

PROPOSAL FORMS, CONTRACT DOCUMENTS,  
TECHNICAL SPECIFICATIONS FOR

# GREGG COUNTY YOUTH CENTER BUILDING RENOVATIONS

GREGG COUNTY BID NO. 2019-904

JPI Project No. 2563-013

SEPTEMBER 28, 2018

Prepared By:



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**GREGG COUNTY YOUTH CENTER BUILDING RENOVATIONS  
GREGG COUNTY BID NO. 2019-904**

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TC-1





**NOTICE TO PROPOSERS OF THE INTENT OF GREGG COUNTY, TEXAS TO LET PROPOSALS  
FOR THE CONSTRUCTION OF GREGG COUNTY YOUTH CENTER BUILDING RENOVATIONS  
GREGG COUNTY BID NO. 2019-904**

COMPETITIVESEALED PROPOSALS will be received by Kelli L. Davis, CPPB, at the Gregg County Purchasing Department located at 101 East Methvin Street, Suite 205, Gregg County Courthouse, Longview, Texas 75601, until **February 13, 2019 at 2:00 p.m.**, for furnishing all labor, materials, equipment, supplies, and supervision necessary for the construction of the **Gregg County Youth Center Building Renovations**, in accordance with the plans and specifications on file at Johnson & Pace Incorporated. Upon opening, proposals will be publicly read aloud. Any proposals received after the above stated time will be returned unopened. All interested parties may attend.

Contract documents including proposal forms, plans sheets, and specifications for the Project may be obtained from Johnson and Pace Incorporated, 1201 NW Loop 281, Suite 100, Longview Texas 75604 (903-753-0663). Printed copies of the Contract Documents may be viewed at the Engineer's/Architect's office.

A Pre-Proposal meeting is scheduled for 1:30PM on Monday, **January 21, 2019** at the Gregg County Youth Probation Office Conference Room located at 310 Turk Street in Longview, Texas. **Attendance is not mandatory but highly recommended.** Please note that access to all portions of the Youth Building may not be available during the Pre-Proposal Meeting.

Please submit questions for this project to Doug Camp, AIA at [DougC@johnsonpace.com](mailto:DougC@johnsonpace.com) at least 72 hours prior to proposal opening. Gregg County reserves the right to accept or reject in whole or in part any proposal received and to waive any irregularities or formalities in the best interest of the County.

Advertisement Dates:

Longview News Journal

1st Publication: Tuesday January 15, 2019 Sunday, January 20, 2019; 2nd Publication: Sunday, January 28, 2019

**ALL PROPOSALS** submitted should be marked clearly on the outside of the sealed envelope with the project name and proposal opening time and date.

**A CERTIFIED OR CASHIER'S CHECK**, or an acceptable bid bond in an amount not less than five percent (5%) of the base bid shall accompany each proposal as a guaranty that, if awarded the contract, the proposer will promptly enter into contract with Gregg County, Texas and furnish bonds on the forms provided.

**PROPOSERS ARE EXPECTED TO INSPECT** the site of the work and to inform themselves of all local conditions.

**NO PROPOSAL** may be withdrawn after the scheduled closing time for receipt of proposals for at least 90 calendar days.

**IN CASE** of ambiguity or lack of clearness stating the price in the proposals, the Owner reserves the right to consider the most advantageous construction thereof or to reject the proposal. The Owner reserves the right to reject any or all proposals, waive any or all informalities, and to award the contract to the proposer or proposers who, in the opinion of the Owner, offers the proposal to the best interest of same.



**GREGG COUNTY YOUTH CENTER BUILDING RENOVATIONS  
GREGG COUNTY BID NO. 2019-904**

**INFORMATION FOR PROPOSERS**

INTENT

Gregg County, Texas is requesting sealed proposals for the **Gregg County Youth Center Building Renovations** located in Longview, Texas.

1. **Receipt and Opening of Proposals**. Gregg County (Owner) invites Proposals to be submitted on the forms provided. Proposals will be received by the Owner at 101 East Methvin Street, Suite 205, Gregg County Courthouse, Longview, Texas 75601, until the time and date specified in the Notice to Proposers, and then at the stated time and place publicly opened and read aloud. Only the total amount of the bid will be read aloud, however, the Proposals will be open for public inspection immediately following the opening.  
The Owner reserves the right to waive any informality and to reject any or all Proposals. Any Proposal received after the specified time will be returned to the Proposer unopened. No Proposal may be withdrawn within 90 days from the opening date. Conditional proposals will not be considered.
2. **Preparation of Proposals**. Each Proposal must be submitted in a sealed envelope bearing on the outside the name of the proposer, their address, and the name of the project for which the Proposal is submitted. If forwarded by mail, the sealed envelope containing the Proposal must be enclosed in another envelope addressed as specified.
3. **Withdrawal or Modification of Proposal**. Prior to the Proposal opening, no Proposal may be withdrawn after 48 hours before the time of the Proposal opening. Any modification of any Proposal may be made under the same conditions as set forth for submitting a Proposal.
4. **Qualifications of Proposer**. The Owner may make such investigations as deemed necessary to determine the ability of the Proposer to perform the work, and the Proposer shall furnish to the Owner all such information and data for this purpose as the Owner may request. The Owner reserves the right to reject any Proposal if the evidence submitted by, or investigation of, such Bidder fails to satisfy the Owner that the bidder is properly qualified to carry out the obligations of the contract and to complete the work contemplated therein.
5. **Proposal Security**. Each Proposal must be accompanied by cash, certified check of the Proposer, or a bid bond duly executed by the Proposal as principal and having as

surety thereon a surety company approved by the Owner, in the amount of 5% of the base bid. Such cash, checks or bid bonds will be returned to all except the two lowest Proposers within three days after the opening of Proposals, and the remaining cash, checks, or bid bonds will be returned promptly after the Owner and the accepted Proposer have executed the contract, or if no award has been made within 90 days after the date of the opening of Proposals, upon demand of the Proposer at any time thereafter, so long as he has not been notified of the acceptance of his Proposal.

6. **Liquidated Damages for Failure to Enter into Contract.** The successful Proposer, upon failure or refusal to execute and deliver the Contract and bonds required within 15 days after receiving notice of the acceptance of his Proposal, shall forfeit to the Owner, as liquidated damages for such failure or refusal, the security deposited with the Proposal.
7. **Time of Completion and Liquidated Damages.** Proposer must agree to commence work within 7 calendar days after the date to be specified in a written "Notice to Proceed" by the Owner and to fully complete the project within the time stated in the Proposal. The Proposer must agree to pay, as liquidated damages, the sum of **\$300** for each consecutive calendar day thereafter as hereinafter provided for in the Standard Conditions.
8. **Conditions of Work.** Each Proposer must inform himself fully of the conditions relating to the construction of the project and the employment of labor thereon. Failure to do so will not relieve a successful Proposer of his obligation to furnish all material and labor necessary to carry out the provision of his Contract. Insofar as possible, the Contractor, in carrying out his work, must employ such methods or means as will not cause any interruption of or interference with the work of any other Contractor.
9. **Addenda and Interpretation.** No interpretation of the meaning of the plans, specifications or other pre-bid documents will be made to any proposer orally. Every request for such interpretation must be in writing addressed to **Doug Camp, AIA at DougC@johnsonpace.com** and must be received at least three days prior to the date fixed for the opening of Proposals to be given consideration. Any and all such interpretations and any supplemental instructions will be in the form of written addenda to the specifications which, if issued, will be distributed via email to all prospective proposers not later than two days prior to the date fixed for the opening of Proposals. Failure of any Proposer to receive any such addendum or interpretation shall not relieve such Proposer from any obligation under his proposal as submitted. Each Proposer shall check with **Johnson & Pace Incorporated** at an appropriate time to determine that he or she has received all Addenda; failure to do so shall be the complete responsibility of the Proposer. All addenda so issued shall become part of the contract documents.



10. **Security for Faithful Performance.** Simultaneously with his delivery of the executed Contract, the Contractor shall furnish bonds as security for faithful performance of this Contract and for the payment of all persons performing labor on the project under Contract and furnishing materials in connection with Contract, as specified in the Standard Conditions included herein. The surety on such bond or bonds shall be a duly authorized surety company satisfactory to the Owner. In the case that the total bid is \$25,000, or less, the Contractor may elect not to furnish a Performance and Payment Bond; provided that it is understood and agreed that no progress or monthly payment will be made, and that final payment will be made following completion and acceptance by the City of the entire project.
11. **Power of Attorney.** Attorneys-in-fact who sign bid bonds or contract bonds must file with each bond a certified and effectively dated copy of their power of attorney.
12. **Laws and Regulations.** The Proposer's attention is directed to the fact that all applicable State laws, municipal ordinances, and the rules and regulations of all authorities having jurisdiction over construction of the project shall apply to the Contract throughout and they will be deemed to be included in the Contract the same as though herein written out in full.
13. **Obligation of Proposer.** At the time of the opening of Proposals each Proposer will be presumed to have inspected the site and to have read and to be thoroughly familiar with the plans and contract documents, including all addenda. The failure or omission of any Proposer to examine any form, instrument or document shall in no way relieve any Proposer from any obligation in respect of his proposal.
14. **Certification of Completion.** A Certificate of Completion, which is included in these contract documents, will be required in the final completion and acceptance of the project.



**GREGG COUNTY YOUTH CENTER BUILDING RENOVATIONS  
GREGG COUNTY BID NO. 2019-904**

**SECTION 00 2116 - INSTRUCTIONS TO PROPOSERS**

**1.01 RECEIPT AND OPENING OF PROPOSALS**

- A. Competitive sealed proposals will be received from qualified Proposers in Room 205 of the Gregg County Courthouse at 100 E. Methvin St., Longview, Texas for the furnishing of all labor, materials, and equipment, and performing all work required for the Gregg County Youth Center Building Renovations, and in compliance with Project manual and drawings, and other contract documents as prepared by Johnson & Pace, Incorporated. The Proposal shall be submitted in two parts as follows: Part "A" (Contract Amount) and Part "B" (Qualifications) both of which shall be received until **2:00-PM Wednesday February 13, 2019** . Following the submission deadline of the Proposal, the proposals will be publicly opened, and the names of the Proposers shall be read aloud. See the Request for Competitive Sealed Proposals for the Schedule of Events and more information.
- B. Proposals shall be submitted by the provided to the attention of Mrs. Kelli L. Davis, Gregg County Purchasing Agent.
- C. Gregg County officials will evaluate Part B of the submittal according to the selection criteria in order to determine which Proposal offers the best value to the County. The County will, within forty-five (45) days of the opening of Proposals, rank each of the Proposers using the Selection Criteria. Each Proposer will be notified of the rankings. If a reasonable contract cannot be negotiated with the top ranked offer, the County will move to the second ranked offer and other offers until a satisfactory contract has been negotiated
- D. Refer to Part 2 of this section and to the Request for Competitive Sealed Proposals for additional information regarding the proposal evaluation process and procedures.
- E. As used herein, the terms "County" and "Owner" shall refer to Gregg County, Texas.
- F. There will be a **PRE-PROPOSAL MEETING** held on January 21, 2019 at 1:30 PM at the Gregg County Youth Center at 310 Turk Street in Longview, Texas. Attendance is not mandatory but highly recommended.

**1.02 PREPARATION OF PROPOSAL**

- A. The Proposer shall submit a **Competitive Sealed Proposal** for the General Construction of the project as bound in the project manual, Section 00 4200 Part A and Section 00 4335 Part B. A proposal will be considered incomplete unless both Parts A and B of the Proposal are submitted. The Proposer's competitive sealed Proposal shall include all the following items:
  1. Part "A" submission:
    - a. Proposal Section 00 4200, Part A.
    - b. Cashier's Check, Certified Check, or Bid Bond for no less than 5% of the largest possible total for the proposal submitted.
  2. Part "B" submission:
    - a. Proposal Section 00 4335 Part "B"
- B. A Cashier's Check, Certified Check, or acceptable Bidder's Bond payable to the Gregg County, in the amount of not less than 5% of the largest possible total for the proposal submitted, must accompany each proposal in Part "A" of the Proposal submission.
- C. The successful Proposer will be required to enter into a contract with the Gregg County and to furnish a Performance and Payment Bond of approved form through an approved bonding company duly authorized to do business in the State of Texas, and currently listed in the Department of Treasury Federal Register, in the amount of not less than 100% of the contract price, conditioned upon the performance of the contract. Performance and Payment Bonds shall be in full compliance with Texas Government Code Chapter 2253. AIA Bonds (AIA

Document A312) do not comply. Bonding Companies using "Reinsuring Insurance Companies" to expand the Bonding Companies Bonding Limits will not be acceptable unless also approved by the Owner.

### 1.03 WAGE RATES

- A. Attention is called to the fact that the Contractor must comply with all Federal, State and Local labor laws, including Chapter 2258 Texas Government Code Title 10, which requires that the Contractor pay not less than the prevailing wage rates and rates for legal holidays and overtime,

### 1.04 PROPOSAL GUIDELINES

- A. Attention is called to the fact that the Owner is exempt from the payment of the State Sales Tax normally levied against material costs. The contract sum, as identified by the Proposal, shall not include any allowance for the payment of State Sales Tax on materials required to complete the work.
- B. The Project Manual and Drawings may be examined, without charge, in the Architect's office and Electronic Documents (PDF Files) may be downloaded from the bidding documents website [www.co.gregg.tx.us](http://www.co.gregg.tx.us) on the Purchasing Department web page.
- C. All definitions set forth in the Standard Form of Agreement, Standard Terms and Conditions and Special Conditions as modified by the Owner, and the Supplementary General Conditions, if any, included in the Project Manual, are applicable to the Instructions to Proposers.
- D. Contract Documents include, but are not limited to, Gregg County's Request for Competitive Sealed Proposals, the Advertisement or Invitation for Proposal, Instructions to Proposers, the Proposal Forms, and the proposed contract documents (drawings and project manual), including any addenda issued prior to receipt of competitive sealed proposals.
- E. Addenda that are written, or graphic instruments issued prior to the execution of the contract which modify or interpret the proposal documents, including drawings and project manual, by additions, deletions, clarifications or corrections should be acknowledged by the Proposer on the Proposal form. Addenda will become part of the contract documents when the construction contract is executed. ADDENDA WILL ONLY BE PUBLISHED ON THE GREGG COUNTY WEBSITE ON THE PURCHASING DEPARTMENT PAGE. NO ADDENDA WILL BE MAILED OR FAXED TO ANY PLANHOLDER.
- F. Each Proposer, by making a competitive sealed proposal, represents that he has carefully studied, compared, and understands the contract documents including any and all addenda items.
- G. Each Proposer, by making a competitive sealed proposal, represents that he has familiarized himself with and understands the local conditions under which work is to be performed, including prevailing subsurface conditions.
- H. All competitive sealed proposals must be prepared on the form provided by the Architects and submitted with all other required material in accordance with the Instructions to Proposers. When the proposal contains multiple "Bid Items", it shall be understood that the Owner may award each Proposal Item separately, or in any combination that the Owner chooses. Failure to comply with instructions or use provided forms and formats may be considered as non-responsive.
- I. A proposal is invalid if it has not been deposited at the designated location prior to the time and date for receipt of proposals indicated in the Advertisement or Invitation for Proposal or prior to any extension thereof issued to the Proposers. It is the proposer's responsibility to prove delivery.
- J. Unless otherwise provided in any supplement to the Instruction to Proposers, no Proposer shall modify, withdraw or cancel his proposal or any part thereof for ninety days after the time

- designated for the receipt of proposals in the Advertisement or Invitation for Proposal or any adjustments to the due dates as provided by any addenda.
- K. Addenda issued after the receipt of competitive sealed proposals will be mailed or delivered only to the selected Proposer.
- L. Each Proposer shall carefully study and compare all of the proposal documents. **Any requests for information, adjustments or change must be made in writing not later than five calendar days prior to the date for receipt of competitive sealed proposals.** All requests shall be made in writing to the Architect for interpretation or correction of any ambiguity, inconsistency or error therein which he may discover. Any interpretation or correction will be issued in a written addendum by the Architect. Only a written interpretation or correction by an addendum that is approved by the Owner shall be binding. No Proposer shall rely upon any interpretation or correction given by any other method, verbal or written.
- M. Each Proposer represents that his competitive sealed proposal is based upon the material and equipment described in the contract documents. Where specific manufacturers are identified, no alternates may be considered unless provided by the Owner in writing by addenda to the documents.
- N. No substitution will be considered unless written request has been submitted to the Architect for approval at least five calendar days prior to the date for receipt of proposals. Each such request shall include a complete description of the proposed substitute, the name of the material or equipment for which it is to be substituted, drawings, cuts, performance and test data and any other data or information necessary for a complete evaluation.
- O. If the Owner approves any proposed substitution, such approval will be set forth in an Addendum.
- P. Should the particular equipment, which any bidder proposes to install, require space conditions other than those shown on the drawings, he shall arrange for such space with the Architect before submitting a bid. No changes will be permitted unless specifically approved by the Owner. Should changes become necessary because of failure to comply with this requirement, the contractor shall be fully responsible for making such changes. The contractor shall be required to submit working drawings of all equipment, which varies from the drawings and the project manual, and any interference must be District approved prior to being eliminated before work proceeds. When working drawings are required, they shall be produced and sealed by a licensed design professional with authority and experience to design such documents.
- Q. The Proposer acknowledges the right of the Owner to reject any or all proposals and to waive any informality or irregularity in any proposal received. In addition, the Proposer recognizes the right of the Owner to reject a proposal if the Proposer failed to furnish any required bid security or to submit the data required by the contract documents, or if the proposal is in any way incomplete, irregular or fails to follow the instructions provided herein or by addenda.
- R. By submitting a proposal, each proposer agrees to waive any claim it has or may have against the Owner, the Architect/Engineer, the Program Manager, and their respective employees, arising out of or in connection with the administration, evaluation, or recommendation of any proposal; waiver of any requirements under the Bid Documents; or the Contract Documents; acceptance or rejection of any proposals; and award of the Contract.
- S. In case of ambiguity or lack of clearness in stating the price in the Proposal, the Owner reserves the right to adopt the price written in words or to reject the Proposal.
- T. In the case of any dispute during this process or the project, the Owner shall provide final interpretation based on those recommendations of the Owner's team of consultants and staff. Any interpretation or decision made by the owner shall be final and the proposer, by submission acknowledges and agrees to this as a condition of their submission.
- U. A proposal is invalid if the following forms attached to the Request for Competitive Sealed Proposals are not submitted with all other require material by the Part A submission deadline:

1. Proposer Requirements/Questionnaire;
2. Non-Collusion Certificate.

### 1.05 GUARANTEES

- A. In addition to any guarantees required elsewhere, whether in other Contract Documents or otherwise, contractor shall guarantee the work in general for one year from the date of Substantial Completion or as further defined in the General and Supplemental Conditions to resolve any warranty or guarantee concerns the Owner may have in materials or workmanship. Contractors shall be held responsible for and must make good any defects arising or discovered in any part of his work within one-year period noted on the form, and in certain other parts as required by the project manual for a longer period. Where detailed specifications call for guarantees as above specified, they shall cover the special features called for.
- B. All guarantees must be submitted to the Architect and the Owner before the final payment request will be approved.
- C. We agree to repair or replace to the satisfaction of the Owner, and at no expense to the Owner, any or all work that may prove defective in workmanship or materials, or is not meeting the specification requirements within that period (ordinary wear and tear and unusual abuse or neglect excepted) together with any other work which may be damaged or displaced in so doing.

