Appliances
 6. Section 22 40 00 - Plumbing Fixtures

1.2 SUBMITTALS

- A. Product Data: Submit in accordance with SECTION 01 33 23 - SHOP DRAWINGS, PRODUCT DATA AND SAMPLES. Include manufacturer's installation instructions for each type of casework unit.
- B. Samples: Submit 6" x 6" samples of specified finishes, including top material. Samples will be reviewed by Architect for color, texture and pattern only. Compliance with other specified requirements is exclusive responsibility of contractor.
- C. Shop Drawings:
1. Submit shop drawings for plastic laminate-faced casework showing plans, elevations, ends and cross-sections. Show details and location of anchorages and fitting to floors, walls and base. Include layout of units with relation to surrounding walls, doors, windows and other building components.
 2. Coordinate shop drawings with other work involved.
- D. Mock-up Casework:
1. Submit one full-size sample of finished base cabinet unit complete with hardware, doors and drawers, without finish top.
 2. Submit one full-size sample of finished wall-mounted cabinet unit complete with hardware, doors and adjustable shelves.
 3. Furnish both hinged and rolling door samples.
 4. Acceptable sample units will be used for comparison inspections at project. Unless otherwise directed, acceptable sample units may be incorporated in work. Notify Architect of their exact locations. If not incorporated in work, retain acceptable sample units in building until completion of work and remove sample units from premises when directed by Architect.

1.3 QUALITY ASSURANCE

- A. Single Source Responsibility: Provide casework with tops and accessories manufactured or furnished by same casework company for single responsibility.
- B. Catalog Standards:
1. The use of catalog numbers and specific requirements set forth in drawings and specifications are not intended to preclude the use of other acceptable manufacturer's product or procedures which may be equivalent, but are given for purpose of establishing standard of design and quality for materials, construction and workmanship.
 2. Custom units shall be of the same quality as standard units specified.

- C. AWI Quality Standard: Comply with grades of interior architectural woodwork, construction, finishes and other requirements of the "Architectural Woodwork Standards", 2nd Edition, 2014, adopted and published jointly by Architectural Woodwork Institute (AWI), Architectural Woodwork Manufacturers Association of Canada (AWMAC), and Woodwork Institute (WI), except as otherwise indicated.
 - 1. Use Premium Grade, except use Economy Grade for millwork in custodian closets and storage rooms. Items not given a specific quality grade shall be Premium Grade.
 - 2. Certification:
 - a. Provide AWI Quality Certification Program Certificates and Labels indicating that the woodwork, including installation, complies with requirements of grades specified.
 - b. Certification shall be evidenced through the application of AWI Quality Certification Labels.
 - c. Certification labels shall be applied to the work.
 - d. The Contractor, upon award of work, shall register the work under this section with the AWI Quality Certification Program (800-449-8811).
- D. Manufacturer shall have at least 5 years' experience and have done installations for similar types of projects.
- E. Accessibility Standards: The following special requirements shall be met, where required to comply with Texas Accessibility Standards (TAS).
 - 1. Countertop height with or without cabinet below, not to exceed a height required by TAS.
 - 2. Kneespace clearance to be minimum clearance as required by TAS.
 - 3. 12" deep shelving, adjustable or fixed not to exceed a range as required by TAS.
 - 4. Wardrobe cabinets to be furnished with rod/shelf adjustable to 48" A.F.F. at a maximum 21" shelf depth.
 - 5. Sink cabinet clearances as required by TAS.
 - 6. Cabinet locks, latches, and other operating mechanisms shall be mounted to comply with forward reach requirements of TAS; i.e. 15" to 48" above finish floor, except locked bottom drawers at base cabinets.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Deliver plastic laminate-faced casework only after wet operations in building are completed.
- B. Store completed plastic laminate-faced casework in a ventilated place, protected from the weather, with relative humidity therein of 50% or less at 70°F.
- C. Protect finished surfaces from soiling and damage during handling and installation. Keep covered with polyethylene film or other protective covering. Woodwork damaged through neglect of the above requirements shall be repaired or replaced without additional cost to the Owner.

1.5 ENVIRONMENTAL REQUIREMENTS

- A. Install finish carpentry products only when temperature and humidity conditions have been stabilized and will be maintained.
- B. Maintain temperature and moisture conditions as recommended by woodwork fabricator from date of installation through remainder of construction period.

1.6 GUARANTEE

- A. Provide 5-year guarantee against defective materials and workmanship.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Basis of Design: Manufacturer's catalog numbers for **Case Systems, Inc.** (website: www.casesystems.com, phone 989-496-9510) are shown on drawings and included in specifications for convenience in identifying certain cabinet work. Unless modified by notation on drawings or otherwise specified, catalog description for indicated number constitutes requirements for each such cabinet, hardware, or equipment.

- B. Subject to compliance with requirements of this specification, Case Systems, Inc. equivalent plastic laminate-faced casework as manufactured by one of the following will be acceptable:
- CIC Concepts in Cabinetry
 - Jericho Woodworks
 - Jim R. Reynolds & Assoc.

2.2 GENERAL

- A. Decorative laminate casework shall be Case Systems as specified or approved equal with the following minimum features:
1. M-3 47# density engineered particleboard for cabinet components meeting or exceeding all requirements as set by ANSI A208.1-2009.
 2. PVC edges applied with hot melt.
 3. Epoxy coated, self closing, minimum 150# static rated drawer slides with lifetime warranty.
 4. Non-Racking, Non-Deflecting Platform Drawer Box With 1/2" Thick Bottoms.
 5. 1/2" Thick Cabinet Back.
 6. "Balanced" High pressure laminates applied with rigid PVA glue.
 7. Thermally Fused Laminate Interior, excluding backs of doors and drawers, complying with requirements of NEMA LD3, Grade VGL, for Test Methods 3.3, 3.4, 3.6, 3.8, and 3.10.
 8. Each Cabinet to have a factory applied, separate and full support toe base construction.
 9. Colors and finishes shall be as selected by Architect.
 10. Casework shall be independently tested to meet the following minimum performance values:

Base Unit Racking	1460 lbf
Base Front Joint Loading	725 lbf
Wall Unit Racking	1600 lbf
Wall Unit Static Load	2500 lbf
Drawer Unit Static Load	1050 lbf
Drawer Front Joint Load	805 lbf
Drawer Side Joint Load	450 lbf
 11. Rail mounted casework shall be vertically and horizontally adjustable.
 12. Rail mounted casework shall have integral lower leveling bar, adjustable from inside of cabinet.
- B. Color and finish selections: Architect reserves the right to select one color for the exposed surfaces of the basic components of cabinets and a different color for the following components of cabinets: door and drawer fronts (including edges of door and drawer fronts), backs of open shelving and countertop and backsplash, unless shown otherwise.

2.3 MATERIALS

- A. Exterior Vertical Surfaces:
1. Door and drawer fronts and backs, finished end panels, and exposed exterior backs shall be surfaced with VGS (0.028") thick high-pressure decorative laminate conforming to NEMA LD3-1995.
 2. Exterior vertical high-pressure laminate panels shall be balanced with textured .020" thick high-pressure cabinet liner conforming to NEMA Standard LD3-1995. Color as selected by Architect. Surface texture shall be similar to exterior finish.
 3. High-pressure laminate must be laminated using a PVA adhesive, set under pressure, resulting in a rigid glue line. Contact adhesives shall not be used.
 4. HPDL at open interiors, underside of wall cabinet bottoms, interiors of glazed door cabinets shall be considered exposed and finished in Decorative High-Pressure VGS laminate.
- B. Plastic Laminate: General purpose grade, HGS (0.048") high pressure decorative laminate meeting requirements of NEMA LD 3. Colors shall be as selected by Architect from full color, finish and pattern range of plastic laminate manufacturers listed. Product/manufacturer; one of the following:
- Formica Brand Laminate; Formica Corp.
 - Nevamar or Pionite Decorative Laminate; Panolam Industries.
 - Wilsonart; Wilsonart LLC.
- C. Thermally Fused Interiors at Semi-Exposed Surfaces: Interior surfaces behind doors, drawer boxes, backs, and unfinished ends shall be laminated with a thermally fused laminate that meets or exceeds the performance standards for NEMA LD3-1995, Grade VGL, for Test Methods 3.3, 3.4, 3.6, 3.8, and 3.10. Panels shall be of "BALANCED" construction. Fast cycle thermally fused, melamine foil or polyester surfaced panels or other surface types that do not meet these requirements are not acceptable. This excludes backs of doors and drawers, which shall be balanced with VGS (0.028") thick high-pressure decorative laminate conforming to NEMA LD3-1995.

- D. 3mm PVC Edges: Door and drawer edging shall be 3mm PVC. The PVC shall be applied utilizing hot melt adhesive and radiused by automatic trimmers. Hand tool applying and trimming of PVC shall not be allowed. Edging shall be available in TWENTY TWO coordinated color options.
- E. Particleboard:
 - 1. Particleboard shall be Grade M-3 Industrial, according to the American National Standard (ANSI) for Mat-Formed Wood Particleboard, ANSI-A208.1-1993 and shall meet or exceed the following:
 - a. Density 47 lbs/cu.ft.
 - b. Moisture Content 6%
 - c. Modulus of Rupture 2400 psi
 - d. Modulus of Elasticity 450,000 psi
 - e. Internal Bond 80 psi
 - f. Hardness 900 pounds
 - g. Linear Expansion 0.30%
 - h. Thickness Tolerance +/- 0.005"
 - i. Face Screw Holding 325 pounds
 - j. Edge Screw Holding 275 pounds

2.4 CASEWORK HARDWARE AND ACCESSORIES

- A. Provide manufacturer's standard, satin finish hardware units, unless otherwise indicated.
- B. Hinges: Institutional type, 5 knuckle. Provide one pair for doors less than 4 ft. high and 1½ pair for doors over 4'. Mill ground hospital tip tight pin feature with edges eased. Hinge to be full wrap around type of tempered steel .095" thick. Each hinge to have minimum 9 #8 screws to assure positive door attachment.
- C. Wire Pulls: Solid brass with dual chrome finish, 4" wide, for drawers and swing doors, mounted with two screws fastened from back. Provide two pulls for drawers over 24" wide.
- D. Door Catches:
 - 1. Dual self-aligning, heavy-duty permanent magnet type with resistance in compliance with the Americans with Disabilities Act and Texas Accessibility Standards. Provide two catches on doors over 4' high.
 - 2. At double-leaf doors, provide locks at each door. No catch provided.
 - 3. At each 1-1/8" doors, provide 1 flap stay No. 499.050.02.0215 or 499.050.03.0215 (Mepla) or approved equivalent.
- E. Drawer Slides and Accessories:
 - 1. Standard Drawers: Case DS430, full extension, self-closing design, epoxy powder coated with positive in-stop. Captive nylon rollers, front and rear. Minimum 100 lb. load rating.
 - 2. File Drawers: Case DS430, full extension, 3-part progressive opening slide, minimum 100 lb., zinc plated or epoxy coated at manufacturer's option.
 - 3. File Drawer Rails: Case FR010, file drawer box shall have full height sides supporting the plastic file rails for hanging file folders.
 - 4. Paper Storage Drawers: Full extension, 3-part progressive opening slide, minimum 100 lb., zinc plated or epoxy coated at manufacturer's option.
- F. Drawer and Cabinet Locks: Provide National Lock No. C8053-14A, half-mortise type, disc tumbler locks, round cylinder only exposed. Locks to be keyed differently, with locks in individual rooms keyed alike. Provide a masterkey.
- G. Cabinet Base Molding: To be provided by General Contractor in field.
 - 1. (RB-1) Rubber Base: Reference SECTION 09 65 13 - RESILIENT BASE.
 - 2. (AB-3) Stainless Steel Cove-Shaped Trim: Provide DesignBase-SL-E cove profile trim, 4-3/8", by Schluter Systems L.P.
- H. Adjustable Shelf Supports: Provide twin pin design with anti tip-up shelf restraints for both ¾" and 1" shelves. Design to include keel to retard shelf slide-off, and slot for ability to mechanically attach shelf to clip. Load rating to be minimum 300 lbs. each support without failure. Cabinet interior sides shall be flush, without shelf system permanent projection. Product/manufacturer; one of the following, no substitutions:
 - 1. #3206 Shelf Support; Bainbridge Manufacturing, Inc.
 - 2. SC240 Plastic Shelf Clip; Case Systems, Inc.
 - 3. Cat. No. 282.47.402; Häfele
 - 4. Clear Polycarbonate Shelf Clip; TMI System Design Corp.

- I. Countertop Support Bracket: Case Systems, Inc. Model X0670
 - 1. 11 gauge construction
 - 2. Powder-coated finish in color as selected by Architect.
 - 3. Load rating of 200 lbs. per lineal foot.
- J. Grommets:
 - 1. Grommets: Max2/A-94 as manufactured by Doug Mockett & Co., Inc.
 - 2. Trash Grommets: 6" x 2" Trash Grommet Model No. TM1B SSS Satin Stainless as manufactured by Doug Mockett & Co., Inc.

2.5 CONSTRUCTION

- A. Cabinet body components shall be secured utilizing concealed interlocking mechanical fasteners as approved by the "Architectural Woodwork Standards", 2nd Edition, October 1, 2014, as adopted and published jointly by Architectural Woodwork Institute (AWI), Architectural Woodwork Manufacturers Association of Canada (AWMAC), and Woodwork Institute (WI), Section 10 and Appendix A. They shall be especially designed for use in joining particleboard panels.
- B. Joints are tight fitting and will not rupture or loosen due to the following:
 - 1. Dimensional changes in the particleboard.
 - 2. Racking of casework during shipment and installation.
 - 3. Normal use.
 - 4. Fastening devices and screws shall be treated to deter or resist corrosion.
- C. Construction Features:
 - 1. Structural components shall be 3/4" thick with balanced surfaces.
 - 2. Back panels shall be 1/2" thick surfaced both sides for balanced construction.
 - 3. Drawer components shall be 1/2" thick surfaced both sides for balanced construction.
 - 4. Mounting stretchers are 3/4" thick structural components fastened to end panels by mechanical fasteners, and are concealed by the cabinet back.
 - 5. Maintain a 1/8" max. reveal between pairs of doors, between door and drawer front, or between multiple drawer fronts within the cabinet.
 - 6. When the rear of cabinets are exposed, a finished 3/4" thick decorative laminate back panel is applied.
 - 7. Exterior grade plywood core individual bases, factory applied to base and tall cabinets shall support and carry the load of the end panels, and the cabinet bottom, directly to the floor. The base shall be let in from the sides and back of the cabinet to allow cabinets to be installed tightly together and tight against a wall. Also to conceal the top edge of applied rubber base molding. There shall be a front to back center support for bases over 30" wide.
 - 8. Horizontal parting rails between drawers shall be 3/4" particleboard with balanced surfaces, secured to and further reinforcing cabinet ends. When drawers are keyed individually within a cabinet, or when drawers are fitted with lock hasps, the parting rail shall run full depth of cabinet to prevent pilfer.
 - 9. A 5mm diameter row hole pattern 32mm (1-1/4") on center shall be bored in cabinet ends for adjustable shelves. This row hole pattern shall also serve for hardware mounting and replacement and/or relocation of cabinet components.
 - 10. Door and drawer fronts and finished ends shall be balanced construction with "high-pressure" laminate bonded to both sides of a M-3, 47# particleboard core.
 - 11. Doors over 24" wide or 80" high shall be 1" thick.
 - 12. Adjustable shelves shall be particleboard core, balanced surfaces and have a .020" thick PVC front edge. Per AWI, shelving shall not deflect in excess of 1/4" when loaded.
 - a. Adjustable shelves behind doors, 3/4" thick to 27" wide, over 30" wide shall be 1" thick min.
 - b. Adjustable shelves in open cabinets shall be 1" thick, except for special use cabinets such as mail, cubical or locker type units.
 - c. There shall be no play in adjustable shelves 1/16" each end, max.
 - 13. Fixed Interior Components such as fixed shelves, dividers, and cubicle compartments shall be full 3/4" thick particleboard attached with concealed interlocking mechanical fasteners.
- D. Wall Cabinets:
 - 1. Each end panel to be secured with a minimum of seven interlocking mechanical fasteners for a total tensile strength of 2,450 pounds.
 - 2. Wall cabinet bottoms shall be of 1" thick particleboard core mechanically fastened to end panels and secured to the bottom back stretcher.
 - 3. An upper 3/4" thick stretcher shall be located behind the back panel with two interlocking mechanical fasteners per end. Also the stretcher is secured to the cabinet top with #8 x 2" plated flat head screws.
 - 4. A lower 3/4" thick stretcher shall be located behind the back panel and attached to the end panels with interlocking mechanical fasteners. The stretcher is also secured to the cabinet bottom.