We understand and agree that if we fail to comply with the above-mentioned conditions within a reasonable time after being notified in writing, or as otherwise required by the Contract Documents, the Owner has the absolute right to proceed to have the defects repaired and made good at our expense, and we will pay the costs and charges therefore immediately upon demand.

Signature of Contractor \_\_\_\_\_  
Signature of Subcontractor \_\_\_\_\_  
Date \_\_\_\_\_

- D. The guarantees in this § 1.05 and its subparts are in addition to any guarantees or warranties contained in any other Contract Documents and shall not serve to limit or otherwise modify any guarantees or warranties in other Contract Documents. To the extent of any conflict between the provisions of this § 1.05 and similar provisions in any other Contract Document, the provisions of the other Contract Document shall control.

## PROPOSAL EVALUATION PROCESS AND PROCEDURES

### 2.01 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 Gregg County through the use of Competitive Sealed Proposals, as authorized in Texas Government Code 2269 and adopted Gregg County Purchasing Policies and Procedures available for review of the Gregg County website at [www.co.gregg.tx.us](http://www.co.gregg.tx.us)

### 2.02 PROPOSAL EVALUATION COMMITTEE

- A. For each construction project utilizing the Competitive Sealed Proposal method of procurement, the Proposal Evaluation Committee (Committee) will be convened at the sole discretion of the County and may include Gregg County officials, Gregg County Juvenile officials, staff and representatives of the Architect's office.

### 2.03 PROPOSAL EVALUATION COMMITTEE FUNCTION

- A. The Committee shall perform an evaluation of all submitted Proposals and shall recommend an order of selection ranking of all Proposers to the Gregg County Juvenile Board. The following procedures shall be used by the Committee in the evaluation process:

1. 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.
2. The Committee shall conduct thorough discussions and evaluations of all Proposals.
3. 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 Gregg County.
4. 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 Gregg County, 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	35.0
Proposed Construction Contract Time	15.0
TAB 2 - Schedule	10.0
TAB 3 - Key Project Personnel & Subcontractors	15.0
TAB 4 - Project Experience	15.0
TAB 5 - Financial Background	10.0
TOTAL OF WEIGHTED VALUE	100.0

#### B. GENERAL EVALUATION PROCEDURES & SCORING

1. Each rating category response will be evaluated, and the Committee shall produce a single evaluation determination in each category for each Proposal received. The rating value shall be a number of up to one decimal place that falls within the value range assigned to the category. (Example: "Schedule" rating: 8.5)
2. 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. 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 hundred (100).
4. 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.

### 2.04 COMPETITIVE SEALED PROPOSALS PREPARATION AND SUBMISSION

#### A. PREPARATION

1. The Proposal shall be based on conditions at the project site, the project Drawings and Specifications and any addenda issued.
2. A Proposal showing omissions, alterations, conditions, or carrying riders or other qualifiers, which modifies the Proposal, may at the Owner's discretion, be rejected as irregular.
3. The various sections of the Proposal data should be separated by tabbed dividers. The tabs must identify the sections by number and name rather than simply a number or alphabet. Tabs shall match in order and identification those shown in Item 2.03, A., 4. All proposals shall only utilize forms and formats as prescribed in this document.

#### B. SUBMISSION

1. If the Proposer chooses to issue a "No Response" (N/R) to a question on the Proposal, an explanation of this action is required. Failure to provide an adequate explanation may be

- viewed by the Owner as an incomplete response and may subject the entire Proposal to rejection or at a minimum a score of zero (0) will be given for that category.
2. Only one Proposal may be submitted by each Proposer. If two or more Proposals are submitted, either in one envelope or in separate envelopes, such multiple Proposals may be subject to rejection. Gregg County reserves the right to reject any proposals as deemed in best interest of the county
  3. Proposals received after the advertised time for the Proposal opening will be ineligible and will be returned unopened.
  4. Post marks and proof of mailing shall not be considered as meeting the deadline. Delivery of a proposal is the sole responsibility of the proposer and delivery failures for any reason will not be considered.
  5. After all Proposals are opened, but before the names of the Proposers will be read aloud they will be examined by the presiding official to determine if they are complete, in proper form and properly signed. If an error or omission is discovered and classified by the presiding official as a technicality, which the Owner has reserved the right to waive, the Proposer's representative may be permitted to make the appropriate correction. Any such correction will be announced and explained to the others present at the Proposal opening. A Proposal that is not and cannot be made eligible for consideration under this procedure will not be read, and or evaluated by Gregg County
  6. A Proposer will receive no compensation or reimbursement of expenses incurred in of the preparation of a Competitive Sealed Proposal submission.
  7. The Owner reserves the right to reject any or all Proposals and waive any and/or all formalities.

#### **2.05 PUBLIC INFORMATION AND NOTICE OF CONFIDENTIALITY**

- A. The Owner considers all Proposal information, documentation and supporting materials submitted in response to this Proposal request to be non-confidential and/or non-proprietary in nature, and therefore, shall be subject to the public disclosure under the Texas Public Information Act (Texas Government Code, Sec. 552.001, et seq.) after the award of the contract.
- B. The Proposer must identify and designate those portions of their technical Proposal that contains trade secrets or other proprietary data. If the Proposal includes such data, the Proposer shall:
  1. Mark the cover sheet of the Technical Proposal with the following phrase: "This Proposal includes data that shall not be disclosed outside Gregg County and the A/E design team and shall not be duplicated, used or disclosed in whole or in part for any purpose other than to evaluate the Proposal." Gregg County will follow the requirements of the Texas Open Records Laws as to what is considered legally proprietary.
  2. Mark each sheet and the specific data on that sheet that the Proposer wishes to restrict with the following phrase: "Use or disclosure of the specifically marked data is subject to the restrictions regarding confidentiality cited on the cover sheet of this Proposal."
- C. Proprietary information, if any, submitted to Gregg County, in the response to this RFP should be identified as such. Any information identified as proprietary will be handled in accordance with the provisions of the Texas Open Records Public Information Act as it applies to such information.

#### **2.06 OWNERSHIP OF COMPETITIVE SEALED PROPOSAL**

- A. Submitted Proposals, documentation and supporting material shall become the property of the Owner.

#### **2.07 SITE INVESTIGATION**

- A. It is the responsibility of each Proposer to examine the project site, existing improvements and adjacent property and be familiar with existing conditions before submission of Proposal.



- B. After investigating the project site and comparing the Project Manual and Drawings with the existing conditions, the Proposer should immediately notify the Architect / Engineer of any conditions for which requirements are not clear, or about which there is any question regarding the extent of the work involved.
- C. Should the successful Proposer fail to make the required investigation, and should a question arise after award of the contract as to the extent of the work involved in any particular case, the Owner will make the interpretation of the Contract Documents.

## **2.08 EVALUATION AND CONTRACT AWARD PROCESS**

- A. Proposals will be opened publicly to identify the names of the Proposer in accordance with Texas law. Other contents of the Proposals will be afforded security sufficient to preclude disclosure of the contents prior to award or rejection action.
- B. Once the Proposal Part B has been submitted, the Owner may opt to interview one or some Proposer prior to the actual evaluation of the Proposals.
- C. Proposals will be evaluated by the Proposal Evaluation Committee appointed by the Owner. The criteria for evaluation and selection of the successful Proposer for this award will include the factors listed in 2.03, A., 4.
- D. The Owner will evaluate and rank each Proposal with respect to the published selection criteria described under Paragraph 2.03. After opening and ranking, an award may be made on the basis of the initially submitted Proposal, without discussion, clarification or modification, or the Owner may discuss with the selected Proposer any element of the Proposal. Other than the data read at the Proposal opening, the Owner shall not disclose any information derived from the Proposals submitted by competing firms in conducting such discussions. If the Owner determines that it is unable to reach a satisfactory agreement with the highest ranked Proposer, the Owner will terminate discussions with that Proposer. The Owner will then proceed with negotiations with each successive Proposer as they appear in the order of ranking until an agreement is reached, or until the Owner has rejected all Proposals. After termination of discussions with any Proposer, Owner will not resume discussions with that Proposer.
- E. Immediately following the Owner's approval of the order of ranking of Proposers and the Owner's contract award or Proposal rejection action, the Proposers will be notified via email
- F. The Owner reserves the right to accept or reject any or all alternates or to accept any combination of alternates considered advantageous to the Owner.
- G. The award or rejection action regarding this Proposal is at the sole discretion of the Owner and the Owner makes no warranty regarding this Proposal that a contract will be awarded to any Proposer.
- H. The Owner agrees that if the Contract is awarded, it will be awarded to the Proposer offering the best value to the Owner, based upon the published selection criteria, and upon its ranking evaluation. The Owner is not bound to accept the lowest priced Proposal if that Proposal is judged not to be the best value for the Owner, as determined by the Owner.
- I. Notwithstanding anything to the contrary, the Owner reserves the right to reject any or all proposals and to waive any informality or irregularity in any proposal received.

**END OF SECTION 00 2116**



**AFFIDAVIT AND COMPLETION CERTIFICATE**

STATE OF TEXAS           §  
  §  
COUNTY OF GREGG §

THAT I, the undersigned, being duly sworn, say that I was the Contractor for the performance of certain work under a Contract entered into the \_\_\_\_ day of \_\_\_\_\_, 20\_\_, between Gregg County, Texas (Owner) and \_\_\_\_\_(Contractor) for construction of the **Gregg County Youth Center Building Renovations.**

**KNOW ALL MEN BY THESE PRESENTS:**

1. The undersigned further certifies the improvements on the aforementioned project have been fully and satisfactorily completed in conformity with the contract.
2. The undersigned further certifies that there are no claims of laborers or mechanics for unpaid wages arising out of the performance of said contract and that the wage rates paid by Contractor and all Subcontractors were in conformity with the contract provisions relating to said wage rates.
3. The undersigned further certifies that there are no claims of subcontractors or materials suppliers for unpaid bills for labor or materials and supplies furnished in the course of the contract.

CERTIFIED TRUE AND CORRECT

\_\_\_\_\_  
Contractor

STATE OF TEXAS           §  
  §  
COUNTY OF \_\_\_\_\_ §

Before me, the undersigned, a Notary Public in and for said County and State, on this day personally appeared \_\_\_\_\_, known to me to be the person whose name is subscribed to the foregoing instrument and acknowledged to me that he executed the same for the purposes and consideration therein expressed.

Given under my hand and seal of office this \_\_\_\_ day of \_\_\_\_\_, AD., 20\_\_.

\_\_\_\_\_  
Notary Public in and for  
\_\_\_\_\_ County, Texas

**CERTIFICATE OF SUBSTANTIAL COMPLETION**

PROJECT: Gregg County Youth Center Building Renovations  
Gregg County Bid No. 2019-904

DATE OF ISSUANCE: \_\_\_\_\_

OWNER: County of Gregg, Texas

CONTRACTOR: \_\_\_\_\_(Contractor)

ENGINEER: Johnson & Pace Incorporated

This Certificate of Substantial Completion applies to all work in the Bid Proposal and subsequent field and/or change orders.

TO: Gregg County, Texas

And to: \_\_\_\_\_(Contractor)

The Work to which this Certificate applies has been inspected by authorized representatives of the OWNER, CONTRACTOR, and ENGINEER, and that work is hereby declared to be substantially complete in accordance with the Contract Documents on

\_\_\_\_\_  
DATE OF SUBSTANTIAL COMPLETION

A tentative list of items to be completed or corrected is shown below:

- 1.

This list may not be all-inclusive, and the failure to include an item in it does not alter the responsibility of Contractor to complete all the Work in accordance with the Contract Documents. The items in the list shall be completed or corrected by CONTRACTOR within 14 days from the date of Substantial Completion.

This certificate does not constitute an acceptance of the Work not in accordance with the Contract Documents nor is it a release of CONTRACTOR's obligation to complete the Work in accordance with the Contract Documents.

Executed by ENGINEER on \_\_\_\_\_, 20\_\_\_\_

Johnson & Pace Incorporated

By: \_\_\_\_\_  
Authorized Signature

CONTRACTOR accepts this Certificate of Substantial Completion on \_\_\_\_\_, 20\_\_\_\_

(Contractor)

By: \_\_\_\_\_  
Authorized Signature

OWNER accepts this Certificate of Substantial Completion on \_\_\_\_\_, 20\_\_\_\_

Gregg County, Texas

By: \_\_\_\_\_  
Authorized Signature



**GREGG COUNTY YOUTH CENTER BUILDING RENOVATIONS  
GREGG COUNTY BID NO. 2019-904**

**SECTION 00 4200  
PART "A" - BASE BID AND ALTERNATES**

**GREGG COUTY PURCHASING AGENT  
GREGG COUNTY COURTHOUSE  
101 E. METHVIN STREET, SUITE 205  
LONGVIEW, TX 75601**

**FEBRUARY 13, 2019 – 2:00 PM**

Proposal of \_\_\_\_\_,  
(hereinafter called "Proposer"), a corporation, organized and existing under the laws of  
the State of \_\_\_\_\_ a partnership, or an individual doing business as  
\_\_\_\_\_ (strike out inapplicable terms).

TO GREGG COUNTY, TEXAS (OWNER):

The undersigned Proposer, in response to the Notice to Proposers for the construction of the above project and in conformance with the Instructions to Proposers and Information for Proposers; having examined the plans, specifications, related documents and the site of the proposed work; being familiar with all of the conditions relating to the construction of the proposed project, including the availability of materials and labor; hereby proposes to furnish all labor, materials, supplies, equipment, and superintendence necessary for the construction of the project in accordance with the plans, specifications, and contract documents at the unit prices proposed herein.

**BASE BID:** The undersigned Proposer acknowledges, and agrees, to construct the entire project as shown on the plans, fully in accordance with the requirements of the plans, specifications, and contract documents for the Gregg County Youth Center - Building Renovations for the sum of:

\$ \_\_\_\_\_

**Alternate #1 - Replace Security Screens** as described in Section 01 2300 'Alternates' of the specifications. **Add** the sum of:

\$ \_\_\_\_\_

(choose one) **Add / Deduct** \_\_\_\_\_ consecutive calendar days if alternate is accepted.

**Alternate #2 - Replace Light Fixtures** as described in Section 01 2300 'Alternates' of the specifications. **Add** the sum of:

\$ \_\_\_\_\_

(choose one) **Add / Deduct** \_\_\_\_\_ consecutive calendar days if alternate is accepted.

**Alternate #3 - Replace Door Hardware** as described in Section 01 2300 'Alternates' of the specifications. **Add** the sum of:

\$ \_\_\_\_\_

(choose one) **Add / Deduct** \_\_\_\_\_ consecutive calendar days if alternate is accepted.

**Alternate #4 – Provide Protective Padding** as described in Section 01 2300 'Alternates' of the specifications. **Add** the sum of:

\$ \_\_\_\_\_

(choose one) **Add / Deduct** \_\_\_\_\_ consecutive calendar days if alternate is accepted.

**Alternate #5 – Provide New Interior Glazing** as described in Section 01 2300 'Alternates' of the specifications. **Add** the sum of:

\$ \_\_\_\_\_

(choose one) **Add / Deduct** \_\_\_\_\_ consecutive calendar days if alternate is accepted.

**Alternate #6 – Block up Exterior Window** as described in Section 01 2300 'Alternates' of the specifications. **Add** the sum of:

\$ \_\_\_\_\_

(choose one) **Add / Deduct** \_\_\_\_\_ consecutive calendar days if alternate is accepted.

The undersigned Proposer proposes, acknowledges, and agrees to construct the entire project as shown on the plans, fully in accordance with the requirements of the plans, specifications, and contract documents for the prices included in this Proposal and fully understands and agrees that the various items of material, labor, and construction not specifically enumerated and provided for herein are considered subsidiary to the several items for which this direct payment is specifically provided. Furthermore, the undersigned agrees that one such subsidiary item is the protection, maintenance, repair, or replacement of all underground lines and services, whether shown on the plans or not, all to the full satisfaction of the Engineer and in a timely manner.



**PROPOSAL:**  
**GREGG COUNTY YOUTH CENTER – BUILDING RENOVATIONS**  
**GREGG COUNTY BID NO. 2019-904**

The undersigned Proposer hereby agrees to begin work under the contract on or before the date to be specified in the written Notice to Proceed and to fully complete PRIOR to \_\_\_\_\_ . The undersigned Proposer further agrees to pay, as liquidated damages, the sum of **\$300.00** for each consecutive calendar day thereafter as provided in Item 7 of the Information for Proposers.

The undersigned Proposer has contacted, within 72 hours prior to this proposer opening, the office of the \_\_\_\_\_ and has determined that all Addenda are as follows:  
Addendum No. 1, dated \_\_\_\_\_ ; \_\_\_\_\_  
Addendum No. 2, dated \_\_\_\_\_ ; \_\_\_\_\_  
Addendum No. 3, dated \_\_\_\_\_ ; \_\_\_\_\_

The undersigned Proposer acknowledges and agrees that this Proposal shall be good and may not be withdrawn for a period of 90 calendar days from the date of this bid opening.