E. Base Cabinets:

1. Each end panel to be secured with a minimum of seven interlocking mechanical fasteners for a total tensile strength of 2,450 pounds.
2. Base cabinets, except sink cabinets, shall have a solid 3/4" thick sub-top fastened to the ends with interlocking mechanical fasteners.
3. Each kneespace to have apron with dimensions per drawings.
4. Provide 1-1/2" thick dividers between kneespaces and adjacent spaces (e.g. dishwasher openings, other kneespaces, etc.)
5. Sink cabinets shall have a vertically mounted front stretcher panel supporting the countertop, a split removable back panel, and four steel corner gussets used to secure the counter-top.
6. An upper 3/4" thick stretcher shall be located behind the back panel and attached to the end panels with interlocking mechanical fasteners. This stretcher is also fastened to the full sub-stop thus capturing the back panel.
7. Sub-Base: Each cabinet to have a factory applied, continuous, separate and fully supportive toe base construction (no cabinet body sides-to-floor) with concealed fastening to cabinet bottom. Subbase shall be recessed at sides of end cabinets for rubber base installation.

F. Tall Cabinets:

1. Each end panel to be secured with a minimum of eleven interlocking mechanical fasteners for a total tensile strength of 3,850 pounds.
2. An intermediate fixed shelf shall be provided on general storage cabinets to maintain internal dimensional stability under heavy loading conditions.
3. An upper 3/4" thick stretcher shall be located behind the back panel and attached to the end panels with interlocking mechanical fasteners. This stretcher is also fastened to the full sub-stop thus capturing the back panel.
4. An intermediate 3/4" thick stretcher shall be located behind the back panel and be secured to the cabinet ends with interlocking mechanical fasteners. Where an intermediate shelf is present, the stretcher shall also be secured to the shelf with a #8 x 2 plated flat head screw.
5. Drawers with 1/4" bottoms requiring hot melt glue or intermediate supports will not be permitted. No exceptions will be permitted.
6. Sub-Base: Each cabinet to have a factory applied, continuous, separate and fully supportive toe base construction (no cabinet body sides-to-floor) with concealed fastening to cabinet bottom. Subbase shall be recessed at sides of end cabinets for rubber base installation.

G. Drawers:

1. Drawer box shall be constructed with a full 1/2" thick non-racking, non-deflecting platform bottom which is carried directly by "L" shaped, bottom mount drawer glides. Sides are secured with 1 1/4" long screws directly into platform and into the sides.
2. Sides, back, sub-front and bottom shall be 1/2" thick 47# density particleboard surfaced both faces with Light Beige, Greystone, or White thermally fused laminate per 2.02.B.1. The top edge shall be .020" PVC matching the drawer color.
3. Corners shall be joined with fluted hardwood dowels and glue, minimum 32mm o/c.
4. Drawer fronts shall be removable and attached drawer box sub-front with screws from inside of drawer.

2.6 PERFORMANCE

A. Laminates:

1. "High Pressure Laminates" shall meet the definition and performance requirements of NEMA LD3-1995. Vertical grade laminate shall be VGS (0.028") balanced with a VGS. Countertops shall be HGS (0.048").
2. Thermally Fused Laminate shall meet the performance requirements of NEMA LD3-1995, Grade VGL, for Test Methods 3.3, 3.4, 3.6, 3.8, and 3.10. Cabinet manufacturer shall submit panel manufacturers' current published specification stating ANSI core properties and NEMA finish properties.

B. Hinges: ANSI 156.9.4.1,2,3,4: Two hinges mounted 23" on center on a 23-7/16" wide x 19-11/16" high cabinet door shall be capable of supporting a 100 pound test load located 1" from the outside edge of the door.

1. Cycle, open and close, from 5 degrees open through 95 degrees open with no failure to hinges, door, or cabinet end panel. The maximum horizontal permanent hinge set shall not exceed .030".

C. Drawers: ANSI/BHMA A156.9-1988 4.11: an actual production drawer box with an applied finished front and 450mm drawer slides mounted per the manufacturers' instructions shall be tested as follows:

1. Dynamic Cycle Test: When uniformly loaded with 100 pounds and tested through 50,000 opening and closing cycles, the drawer shall operate freely.

2. Static Edge Load Test: When the drawer is fully extended, a 150 pound load shall be supplied to the drawer front at a point on the centerline of the drawer for one minute. No permanent damage or distortion shall occur.
- D. Adjustable Cabinet Shelving: Shelving shall not deflect in excess of 1/4" when loaded with calculations per AWI Standards.

2.7 COUNTERTOPS

- A. High-Pressure Decorative Laminate, Nominal 1 1/8" Thick Countertop:
1. General Purpose, HGS (0.048") high-pressure decorative laminate on horizontal surface, conforming to NEMA Standard LD3-1995.
 2. Laminate bonded to 1" thick 47# M-3 particleboard core with PVA rigid adhesives. Contact method shall NOT be allowed. Core shall be balanced with HPL backer.
 3. Joints shall be secured with adhesive and tight joint fasteners.
 4. Provide 4" high back splashes where shown and at ends abutting walls and adjacent cabinets.
 5. Countertops shall conform to ANSI A161.2-1979 PERFORMANCE STANDARDS FOR FABRICATED HIGH-PRESSURE DECORATIVE LAMINATE COUNTERTOPS.
 6. No joints shall be closer than 24" either side of sink cutout..
 7. No joints shall occur within kneespace.
 8. Countertops containing sinks and countertops over dishwashers shall be exterior-grade veneer core plywood or moisture resistant medium density fiberboard, no substitutions.
 9. Joint between backsplash and countertops containing sinks shall be sealed with sanitary, silicone sealant to ensure a tight seal.
 10. Seal substrate at sink cutouts with sanitary, silicone sealant.

2.8 SOLID SURFACING

- A. Solid Surfacing Countertops and Other Surfaces: Basis of Design shall be as scheduled in SECTION 09 99 00 - COLOR SCHEDULE.
1. AWI Premium Grade.
 2. Substrate: Marine grade plywood.
 3. Fabricate to detail using 1/2-inch thick solid surfacing.
 4. Use seam adhesive and color-matched sealant by manufacturer
 5. Color shall be as selected by Architect from full range of manufacturer colors.
 6. Edge Treatment: PVC edging will not be acceptable. Reference installation for edge treatment required.