The undersigned Proposer is obligated to and shall show accurate unit prices as well as total amounts and agrees that in the case of ambiguity between unit prices and total amounts or in the case of any other ambiguity the Owner may interpret an ambiguity in a manner most advantageous to the Owner or reject the proposal.

The undersigned Proposer further acknowledges and agrees that a proposal that has been opened may not be changed for the purpose of correcting an error in the final proposal price.

The undersigned Proposer agrees to execute the Contract Agreement and furnish the required Performance Bond, Payment Bond, and Maintenance Bond within 15 calendar days from the date of acceptance of the Proposal.

The undersigned Proposer has attached and made a part of this Proposal a bid security in conformance with Item 5 of the Information for Proposers.

Submitted by:

\_\_\_\_\_  
(Signature)

\_\_\_\_\_  
(Firm)

\_\_\_\_\_  
(Name - Typed or Printed)

\_\_\_\_\_  
(Address)

\_\_\_\_\_  
(Title)

\_\_\_\_\_  
(City, County, State, Zip Code)

\_\_\_\_\_  
(Attest - Date)

\_\_\_\_\_  
(Area Code-Telephone Number)

(Corporation Seal)

\_\_\_\_\_  
(Fax Number)

## VENDOR REFERENCES

Please list three (3) references of current customers who can verify the quality of service your company provides. The County prefers customers of similar size and scope of work to this Proposal. ***THIS FORM MUST BE RETURNED WITH YOUR PROPOSAL.***

### REFERENCE ONE:

COMPANY NAME:
ADDRESS/CITY/STATE/ZIP:
CONTACT NAME/TITLE:
BUSINESS PHONE/FAX:
CONTRACT PERIOD: SCOPE OF WORK:

### REFERENCE TWO:

COMPANY NAME:
ADDRESS/CITY/STATE/ZIP:
CONTACT NAME/TITLE:
BUSINESS PHONE/FAX:
CONTRACT PERIOD: SCOPE OF WORK:

### REFERENCE THREE:

COMPANY NAME:
ADDRESS/CITY/STATE/ZIP:
CONTACT NAME/TITLE:
BUSINESS PHONE/FAX:
CONTRACT PERIOD: SCOPE OF WORK:

***CERTIFICATION OF ELIGIBILITY***

By submitting a Proposal in response to this solicitation, the Proposer certifies that at the time of submission, he/she is ***not*** on the Federal Government's list of suspended, ineligible, or debarred contractors.

In the event of placement on the list between the time of proposal submission and time of award, the Proposer will notify the Gregg County Purchasing Agent. Failure to do so may result in terminating this contract for default.

**Signature:** \_\_\_\_\_ **Date:** \_\_\_\_\_

**Printed Name:** \_\_\_\_\_

**BID SIGNATURE FORM**

The undersigned agrees this bid becomes the property of Gregg County after the official opening.

The undersigned affirms he has familiarized himself with the local conditions under which the work is to be performed; satisfied himself/herself of the conditions of delivery, handling and storage of equipment and all other matters which may be incidental to the work, before submitting a bid.

The undersigned agrees if this bid is accepted, to furnish any and all items/services upon which prices are offered, at the price(s) and upon the terms and conditions contained in the Specifications. The period for acceptance of this Bid will be ninety (90) calendar days unless a different period is noted by the bidder.

The undersigned affirms that they are duly authorized to execute this contract, that this bid has not been prepared in collusion with any other Bidder, nor any employee of Gregg County, and that the contents of this bid have not been communicated to any other bidder or to any employee of Gregg County prior to the official opening of this bid.

Vendor hereby assigns to purchase any and all claims for overcharges associated with this contract which arise under the antitrust laws of the United States, 15 USCA Section 1 et seq., and which arise under the antitrust laws of the State of Texas, Tex. Bus. & Com. Code, Section 15.01, et seq.

The undersigned affirms that they have read and do understand the specifications and any attachments contained in this bid package. ***Failure to sign and return this form will result in the rejection of the entire bid.***

**Signature** \_\_\_\_\_ **X**

Company Name	
Address	
City/State/Zip Code	
Phone:	Office: Fax: Cell: Email:
Print Name	
Job Title	

To: Vendors of Gregg County, Texas  
From: Kelli L. Davis, CPPB, Purchasing Agent  
Re: ***Conflict of Interest Form (CIQ)***

Vendor;

Attached, please find link below to a Conflict of Interest Questionnaire. Please complete this form if you have a conflict of interest with any Gregg County Official, Employee, or Department. The questionnaire should reflect the name of the individual with whom the conflict of interest occurs. If you have any questions regarding compliance with Chapter 176 of the Texas Local Government Code, please consult your legal representative. Compliance is the responsibility of each individual, business, agent or representative who is subject to the law's filing requirements.

<http://www.ethics.state.tx.us/forms/CIQ.pdf>

Original completed forms should be filed with the County Clerk's Office and a copy sent to the Gregg County Purchasing Department either through bid return, fax, or email. Please see contact information below.

**Gregg County Clerk**

Gregg County Courthouse  
101 East Methvin, St. 200  
Longview, Texas 75601  
Ph; 903-236-8430

**Gregg County Purchasing Department**

Email: [purchasing@co.gregg.tx.us](mailto:purchasing@co.gregg.tx.us)  
Ph: 903-237-2684  
Fx: 903-237-2682

***Applicable Law***

Chapter 176 of the Texas Local Government Code requires that any vendor or person considering doing business with a local government entity disclose in the Questionnaire Form CIQ, the vendor or person's affiliation or business relationship that might cause a conflict of interest with a local government entity. By law, this questionnaire must be filed with the records administrator of Gregg County (County Clerk) no later than the 7<sup>th</sup> business day after the date the person becomes aware of facts that require the statement to be filed. See Section 176.006, Texas Local Government Code.



**GREGG COUNTY YOUTH CENTER BUILDING RENOVATIONS  
GREGG COUNTY BID NO. 2019-904**

**SECTION 00 4335  
PART "B" - QUALIFICATIONS**

**GREGG COUTY PURCHASING AGENT  
GREGG COUNTY COURTHOUSE  
101 E. METHVIN STREET, SUITE 205  
LONGVIEW, TX 75601**

**FEBRUARY 13, 2019 – 2:00 PM**

**THE CONTRACTOR SHALL PROVIDE THE FOLLOWING INFORMATION IN THE SEQUENCE AND FORMAT PRESCRIBED HEREIN AND AS OUTLINED IN THE INSTRUCTIONS TO PROPOSERS SECTION 00 2116, PARAGRAPH 2.04.A AND 2.04.B. SUPPLEMENTAL MATERIALS 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: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

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: \_\_\_\_\_

Phone Number: \_\_\_\_\_

Fax Number: \_\_\_\_\_

Address of Principal Office: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**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 Agreement between Owner and Contractor.

**TAB 3: KEY PROJECT PERSONNEL & SUBCONTRACTORS:**

Given the scope and schedule of the project, identify the Project Manager and Superintendent who would work on the project. Provide a resume and references for each. 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. Members of the proposed team, once approved, shall not be changed without prior written approval of the Owner.

For the following categories, you may provide a maximum of three (3) proposed Sub-contractors for each category. Note that **no additional Sub-contractors will be considered after submission of this list.** Provide a brief resume and references for each firm and previous experience with the General Contractor.

- Site Work
- Concrete
- Metal Fabrications
- Casework
- Glazing
- Flooring
- Painting
- Electrical
- Plumbing
- Mechanical
- Fire Alarm

**TAB 4: PROJECT EXPERIENCE:**

List all major projects constructed by your firm within the last three 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 5: FINANCIAL BACKGROUND:**

Attach a financial statement, 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.



Gregg County Youth Center  
Building Renovations  
310 Turk Street  
Longview, TX 75601

00 4335 PROPOSAL FORM  
PART B

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. Reference Instructions to Proposers for information regarding confidentiality.

**END OF SECTION 00 4335**



# CONFLICT OF INTEREST QUESTIONNAIRE

## FORM CIQ

For vendor or other person doing business with local governmental entity

This questionnaire reflects changes made to the law by H.B. 1491, 80th Leg., Regular Session.

This questionnaire is being filed in accordance with Chapter 176, Local Government Code by a person who has a business relationship as defined by Section 176.001(1-a) with a local governmental entity and the person meets requirements under Section 176.006(a).

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 person becomes aware of facts that require the statement to be filed. See Section 176.006, Local Government Code.

A person commits an offense if the person knowingly violates Section 176.006, Local Government Code. An offense under this section is a Class C misdemeanor.

### OFFICE USE ONLY

Date Received

**1 Name of person who has a business relationship with local governmental entity.**

**2**  **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 the originally filed questionnaire becomes incomplete or inaccurate.)

**3 Name of local government officer with whom filer has employment or business relationship.**

\_\_\_\_\_  
Name of Officer

This section (item 3 including subparts A, B, C & D) must be completed for each officer with whom the filer has an employment or other business relationship as defined by Section 176.001(1-a), Local Government Code. Attach additional pages to this Form CIQ as necessary.

A. Is the local government officer named in this section receiving or likely to receive taxable income, other than investment income, from the filer of the questionnaire?

Yes       No

B. Is the filer of the questionnaire receiving or likely to receive taxable income, other than investment income, from or at the direction of the local government officer named in this section AND the taxable income is not received from the local governmental entity?

Yes       No

C. Is the filer of this questionnaire employed by a corporation or other business entity with respect to which the local government officer serves as an officer or director, or holds an ownership of 10 percent or more?

Yes       No

D. Describe each employment or business relationship with the local government officer named in this section.

**4**

\_\_\_\_\_  
Signature of person doing business with the governmental entity

\_\_\_\_\_  
Date

**VENDOR COMPLIANCE TO STATE LAW**

The 1985 Session of the Texas Legislature passed House Bill 620 relative to the award of contracts to non-resident bidders. This law provides that, in order to be awarded a contract as low bidder, non-resident bidders (out-of-state contractors whose corporate offices or principal place of business are outside of the state of Texas) bid projects for construction, improvements, supplies or services in Texas at an amount lower than the lowest Texas resident bidder by the same amount that a Texas resident bidder would be required to under bid a non-resident bidder in order to obtain a comparable contract in the state in which the non-residents principal place of business is located. The appropriate blanks in Section A must be filled out by all out-of-state or non-resident bidders in order for your bid to meet specifications. The failure of out-of-state or non-resident contractors to do so will automatically disqualify that bidder. Resident bidders must check the blank in Section B.

A. Non-resident vendors in \_\_\_\_\_ (insert state), our principal place of business, are required to be \_\_\_\_\_ percent lower than resident bidders by state law. A copy of the statute is attached.

Non-resident vendors in \_\_\_\_\_ (insert state), our principal place of business, are not required to underbid resident bidders.

B. \_\_\_\_\_ Our principal place of business or corporate offices are in the State of Texas.

BIDDER:

\_\_\_\_\_  
(company)

\_\_\_\_\_  
(address)

\_\_\_\_\_  
(city, state, zip)

By: \_\_\_\_\_  
(signature)

\_\_\_\_\_  
(print name)

\_\_\_\_\_  
(title)

**THIS FORM MUST BE INCLUDED WITH YOUR SEALED PROPOSAL**

## **Certificate of Interested Parties (Form 1295)**

In 2015, the Texas Legislature adopted House Bill 1295, which added Section 2252.908 of the Government Code. The law states that a government entity may not enter into certain contracts with a business entity unless the business entity submits a disclosure of interested parties to the government entity. The disclosure of interested parties will be submitted online via Form 1295 and must be submitted to the governmental entity prior to any signed contract and/or vote by the governing authority.

### **The Filing Process:**

1. Prior to award by Commissioners Court, your firm will be required to log in to the Texas Ethics Commission, [https://www.ethics.state.tx.us/whatsnew/elf\\_info\\_form1295.htm](https://www.ethics.state.tx.us/whatsnew/elf_info_form1295.htm) and fill out the Electronic Filing Application.
2. Once submitted, the system will generate an electronic Form 1295 displaying a "Certificate Number." Your firm must print, sign and notarize Form 1295.
3. **Within ten (10) business days** from notification of pending award by the Gregg County Purchasing Agent, the completed Form 1295 **must** be submitted to Gregg County.
4. Your firm will need to repeat this process and obtain a separate Form 1295 each time you enter into a new contract, renew a contract or make modification and/or amendments to a Gregg County contract.

Instructions and information are available at <https://www/ethics.state.tx.us/tec/1295-Info.htm> or you may call the Texas Ethics Commission at (512) 463-5800.



**STANDARD FORM OF AGREEMENT**

STATE OF TEXAS §  
COUNTY OF GREGG §

THIS AGREEMENT, made and entered into this \_\_\_\_ day of \_\_\_\_\_, 20\_\_ by and between the County of Gregg, Texas, acting through the Honorable Bill Stoudt, County Judge, thereunto duly authorized so to do, Party of the First Part, hereinafter termed OWNER, and \_\_\_\_\_ of the City of \_\_\_\_\_, County of \_\_\_\_\_ and State of \_\_\_\_\_, Party of the Second Part, hereinafter termed CONTRACTOR.

WITNESSETH: That for and in consideration of the payments and agreements hereinafter mentioned, to be made and performed by the Party of the First Part (OWNER), and under the conditions expressed in the bond having even date wherewith, the said Party of the Second Part (CONTRACTOR), hereby agrees with the said party of the First Part (OWNER) to commence and complete the construction of certain improvements described as follows:

**GREGG COUNTY YOUTH CENTER BUILDING RENOVATIONS**  
**GREGG COUNTY BID NO. 2019-904**

and all extra work in connection therewith, under the terms as stated in the Standard Conditions of the Agreement and at his (or their) own proper cost and expense to furnish all the materials, supplies, machinery, equipment, tools, superintendence, labor, insurance, and other accessories and services necessary to complete the said construction, in accordance with the Notice to Proposers, Standard and Special Conditions of Agreement, Plans and other drawings and printed or written explanatory matter thereof, and the Specifications and addenda therefore, as prepared by Johnson & Pace Incorporated hereinafter entitled ENGINEER, together with the CONTRACTOR's written Proposal, the Standard Conditions of the Agreement, and the Performance and Payment Bonds hereto attached; all of which are made a part hereof and collectively evidence and constitute the entire contract.

THE CONTRACTOR hereby agrees to commence work within SEVEN (7) days after the date written notice to do so shall have been given to him, and to substantially complete the same prior to \_\_\_\_\_, subject to such extensions of time as are provided by the Standard and Special Conditions.

THE OWNER agrees to pay the Contractor in current funds \_\_\_\_\_ Dollars (\$ \_\_\_\_\_), such payments to be subject to the Standard and Special Conditions of the contract.

IN WITNESS WHEREOF, the parties to these presents have executed this Agreement in the year and day first above written.

\_\_\_\_\_  
**County of Gregg**  
OWNER, Party of the First Part

\_\_\_\_\_  
CONTRACTOR, Party of the Second Part

By: \_\_\_\_\_  
**County Judge**

By: \_\_\_\_\_





**PERFORMANCE BOND**

STATE OF TEXAS           §  
COUNTY OF GREGG       §

KNOW ALL MEN BY THESE PRESENTS: That \_\_\_\_\_  
of the City of \_\_\_\_\_ County of \_\_\_\_\_, and State  
of \_\_\_\_\_, as principal, and  
\_\_\_\_\_ authorized under the laws of the  
State of Texas to act as surety on bonds for principals, are held and firmly bound unto the Gregg  
County, Texas (Owner), in the penal sum of: \_\_\_\_\_  
\_\_\_\_\_ Dollars (\$ \_\_\_\_\_) for the  
payment whereof, the said Principal and Surety bind themselves, and their heirs, administrators,  
executors, successors and assigns, jointly and severally, by these presents:

WHEREAS, the Principal has entered into a certain written contract with the Owner, dated  
the \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, to complete

**GREGG COUNTY YOUTH CENTER BUILDING RENOVATIONS  
GREGG COUNTY BID NO. 2019-904**

which contract is hereby referred to and made a part hereof as fully and to 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 said Contract and shall in all respects duly and faithfully observe  
and perform all and singular the covenants, conditions and agreements in and by said contract agreed  
and covenanted by the Principal to be observed and performed, and according to the true intent and  
meaning of said Contract and the Plans and Specifications hereto annexed, 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  
2253 of the Texas Government Code, as amended, 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.

Surety, for value received, stipulates and agrees that no change, extension of time, alteration  
or addition to the terms of the contract, or to the work performed thereunder, or the plans,  
specifications, or drawings accompanying the same, shall in anywise affect its obligation on this bond,  
and it does hereby waive notice of any such change, extension of time, alteration or addition to the

terms of the contract, or to the work to be performed thereunder.

IN WITNESS WHEREOF, the said Principal and Surety have signed and sealed this instrument this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_.

\_\_\_\_\_  
Principal

\_\_\_\_\_  
Surety

By \_\_\_\_\_

By \_\_\_\_\_

Title \_\_\_\_\_

Title \_\_\_\_\_

Address \_\_\_\_\_

Address \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

The name and address of the Resident Agent of Surety is: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**PAYMENT BOND**

STATE OF TEXAS           §  
COUNTY OF GREGG       §

KNOW ALL MEN BY THESE PRESENTS: That \_\_\_\_\_  
of the City of \_\_\_\_\_ County of \_\_\_\_\_,  
and State of \_\_\_\_\_, as principal, and  
\_\_\_\_\_ authorized under the laws of the State of Texas to  
act as surety on bonds for principals, are held and firmly bound unto Gregg County, Texas (Owner),  
in the penal sum of: \_\_\_\_\_  
\_\_\_\_\_ Dollars (\$\_\_\_\_\_)  
for the payment whereof, the said Principal and Surety bind themselves, and their heirs,  
administrators, executors, successors and assigns, jointly and severally, by these presents:

WHEREAS, the Principal has entered into a certain written contract with the Owner, dated  
the \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, to construct

**GREGG COUNTY YOUTH CENTER BUILDING RENOVATIONS  
GREGG COUNTY BID NO. 2019-904**

which contract is hereby referred to and made a part hereof as fully and to 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  
2253 of the Texas Government Code, as amended, 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.

Surety, for value received, stipulates and agrees that no change, extension of time, alteration  
or addition to the terms of the contract, or to the work performed thereunder, or the plans,  
specifications, or drawings accompanying the same, shall in anywise affect its obligation on this bond,  
and it does hereby waive notice of any such change, extension of time, alteration or addition to the  
terms of the contract, or to the work to be performed thereunder.