2.9 FABRICATION

- A. Fabricate plastic laminate-faced casework to dimensions, profiles and details shown.
- B. Assemble units in the shop in as large components as practicable to minimize field jointing.
- C. Install hardware uniformly and precisely after final finishing is complete. Set hinges snug and flat in mortises unless otherwise indicated. Turn screws to a flat seat. Adjust and align hardware so that moving parts operate freely and contact points meet accurately. Allow for final field adjustment after installation.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Verify site dimensions of cabinet locations in building prior to fabrication.
- B. Verify location of wood blocking prior to installation of finish carpentry.

3.2 CASEWORK INSTALLATION

- A. Installers: Install casework under the supervision of the manufacturer's representative with factory-trained mechanics certified by manufacturer.

- B. General: Install plumb, level, true and aligned with no distortions. Shim as required, using concealed shims. Where casework abuts other finished work or walls, scribe and apply filler strips for accurate fit with fasteners concealed where practicable.
- C. Base Cabinets:
 - 1. Set cabinets straight, plumb and level. Adjust sub-tops within 1/16" of a single plane. Fasten each individual cabinet to blocking in wall with screws and finishing washers spaced 24" o.c. Bolt adjacent cabinets together into one integral unit with joints flush, tight, and uniform. Align similar adjoining doors and drawers to a tolerance of 1/16".
 - 2. Where base cabinets are not installed adjacent to walls, fasten to floor at toe space with fasteners spaced 24" o.c. Secure sides of cabinets to floor, where they do not adjoin other cabinets, with not less than two fasteners.
- D. Wall Cabinets
 - 1. Securely fasten to solid blocking in partitions (not plaster, lath, or wallboard). Anchor, adjust and align wall cabinets as specified for base cabinets. Using screws with finishing washers, securely fasten each cabinet through back, near top, at not less than 24" o.c. Align similar adjoining doors to a tolerance of 1/16".
 - 2. Adjust fronts and bottoms within 1/16" of a single plane.
 - 3. Reinforcement of stud walls to support wall-mounted cabinets will be done during wall erection by trade involved, but responsibility for accurate location and sizing of reinforcement is part of this work.
- E. Adjust casework and hardware so that doors and drawers operate smoothly without warp or bind. Lubricate operating hardware as recommended by manufacturer.

3.3 INSTALLATION OF TOPS

- A. Field Jointing: Where practicable, make in same manner as factory jointing using dowels, splines, adhesives and fasteners recommended by manufacturer. Locate field joints as shown on accepted shop drawings, factory prepared so there is no jobsite processing of top and edge surfaces.
- B. Fastenings: Use concealed clamping devices for field joints, located within 6" of front, at back edges and at intervals not exceeding 24". Tighten in accordance with manufacturer's instructions to exert a constant, heavy clamping pressure at joints. Secure tops to cabinets with "Z"-type fasteners or equivalent, using two or more fasteners at each front, end and back.
- C. Workmanship:
 - 1. Abut top and edge surfaces in one true plane, with internal supports placed to prevent deflection. Provide flush hairline joints in top units using clamping devices.
 - 2. After installation, carefully dress joints smooth, remove surface scratches, clean and polish entire surface.
 - 3. Provide holes and cutouts as required for mechanical and electrical service fixtures.
 - 4. Provide scribe moldings for closures at junctures of top, curb and splash with walls as recommended by manufacturer for materials involved. Use permanently elastic sealing compound recommended by manufacturer.

3.4 INSTALLATION OF ACCESSORIES

- A. Install in a precise manner in accordance with manufacturer's directions. Turn screws to a flat seat; do not drive. Adjust moving parts to operate freely without excessive bind.
- B. Demonstration Mirror: Position mirror supports with mounting plates where shown on drawings. Fasten pre-drilled mounting plates to structure with bolts. Level supports to ensure mirror rotation.
- C. Install grommets at knee spaces where electrical/telephone/data outlets are installed below countertop, whether detailed on drawings or not.

3.5 CLEANING AND PROTECTION

- A. Clean Up: Remove cartons, debris, sawdust, scraps, etc., and leave spaces clean and casework ready for Owner's use.
- B. Repair or remove and replace defective work as directed upon completion of installation.

- C. Clean shop-finished surfaces, touch-up as required and remove or refinish damaged or soiled areas, as acceptable to Architect.
- D. Protection: Advise contractor of procedures and precautions for protection of materials and installed plastic laminate-faced casework from damage by work of other trades.

END OF SECTION

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SECTION 12 35 53.13

STEEL LABORATORY CASEWORK AND EQUIPMENT

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
1. Fabricating, delivering, and installing the laboratory casework and equipment shown and scheduled on the drawings and specified in this section.
 2. Furnishing, delivering to the building, un-crating, setting in place and leveling casework and equipment.
 3. Furnishing plumbing fixtures and fittings as defined in the specifications and shown on drawings complete with tank nipples and lock nuts for mounting fixtures and fittings on tops or curbs. These fixtures shall be furnished and installed in the casework, hand tighten fixtures.
 4. Furnishing electrical service fixtures directly attached to the casework or equipment as called for in the specifications and shown on drawings. Fixtures shall be furnished and set in place in equipment as required by drawings. Plug mold housing and cover plates shall be furnished and installed.
 5. Furnishing of sink bowls and cup sinks, complete with required overflows, plugs, strainers and tailpieces with couplings, as called for in the specifications, and shown on drawings. Traps, above floor, shall be furnished with, support, tailpiece, trap/drum, and overflow and set inside the casework.
 6. Furnishing filler panels and scribes as required.
- B. Related Sections:
1. Section 06 10 00 - Rough Carpentry; wood blocking.
 2. Section 09 65 00 - Resilient Flooring; coved rubber base.
 3. Section 11 31 00 - Appliances.
 4. Division 22 - Plumbing; Furnishing and installation of plumbing utilities and final connections to plumbing fixtures.
 5. Division 26 - Electrical connections to equipment; Furnishing and installation of electrical utilities and final connections to plumbing fixtures.

1.2 RELATED WORK SPECIFIED ELSEWHERE

- A. Furnishing, installing and connecting of service lines, drain lines, piping, system vacuum breakers and conduit within equipment, in service turrets or tunnels, through, under or along the backs of working surfaces. Caulking in the tailpieces and sinks; furnishing and installing adapters and drain lines.
- B. Furnishing and installing rigid or flexible conduit, wire, pulling of wire, fittings and special electrical equipment and accessories. This includes light and a blower switches and cover plates.
- C. Providing framing and reinforcements of walls, floors, and ceilings necessary to adequately support the equipment, and bucks and plaster grounds required for proper installation of equipment.

1.3 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Laboratory casework and equipment shall be of the quality manufactured by Kewaunee Scientific Corporation, Inc.,
1. Casework items are referred to by Kewaunee Lab catalog numbers for convenience in identification.
 2. The use of a catalog number as part or all of the description of an item shall be taken to include any description or specification of the item in the manufacturers.
 3. If there are contradictions or variations in the catalog descriptions, the better quality or greater quantity of workmanship or material described shall be furnished.
 4. The casework, together with associated equipment, shall be furnished from one source to assure matching of finishes and compatibility of design.
 5. Casework shall be furnished by a manufacturer which has repair and replacement parts readily available for the Owner to secure. Source of repair/replacement parts shall be provided to the Owner.

- B. Allowable Tolerances: Casework shall completely fill the spaces as detailed, and the casework items and the rooms are dimensioned accordingly. Fillers and like devices which provide no usable cabinet space shall be kept to a minimum.
 - 1. Verify the dimensions of each unit with the plan elevations and details. No variations from the dimensions shown on the plans will be permitted without written approval of the Architect.
 - 2. Take necessary field measurements and verify project conditions as required for the correct fabrication and installation of this work.

- C. Accessibility Standards: The following special requirements shall be met, where required to comply with Texas Accessibility Standards (TAS).
 - 1. Countertop height with or without cabinet below, not to exceed a height required by TAS.
 - 2. Knee space clearance to be minimum clearance as required by TAS.
 - 3. 12" deep shelving, adjustable or fixed not to exceed a range as required by TAS.
 - 4. Wardrobe cabinets to be furnished with rod/shelf adjustable to 48" A.F.F. at a maximum 21" shelf depth.
 - 5. Sink cabinet clearances as required by TAS.
 - 6. Cabinet locks, latches, and other operating mechanisms shall be mounted to comply with forward reach requirements of TAS; i.e. 15" to 48" above finish floor, except locked bottom drawers at base cabinets.

1.4 SUBMITTALS

- A. Shop Drawings: Submit in accordance with Section 01 33 23 - SHOP DRAWINGS, PRODUCT DATA, SAMPLES. Submit detailed shop drawings prior to fabrication of any casework.
 - 1. Shop drawings shall show the following:
 - a. Layout of casework and relationship to adjacent construction.
 - b. Construction features, exact dimensions, finishes, hardware, and the like.

- B. Roughing-in Drawings: Submit in accordance with Section 01 33 23 - SHOP DRAWINGS, PRODUCT DATA, SAMPLES. Rough-in drawings shall show dimensioned locations of electrical and plumbing stub-outs.

- C. Samples: Submit in accordance with Section 01 33 23 - SHOP DRAWINGS, PRODUCT DATA, SAMPLES. Samples may be required by the Architect before proceeding with any of the work. Such samples must clearly show the following:
 - 1. Top construction.
 - 2. Drawer construction.
 - 3. Corner and leg construction.
 - 4. Cabinet construction.
 - 5. Door construction.
 - 6. Finish.
 - 7. Hardware.
 - 8. Plumbing fixtures.

- D. Finish Samples: Submit 3 x 3inch samples of each color of finish for casework, work surfaces and for other pre-finished equipment and accessories for selection by Architect.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, and handle casework and accessories in a manner to prevent damage and deterioration.
 - 1. Provide protective packaging and containers.
 - 2. Store in a protected dry area, and follow special handling requirements of the manufacturer.
 - 3. Schedule delivery of equipment so that spaces are sufficiently complete that equipment can be installed immediately following delivery.
 - 4. Protect finished surfaces from soiling or damage during handling and installation. Keep covered with polyethylene film or other protective coating.
 - 5. Protect work surfaces throughout construction period with 1/4" corrugated cardboard completely covering the top and securely taped to edges. Mark cardboard in large lettering "No Standing".

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Materials and methods described are based on the specifications of Kewaunee Scientific Corp. (phone 704.873.7202 web site: www.kewaunee.com), Overlay – Square Edge and are given to designate the quality of materials and workmanship required or approved equal.
- B. Sheet steel: Mild, cold rolled and leveled unfinished steel.
- C. Minimum gauges:
 - 1. 20 gauge: Exterior/interior drawer fronts, interior door panels, scribing strips, filler panels, enclosures, drawer bodies, shelves, security panels and sloping tops.
 - 2. 18 gauge: Door fronts, case tops, ends, bottoms, bases, backs, vertical posts, uprights, and access panels.
 - 3. 16 gauge: Top front rails, top rear gussets, intermediate horizontal rails, table legs and frames, leg rails and stretchers.
 - 4. 14 gauge: Drawer suspensions, door and case hinge reinforcements and front corner reinforcements.
 - 5. 11 gauge: Table leg corner brackets and gussets for leveling screws.
- D. Glass for glazed swinging and sliding doors and/or unframed doors:
6mm Safety Glass - Tempered (framed)

2.2 CASEWORK FABRICATION

- A. Base Units, Wall, Upper and Tall Cases:
 - 1. Base units - 33" (ADA) and 36" standing height and 30" sitting height. End panels and back reinforced with internal reinforcing front and rear posts. Base units shall be 22" overall in depth.
 - 2. Wall and Tall Cases - 25", 31", 36", 49 13/32" and 84 5/8". Formed end panels with front and rear reinforcing post channels; back shall be formed steel panel, recessed 3/4" for mounting purposes.
 - 3. Posts: Front post fully closed with full height reinforcing upright. Shelf adjustment holes in front and rear posts shall be perfectly aligned for level setting, incrementally adjustable to 1/2" on-center full height of unit.
 - 4. Secure intersection of case members with spot and arc welds. Provide gusset reinforcement at front corners.
 - 5. Base unit backs: Provide drawer units without backs and cupboard units with removable backs for access to services behind units.
 - 6. Bottoms: Base units and 25", 31", 37" and 49" high wall and upper cases shall have one piece bottom with front edge formed into front rail, rabbeted as required for swinging doors and drawers and flush design for sliding doors.
 - 7. Top rail for base units: Interlock with end panels, flush with front of unit.
 - 8. Horizontal intermediate rails: Recessed behind doors and drawer fronts.
 - 9. Base for base units: 4" high x 3" deep with formed steel base and 11 gauge die formed steel gussets at corners. Provide 3/8" diameter leveling screw with integral bottom flange of minimum 0.56 sq. in. area at each corner, accessible through openings in toe space.
 - 10. Tops of wall and upper cases: One piece, with front edge formed into front rail.
 - 11. Back Panels shall be removable to access plumbing chase and open behind drawer. Back panel shall match adjacent wood veneer surfaces
- B. Drawers:
 - 1. Steel Drawer Fronts: 3/4" thick, double wall steel construction, pre-painted prior to assembly and sound deadened.
 - 2. Drawer bodies: Bottom and sides formed from one-piece, cold rolled steel with bottom and sides coved and formed top edges. Front and back panels spot welded to center section.
 - 3. Drawer suspension: Heavy duty coved raceways for both case and drawer with nylon tired, ball bearing rollers; self-centering and self-closing when open to within 3" of the closed position.
 - 4. Provide drawer with rubber bumpers. Friction centering devices are not acceptable.
 - 5. Provide security panels for drawers with keyed different locks.
 - 6. File drawers: Provide with 150# full extension slides for full access and operation.
- C. Doors:
 - 1. Steel Solid Panel Doors: 3/4" thick, double wall, telescoping box steel construction with interior prepainted and sound deadened. Reinforce interior of front panel with welded steel hat channels. Hinges with screws to internal 14 gauge reinforcing in case and door. Hinges shall be removable; welding of hinges not acceptable. Doors shall close against rubber bumpers.