IN WITNESS WHEREOF, the said Principal and Surety have signed and sealed this instrument this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

\_\_\_\_\_  
Principal

\_\_\_\_\_  
Surety

By \_\_\_\_\_

By \_\_\_\_\_

Title \_\_\_\_\_

Title \_\_\_\_\_

Address \_\_\_\_\_

Address \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

The name and address of the Resident Agent of Surety is: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**ONE-YEAR MAINTENANCE BOND**

STATE OF TEXAS §

COUNTY OF GREGG §

KNOW ALL MEN BY THESE PRESENTS:

That we, \_\_\_\_\_  
as Principal, hereinafter called "Contractor", and the other subscriber hereto as Surety, do hereby  
acknowledge ourselves to be held and firmly bound to the Gregg County, Texas, (OWNER), in the  
sum of \_\_\_\_\_ DOLLARS  
(\$ \_\_\_\_\_) for the payment of which sum well and truly to be made to the Gregg County, and  
its successors, the said Contractor and Surety do bind themselves, their successors and assigns jointly  
and severally. The conditions of this obligation are such that:

WHEREAS, the said Contractor has entered into a contract in writing with Greg County,  
Texas, dated of even date herewith, for completion of

**GREGG COUNTY YOUTH CENTER BUILDING RENOVATIONS  
GREGG COUNTY BID NO. 2019-904**

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all of such work to be done as set out in full in said contract and the plans and specifications therein  
referred to.

NOW, THEREFORE, if the said Contractor shall repair, replace and restore any and all  
defects in or damages to said construction, occasioned by, and resulting within one (1) year from and  
after the day of the acceptance of said work by said Gregg County from defects in materials furnished  
by, or workmanship of the Contractor, in performing the work covered by said contract, then this  
obligation shall become null and void, and shall be of no further force and effect; otherwise, the same  
is to remain in full force and effect.

IN WITNESS WHEREOF, the said Principal and Surety have signed and sealed this instrument on the respective dates written below their signatures.

ATTEST/SEAL: (if a corporation)

WITNESS: (if not a corporation)

\_\_\_\_\_  
(Principal)

\_\_\_\_\_

Name \_\_\_\_\_

Title \_\_\_\_\_

\_\_\_\_\_

Name \_\_\_\_\_

Title \_\_\_\_\_

Date \_\_\_\_\_

\_\_\_\_\_  
(Full Name of Surety)

ATTEST/WITNESS:

\_\_\_\_\_

Name \_\_\_\_\_

Title \_\_\_\_\_

\_\_\_\_\_

Name \_\_\_\_\_

Title \_\_\_\_\_

Date \_\_\_\_\_



## ***STANDARD TERMS AND CONDITIONS*** ***Gregg County, Texas***

### **Awarded vendor certifies and agrees to the following:**

1. Non-performance or non-compliance of the Standard Terms & Conditions, or non-performance or non-compliance with the Specifications shall be basis for termination by Gregg County of the proposal or final executed contract. Termination in whole, or in part, by the County may be made solely at the County's option and without prejudice to any other remedy to which Gregg County may be entitled by law or in equity, or elsewhere under this Proposal or the agreement, by giving thirty (30) days written notice to the vendor with the understanding that all work being performed under this agreement shall cease upon the date specified in such notice. Gregg County shall not pay for work, equipment, services or supplies, which are unsatisfactory. The Respondent may be given reasonable opportunity prior to termination to correct any deficiency. This however shall in no way be construed as negating the basis for termination for non-performance or non-compliance.
2. Respondent shall make all inquiries necessary to be thoroughly informed as to the specifications and all other requirements proposed in the Proposal. Any apparent omission or silence of detail in the description concerning any point in the specifications shall be interpreted on the basis of best commercial practices, and best commercial practices shall prevail.
3. Invoices shall be sent to the Gregg County Purchasing Department, 101 East Methvin, St. 205, Longview, TX, 75601. Invoices must detail the materials/equipment/services delivered and **must reference the Gregg County Purchase Order Number.** Payments are processed after the Purchasing Department has verified that the material or equipment and/or services have been delivered in good condition and that no unauthorized substitutions have been made according to specifications. Neither a signed receipt nor payments shall be construed as an acceptance of any defective work, improper materials, or release of any claim for damage.
4. Only the Commissioners Court of Gregg County, Texas acting as a body may enter into any type of agreement or contract on behalf of Gregg County. Department heads, other elected or appointed officials, are not authorized to enter into any type of agreement or contract on behalf of Gregg County, or to agree to any type of supplemental agreements or contracts for goods or services. Contracts are subject to review by the County's attorney prior to signature by the authorized County official.

5. The Respondent shall be considered an independent Contractor and not an agent, servant, employee or representative of the County in the performance of the work. No term or provision, hereof, or act of the Respondent shall be construed as changing that status.
6. The Respondent shall defend, indemnify, and shall save whole and harmless the County and all its officers, agents, employees from and against all suits, actions, or claims of the character, name and description brought for or on account of any injuries or damages (including but not restricted to death) received or sustained by any person(s) or property on account of, arising out of, or in connection with the performance of the work, including without limiting the generality of the foregoing, any negligent act or omission of the Respondent on the execution or performance of the Contract.
7. The Respondent agrees, during the performance of the work, to comply with all applicable codes and ordinances of the City of Longview, Gregg County, or State of Texas as they may apply, as these laws may now read or as they may hereafter be changed or amended.
8. The awarded vendor shall obtain from the appropriate City, Gregg County, or State of Texas the necessary permit(s) required by the ordinances of the City, County, or State, for performance of the work.
9. The awarded contractor shall not sell, assign, transfer or convey the agreement in whole or in part, without the prior written consent of the County.
10. The parties herein agree that the agreement shall be enforceable in Gregg County, Texas, and if legal action is necessary to enforce it, exclusive venue shall lie in Gregg County, Texas.
11. The agreement shall be governed by, and construed in accordance with, the Laws of the State of Texas and all applicable Federal Laws.
12. Funding Clause - Payments required to be made by Gregg County under the terms of the agreement shall be contingent upon and subject to the initial and continuing appropriation of funding for the agreement by and through the Commissioners Court of Gregg County, Texas. In the event appropriations for funding of the agreement are not approved by and through the Commissioners Court, the contract shall terminate. Gregg County shall, submit written notice to Respondent thirty (30) days prior to such termination. Upon notice of termination, as provided in this paragraph, the Respondent may submit a final invoice to the County and coordinate with the Purchasing Agent to remove all property belonging to said Respondent as soon as possible. Payment for final invoice will be subject to verification and approval by the purchasing agent. Thereupon, Gregg County will be released from its obligation to make further payments.
13. Gregg County is exempt from federal excise and sales taxes, ad valorem taxes and personal property taxes; therefore, tax must not be included in proposals tendered. Proposals offered must be complete and all inclusive. Gregg County will not pay additional taxes, surcharges or other fees not included in proposal prices.



14. In case any one or more of the provisions contained in the agreement shall for any reason be held to be invalid, illegal, or unenforceable in any respect, such invalidity, illegality, or unenforceability shall not affect any other provision thereof and the agreement shall be considered as if such had never been contained herein.
15. The agreement embodies the complete agreement of the parties hereto, superseding all oral or written previous and contemporary agreements between the parties and relating to matters herein, and except as otherwise provided herein cannot be modified without written agreement of the parties. A contract will be executed after determination of the award.
16. Awarded Respondent must provide a certificate of insurance conforming to the above listed requirements or a statement of Respondent's insurance carrier certifying that the required coverage shall be obtained by Respondent within ten (10) days of formal award of the Contract. In the case where a certification letter from an insurance carrier is attached to the proposal in lieu of an insurance certificate, any formal award of a contract shall be contingent upon required coverage being put into force **prior** to any performance required by subject agreement.
17. Gregg County reserves the right to terminate an agreement/contract at any time, without cause, upon thirty (30) days written notice to awarded contractor. Upon termination, Gregg County shall pay Respondent for those costs directly attributable to work done or supplies obtained in preparation for completion or compliance with the Contract, except no payment shall be made for costs recoverable by Respondent in the normal course of doing business or which can be mitigated through the sale of supplies or materials obtained for use under this Contract. It is further agreed by Respondent that Gregg County shall not be liable for loss or reduction in any anticipated profit.
18. Gregg County is wholly committed to developing, establishing, maintaining, and enhancing minority business involvement in the total procurement process. The County, its contractors, their suppliers and sub-contractors, vendors of goods, equipment, services, and professional services, shall not discriminate on the basis of race, color, religion, national origin, age, handicap, or sex in the award and/or performance of contracts. However, competition and quality of work remain the ultimate standards in contractor, sub-contractor, vendor service, professional service, and supplier utilization. All vendors, suppliers, professionals and contractors doing business or anticipating doing business with Gregg County shall support, encourage and implement steps toward our common goal of establishing equal opportunity for all citizens of Gregg County.
19. The awarded contractor agrees that Gregg County assumes no responsibility for any costs associated with any administrative or judicial proceedings resulting from the solicitation process.
20. The awarding Respondent shall maintain adequate records to justify all charges, expenses, and costs incurred in estimating and performing the work for at least two (2) years. County shall have access to all records, documents and information collected and/or maintained by others in the course of the administration of this agreement.

21. Contractor understands and agrees that in returning a response to this proposal that it is neither an "offer" nor an "acceptance" until such time a formal contract is authorized/awarded by the Gregg County Commissioners Court; if any.
22. Gratuities– Gregg County may, by written notice to the Seller, cancel this contract without liability to Seller if it is determined by Gregg County that gratuities, in the form of entertainment, gifts, or otherwise, were offered or given by the Seller, or any agent or representative of the Seller, to any officer or employee of Gregg County with a view toward securing a contract or securing favorable treatment with respect to the awarding or amending, or the making of any determinations with respect to the performing of such a contract. In the event this contract is canceled by Gregg County pursuant to this provision, Gregg County shall be entitled, in addition to any other rights and remedies, to recover or withhold the amount of the cost incurred by Seller in providing such gratuities.
23. Termination - The performance of work under this order may be terminated in whole or in part by the Buyer in accordance with this provision. Termination of work hereunder shall be effected by the delivery to the Seller of a "Notice of Termination" specifying the extent to which performance of work under the order is terminated and the date upon which such termination becomes effective. Such right of termination is in addition to and not in lieu of rights of Buyer.
24. Force Majeure - If, by reason of Force Majeure, either party hereto shall be rendered unable wholly or in part to carry out its obligations under this Agreement then such party shall give notice and full particulars of such Force Majeure in writing to the other party within a reasonable time after occurrence of the event or cause relied upon, and the obligation of the party giving such notice, so far as it is affected by such Force Majeure, shall be suspended during the continuance of the inability then claimed, except as hereinafter provided, but for no longer period, and such party shall endeavor to remove or overcome such inability with all reasonable dispatch. The term Force Majeure as employed herein, shall mean acts of God, strikes, lockouts, or other industrial disturbances, act of public enemies, orders of any kind of government of the United States or the State of Texas or any civil or military authority, insurrections, riots, epidemics, landslides, lightning, earthquake, fires, hurricanes, storms, floods, washouts, droughts, arrests, restraint of government and people, civil disturbances, explosions, breakage or accidents to machinery, pipelines or canals or other causes not reasonably within the control of the party claiming such inability. It is understood and agreed that the settlement of strikes and lockouts shall be entirely within the discretion of the party having the difficulty, and that the above requirement that any Force Majeure shall be remedied with all reasonable dispatch shall not require the settlement of strikes and lockouts by acceding to the demands of the opposing party or parties when such settlement is unfavorable in the judgment of the party having the difficulty.

25. Assignment Delegation - No right or interest in this contract shall be assigned or delegation of any obligation made by Seller without the written permission of the Buyer. Any attempted assignment or delegation by Seller shall be wholly void and totally ineffective for all purposes unless made in conformity with this paragraph.
26. Waivers - No claim or right arising out of a breach of this contract can be discharged in whole or in part by a waiver or renunciation of the claim or right unless the waiver or renunciation is supported by consideration and is in writing signed by the aggrieved party.
27. Modification - Contract can be modified or rescinded only by a written and signed agreement by both of the parties duly authorized agents.
28. Applicable Law - This agreement shall be governed by the Uniform Commercial Code. Wherever the term "Uniform Commercial Code" is used, it shall be construed as meaning the Uniform Commercial Code as adopted in the State of Texas as effective and in force on the date of this agreement.
29. Advertising - Seller shall not advertise or publish, without Buyer's prior consent, the fact that Buyer has entered into this contract, except to the extent necessary to comply with proper requests for information from an authorized representative of the federal, state, or local government.
30. Right to Assurance - Whenever one party to this contract in good faith has reason to question the other party's intent to perform, he may demand that the other party give written assurance of his intent to perform. In the event a demand is made and no assurance is given within five (5) days, the demanding party may treat this failure as an anticipatory repudiation of the contract.
31. Venue - Both parties agree that venue for any litigation arising from this contract shall be in Longview, Gregg County, Texas.
32. No negotiations, decisions, or actions shall be executed by the vendor as a result of any discussions with any public service official, employee and/or consultant. Only those transactions provided in written form may be considered binding.
33. The contents of each vendor's proposal, including specifications shall remain valid for a minimum of 90 calendar days from the Proposal due date.
34. Subcontracting: The Vendor must function as the single point of responsibility for the Agency. No vendor shall submit a proposal comprised of separate software packages from multiple subcontractors.

35. Conflict of Interest: No public official shall have interest in this contract except in accordance with Vernon's Texas Codes Annotated, Local Government Code Title 5, Subtitle C, Chapter 171. State Law (CHAPTER 176 of the Local Government Code) requires the filing of a CONFLICT OF INTEREST QUESTIONNAIRE by certain individuals and businesses.
36. Design, Strength, Quality of materials and workmanship must conform to the highest standards of manufacturing and engineering practice.
37. All Hardware of any other item offered in this proposal must be new and unused, unless otherwise specified, in first-class condition and of current manufacture.
38. Descriptions: Whenever an article or material is defined or used in the Proposal specifications by describing a proprietary product or by using the name of a manufacturer, model number, or make, the term "or equal" if not inserted, shall be implied. Any reference to specified article or material shall be understood as descriptive, NOT restrictive, and is used to indicate type and quality level desired for comparison purposes unless otherwise noted. Proposals must be submitted on units of quantity specified, extended, and totaled. In the event of discrepancies in extension, the unit prices shall govern.
39. Addendum: Any interpretations, corrections or changes to this Proposal and Specifications will be made by addendum, unless otherwise stated. Issuing authority of addendum shall be the Commissioners' Court of Gregg County, Texas. Addendum will be mailed, emailed, or faxed to all that are known to have received a copy of the Proposal. Vendors shall acknowledge receipt of all addenda and include receipt and response to addenda with submission.
40. Patents/Copyrights: The successful vendor agrees to protect Gregg County from claims involving infringements of patents and/or copyrights.
41. Contract Administrator: The Contract Administrator will serve as sole liaison between the Gregg County Commissioners Court and affected Gregg County Departments and the successful vendor. Unless directly outlined in this specification the vendor shall consider no one but the Contract Administrator authorized to communicate, by any means, information or suggestions regarding or resembling this proposal throughout the proposal process. The Contract Administrator has been designated the responsibility to ensure compliance with contract requirements, such as but not limited to, acceptance, inspection and delivery. The County will not pay for work, equipment or supplies, which it deems unsatisfactory. Vendors will be given a reasonable opportunity to correct deficiencies before termination. This however, shall in no way be construed as negating the basis for termination for non-performance.
42. Packing slips or other suitable shipping documents shall accompany each special order shipment and shall include:

- (a) Name and address of successful vendor;
  - (b) Name and address of receiving department and/or location;
  - (c) Gregg County Purchase Order number; and,
  - (d) Descriptive information of the materials shipped or services rendered, including item numbers, serial numbers, quantities, number of containers and package numbers, address/location of services rendered, as applicable.
43. Unless otherwise indicated, items will be new, unused, and in first class condition in containers suitable for damage-free shipment and storage.
44. Invoices must show all information as stated above, and will be issued for each purchase order.
45. Equipment/Good/Services supplied under this contract shall be subject to the County's approval. Item(s) found defective or not meeting specifications shall be picked up and replaced by the successful vendor within one (1) week after notification at no expense to the County. If item(s) is not picked up within one (1) week after notification, the item(s) will become a donation to the County for disposition.
46. Warranty: Successful vendor shall warrant that all equipment/goods/services shall conform to the proposed specifications and/or all warranties stated in the Uniform Commercial Code and be free from all defects in material, workmanship and title.
47. Remedies: The successful vendor and Gregg County agree that both parties have all rights, duties, and remedies available as stated in the Uniform Commercial Code.
48. Silence of Specification: The apparent silence of specifications as to any detail or to the apparent omission from it of a detailed description concerning any point, shall be regarded as meaning that only the best commercial practices are to prevail. All interpretations of these specifications shall be made on the basis of this statement.
49. The Contractor shall procure and maintain at its sole cost and expense for the duration of this Agreement insurance against claims for injuries to persons or damages to property that may arise from or in connection with the performance of the work hereunder by the Contractor, its agents, representatives, volunteers, employees or subcontractors. The Contractor's insurance coverage shall be primary insurance with respect to the County, its officials, employees and volunteers. Any insurance or self-insurance maintained by the County, its officials, employees or volunteers shall be considered in excess of the Contractor's insurance and shall not contribute to it. Further, the Contractor shall include all subcontractors as additional insured under its policies or shall furnish separate certificates and endorsements for each subcontractor. All coverage for subcontractors shall be subject to all of the requirements stated herein. **All Certificates of Insurance and endorsements shall be furnished to the County's Purchasing Agent and approved by the County *before* work commences.**

50. ***Standard Insurance Policies Required:***
- a. Commercial General Liability Policy
  - b. Automobile Liability Policy
  - c. Worker's Compensation Policy

General Requirements applicable to all policies:

- a. Only insurance carriers licensed and admitted to do business in the State of Texas will be accepted.
- b. Deductibles shall be listed on the Certificate of Insurance and are acceptable only on a per occurrence basis for property damage only.
- c. "Claims Made" policies will not be accepted.
- d. Each insurance policy shall be endorsed to state that coverage shall not be suspended, voided, canceled, reduced in coverage or in limits except after thirty (30) days prior written notice by certified mail, return receipt requested, has been given to Gregg County.
- e. All insurance policies shall be furnished to Gregg County upon request.