- D. Drawers:
1. Drawer bodies: Bottom and sides formed into one-piece center section with bottom and sides covered (1/4" minimum) and formed top edges. Front and back panels spot welded to center section.
 2. Drawer suspension:
 - SEFA 8 Laboratory 100 lb. Load – coved raceways for case and drawer with nylon tied, ball bearing rollers; self-centering and self-closing when open within 3" of the closed position. Tested to full extension for 50,000 cycles at a rate not to exceed 10 cycles per minute without failure or permanent deformation.
 - File drawers: provide with 150 lb. full extension slides for full access and operation.
 3. Provide drawer with rubber bumpers. Friction centering devices are not acceptable.
 4. Provide security panels for drawers with keyed different locks.
- E. Shelves:
1. Form front and back edges down and back 3/4". Form ends down 3/4".
 2. Reinforce shelves over 30" long with welded hat channel reinforcement the full width of shelf.
 3. Pull out shelves: Same suspension as specified for drawers.
- E. Base molding: 4" high, to be furnished and installed by flooring contractor.
- F. Corner base guards: 4" high #304 stainless steel corner guards.
- G. Hardware: Drawer and hinged door pulls.
Pull Direction at Drawers and Doors
1. Horizontal on drawers, vertical on doors.
 - a. Door/Drawer Pulls – Stainless steel wire finger
 2. Hinges: Institutional type, five knuckle projecting barrel hinges, minimum 2-1/2" long, type 304 stainless steel. Provide two hinges for doors up to 36" high; three hinges for doors over 36" high. Drill each leaf for three screw attachment to door and frame.
 3. Door catches:
 - a. Adjustable type, spring actuated nylon roller catches.
 - b. Non-metallic plunger catch (acid storage only)
 4. Elbow catches: Spring type of cadmium plated steel, with strike of suitable design.
 5. Locks: National Lock Remove-A-Core 5-pin tumbler, heavy duty cylinder type. Exposed lock noses shall be dull nickel (satin) plated and stamped with identifying numbers.
 6. Keying: Locks at all cabinets shall have capacity for 225 primary key changes. Master key one level with the potential of 40 different, non-interchangeable master key groups.
 7. Keys: Stamped brass available from manufacturer or local locksmith, and supplied in the following quantities unless otherwise specified:
 - 2 for each keyed different lock.
 - 3 for each group keyed alike locks.
 - 2 for master keys for each system.
 8. Shelf clips: Die formed steel, zinc plated, designed to engage in shelf adjustment holes. Seismic rated shelf clips.
- H. Four Leg Adjustable-Height Table
1. Freestanding table capable of supporting suspended base cabinets.
 2. Table equipped with casters.
 3. Outer leg: 11 gauge rolled steel C-channel.
 4. Inner telescoping leg: 16 gauge rolled steel rectangular tubing.
 5. Adjustment mechanism: mechanical with locking pins.
 6. Structural modesty panel: Box construction of 18 gauge cold rolled steel.
 7. Weight Capacity: 400 pounds.
 8. Epoxy countertop
- I. Adjustable Height Medium Back Chair
1. Color chosen by architect from manufactures colors.
 2. Adjustable armrest.
 3. Chair equipped with casters.
 4. Weight Capacity: 300 pounds
 5. Upholstery: Durable, antibacterial vinyl.

2.3 METAL FINISH

A. Metal Finish

1. Preparation: Spray clean metal with a heated cleaner/phosphate solution, pre-treat with iron phosphate spray, water rinse, and neutral final seal. Immediately dry in heated ovens, gradually cooled, prior to application of finish.
2. Application: Electrostatically apply urethane powder coat of selected color and bake in controlled high temperature oven to assure a smooth, hard satin finish. Surfaces shall have a chemical resistant, high grade laboratory furniture quality finish of the following thickness: Liquid, dipped, solvent based finishes are not and will not be acceptable.
 - a. Exterior and interior exposed surfaces: 1.5 mil average and 1.2 mil min.
 - b. Backs of cabinets and other surfaces not exposed to view: 1.2 mil average.

2.4 SERVICE FITTINGS

- A. Fitting bodies for plumbing, services shall be of red brass with a minimum of 85% copper and for gas or steam services shall be of high-grade brass forgings (SAE-88) with a minimum of 60% copper and shall be extra heavy grade designed for laboratory use. Fittings shall be polished chrome plated.
- B. Electric fixtures and fittings where shown and/or specified, shall be flush, line type, and shall be in strict accordance with the current edition of the National Electrical Code of the National Fire Protection Association and with local codes, ordinances and building codes having jurisdiction.
 1. Receptacles shall be rated at 120 volts A.C. at 20 amperes, and shall be three wire grounding type with "Automatic Ground" feature. Receptacles shall have stainless steel, molded thermo-set bodies, and shall be either single or duplex as required.
 2. Switches shall be single pole, toggle type.
 3. Flush boxes shall be of stainless steel.
 4. Line type housings shall be of heavy cast aluminum and shall be self-supporting when installed with rigid conduit. Finish shall be polished aluminum.
 5. Finish on flush plates shall be stainless steel.
 6. Line type housings, flush boxes, receptacles, and flush plates must be grounded.

2.5 COUNTERTOPS

- A. Countertops, General: Provide units with smooth surfaces in uniform plane free of defects. Make exposed edges and corners straight and uniformly beveled. Provide front and end overhang of 1 inch, with continuous drip groove on underside ½ inch from edge.
- B. Epoxy Countertops: Factory molded of modified epoxy-resin formulation with smooth, nonspecular finish.
 1. Physical Properties:
 - a. Flexural Strength: Not less than 10,000 psi.
 - b. Modulus of Elasticity: Not less than 2,000,000 psi.
 - c. Hardness (Rockwell M): Not less than 100.
 - d. Water Absorption (24 hours): Not more than 0.02 percent.
 - e. Heat Distortion Point: Not less than 260°F.
 2. Color to be selected from manufacturer's full range of color options.
 3. Countertop Fabrication: Fabricate with factory cutouts for sinks and with butt joints assembled with epoxy adhesive and prefitted.
 4. Countertop Configuration: Flat, 1 inch thick, with beveled edge and corner, and with drip groove and 4" high epoxy-resin applied curb backsplash where base cabinets, tables, and workstations are adjacent to a wall.
 5. Countertop Construction: Uniform throughout full thickness.

2.6 SINKS AND DRAINAGE

- A. Sinks: Epoxy Resin. Provide overflow stopper and drain pieces at every sink.
- B. Traps for chemical waste shall be 1-1/2" required, type "P" selected according to building conditions and plumbing codes. Traps shall be in the following materials:
 1. Polypropylene trap shall be constructed of black thermo-plastic material.
- C. Clean outs for waste lines shall occur above the finished floor line and shall be concealed within casework.

PART 3 - EXECUTION

3.1 GENERAL

- A. Keying:
 - 1. Doors and drawers in lab shall be locked and keyed to a single key.
- B. Acid waste drains shall be included in sinks.
- C. Hot/cold water shall be provided:
 - 1. to preparation room sink
- D. Tepid water shall be provided to emergency shower and eyewash where required by code.
- E. Faucets shall be vandal-resistant and shall not swivel.

3.2 INSTALLATION

- A. Install laboratory casework and equipment in accord with the manufacturer's recommendations.
 - 1. Secure the work in a rigid substantial manner, straight and plumb, and with horizontal surfaces level and in proper alignment.
 - 2. Make the casework and accessories ready for use once the service connections have been made.
 - 3. Cooperate with and assist other trades concerned with the installation.

3.3 ADJUST AND CLEAN

- A. Adjusting: Adjust doors, drawers and other operating parts, and leave in perfect working order.
- B. Cleaning: Upon completion of the work, clean the casework and accessories.
 - 1. Clean stainless steel with an organic solvent such as carbon tetrachloride, and follow with warm, soapy water. Rinse thoroughly with clean water and wipe dry with soft cloths.
 - 2. Leave the work clean and free of defects..

3.4 SCIENCE LABORATORY EQUIPMENT

Item No. Description

EQUIPMENT

E1	SE1082 Flinn	FIRST AID KIT For 50 people Should include wall mounting bracket and supplies for 50 people.
E2	F-5332-00 Kewaunee	KEY CASES 11" H X 17 5/16" W X 2 1/2" D
E3	SE3006 Flinn	FIRE BLANKET in cabinet; 16" H X 18" W X 5.25" D, blanket can be refolded and returned to cabinet.
E4	SE1000 Flinn	GOGGLE SANITIZER CABINET 28 1/2" H X 26 1/2" W X 10 1/2" D 24 gage steel, lockable cabinet with white baked enamel finish that holds 36 goggles with racking system that holds each individual goggle. Safety door switch shuts off UV light source if door is opened with UV light viewing screen, 15 minute timer and 8' heavy duty neoprene cord.) Goggles provided by owner.
E5	X-020014-GR Kewaunee	GLASSWARE PEG BOARD 30" H X 20" W X 1" D, epoxy resin panel with 1 1/2" H X 20" W X 2 1/2" D stainless steel Drip Trough (F-2939-00),

„SINK UNITS

- S1 1006-DI-GR SINGLE COMPARTMENT, classroom
Kewaunee 17 7/8" x 14 7/8"D X 8"H epoxy resin single compartment sink with outlet, overflow drain and a tempered water faucet with vacuum breaker and fixed gooseneck (VR611VB-RH WaterSaver).
- S2 1006-ADA- ADA ACCESSIBLE, SINGLE COMPARTMENT, classroom
DI-GR 18"W x 15"D X 5"H epoxy resin sink with outlet, overflow drain, tempered water gooseneck faucet with vacuum breaker and wrist blades (VR611VB-RH WaterSaver). Modify as required to allow 27" vertical knee space clearance for wheelchair accessibility.
- S3 1006-DI-GR SINGLE COMPARTMENT, prep room
17 7/8" x 14 7/8"D X 8"H epoxy resin single compartment sink with outlet, overflow drain and Hot and Cold faucet with vacuum breaker and gooseneck (VR412VB-BH WaterSaver) and lever.

END OF SECTION

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SECTION 12 36 61.19

QUARTZ AGGLOMERATE COUNTERTOPS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Quartz surfacing for countertops.
- B. Related Sections:
 - 1. Section 06 40 00 - Architectural Woodwork.
 - 2. Section 12 32 16 - Manufactured Plastic-Laminate-Clad Casework

1.2 SUBMITTALS

- A. General: Submit in accordance with SECTION 01 33 23 – SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Product Data: Submit manufacturer's product data and fabrication and installation instructions.
- C. Shop Drawings: Show field-verified dimensions, quartz surfacing dimensions, locations and dimensions of cutouts, required locations of support and blocking members, edge profiles, and installation details and methods.
- D. Samples: Submit two 6" x 6" sets of manufacturer's standard colors and finishes.

1.3 DELIVERY, STORAGE, AND HANDLING

- A. Packaging, Shipping, Handling, and Unloading: Observe manufacturer's recommendations and handle in manner to prevent breakage or damage. Brace parts if necessary. Transport in the near-vertical position with finished face toward finished face. Do not allow finished surfaces to rub during shipping or handling.
- B. Storage and Protection: Store in racks in near-vertical position. Prevent warpage and breakage. Store inside away from direct exposure to sun. Store between 25°F. and 130°F. Store with finished face toward finished face.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. (QZ) Quart Solid Surfacing Basis of Design: Products manufactured by DuPont (E. I. du Pont de Nemours and Company). Provide Corian® Quartz, formerly known as Zodiaq® (basis of design) subject to compliance with the requirements. Phone: (800) 426-7426. Website: www-surfaces.dupont.com; www.corianquartz.com. Subject to compliance with the requirements, provide the following product: quartz surface from Corian® Design (basis of design).
 - 1. Color as scheduled in SECTION 09 99 00 - COLOR SCHEDULE.

2.2 QUARTZ SURFACING

- A. Composition: 93 percent crushed quartz aggregate combined with resins and pigments and fabricated into slabs using a vacuum vibro-compaction process.
- B. Thickness: Nominal 1-1/4 inches.
- C. Color and Finish: Provide colors and finishes selected by Architect from manufacturer's stocked standards.

2.3 ACCESSORIES

- A. Mounting Adhesives: Provide structural-grade silicone or epoxy adhesives of type recommended by manufacturer for application and conditions of use.

QUARTZ AGGLOMERATE COUNTERTOPS

- B. Solvent: Product recommended by adhesive manufacturer to clean surface of quartz surfacing to assure adhesion of adhesives.
- C. Cleaning Agents: Non-abrasive, soft-scrub type kitchen cleansers.

2.4 FABRICATION

- A. Fabricator: Firm shall have five years experience fabricating architectural stone and shall have water-cooled cutting tools.
- B. Shop Assembly: Observe proper safety procedures and comply with manufacturer's instructions.
- C. Layout: Layout joints to minimize joints and to avoid L-shaped pieces of quartz surfacing.
- D. Inspect Material:
 - 1. Inspect material for defects prior to fabrication.
 - 2. Color Match: Materials throughout project shall be from the same batch and shall bear labels with same batch number. Visually inspect materials to be used for adjacent pieces to assure acceptable color match. Inspect in lighting conditions similar to those on project.
 - 3. Variation in distribution of aggregates in quartz surfacing which are within manufacturer's tolerances is not a defect.
- E. Tools: Cut and polish with water-cooled power tools.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Site Verification:
 - 1. Verify dimensions by field measurements prior to fabrication.
 - 2. Verify that substrates supporting quartz surfaces are plumb, level, and flat to within 1/16 inch in ten feet and that necessary supports and blocking are in place.
- B. Inspect finished surfaces for damage. Do not install until damage materials have been repaired in an acceptable manner or replaced.

3.2 INSTALLATION

- A. Install materials in accordance to manufacturer's written instructions and recommendations. Lift and place to avoid breakage.
- B. Preliminary Installation and Adjustment: Position materials to verify that materials are correctly sized and prepared. Make necessary adjustments.
 - 1. If jobsite cutting, grinding, or polishing is required, use water-cooled tools. Protect jobsite and surfaces against dust and water. Perform work away from installation site if possible.
 - 2. Allow gaps for expansion of not less than 1/16 inch per five feet when installed between walls or other fixed conditions.
- C. Permanent Installation:
 - 1. After verifying fit, remove quartz surfacing from position, clean substrates of dust and contamination, and clean quartz surfacing back side and joints with solvent.
 - 2. Apply sufficient quantity of mounting adhesive in accordance with adhesive manufacturer's recommendations to provide permanent, secure installation.
 - 3. Install surfacing plumb, level, and square and flat to within 1/16 inch in ten feet.
- D. Joints Between Adjacent Pieces of Quartz Surfacing:
 - 1. Joints shall be flush, tight fitting, level, and neat.
 - 2. Securely join with stone adhesive. Fill joints level with quartz surfacing.
 - 3. Clamp or brace quartz surfacing in position until adhesive sets.

3.3 REPAIR

- A. Repair or replace damaged materials in a satisfactory manner.

3.4 CLEANING AND PROTECTION

- A. Remove masking and excess adhesives and sealants. Clean exposed surfaces.
- B. Protect surfacing from damage by other trades.

END OF SECTION

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SECTION 14 24 00

HYDRAULIC ELEVATORS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Hydraulic holeless passenger elevator. In all cases, where a device or part is referred to in the singular number, it is intended that such reference shall apply to as many devices or parts as required to complete the installation.

1.2 RELATED WORK

- A. The following work for the elevator installation will be done at the appropriate time and is specified in other sections of the specifications.
1. A legal hoistway, properly framed and enclosed, and including a pit of proper depth, provide with a ladder, drains and lights as required. Suitable machine room adequate for the elevator equipment.
 2. Adequate supports and foundations to carry the loads of all equipment.
 3. Suitable connections from the power main to controller, signal equipment feeders as required, including necessary circuit breakers and fused mainline disconnect switch.
 4. Outlet near center of the hoistway for lighting in the car. Electric power without charge, for construction, testing and adjusting, of the same characteristics as the permanent supply.
 5. Cutting of walls, floors, etc., and removal of such obstructions as may be necessary for proper installation of the elevator. Setting of anchors and sleeves. Pockets or blockouts for signal fixtures.
 6. All sill supports, including steel angles where required, and sill recesses and the grouting of door sills and hoistway frames after installation.
 7. Temporary enclosures and other protection for open hoistway during the time the elevator is being installed.

1.3 SUBMITTALS

- A. Shop Drawings: Submit in accordance with Uniform General Conditions. Shop drawings shall show the general arrangement of the elevator equipment, including floor openings, hole dimensions for plunger, details of hoistway entrances and guide rails, and other requirements influencing general building construction.
- B. Maintenance Manuals: Submit 3 copies of bound maintenance manual for elevator. Include full maintenance and operating instructions, parts lists, recommended spare parts and emergency parts inventory, sources of purchase and similar information.