Commercial General Liability

- a. General Liability insurance shall be written by carrier with an A:VIII or better rating in accordance with the current Best Key Rating guide.
- b. Minimum Combined Single Limit of \$1,000,000.00 per occurrence for bodily Injury and property damage with Gregg County named as an additional insured.
- c. No coverage shall be deleted from the standard policy without notification of individual exclusions being attached for review and acceptance.

Automobile Liability

- a. General Liability Insurance shall be written by a carrier with an A:VIII or better rating in accordance with the current Best Key Rating Guide.
- b. Minimum Combined Single Limit of \$600,000.00 per occurrence for bodily injury and property damage.

51. ***Workers Compensation Insurance*** - Pursuant to the requirements set forth in Title 28, Section 110.110 of the Texas compensation insurance policy; either directly through their employer's policy (the Contractor's or subcontractor's policy) or through an executed coverage agreement on an approved TWCC form. Accordingly, if a subcontractor does not have his or her own policy and a coverage agreement is used, Contractors and subcontractors must use that portion of the form whereby the hiring contractor agrees to provide coverage to the employees of the subcontractor. The portion of the form that would otherwise allow them not to provide coverage for the employees of an independent contractor may not be used.

The worker's compensation insurance shall include the following terms:

- a. Employer's Liability limits of \$500,000.00 for each accident is required.

- b. "Texas Waiver of Our Right to Recover from Others Endorsement" shall be included in this policy. (Waiver of Subrogation)

Pursuant to the explicit terms of Title 28, Section 110.110 (c) (7) of the Texas Administrative Code, the Proposal specifications, this Agreement, and all subcontracts on this Project must include the following terms and conditions in the following language, without any additional words or changes, except those required to accommodate the specific document in which they are contained or to impose stricter standards of documentation:

**Definitions:**

**Certificate of coverage ("certificate")** - A copy of a certificate of insurance, a certificate of authority to self-insure issued by the Texas Worker's Compensation Commission, or a coverage agreement (TWCC-81), TWCC-83, or TWCC-84), showing statutory worker's compensation insurance coverage for the person's or entity's employees providing services on a project, for the duration of the project.

**Duration of the project** - includes the time from the beginning of the work on the project until the Contractor's/person's work on the project has been completed and accepted by the governmental entity.

**Persons providing services on the project ("subcontractors" in section 406.096 {of the Texas Labor Code})** - includes 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-operators, employees of any such entity or employees of any entity which furnishes persons to provide services on the project. "Services" include, without limitation, providing, hauling, or delivering equipment or materials, or providing labor, transportation, or other service related to a project. "Services" does not include activities unrelated to the project, such as food/beverage respondents, office supply deliveries, and delivery of portable toilets.

- The Contractor shall provide coverage, based on the proper reporting of classification codes and payroll amounts and filing of any coverage agreements, that meets the statutory requirements of Texas Labor Code, Section 401.011 (44) for all employees of the Contractor providing services on the project, for the duration of the project.
- The Contractor must provide a certificate of coverage to the governmental entity prior to being awarded the contract.
- 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 governmental entity showing that coverage has been extended.
- The Contractor shall obtain from each person providing services on a project, and provide to the governmental entity:

- (1) a certificate of coverage, prior to that person beginning work on the project, so the governmental entity will have on file providing services on the project, and certificates of coverage showing coverage for all person; and
- (2) no later than seven calendar 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.
- (3) The Contractor shall retain all required certificates of coverage for the duration of the project and for one year thereafter.

The Contractor shall notify the governmental entity in writing by certified mail or personal delivery, within 10 calendar days after the Contractor knew or should have known, or any change that materially affects the provision of coverage of any person providing services on the project.

The Contractor shall post on each project site a notice, in the text, form and manner prescribed by the Texas Workers' Compensation commission, 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.

The Contractor shall contractually require each person with whom it contracts to provide services on a project, to:

- (1) provide coverage, based on proper reporting of classification codes and payroll amounts and filing of any coverage agreement, that meets the statutory requirements of Texas Labor Code, Section 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 whom it contracts, and provide to the Contractor:
  - (a) a certificate of coverage, prior to the other person beginning work on the project; and
  - (b) 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 governmental entity in writing by certified mail or personal delivery, within 10 calendar 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; with the certificates of coverage to be provided to the person for whom they are providing services.

By signing a contract with Gregg County, or providing, or causing to be provided a certificate of coverage, the Contractor who will provide services on the project will be covered by workers' 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 commission'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.

***CERTIFICATES OF INSURANCE*** shall be prepared and executed by the insurance company or its authorized agent, and shall contain the following provisions and warranties:

- a. The company is licensed and admitted to do business in the State of Texas.
- b. The insurance policies provided by the insurance company are underwritten on forms that have been provided by the Texas State Board of Insurance or ISO.
- c. All endorsements and insurance coverage according to requirements and instructions contained herein.
- d. The form of the notice of cancellation, termination, or change in coverage provisions to Gregg County.
- e. Original endorsements affecting coverage required by the section shall be

**RELATING TO STATE CONTRACTS WITH AND INVESTMENTS IN COMPANIES THAT BOYCOTT ISRAEL AND INVESTMENTS IN COMPANIES THAT DO BUSINESS WITH Iran, Sudan, or any known foreign terrorist organizations**

Effective September 1, 2018, Contractor/Vendor verifies that it/he/she does not boycott Israel and will not boycott Israel during the term of this contract. The term "boycott Israel" is defined by Texas Government Code Section 808.001, effective September 1, 2018. Contractor/Vendor further verifies that it/he/she is not engaged in business with Iran, Sudan, or any foreign terrorist organization. The term "foreign terrorist organization" means an organization designated as a foreign terrorist organization by the United States Secretary of State as authorized by 8 U.S.C. Section 1189. furnished with the certificates of insurance.

## ***BONDING REQUIREMENTS***

If applicable, a Bid Bond shall be required. Pursuant to the provisions of Section 262.032 (a) of the Texas Local Government Code, if the contract contemplated by this request is a proposal/bid for the construction of public works, or will be under a contract exceeding \$100,000.00, Gregg County may require the vendor to execute a good and sufficient bid bond in the amount of five percent (5%) of the total contract price. Said bond shall be executed with a surety company authorized to do business in the State of Texas.

If applicable, a Performance Bond shall be required. Pursuant to the provisions of Section 262.032 (b) of the Texas Local Government Code, within thirty (30) days of the date of the signing of a contract or issuance of a purchase order following the acceptance of a proposal by Gregg County Commissioners Court and prior to commencement of the actual work, the successful vendor shall furnish a performance bond to Gregg County for the full amount of the contract if the contract exceeds \$50,000.00. Said bond shall be for the purpose of insuring the faithful performance of the work in accordance with the plans, specifications and contract documents associated with the contract.

If applicable, a Payment Bond shall be required. Pursuant to the provisions of Section 2253.021, Texas Government Code, if the amount of the contract awarded to the successful vendor exceeds \$25,000.00, the successful vendor shall execute a payment bond in the amount of the contract. Said bond is solely for the protection and use of payment bond beneficiaries who have a direct contractual relationship with the prime contractor or a subcontractor to supply public work labor or material. This bond must be issued to the County within ten (10) days of the award of the contract and before vendor begins the work.

If applicable, a Performance Bond shall be required. Pursuant to the provisions of Section 2253.021, Texas Government Code, if the amount of the contract awarded to the successful vendor exceeds \$100,000.00, the successful vendor shall execute a performance bond in the amount of the contract. Said performance bond is solely for the protection of Gregg County and is conditioned on the faithful performance of the work in accordance with the plans, specifications, and contract documents. This bond must be issued to the County within ten (10) days of the award of the contract and before the vendor begins the work.

## ***CRIMINAL BACKGROUND CHECKS***

**Any contracts will require vendors to enter sensitive security areas. These include, but are not limited to, Gregg County Courthouse, Gregg County Sheriff's Department and/or Gregg County Jails.**

**The following will apply to awarded vendor personnel.**

- The successful Proposer shall provide information, including, but not limited to, name, date of birth, and driver's license number for each individual who will be performing work on Gregg County property.
- Vendor personnel who perform work on Gregg County property must submit to and pass a Sheriff's Department Criminal Background Check. That status must be maintained by all vendor personnel entering County buildings for the duration of the contract.
- Criminal Background checks conducted by your firm may or may not be acceptable to certain departments depending on their particular requirements. The County reserves the right to conduct additional Criminal Background Checks as it deems necessary.
- Award of a contract could be affected by your firms' refusal to agree to these terms. Award could also be affected if your firm is unable to supply personnel who can pass a Criminal Background Check.

**The Criminal Background Check applies to the individual and not the company.**

## *Special Conditions*

WORK. The CONTRACTOR shall provide and pay for all materials, supplies, machinery, equipment, tools, superintendence, labor, services, insurance, and all water, light, power, fuel, transportation and other facilities necessary for the execution and completion of the work covered by the contract Documents. Unless otherwise specified, all materials shall be new and both workmanship and materials shall be of a good quality. The CONTRACTOR shall if required, furnish satisfactory evidence as to the kind and quality of materials.

RIGHT OF ENTRY. The OWNER reserves the right to enter the property or location on which the work herein is contracted for by such agent or agents as he may elect, for the purpose of inspecting the work, or for the purpose of constructing or installing such collateral work as said OWNER may desire.

EQUIPMENT, MATERIALS AND CONSTRUCTION PLANT. The CONTRACTOR shall be responsible for the care, preservation, conservation, and protection of all materials, supplies, machinery, equipment, tools, apparatus, accessories, facilities, all means of construction, and any and all parts of the work, whether the CONTRACTOR has been paid, partially paid, or not paid for such work, until the entire work is completed and accepted.

CHARACTER OF WORKMEN. The CONTRACTOR agrees to employ only orderly and competent men, skillful in the performance of the type of work required under this contract, to do the work; and agrees that whenever the OWNER shall inform him in writing that any man or men on the work are, in his opinion, incompetent, unfaithful or disorderly, such man or men shall be discharged from the work and shall not again be employed on the work without the OWNER'S written consent.

PROTECTION AGAINST ACCIDENT TO EMPLOYEES AND THE PUBLIC. The CONTRACTOR shall at all times exercise reasonable precautions for the safety of employees and others on or near the work and shall comply with all applicable provisions of Federal, State, and Municipal safety laws and building and construction codes. All machinery and equipment and other physical hazards shall be guarded in accordance with the "Manual of Accident Prevention in Construction" of the Associated General Contractors of America except where incompatible with Federal, State, or Municipal laws or regulations. The CONTRACTOR shall provide such machinery guards, safe walkways, ladders, bridges, gangplanks, and other safety devices if necessary. The safety precautions actually taken and their adequacy shall be the sole responsibility of the CONTRACTOR, acting at his discretion as an independent contractor.

PROTECTION OF ADJOINING PROPERTY. The said CONTRACTOR shall take proper means to protect the adjacent or adjoining property or properties in any way encountered, which might be injured or seriously affected by any process of construction to undertaken under this Agreement, from any damage or injury by reason of said process of construction; and he shall be liable for any and all claims for such damage on account of his failure to fully protect all adjoining property. The CONTRACTOR agrees to indemnify, save and hold harmless the OWNER against any claim or claims for damages due to any injury to any adjacent or adjoining

property, arising or growing out of the performance of the contract; but any such indemnity shall not apply to any claim of any kind arising out of the existence or character of the work.

**PROTECTION AGAINST CLAIMS OF SUB-CONTRACTORS, LABORERS, MATERIALMEN AND FURNISHERS OF MACHINERY, EQUIPMENT AND SUPPLIES.** The CONTRACTOR agrees that he will indemnify and save the OWNER harmless from all claims growing out of the lawful demands of sub-contractors, laborers, workmen, mechanics, material men and furnishers of machinery and parts thereof, equipment, power tools, and all supplies, including commissary, incurred in the furtherance of the performance of this contract. When so desired by the OWNER, the CONTRACTOR shall furnish satisfactory evidence that all obligations of the nature hereinabove designated have been paid, discharged or waived. If the CONTRACTOR fails so to do, then the OWNER may at the option of the CONTRACTOR either pay directly any unpaid bills, of which the OWNER has written notice, or withhold from the CONTRACTOR'S unpaid compensation a sum of money deemed reasonably sufficient to liquidate any and all such lawful claims until satisfactory evidence is furnished that all liabilities have been fully discharged, whereupon payments to the CONTRACTOR shall be resumed in full, in accordance with the terms of this contract, but in no event shall the provisions of this sentence be construed to impose any obligation upon the OWNER by either the CONTRACTOR or his Surety.

**FINAL COMPLETION AND ACCEPTANCE.** Within ten (10) days after the CONTRACTOR has given the OWNER written notice that the work has been completed, or substantially completed, the OWNER shall inspect the work and within said time, prepare and send a list of deficiencies. If there are not deficiencies found then OWNER will process final payment.

**FINAL PAYMENT.** The OWNER, who shall pay to the CONTRACTOR on or before the 30th day, and before the 35th day, after the date of Project Completion, the balance due the CONTRACTOR under the terms of this Agreement, provided he has fully performed his contractual obligations under the terms of this contract.

**PAYMENTS WITHHELD.** The OWNER may, on account of subsequently discovered evidence, withhold payment to such extent as may be necessary to protect himself from loss on account of:

- (a) Defective work not remedied.
- (b) Claims filed or reasonable evidence indicating probable filing of claims.
- (c) Failure of the CONTRACTOR to make payments properly to subcontractors or for material or labor.
- (d) Damage to another contractor.
- (e) Reasonable doubt that the work can be completed for the unpaid balance of the contract amount.
- (f) Reasonable indication that the work will not be completed within the contract time.

**CHANGE ORDERS:** Without invalidating this Agreement, the OWNER may, at any time or from time to time, order deletions or revisions to the work; such changes will be authorized by Change Order to be prepared by the OWNER after formal approval of the Gregg County Commissioners Court. The Change Order shall set forth the basis for any change in contract

price, as hereinafter set forth for Extra Work, and any change in contract time which may result from the change..

**EXAMINATION OF SITE OF PROJECT.** Prospective proposers shall make a careful examination of the site of the project, soil and water conditions to be encountered, improvements to be protected, disposal sites for surplus materials not designated to be salvaged materials, and methods of providing ingress and egress to private properties and of handling traffic during construction of the entire project.

**TRADE NAMES AND MATERIALS.**

Where materials or equipment are specified by a trade or brand name, it is not the intention of the Owner to discriminate against an equal product of another manufacturer, but rather to set a definite standard of quality of performance, and to establish an equal basis for the evaluation of proposals. Where the words "equivalent", "proper" or "equal to" are used, they shall be understood to mean the equivalent of, or equal to some other thing, in the opinion or judgment of the Owner. Unless otherwise specified, all materials shall be the best of their respective kinds and shall be in all cases fully equal to approved samples. Notwithstanding that the words "or equal to" or other such expressions may be used in the specifications in connection with a material, manufactured article or process, the materials, article or process specifically designated shall be used, unless a substitute shall be approved in writing by the Owner, and the Owner shall have the right to require the use of such specifically designated material, article or process.

**BARRICADES, LIGHTS, AND WATCHMEN.** Where the work is carried on in or adjacent to any street, alley or public place, the Contractor shall at his own cost and expense furnish and erect such barricades, fences, lights, and danger signals, shall provide such watchmen, and shall provide such other precautionary measures for the protection of persons or property and of the work as are necessary. Barricades shall be painted in a color that will be visible at night. From sunset to sunrise the Contractor shall furnish and maintain at least one light at each barricade and sufficient number of barricades shall be erected to keep vehicles from being driven on or into any work under construction. The Contractor shall furnish watchmen in sufficient numbers to protect the work. The Contractor will be held responsible for all damage to the work due to failure of barricades, signs, lights, and watchmen to protect it, and whenever evidence is found of such damage, the Owner may order the damaged portion immediately removed and replaced by the Contractor at his cost and expense. The Contractor's responsibility for the maintenance of barricades, signs, and lights, and for providing watchmen shall not cease until the project shall have been accepted by the Owner.

**RESTORATION OF SITE & CLEANUP.** Upon completion of the project (or major portions thereof) the Contractor shall restore the site to its original condition or better. Driveways and streets shall be compacted and resurfaced as originally found. All private property disrupted during construction including fences, patios, retaining walls, sidewalks, wooden decks, etc. shall be mended or repaired to their original condition. At the conclusion of the work, all tools, temporary structures and materials belonging to the Contractor shall be promptly removed, and all dirt, rubbish and other foreign substances shall be disposed of. The Contractor shall thoroughly clean all equipment and materials installed by him and shall deliver over such materials and equipment in an undamaged, clean condition.

## SAFETY.

- In accordance with generally accepted construction practices, the Contractor alone will be solely and completely responsible for conditions of the job site, including safety of all persons and property during performance of the work. This requirement will apply continuously and not be limited to normal working hours.
- The duty of the Owner to conduct construction review of the Contractor's performance is not intended to include review of the adequacy of the Contractor's safety measures, in, or on, or near the construction site.

EXISTING UTILITIES AND SERVICE LINES. The Contractor shall be responsible for the protection of all existing utilities or service lines crossed or exposed by his construction operations. Where existing utilities or service lines are cut, broken or damaged, the Contractor shall replace or repair the utilities or service lines with the same type of original material and construction, or better, at his own cost and expense.

PROTECTION OF PROPERTY. The Contractor shall, at no additional expense to the Owner, protect by false work, braces, shoring or other property along his line of work or affected directly by his work, against damage and shall repair the damages or repay the injured Owners if such damage occurs. The Contractor shall exercise care to protect from injury all water pipes, sanitary sewer pipes, gas mains, telephone cables, electric cables, service pipes, and other utilities or fixtures which may be encountered during the progress of the work. All utilities and other service facilities or fixtures if damaged, shall be repaired by the Contractor without additional compensation. Protection is Contractor's responsibility and he must satisfy himself as to the existence and location of all utilities and structures.

CONTRACTS IN DEFAULT. The Owner may declare a contract in default for any one or more of the following reasons:

- Failure to complete the work within the contract period or any extension thereof.
- Failure or refusal to comply with an order of the Owner within a reasonable time.
- Failure or refusal to remove rejected materials.
- Failure or refusal to perform anew any defective or unacceptable work.
- Bankruptcy or insolvency, or the making of an assignment for the benefit of creditors.
- Failure to provide a qualified superintendent, competent workmen or subcontractors to carry on the work in an acceptable manner or failure to prosecute the work according to the agreed schedule of completion.
- Disregard or violation of any other important provisions of the Contract Documents as determined by the Engineer.





Division	Section Title
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**SPECIFICATIONS GROUP**

*General Requirements Subgroup*

**DIVISION 01 - GENERAL REQUIREMENTS**

- 011000 SUMMARY
- 012100 ALLOWANCES
- 012300 ALTERNATES
- 012500 SUBSTITUTION PROCEDURES
- 012900 PAYMENT PROCEDURES
- 013100 PROJECT MANAGEMENT AND COORDINATION
- 013300 SUBMITTAL PROCEDURES
- 014000 QUALITY REQUIREMENTS
- 014200 REFERENCES
- 015000 TEMPORARY FACILITIES AND CONTROLS
- 016000 PRODUCT REQUIREMENTS
- 017300 EXECUTION
- 017419 CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL
- 017700 CLOSEOUT PROCEDURES
- 017823 OPERATION AND MAINTENANCE DATA
- 017839 PROJECT RECORD DOCUMENTS
- 017900 DEMONSTRATION AND TRAINING

*Facility Construction Subgroup*

**DIVISION 02 - EXISTING CONDITIONS**

- 024119 SELECTIVE DEMOLITION

**DIVISION 03 - CONCRETE**

- 033000 CAST-IN-PLACE CONCRETE

**DIVISION 04 - MASONRY**

- 040100 MAINTENANCE OF MASONRY
- 042000 UNIT MASONRY

**DIVISION 05 - METALS**

- 055000 METAL FABRICATIONS
- 055213 PIPE AND TUBE RAILINGS

**DIVISION 06 - WOOD, PLASTICS, AND COMPOSITES**

- 061000 ROUGH CARPENTRY
- 064116 PLASTIC-LAMINATE-CLAD ARCHITECTURAL CABINETS



**DIVISION 07 - THERMAL AND MOISTURE PROTECTION**

079200 JOINT SEALANTS

**DIVISION 08 – OPENINGS**

083113.53 SECURITY ACCESS DOORS AND FRAMES

083463 DETENTION DOOR VISION LITE

087100 DOOR HARDWARE

088000 GLAZING

08 8400 PLASTIC GLAZING

**DIVISION 09 – FINISHES**

092900 GYPSUM BOARD

093013 TILING

095113 ACOUSTICAL PANEL CEILINGS

096513 RESILIENT BASE AND ACCESSORIES

096519 RESILIENT TILE FLOORING

096723 RESINOUS FLOORING

096813 TILE CARPETING

099113 PAINTING

099200 METAL FRAMING

**DIVISION 10 – SPECIALTIES**

101423.16 ROOM-IDENTIFICATION PANEL SIGNAGE

102800 TOILET, BATH, AND LAUNDRY ACCESSORIES

102813.63 DETENTION TOILET ACCESSORIES

*Facility Services Subgroup*

**DIVISION 22 - PLUMBING**

220500 COMMON WORK RESULTS FOR PLUMBING

**DIVISION 23 - HEATING, VENTILATING, AND AIR CONDITIONING (HVAC)**

230500 COMMON WORK RESULTS FOR HVAC

230593 TESTING ADJUSTING BALANCING FOR HVAC

**DIVISION 26 - ELECTRICAL**

26 0500 COMMON WORK RESULTS FOR ELECTRICAL

**DIVISION 28 - ELECTRONIC SAFETY AND SECURITY**

283100 ADDRESSABLE FIRE-ALARM SYSTEMS

END OF TABLE OF CONTENTS

## **SECTION 011000 - SUMMARY**

### **PART 1 - GENERAL**

#### **1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

#### **1.2 CLARIFICATION OF TERMS**

- A. The notation '**GC**' in technical drawings and specifications is intended to refer to the **General Contractor**, not Gregg County. Any confusion of this terminology discovered in the technical drawings and specifications shall be brought to the attention of the Architect for clarification.

#### **1.3 SUMMARY**

- A. Section Includes:
  - 1. Project information.
  - 2. Work covered by Contract Documents.
  - 3. Phased construction.
  - 4. Work by Owner.
  - 5. Work under separate contracts.
  - 6. Future work.
  - 7. Purchase contracts.
  - 8. Owner-furnished products.
  - 9. Contractor-furnished, Owner-installed products.
  - 10. Access to site.
  - 11. Coordination with occupants.
  - 12. Work restrictions.
  - 13. Specification and Drawing conventions.
  - 14. Miscellaneous provisions.
- B. Related Requirements:
  - 1. Section 015000 "Temporary Facilities and Controls" for limitations and procedures governing temporary use of Owner's facilities.

#### **1.4 PROJECT INFORMATION**

- A. Project Identification: Gregg County Youth Center.
  - 1. Project Location: 310 Turk Street Longview, Texas 75601.
- B. Owner: Gregg County.
  - 1. Owner's Representative: Cathy Cerliano, Business Manager, Gregg County Juvenile Probation Department. 903.758.0121 [ccerliano@gcjpd.com](mailto:ccerliano@gcjpd.com)
- C. Architect: Doug Camp, Johnson & Pace Incorporated.

#### **1.5 WORK COVERED BY CONTRACT DOCUMENTS**

- A. The Work of Project is defined by the Contract Documents and consists of the following:
  - 1. The Gregg County Youth Center at 310 Turk Street, Longview Texas, is an approximately 18,014 SF building comprising detention facilities and probation offices. The building has had two additions since its initial construction in 1977. The detention facility is constructed of load- and non-bearing concrete masonry supporting a built-up roof on steel deck and joists. The probation facility is a steel frame supporting a built-up roof on steel deck and joists, walled with drywall partitions. The exterior wall finish is stucco.

2. Current renovations are to consist of work by three entities, each under separate agreement with the owner. These are:
  - Owner
  - Owner's retained contractor which is Sydaptics Inc.
  - General Building Contractor (referred to as 'GC')
3. Work by the owner will generally consist of removal of existing vinyl tile from floors, and painting of walls and ceilings in the detention facility.
4. Work by the Owner's retained contractor (Sydaptics) will consist of upgrading, augmenting and/or providing the following items in the detention facility, including cabling and protective guard covers as applicable:
  - Door access control system (door hardware, control/monitoring console)
  - Video surveillance system (cameras and DVR)
  - New gun locker
  - New doors to six resident bedrooms
  - New Lexan glass doors to three resident bedrooms

**GC shall coordinate project security and scheduling with Sydaptics but has no responsibility to oversee work by Sydaptics.**
5. All other work shall be by the GC and generally consists of the following in the probation facility:
  - Remodeling of building entrance and limited pavement for accessibility
  - New exterior ramp, rails and porch paving
  - Limited grading & drainage work
  - Removal of all door latching hardware
  - Provide new latching hardware
  - Modifications to reception area, restroom and un-used laundry (removals, cabinets, prepping of surfaces to be painted by the owner, etc.)
6. Other work by the GC in the detention facility generally consists of the following:
  - Removal of existing generator and provide new generator
  - Removal of existing fire detection and alarm system and provide new system
  - Removal of detention plumbing fixtures and provide new plumbing fixtures
  - Removal of detention bed frames and provide new bed pedestals
  - Removal of old paint and coating from walls and floors for painting of walls by owner
  - New sealers and high-performance coating for concrete floors
  - New vinyl tile and ceramic tile flooring
  - Reinforce anchorage of steel window frames
  - Provide new security screens at windows
  - Repair and prepping of window frames for painting by owner
  - Modifications to restrooms, shower rooms, and non-commercial kitchen
  - Clean existing terrazzo floor and glazed block walls
  - Provide bullet resistive film at interior windows
  - Reinforcement of stucco-on-lath ceilings
  - Miscellaneous roof repair
  - Repair and reinforcing of light fixtures
  - Associated mechanical, electrical and plumbing work

And is described in greater detail in the construction documents.

7. The detention and probation facilities will remain in use during construct so that one of the key challenges to the GC is the sequencing of work so that while one of the three groups of resident bedrooms is closed for remodeling, the other two remain open and fully operational at any given time. Likewise, when one of the two day-rooms (common rooms) is closed for remodeling, the other must remain in full use. The GC will be responsible to coordinate with the owner to develop a detail schedule of closures and protection of users.
8. Another challenge to the GC will be coordination and timing between the three entities performing work. The GC will develop and manage a schedule work for the project, coordinating with the owner and security contractor as necessary to achieve completion.
9. The detention facility is correctional by nature, so that heightened security, safety and management will be essential to performance of the work and conduct of the project. The GC will coordinate with the owner to develop security and safety for the project and management of construction work and personnel.
10. Six bid alternates will be considered in addition to work performed in the base bid. See Alternates Section of specifications for additional Information.
11. Work shall be done in accordance with the requirements of Gregg County Fire Marshall, Chapter 343, Part 11, Title 37 of the Texas Administrative Code *Secure Juvenile Pre-Adjudication Detention and Post Adjudication Correctional Facilities*, and NFPA 101 *Life Safety Code*, 2012 Edition.

B. Type of Contract:

1. Project will be constructed under a single prime contract.

**1.6 PHASED CONSTRUCTION**

- A. The Work shall be conducted in at least three phases. Refer to Work Covered by Contract Documents in preceding section.

**1.7 WORK BY OWNER**

- A. General: Cooperate fully with Owner so work may be carried out smoothly, without interfering with or delaying work under this Contract or work by Owner. Coordinate the Work of this Contract with work performed by Owner.
- B. Preceding Work: Owner will perform the following construction operations at Project site. Those operations are scheduled to be substantially complete before work under this Contract begins.
1. All repair of window and door frames shall be by owner.
  2. All painting of walls and window and door frames shall be by owner.

**1.8 WORK UNDER SEPARATE CONTRACTS**

- A. General: Cooperate fully with separate contractors so work on those contracts may be carried out smoothly, without interfering with or delaying Work under this Contract or other contracts. Coordinate the Work of this Contract with work performed under separate contracts.
1. Security Contractor: SYDAPTIC INC., Waco Texas
    - a. Contact: Patrick Scott 254-776-7994 [pscott@sydaptic.com](mailto:pscott@sydaptic.com)

**1.9 ACCESS TO SITE**

- A. General: Contractor shall have limited use of Project site for construction operations as indicated on Drawings by the Contract limits and as indicated by requirements of this Section.
- B. Use of Site: Limit use of Project site to work in areas indicated. Do not disturb portions of Project site beyond areas in which the Work is indicated.

1. Limits: Confine construction operations to area of work for current phase.
2. Driveways, Walkways and Entrances: Keep driveways, loading areas, and entrances serving premises clear and available to Owner, Owner's employees, and emergency vehicles at all times. Do not use these areas for parking or for storage of materials.
  - a. Schedule deliveries to minimize use of driveways and entrances by construction operations.
  - b. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.
- C. Condition of Existing Building: Maintain portions of existing building affected by construction operations in a weathertight condition throughout construction period. Repair damage caused by construction operations.
- D. Condition of Existing Grounds: Maintain portions of existing grounds, landscaping, and hardscaping affected by construction operations throughout construction period. Repair damage caused by construction operations.

#### **1.10 COORDINATION WITH OCCUPANTS**

- A. Partial Owner Occupancy: Owner will occupy the premises during entire construction period, with the exception of areas under construction. Cooperate with Owner during construction operations to minimize conflicts and facilitate Owner usage. Perform the Work so as not to interfere with Owner's operations. Maintain existing exits unless otherwise indicated.
  1. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities. Do not close or obstruct walkways, corridors, or other occupied or used facilities without written permission from Owner and authorities having jurisdiction.
  2. Provide not less than 72 hours' notice to Owner of activities that will affect Owner's operations.

#### **1.11 WORK RESTRICTIONS**

- A. Work Restrictions, General: Comply with restrictions on construction operations.
  1. Comply with limitations on use of public streets and with other requirements of authorities having jurisdiction.
- B. On-Site Work Hours: Limit work in the existing building to normal business working hours of 8 a.m. to 5 p.m., Monday through Friday, unless otherwise indicated. Other times will be coordinated with the Owner:
  1. Weekend Hours
  2. Early Morning Hours
  3. Hours for Utility Shutdowns.
  4. Hours for Core Drilling and Sawing
- C. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after providing temporary utility services according to requirements indicated:
  1. Notify Owner not less than two days in advance of proposed utility interruptions.
  2. Obtain Owner's written permission before proceeding with utility interruptions.
- D. Noise, Vibration, and Odors: Coordinate operations that may result in high levels of noise and vibration, odors, or other disruption to Owner occupancy with Owner.
  1. Notify Owner not less than two days in advance of proposed disruptive operations.
  2. Obtain Owner's written permission before proceeding with disruptive operations.
- E. Restricted Substances: Use of tobacco products and other controlled substances on Project site is not permitted.

- F. Employee Identification: Provide identification tags for Contractor personnel working on Project site. Require personnel to use identification tags at all times.
- G. Employee Screening: Comply with Owner's requirements for drug and background screening of Contractor personnel working on Project site.
  - 1. Maintain list of approved screened personnel with Owner's representative.

**1.12 SPECIFICATION AND DRAWING CONVENTIONS**

- A. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:
  - 1. Imperative mood and streamlined language are generally used in the Specifications. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.
  - 2. Specification requirements are to be performed by Contractor unless specifically stated otherwise.
- B. Division 01 General Requirements: Requirements of Sections in Division 01 apply to the Work of all Sections in the Specifications.
- C. Drawing Coordination: Requirements for materials and products identified on Drawings are described in detail in the Specifications. One or more of the following are used on Drawings to identify materials and products:
  - 1. Terminology: Materials and products are identified by the typical generic terms used in the individual Specifications Sections.
  - 2. Abbreviations: Materials and products are identified by abbreviations published as part of the U.S. National CAD Standard and scheduled on Drawings.
  - 3. Keynoting: Materials and products are identified by reference keynotes referencing Specification Section numbers found in this Project Manual.

**PART 2 - PRODUCTS (Not Used)**

**PART 3 - EXECUTION (Not Used)**

END OF SECTION 011000





**SECTION 012100 - ALLOWANCES**

**PART 1 - GENERAL**

**1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

**1.2 SUMMARY**

- A. Section includes administrative and procedural requirements governing allowances.
- B. Types of allowances include the following:
  - 1. Lump-sum allowances.
  - 2. Unit-cost allowances.
  - 3. Quantity allowances.
  - 4. Contingency allowances.
  - 5. Testing and inspecting allowances.
- C. Related Requirements:
  - 1. Section 014000 "Quality Requirements" for procedures governing the use of allowances for field testing by an independent testing agency.

**1.3 DEFINITIONS**

- A. Allowance is a quantity of work or dollar amount established in lieu of additional requirements, used to defer selection of actual materials and equipment to a later date when direction will be provided to Contractor. If necessary, additional requirements will be issued by Change Order.

**1.4 SELECTION AND PURCHASE**

- A. At the earliest practical date after award of the Contract, advise Architect of the date when final selection, or purchase and delivery, of each product or system described by an allowance must be completed by the Owner to avoid delaying the Work.
- B. At Architect's request, obtain proposals for each allowance for use in making final selections. Include recommendations that are relevant to performing the Work.
- C. Purchase products and systems selected by Architect from the designated supplier.

**1.5 ACTION SUBMITTALS**

- A. Submit proposals for purchase of products or systems included in allowances in the form specified for Change Orders.

**1.6 INFORMATIONAL SUBMITTALS**

- A. Submit invoices or delivery slips to show actual quantities of materials delivered to the site for use in fulfillment of each allowance.
- B. Submit time sheets and other documentation to show labor time and cost for installation of allowance items that include installation as part of the allowance.
- C. Coordinate and process submittals for allowance items in same manner as for other portions of the Work.

**1.7 LUMP-SUM ALLOWANCES**

- A. Allowance shall include cost to Contractor of specific products and materials ordered by Owner or selected by Architect under allowance and shall include freight and delivery to Project site.
- B. Unless otherwise indicated, Contractor's costs for receiving and handling at Project site, labor, installation, overhead and profit, and similar costs related to products and materials ordered by Owner or selected by Architect under allowance shall be included as part of the Contract Sum and not part of the allowance.
- C. Unused Materials: Return unused materials purchased under an allowance to manufacturer or supplier for credit to Owner, after installation has been completed and accepted.

1. If requested by Architect, retain and prepare unused material for storage by Owner. Deliver unused material to Owner's storage space as directed.

**1.8 UNIT-COST ALLOWANCES**

- A. Allowance shall include cost to Contractor of specific products and materials ordered by Owner or selected by Architect under allowance and shall include freight and delivery to Project site.
- B. Unless otherwise indicated, Contractor's costs for receiving and handling at Project site, labor, installation, overhead and profit, and similar costs related to products and materials ordered by Owner or selected by Architect under allowance shall be included as part of the Contract Sum and not part of the allowance.
- C. Unused Materials: Return unused materials purchased under an allowance to manufacturer or supplier for credit to Owner, after installation has been completed and accepted.
  1. If requested by Architect, retain and prepare unused material for storage by Owner. Deliver unused material to Owner's storage space as directed.

**1.9 QUANTITY ALLOWANCES**

- A. Allowance shall include cost to Contractor of specific products and materials ordered by Owner or selected by Architect under allowance and shall include freight and delivery to Project site.
- B. Unless otherwise indicated, Contractor's costs for receiving and handling at Project site, labor, installation, overhead and profit, and similar costs related to products and materials ordered by Owner or selected by Architect under allowance shall be included as part of the Contract Sum and not part of the allowance.
- C. Unused Materials: Return unused materials purchased under an allowance to manufacturer or supplier for credit to Owner, after installation has been completed and accepted.
  1. If requested by Architect, retain and prepare unused material for storage by Owner. Deliver unused material to Owner's storage space as directed.