1.4 QUALITY ASSURANCE

- A. Codes and Standards:
1. In addition to complying with pertinent regulations of governmental agencies having jurisdiction, comply with ASME A17.1, "Safety Code for Elevators and Escalators."
 2. Elevators shall be provided with Phase I emergency recall operation and Phase II emergency in-car operation in accordance with ASME A17.1.
 3. All terms in this specification shall have the meaning defined in the ASME A17.1 Code.
 4. The elevator contractor shall be responsible for obtaining all necessary permits and inspections as required by the State or Local Authorities. All permits and copies of the test results shall be presented to the Owner prior to the elevator being placed into operation.
 5. Elevator cab shall be equipped with manual lowering controls as required by code to lower cab to the first level of the building.
- B. Labeled Construction: Doors and frames shall be labeled and shall be manufactured in accordance with specifications and procedures for doors and frames tested and rated by Underwriter's Laboratories, Inc. Metal UL classification markers shall be attached to these doors and frames.

- C. Tolerance for Elevator Travel: Plumb and secure guide rails within and overall tolerance of ¼" (measured with no wind or solar load on building) and within 0.01" joint offset on rail surfaces. Limit short-span tolerance (measured between upper and lower car guides, continuously) to 1/16" plumb tolerance.
 - 1. Tolerance for Car Leveling: Position stopping car within ½" out of level, up and down, regardless of load and direction of travel.
- D. Accessibility Standards: Elevator and elevator controls shall be in conformance with Texas Accessibility Standards (TAS), Architectural Barriers Act--Article 9102, Vernon's Texas Civil Statutes and Texas Government Code, Chapter 469.

1.5 PROJECT CONDITIONS

- A. Temporary use of the elevator by Contractor for construction purposes will not be permitted.

1.6 MAINTENANCE

- A. Provide maintenance and call-back service of the equipment provided for a period of 12 months after date of substantial completion of the project. This service shall include regular examinations of the installation by competent and trained employee and shall include necessary adjustments, greasing, oiling, cleaning, supplies and parts to keep the equipment in perfect operation, except such parts made necessary by misuse, accidents, or negligence not caused by Contractor.
- B. The elevator contractor shall provide to the Owner any tools required to access the microprocessor controls and manuals required to troubleshoot and maintain the elevator equipment. These tools and manuals shall become the property of the Owner.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

- A. Provide holeless endura 4000 passenger (offset entry) elevators, and Standard Cab, as manufactured by ThyssenKrupp Elevator (phone 877.230.0303 website: www.thyssenkruppelevator.com). Equivalent products of one of the following will be acceptable:
 - KONE, Inc. (phone 800.956.5663 web site: www.kone.com)
 - Otis Elevator Co. (phone 800.355.6847 web site: otis.com)
 - Schindler Elevator Corp. (phone 201.397.6554 web site: www.us.schindler.com)

2.2 POWER UNIT

- A. Pump to provide pollution-free oil flow, without output variation more than 10%. Valves to be consistent in operation and provide smooth acceleration and deceleration with vital orifices protected by filters. Provide sound-isolating enclosure, isolation mounting, oil line muffler and stress-removing flexible connector in the oil line.
- B. Provide a "viscosity control", which thermostatically controls the hydraulic tank to 120°F.

2.3 JACKS

- A. Telescopic Holeless Jack System:
 - 1. Jack Cylinder: Two jacks, one located at each side of the car and mounted to the elevator car structure.
 - 2. Synchronization of Jack Stages: Direct mechanical means to ensure elevator moves at steady speed and provides smooth ride.

2.4 CAR SLING AND PLATFORM

- A. Platforms to be of steel. A wood top filler to be provided as a resilient subfloor and vinyl composition tile to be laid as a floor covering. The car sling to consist of steel members and steel braces attached to the platform. Solid guide shoes to be positioned on mounting plates and provide perfect alignment.

2.5 CAB ENCLOSURE

- A. Cab shall be Standard Cab (DLP) with the following standard and optional finishes:
1. Walls: High pressure laminate on both sides of compressed wood core, color as scheduled. Provide hooks for removable protective pads.
 2. Floor: Finish shall be (3R-2) mosaic floor tile. Reference SECTION 09 99 00 - COLOR SCHEDULE.
 3. Base: Cove base as scheduled from materials specified in SECTION 09 65 13 - RESILIENT BASE.
 4. Ceiling: Suspended white translucent diffuser in a baked enamel steel frame.
 5. Lighting: Fluorescent.
 6. Doors: Hollow metal, horizontal sliding type stainless steel with No. 4 finish.
 7. Accessories:
 - a. Emergency lighting system.
 - b. Emergency Two-Way Communication System: Provide an ADA approved system with provisions to accommodate the hearing and speech impaired. The two-way system shall be provided between the elevator and a point outside the hoistway that shall comply with ASME A17.1. A standby or emergency back-up power source shall be provided. The elevator shall be provided with a means within the car for communicating with or signaling to a service which is capable of taking appropriate action when a building attendant is not available. The 24-hour monitoring system shall be coordinated with the Owner.
 - c. Extruded aluminum sill.
 - d. Protective pads and hooks.
 - e. Handrail: 1-1/2" round handrails with No. 4 stainless steel finish.

2.6 HOISTWAY ENTRANCES

- A. Hoistway entrance door frames to be stainless steel with No. 4 finish. Frames to be of standard dimension with hall operating buttons mounted in the wall. Hoistway entrance doors to be stainless steel with No. 4 finish. Entrance doors and associated frames shall be UL Class "B" Rated for installation in concrete masonry unit construction. Hoistway sill to be extruded aluminum.

2.7 FIXTURES

- A. The hall fixtures to mount in front walls and will have stainless-steel coverplates.
- B. Call signaling is to be by push button operation at 42" above finish floor.
- C. Position indicators shall be mounted above each hoistway entrance door.
- D. Provide car riding lantern located in the entrance column adjacent to the operating panel.
- E. Provide raised and braille floor designations on both jambs of hoistway entrances. The centerline of the characters shall be at 60" above finish floor and characters shall be 2" high.

PART 3 - EXECUTION

3.1 INSPECTION

- A. Examine area to receive elevator for conditions that will adversely affect the execution and quality of work.
1. Check the hoistway for plumbness.
 2. Field-check hoistway dimensions and elevators.
 3. Elevator company has sole responsibility for drilling hole and ensuring correct depth.
 4. This installation was designed with no hoist beam. If a hoist beam is required, the General Contractor and elevator manufacturer shall pay for the beam, installation, and engineering fees for adding to the structure and installation.

3.2 INSTALLATION

- A. Install jacks and guide rails and align and plumb.
- B. Wiring: Furnish and install necessary wiring in the hoistway, in accord with National Electric Code, to connect the operating buttons and switches to the control board of the power unit. All wiring to be done in conduit except to movable apparatus which shall be connected by short lengths of flexible conduit.

- C. Piping and Oil: Furnish and install necessary pipe fittings, including shut-off valve, to connect the power unit to the jack. Furnish oil of the proper grade to fill the system.
- D. Painting: All exposed metal work furnished in these specifications, except as otherwise specified, shall be painted after installation by this Contractor.

3.3 ELEVATOR SCHEDULE

A. Elevator No. 1 (ELEV. C001D) :

- Capacity - 4000 lbs.
- Speed - 100 ft./min.
- Operation - TAC32H, Twinpost above-ground 3-stage
- Clear Car Inside - 7'-8" wide x 5'-5" deep
- Travel - Approximately 30'-8"
- Power Supply - 460 v., 3 phase, 60 Hz. AC, verify
- Stops - Three Landings
- Openings - Three front
- Hoistway Doors - 3'-6" wide x 7'-0" high, single slide
- Door Type - Single Speed (RH - as shown on drawings)
- Car Enclosure - As specified
- Signals - As specified

END OF SECTION



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