**1.10 CONTINGENCY ALLOWANCES**

- A. Use the contingency allowance only as directed by Architect for Owner's purposes and only by Change Orders that indicate amounts to be charged to the allowance.
- B. Contractor's overhead, profit, and related costs for products and equipment ordered by Owner under the contingency allowance are included in the allowance and are not part of the Contract Sum. These costs include delivery, installation, taxes, insurance, equipment rental, and similar costs.
- C. Change Orders authorizing use of funds from the contingency allowance will include Contractor's related costs and reasonable overhead and profit.
- D. At Project closeout, credit unused amounts remaining in the contingency allowance to Owner by Change Order.

**1.11 TESTING AND INSPECTING ALLOWANCES**

- A. Testing and inspecting allowances include the cost of engaging testing agencies, actual tests and inspections, and reporting results.
- B. The allowance does not include incidental labor required to assist the testing agency or costs for retesting if previous tests and inspections result in failure. The cost for incidental labor to assist the testing agency shall be included in the Contract Sum.
- C. Costs of testing and inspection services not required by the Contract Documents are not included in the allowance.
- D. At Project closeout, credit unused amounts remaining in the testing and inspecting allowance to Owner by Change Order.

**1.12 ADJUSTMENT OF ALLOWANCES**

- A. Allowance Adjustment: To adjust allowance amounts, prepare a Change Order proposal based on the difference between purchase amount and the allowance, multiplied by final measurement of work-in-place where applicable. If applicable, include reasonable allowances for cutting losses, tolerances, mixing wastes, normal product imperfections, and similar margins.
  - 1. Include installation costs in purchase amount only where indicated as part of the allowance.
  - 2. If requested, prepare explanation and documentation to substantiate distribution of overhead costs and other markups.
  - 3. Submit substantiation of a change in scope of Work, if any, claimed in Change Orders related to unit-cost allowances.
  - 4. Owner reserves the right to establish the quantity of work-in-place by independent quantity survey, measure, or count.
- B. Submit claims for increased costs because of a change in scope or nature of the allowance described in the Contract Documents, whether for the purchase order amount or Contractor's handling, labor, installation, overhead, and profit.
  - 1. Do not include Contractor's or subcontractor's indirect expense in the Change Order cost amount unless it is clearly shown that the nature or extent of Work has changed from what could have been foreseen from information in the Contract Documents.
  - 2. No change to Contractor's indirect expense is permitted for selection of higher- or lower-priced materials or systems of the same scope and nature as originally indicated.

**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 materials and their installation for each allowance with related materials and installations to ensure that each allowance item is completely integrated and interfaced with related work.

**3.3 SCHEDULE OF ALLOWANCES**

- A. **Allowance No. 1: Testing and Inspecting Allowance:** Develop and include in the base bid, an allowance for concrete and soils testing specified and as shown on Drawings.
  - 1. Amount of allowance: Five Thousand Dollars (\$5,000).
- B. **Allowance No. 2: General Contingency Allowance:** Include in base bid, an allowance for only as directed by Architect and approved by Owner in writing: for Owner's purposes
  - 1. Amount of allowance: Thirty Thousand Dollars (\$30,000)

END OF SECTION 012100



## **SECTION 012300 - ALTERNATES**

### **PART 1 - GENERAL**

#### **1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

#### **1.2 SUMMARY**

- A. Section includes administrative and procedural requirements for alternates.

#### **1.3 DEFINITIONS**

- A. Alternate: An amount proposed by bidders and stated on the Bid Form for certain work defined in the bidding requirements that may be added to or deducted from the base bid amount if the Owner decides to accept a corresponding change either in the amount of construction to be completed or in the products, materials, equipment, systems, or installation methods described in the Contract Documents.
  1. Alternates described in this Section are part of the Work only if enumerated in the Agreement.
  2. The cost or credit for each alternate is the net addition to or deduction from the Contract Sum to incorporate alternates into the Work. No other adjustments are made to the Contract Sum.

#### **1.4 PROCEDURES**

- A. Coordination: Revise or adjust affected adjacent work as necessary to completely integrate work of the alternate into Project.
  1. Include as part of each alternate, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation whether or not indicated as part of alternate.
- B. Execute accepted alternates under the same conditions as other work of the Contract.
- C. Schedule: A schedule of alternates is included at the end of this Section. Specification Sections referenced in schedule contain requirements for materials necessary to achieve the work described under each alternate.

### **PART 2 - PRODUCTS (Not Used)**

### **PART 3 - EXECUTION**

#### **3.1 SCHEDULE OF ALTERNATES**

- A. Base Bid: All work specified and indicated on drawing sheets except work noted under an alternate or as an alternate.
  1. **Alternate #1 - Replace Security Screens:** Remove existing security screens from H.V.A.C. distribution devices and replace with new screens as noted on Sheet M1.0.
  2. **Alternate #2 - Replace Light Fixtures:** Remove existing light fixtures in detention areas and replace with new fixtures as noted on Sheet E1.1.
  3. **Alternate #3 - Replace Door Hardware:** Remove existing latching/locking hardware from all doors in the probation areas and replace with new hardware as scheduled on Sheet A7.2.
  4. **Alternate #4 – Provide Protective Padding:** Provide cell padding on all surfaces of Bedroom #105 in lieu of paint in accordance with note #37 on Sheet A2.2.

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012300 - ALTERNATES

5. **Alternate #5 - Replace Security Screens:** Remove existing glazing and pass-through window from interior window frames in Rooms 155 and 158 and replace with new laminated glazing in accordance with note # 33 on Sheet A2.3
6. **Alternate #6 – Block up Exterior Window:** Remove existing exterior window frame and glazing from Medical #106 and infill opening with standard CMU covered on exterior side with stucco-on-lath to match exterior of building in accordance with note #39 on Sheet A2.3

END OF SECTION 012300

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## **SECTION 012500 - SUBSTITUTION PROCEDURES**

### **PART 1 - GENERAL**

#### **1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

#### **1.2 SUMMARY**

- A. Section includes administrative and procedural requirements for substitutions.
- B. Related Requirements:
  - 1. Section 012100 "Allowances" for products selected under an allowance.
  - 2. Section 012300 "Alternates" for products selected under an alternate.
  - 3. Section 016000 "Product Requirements" for requirements for submitting comparable product submittals for products by listed manufacturers.

#### **1.3 DEFINITIONS**

- A. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor.
  - 1. Substitutions for Cause: Changes proposed by Contractor that are required due to changed Project conditions, such as unavailability of product, regulatory changes, or unavailability of required warranty terms.
  - 2. Substitutions for Convenience: Changes proposed by Contractor or Owner that are not required in order to meet other Project requirements but may offer advantage to Contractor or Owner.

#### **1.4 ACTION SUBMITTALS**

- A. Substitution Requests: Submit three copies of each request for consideration. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.
  - 1. Substitution Request Form: Use CSI Form 13.1A.
  - 2. Documentation: Show compliance with requirements for substitutions and the following, as applicable:
    - a. Statement indicating why specified product or fabrication or installation method cannot be provided, if applicable.
    - b. Coordination of information, including a list of changes or revisions needed to other parts of the Work and to construction performed by Owner and separate contractors that will be necessary to accommodate proposed substitution.
    - c. Detailed comparison of significant qualities of proposed substitutions with those of the Work specified. Include annotated copy of applicable Specification Section. Significant qualities may include attributes, such as performance, weight, size, durability, visual effect, sustainable design characteristics, warranties, and specific features and requirements indicated. Indicate deviations, if any, from the Work specified.
    - d. Product Data, including drawings and descriptions of products and fabrication and installation procedures.
    - e. Samples, where applicable or requested.
    - f. Certificates and qualification data, where applicable or requested.
    - g. List of similar installations for completed projects, with project names and addresses as well as names and addresses of architects and owners.
    - h. Material test reports from a qualified testing agency, indicating and interpreting test results for compliance with requirements indicated.
    - i. Research reports evidencing compliance with building code in effect for Project, from ICC-ES.

- j. Detailed comparison of Contractor's construction schedule using proposed substitutions with products specified for the Work, including effect on the overall Contract Time. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating date of receipt of purchase order, lack of availability, or delays in delivery.
  - k. Cost information, including a proposal of change, if any, in the Contract Sum.
  - l. Contractor's certification that proposed substitution complies with requirements in the Contract Documents, except as indicated in substitution request, is compatible with related materials and is appropriate for applications indicated.
  - m. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.
3. Architect's Action: If necessary, Architect will request additional information or documentation for evaluation within seven days of receipt of a request for substitution. Architect will notify Contractor of acceptance or rejection of proposed substitution within 15 days of receipt of request, or seven days of receipt of additional information or documentation, whichever is later.
- a. Forms of Acceptance: Change Order, Construction Change Directive, or Architect's Supplemental Instructions for minor changes in the Work.
  - b. Use product specified if Architect does not issue a decision on use of a proposed substitution within time allocated.

#### **1.5 QUALITY ASSURANCE**

- A. Compatibility of Substitutions: Investigate and document compatibility of proposed substitution with related products and materials. Engage a qualified testing agency to perform compatibility tests recommended by manufacturers.

#### **1.6 PROCEDURES**

- A. Coordination: Revise or adjust affected work as necessary to integrate work of the approved substitutions.

#### **1.7 SUBSTITUTIONS**

- A. Substitutions for Cause: Submit requests for substitution immediately on discovery of need for change, but not later than 15 days prior to time required for preparation and review of related submittals.
  - 1. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:
    - a. Requested substitution is consistent with the Contract Documents and will produce indicated results.
    - b. Substitution request is fully documented and properly submitted.
    - c. Requested substitution will not adversely affect Contractor's construction schedule.
    - d. Requested substitution has received necessary approvals of authorities having jurisdiction.
    - e. Requested substitution is compatible with other portions of the Work.
    - f. Requested substitution has been coordinated with other portions of the Work.
    - g. Requested substitution provides specified warranty.
    - h. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.
- B. Substitutions for Convenience: Architect will consider requests for substitution if received within 60 days after the Notice to Proceed. Requests received after that time may be considered or rejected at discretion of Architect.



1. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:
  - a. Requested substitution offers Owner a substantial advantage in cost, time, energy conservation, or other considerations, after deducting additional responsibilities Owner must assume. Owner's additional responsibilities may include compensation to Architect for redesign and evaluation services, increased cost of other construction by Owner, and similar considerations.
  - b. Requested substitution does not require extensive revisions to the Contract Documents.
  - c. Requested substitution is consistent with the Contract Documents and will produce indicated results.
  - d. Substitution request is fully documented and properly submitted.
  - e. Requested substitution will not adversely affect Contractor's construction schedule.
  - f. Requested substitution has received necessary approvals of authorities having jurisdiction.
  - g. Requested substitution is compatible with other portions of the Work.
  - h. Requested substitution has been coordinated with other portions of the Work.
  - i. Requested substitution provides specified warranty.
  - j. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

**PART 2 - PRODUCTS (Not Used)**

**PART 3 - EXECUTION (Not Used)**

END OF SECTION 012500



## **SECTION 012900 - PAYMENT PROCEDURES**

### **PART 1 - GENERAL**

#### **1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

#### **1.2 SUMMARY**

- A. Section includes administrative and procedural requirements necessary to prepare and process Applications for Payment.
- B. Related Requirements:
  - 1. Section 012100 "Allowances" for procedural requirements governing the handling and processing of allowances.
  - 2. Section 012200 "Unit Prices" for administrative requirements governing the use of unit prices.
  - 3. Section 012600 "Contract Modification Procedures" for administrative procedures for handling changes to the Contract.
  - 4. Section 013200 "Construction Progress Documentation" for administrative requirements governing the preparation and submittal of the Contractor's construction schedule.

#### **1.3 DEFINITIONS**

- A. Schedule of Values: A statement furnished by Contractor allocating portions of the Contract Sum to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.

#### **1.4 SCHEDULE OF VALUES**

- A. Coordination: Coordinate preparation of the schedule of values with preparation of Contractor's construction schedule. Cost-loaded Critical Path Method Schedule may serve to satisfy requirements for the schedule of values.
  - 1. Coordinate line items in the schedule of values with items required to be indicated as separate activities in Contractor's construction schedule.
  - 2. Submit the schedule of values to Architect at earliest possible date, but no later than seven days before the date scheduled for submittal of initial Applications for Payment.
  - 3. Sub-schedules for Phased Work: Where the Work is separated into phases requiring separately phased payments, provide sub-schedules showing values coordinated with each phase of payment.
  - 4. Sub-schedules for Separate Elements of Work: Where the Contractor's construction schedule defines separate elements of the Work, provide sub-schedules showing values coordinated with each element.
  - 5. Sub-schedules for Separate Design Contracts: Where the Owner has retained design professionals under separate contracts who will each provide certification of payment requests, provide sub-schedules showing values coordinated with the scope of each design services contract, as described in Section 011000 "Summary."
- B. Format and Content: Use Project Manual table of contents as a guide to establish line items for the schedule of values. Provide at least one-line item for each Specification Section.
  - 1. Identification: Include the following Project identification on the schedule of values:
    - a. Project name and location.
    - b. Name of Architect.
    - c. Architect's Project number.
    - d. Contractor's name and address.
    - e. Date of submittal.
  - 2. Arrange schedule of values consistent with format of AIA Document G703.
  - 3. Arrange the schedule of values in tabular form, with separate columns to indicate the following for each item listed:

- a. Related Specification Section or Division.
  - b. Description of the Work.
  - c. Name of subcontractor.
  - d. Name of manufacturer or fabricator.
  - e. Name of supplier.
  - f. Change Orders (numbers) that affect value.
  - g. Dollar value of the following, as a percentage of the Contract Sum to nearest one-hundredth percent, adjusted to total 100 percent. Round dollar amounts to whole dollars, with total equal to Contract Sum.
    - 1) Labor.
    - 2) Materials.
    - 3) Equipment.
4. Provide a breakdown of the Contract Sum in enough detail to facilitate continued evaluation of Applications for Payment and progress reports. Provide multiple line items for principal subcontract amounts in excess of five percent of the Contract Sum.
  5. Provide a separate line item in the schedule of values for each part of the Work where Applications for Payment may include materials or equipment purchased or fabricated and stored, but not yet installed.
    - a. Differentiate between items stored on-site and items stored off-site.
  6. Allowances: Provide a separate line item in the schedule of values for each allowance. Show line-item value of unit-cost allowances, as a product of the unit cost, multiplied by measured quantity. Use information indicated in the Contract Documents to determine quantities.
  7. Purchase Contracts: Provide a separate line item in the schedule of values for each purchase contract. Show line-item value of purchase contract. Indicate Owner payments or deposits, if any, and balance to be paid by Contractor.
  8. Overhead Costs: Include total cost and proportionate share of general overhead and profit for each line item.
  9. Overhead Costs: Show cost of temporary facilities and other major cost items that are not direct cost of actual work-in-place as separate line items.
  10. Closeout Costs. Include separate line items under Contractor and principal subcontracts for Project closeout requirements in an amount totaling five percent of the Contract Sum and subcontract amount.
  11. Schedule of Values Revisions: Revise the schedule of values when Change Orders or Construction Change Directives result in a change in the Contract Sum. Include at least one separate line item for each Change Order and Construction Change Directive.

#### **1.5 APPLICATIONS FOR PAYMENT**

- A. Each Application for Payment following the initial Application for Payment shall be consistent with previous applications and payments as certified by Architect and paid for by Owner.
- B. Payment Application Times: The date for each progress payment is indicated in the Agreement between Owner and Contractor. The period of construction work covered by each Application for Payment is the period indicated in the Agreement.
- C. Application for Payment Forms: Use AIA Document G702 and AIA Document G703 as form for Applications for Payment.
  1. Other Application for Payment forms proposed by the Contractor shall be acceptable to Architect and Owner. Submit forms for approval with initial submittal of schedule of values.
- D. Application Preparation: Complete every entry on form. Notarize and execute by a person authorized to sign legal documents on behalf of Contractor. Architect will return incomplete applications without action.
  1. Entries shall match data on the schedule of values and Contractor's construction schedule. Use updated schedules if revisions were made.

2. Include amounts for work completed following previous Application for Payment, whether or not payment has been received. Include only amounts for work completed at time of Application for Payment.
  3. Include amounts of Change Orders and Construction Change Directives issued before last day of construction period covered by application.
  4. Indicate separate amounts for work being carried out under Owner-requested project acceleration.
- E. Stored Materials: Include in Application for Payment amounts applied for materials or equipment purchased or fabricated and stored, but not yet installed. Differentiate between items stored on-site and items stored off-site.
1. Provide certificate of insurance, evidence of transfer of title to Owner, and consent of surety to payment for stored materials.
  2. Provide supporting documentation that verifies amount requested, such as paid invoices. Match amount requested with amounts indicated on documentation; do not include overhead and profit on stored materials.
  3. Provide summary documentation for stored materials indicating the following:
    - a. Value of materials previously stored and remaining stored as of date of previous Applications for Payment.
    - b. Value of previously stored materials put in place after date of previous Application for Payment and on or before date of current Application for Payment.
    - c. Value of materials stored since date of previous Application for Payment and remaining stored as of date of current Application for Payment.
- F. Transmittal: Submit three signed and notarized original copies of each Application for Payment to Architect by a method ensuring receipt within 24 hours. One copy shall include waivers of lien and similar attachments if required.
1. Transmit each copy with a transmittal form listing attachments and recording appropriate information about application.
- G. Waivers of Mechanic's Lien: With each Application for Payment, submit waivers of mechanic's lien from entities lawfully entitled to file a mechanic's lien arising out of the Contract and related to the Work covered by the payment.
1. Submit partial waivers on each item for amount requested in previous application, after deduction for retainage, on each item.
  2. When an application shows completion of an item, submit conditional final or full waivers.
  3. Owner reserves the right to designate which entities involved in the Work must submit waivers.
  4. Submit final Application for Payment with or preceded by conditional final waivers from every entity involved with performance of the Work covered by the application who is lawfully entitled to a lien.
  5. Waiver Forms: Submit executed waivers of lien on forms acceptable to Owner.
- H. Initial Application for Payment: Administrative actions and submittals that must precede or coincide with submittal of first Application for Payment include the following:
1. List of subcontractors.
  2. Schedule of values.
  3. Contractor's construction schedule (preliminary if not final).
  4. Combined Contractor's construction schedule (preliminary if not final) incorporating Work of multiple contracts, with indication of acceptance of schedule by each Contractor.
  5. Products list (preliminary if not final).
  6. Sustainable design action plans, including preliminary project materials cost data.
  7. Schedule of unit prices.
  8. Submittal schedule (preliminary if not final).
  9. List of Contractor's staff assignments.
  10. List of Contractor's principal consultants.
  11. Copies of building permits.

12. Copies of authorizations and licenses from authorities having jurisdiction for performance of the Work.
  13. Initial progress report.
  14. Report of preconstruction conference.
  15. Certificates of insurance and insurance policies.
  16. Performance and payment bonds.
  17. Data needed to acquire Owner's insurance.
- I. Application for Payment at Substantial Completion: After Architect issues the Certificate of Substantial Completion, submit an Application for Payment showing 100 percent completion for portion of the Work claimed as substantially complete.
1. Include documentation supporting claim that the Work is substantially complete and a statement showing an accounting of changes to the Contract Sum.
  2. This application shall reflect Certificate(s) of Substantial Completion issued previously for Owner occupancy of designated portions of the Work.
- J. Final Payment Application: After completing Project closeout requirements, submit final Application for Payment with releases and supporting documentation not previously submitted and accepted, including, but not limited, to the following:
1. Evidence of completion of Project closeout requirements.
  2. Insurance certificates for products and completed operations where required and proof that taxes, fees, and similar obligations were paid.
  3. Updated final statement, accounting for final changes to the Contract Sum.
  4. AIA Document G706.
  5. AIA Document G706A.
  6. AIA Document G707.
  7. Evidence that claims have been settled.
  8. Final meter readings for utilities, a measured record of stored fuel, and similar data as of date of Substantial Completion or when Owner took possession of and assumed responsibility for corresponding elements of the Work.
  9. Final liquidated damages settlement statement.

**PART 2 - PRODUCTS (Not Used)**

**PART 3 - EXECUTION (Not Used)**

END OF SECTION 012900

## **SECTION 013100 PROJECT MANAGEMENT AND COORDINATION**

### **PART 1 - GENERAL**

#### **1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

#### **1.2 SUMMARY**

- A. Section includes administrative provisions for coordinating construction operations on Project including, but not limited to, the following:
  - 1. General coordination procedures.
  - 2. Coordination drawings.
  - 3. Requests for Information (RFIs).
  - 4. Project meetings.
- B. Each contractor shall participate in coordination requirements. Certain areas of responsibility are assigned to a specific contractor.
- C. Related Requirements:
  - 1. Section 013200 "Construction Progress Documentation" for preparing and submitting Contractor's construction schedule.
  - 2. Section 017300 "Execution" for procedures for coordinating general installation and field-engineering services, including establishment of benchmarks and control points.
  - 3. Section 017700 "Closeout Procedures" for coordinating closeout of the Contract.

#### **1.3 DEFINITIONS**

- A. RFI: Request from Owner, Architect, or Contractor seeking information required by or clarifications of the Contract Documents.

#### **1.4 INFORMATIONAL SUBMITTALS**

- A. Subcontract List: Prepare a written summary identifying individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment fabricated to a special design. Use CSI Form 1.5A. Include the following information in tabular form:
  - 1. Name, address, and telephone number of entity performing subcontract or supplying products.
  - 2. Number and title of related Specification Section(s) covered by subcontract.
  - 3. Drawing number and detail references, as appropriate, covered by subcontract.
- B. Key Personnel Names: Within 15 days of starting construction operations, submit a list of key personnel assignments, including superintendent and other personnel in attendance at Project site. Identify individuals and their duties and responsibilities; list addresses and telephone numbers, including home, office, and cellular telephone numbers and e-mail addresses. Provide names, addresses, and telephone numbers of individuals assigned as alternates in the absence of individuals assigned to Project.
  - 1. Post copies of list in project meeting room, in temporary field office, on Project Web site, and by each temporary telephone. Keep list current at all times.

#### **1.5 GENERAL COORDINATION PROCEDURES**

- A. Coordination: Coordinate construction operations included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations, included in different Sections, that depend on each other for proper installation, connection, and operation.
  - 1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.

2. Coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair.
3. Make adequate provisions to accommodate items scheduled for later installation.
- B. Prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and list of attendees at meetings.
  1. Prepare similar memoranda for Owner and separate contractors if coordination of their Work is required.
- C. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities and activities of other contractors to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:
  1. Preparation of Contractor's construction schedule.
  2. Preparation of the schedule of values.
  3. Installation and removal of temporary facilities and controls.
  4. Delivery and processing of submittals.
  5. Progress meetings.
  6. Preinstallation conferences.
  7. Project closeout activities.
  8. Startup and adjustment of systems.
- D. Conservation: Coordinate construction activities to ensure that operations are carried out with consideration given to conservation of energy, water, and materials. Coordinate use of temporary utilities to minimize waste.
  1. Salvage materials and equipment involved in performance of, but not actually incorporated into, the Work. See other Sections for disposition of salvaged materials that are designated as Owner's property.

#### **1.6 REQUESTS FOR INFORMATION (RFIs)**

- A. General: Immediately on discovery of the need for additional information or interpretation of the Contract Documents, Contractor shall prepare and submit an RFI in the form specified.
  1. Architect will return RFIs submitted to Architect by other entities controlled by Contractor with no response.
  2. Coordinate and submit RFIs in a prompt manner so as to avoid delays in Contractor's work or work of subcontractors.
- B. Content of the RFI: Include a detailed, legible description of item needing information or interpretation and the following:
  1. Project name.
  2. Project number.
  3. Date.
  4. Name of Contractor.
  5. Name of Architect.
  6. RFI number, numbered sequentially.
  7. RFI subject.
  8. Specification Section number and title and related paragraphs, as appropriate.
  9. Drawing number and detail references, as appropriate.
  10. Field dimensions and conditions, as appropriate.
  11. Contractor's suggested resolution. If Contractor's suggested resolution impacts the Contract Time or the Contract Sum, Contractor shall state impact in the RFI.
  12. Contractor's signature.
  13. 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. RFI Forms: AIA Document G716.
  - 1. Attachments shall be electronic files in Adobe Acrobat PDF format.
- D. Architect's Action: Architect will review each RFI, determine action required, and respond. Allow seven 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 of additional information.
  - 3. Architect's action on RFIs that may result in a change to the Contract Time or the Contract Sum may be eligible for Contractor to submit Change Proposal according to Section 012600 "Contract Modification Procedures."
    - a. If Contractor believes the RFI response warrants change in the Contract Time or the Contract Sum, notify Architect in writing within 7 of receipt of the RFI response.
- E. RFI Log: Prepare, maintain, and submit a tabular log of RFIs organized by the RFI number. Submit log weekly. Use CSI Log Form 13.2B. Include the following:
  - 1. Project name.
  - 2. Name and address of Contractor.
  - 3. Name and address of Architect.
  - 4. RFI number including RFIs that were returned without action or withdrawn.
  - 5. RFI description.
  - 6. Date the RFI was submitted.
  - 7. Date Architect's response was received.
- F. On receipt of Architect's action, update the RFI log and immediately distribute the RFI response to affected parties. Review response and notify Architect within seven days if Contractor disagrees with response.
  - 1. Identification of related Minor Change in the Work, Construction Change Directive, and Proposal Request, as appropriate.

## 1.7 PROJECT MEETINGS

- A. General: Schedule and conduct meetings and conferences at Project site unless otherwise indicated.
  - 1. Attendees: Inform participants and others involved, and individuals whose presence is required, of date and time of each meeting. Notify Owner and Architect of scheduled meeting dates and times.
  - 2. Agenda: Prepare the meeting agenda. Distribute the agenda to all invited attendees.
  - 3. Minutes: Entity responsible for conducting meeting will record significant discussions and agreements achieved. Distribute the meeting minutes to everyone concerned, including Owner and Architect, within three days of the meeting.
- B. Preconstruction Conference: Schedule and conduct a preconstruction conference before starting construction, at a time convenient to Owner and Architect, but no later than 15 days after execution of the Agreement.
  - 1. Conduct the conference to review responsibilities and personnel assignments.
  - 2. Attendees: Authorized representatives of Owner Architect, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned

- parties shall attend the conference. Participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
3. Agenda: Discuss items of significance that could affect progress, including the following:
    - a. Tentative construction schedule.
    - b. Phasing.
    - c. Critical work sequencing and long-lead items.
    - d. Designation of key personnel and their duties.
    - e. Lines of communications.
    - f. Procedures for processing field decisions and Change Orders.
    - g. Procedures for RFIs.
    - h. Procedures for testing and inspecting.
    - i. Procedures for processing Applications for Payment.
    - j. Submittal procedures.
    - k. Work restrictions.
    - l. Working hours.
    - m. Responsibility for temporary facilities and controls.
    - n. Procedures for moisture and mold control.
    - o. Construction waste management and recycling.
    - p. Parking availability.
    - q. Office, work, and storage areas.
    - r. Equipment deliveries and priorities.
    - s. Progress cleaning.
  4. Minutes: Entity responsible for conducting meeting will record and distribute meeting minutes.
- C. Project Closeout Conference: Schedule and conduct a project closeout conference, at a time convenient to Owner and Architect, but no later than 30 days prior to the scheduled date of Substantial Completion.
1. Conduct the conference to review requirements and responsibilities related to Project closeout.
  2. Attendees: Authorized representatives of Owner, Architect, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the meeting. Participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.
  3. Agenda: Discuss items of significance that could affect or delay Project closeout, including the following:
    - a. Preparation of record documents.
    - b. Procedures required prior to inspection for Substantial Completion and for final inspection for acceptance.
    - c. Submittal of written warranties.
    - d. Requirements for preparing operations and maintenance data.
    - e. Requirements for delivery of material samples, attic stock, and spare parts.
    - f. Requirements for demonstration and training.
    - g. Preparation of Contractor's punch list.
    - h. Procedures for processing Applications for Payment at Substantial Completion and for final payment.
    - i. Submittal procedures.
    - j. Installation of Owner's furniture, fixtures, and equipment.
    - k. Responsibility for removing temporary facilities and controls.
  4. Minutes: Entity conducting meeting will record and distribute meeting minutes.
- D. Progress Meetings: Conduct progress meetings weekly.
1. Coordinate dates of meetings with preparation of payment requests.
  2. Attendees: In addition to representatives of Owner and Architect, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these

- meetings. All participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.
3. Agenda: Review and correct or approve minutes of previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.
    - a. Contractor's Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Contractor's construction schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.
      - 1) Review schedule for next period.
    - b. Review present and future needs of each entity present, including the following:
      - 1) Interface requirements.
      - 2) Sequence of operations.
      - 3) Status of submittals.
      - 4) Deliveries.
      - 5) Off-site fabrication.
      - 6) Access.
      - 7) Site utilization.
      - 8) Temporary facilities and controls.
      - 9) Progress cleaning.
      - 10) Quality and work standards.
      - 11) Status of correction of deficient items.
      - 12) Field observations.
      - 13) Status of RFIs.
      - 14) Status of proposal requests.
      - 15) Pending changes.
      - 16) Status of Change Orders.
      - 17) Pending claims and disputes.
      - 18) Documentation of information for payment requests.
  4. Minutes: Entity responsible for conducting the meeting will record and distribute the meeting minutes to each party present and to parties requiring information.
    - a. Schedule Updating: Revise Contractor's construction schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with the report of each meeting.

**PART 2 - PRODUCTS (Not Used)**

**PART 3 - EXECUTION (Not Used)**

END OF SECTION 013100



## **SECTION 013300**

### **SUBMITTAL PROCEDURES**

#### **PART 1 - GENERAL**

##### **1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

##### **1.2 SUMMARY**

- A. Section includes requirements for the submittal schedule and administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other submittals.
- B. All submittals are to be made by the General Contractor or Project Manager, to the Owner and Architect. No submittal is to be made before the General Contractor or Project Manager has reviewed the submittal and made appropriate annotations on the submittal. All submittals are to bear the General Contractor or Project Managers comments, markups and approval before being submitted.
- C. It is the intent of this project to utilize electronic submittals for the review process. Electronic submittal process may need to be adjusted and refined as project commences to establish the procedure and protocol that works best for the Owner and Architect to maintain document control of their work.
- D. Related Requirements:
  - 1. Section 012900 "Payment Procedures" for submitting Applications for Payment and the schedule of values.
  - 2. Section 017823 "Operation and Maintenance Data" for submitting operation and maintenance manuals.
  - 3. Section 017900 "Demonstration and Training" for submitting video recordings of demonstration of equipment and training of Owner's personnel.

##### **1.3 DEFINITIONS**

- A. Action Submittals: Written and graphic information and physical samples that require Architect's responsive action. Action submittals are those submittals indicated in individual Specification Sections as "action submittals."
- B. Informational Submittals: Written and graphic information and physical samples that do not require Architect's responsive action. Submittals may be rejected for not complying with requirements. Informational submittals are those submittals indicated in individual Specification Sections as "informational submittals."
- C. File Transfer Protocol (FTP): Communications protocol that enables transfer of files to and from another computer over a network and that serves as the basis for standard Internet protocols. An FTP site is a portion of a network located outside of network firewalls within which internal and external users are able to access files.
- D. Portable Document Format (PDF): An open standard file format licensed by Adobe Systems used for representing documents in a device-independent and display resolution-independent fixed-layout document format.

##### **1.4 ACTION SUBMITTALS**

- A. Submittal Schedule: Submit a schedule of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review, ordering, manufacturing, fabrication, and delivery when establishing dates. Include additional time required for making corrections or revisions to submittals noted by Architect and additional time for handling and reviewing submittals required by those corrections.

1. Coordinate submittal schedule with list of subcontracts, the schedule of values, and Contractor's construction schedule.
2. Final Submittal: Submit concurrently with the first complete submittal of Contractor's construction schedule.
  - a. Submit revised submittal schedule to reflect changes in current status and timing for submittals.
3. Format: Arrange the following information in a tabular format:
  - a. Scheduled date for first submittal.
  - b. Specification Section number and title.
  - c. Submittal category: Action; informational.
  - d. Name of subcontractor.
  - e. Description of the Work covered.
  - f. Scheduled date for Architect's final release or approval.
  - g. Scheduled date of fabrication.

### **1.5 SUBMITTAL ADMINISTRATIVE REQUIREMENTS**

- A. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.
  1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
  2. Submit all submittal items required for each Specification Section concurrently unless partial submittals for portions of the Work are indicated on approved submittal schedule.
  3. Submit action submittals and informational submittals required by the same Specification Section as separate packages under separate transmittals.
  4. Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.
    - a. Architect reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.
- 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 15 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. Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.
  3. Resubmittal Review: Allow 15 days for review of each resubmittal.
- C. Paper Submittals: Place a permanent label or title block on each submittal item for identification.
  1. Indicate name of firm or entity that prepared each submittal on label or title block.
  2. Provide a space approximately 6 by 8 inches on label or beside title block to record Contractor's review and approval markings and action taken by Architect.
  3. Include the following information for processing and recording action taken:
    - a. Project name.
    - b. Date.
    - c. Name of Architect.
    - d. Name of Contractor.
    - e. Name of subcontractor.
    - f. Name of supplier.
    - g. Name of manufacturer.
    - h. Submittal number or other unique identifier, including revision identifier.

- 1) Submittal number shall use Specification Section number followed by a decimal point and then a sequential number (e.g., 061000.01). Resubmittals shall include an alphabetic suffix after another decimal point (e.g., 061000.01.A).
  - i. Number and title of appropriate Specification Section.
  - j. Drawing number and detail references, as appropriate.
  - k. Location(s) where product is to be installed, as appropriate.
4. Additional Paper Copies: Unless additional copies are required for final submittal, and unless Architect observes noncompliance with provisions in the Contract Documents, initial submittal may serve as final submittal.
  - a. Submit one copy of submittal to concurrent reviewer in addition to specified number of copies to Architect.
5. Transmittal for Paper Submittals: Assemble each submittal individually and appropriately for transmittal and handling. Transmit each submittal using a transmittal form. Architect will return without review submittals received from sources other than Contractor.
  - a. Transmittal Form for Paper Submittals: Use AIA Document G810.
- D. Electronic Submittals: Identify and incorporate information in each electronic submittal file as follows:
  1. Assemble complete submittal package into a single indexed file incorporating submittal requirements of a single Specification Section and transmittal form with links enabling navigation to each item.
  2. Name file with submittal number or other unique identifier, including revision identifier.
    - a. File name shall use project identifier and Specification Section number followed by a decimal point and then a sequential number (e.g., LNHS-061000.01). Resubmittals shall include an alphabetic suffix after another decimal point (e.g., LNHS-061000.01.A).
  3. Provide means for insertion to permanently record Contractor's review and approval markings and action taken by Architect.
  4. Transmittal Form for Electronic Submittals: Use software-generated form from electronic project management software acceptable to Owner, containing the following information:
    - a. Project name.
    - b. Date.
    - c. Name and address of Architect.
    - d. Name of Contractor.
    - e. Name of firm or entity that prepared submittal.
    - f. Names of subcontractor, manufacturer, and supplier.
    - g. Category and type of submittal.
    - h. Submittal purpose and description.
    - i. Specification Section number and title.
    - j. Specification paragraph number or drawing designation and generic name for each of multiple items.
    - k. Drawing number and detail references, as appropriate.
    - l. Location(s) where product is to be installed, as appropriate.
    - m. Related physical samples submitted directly.
    - n. Indication of full or partial submittal.
    - o. Transmittal number, numbered consecutively.
    - p. Submittal and transmittal distribution record.
    - q. Other necessary identification.
    - r. Remarks.
- E. Options: Identify options requiring selection by Architect.
- F. Deviations and Additional Information: On an attached separate sheet, prepared on Contractor's letterhead, record relevant information, requests for data, revisions other than those requested by Architect on previous submittals, and deviations from requirements in the

Contract Documents, including minor variations and limitations. Include same identification information as related submittal.

- G. Resubmittals: Make resubmittals in same form and number of copies as initial submittal.
  - 1. Note date and content of previous submittal.
  - 2. Note date and content of revision in label or title block and clearly indicate extent of revision.
  - 3. Resubmit submittals until they are marked with approval notation from Architect's action stamp.
- H. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, and installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.
- I. Use for Construction: Retain complete copies of submittals on Project site. Use only final action submittals that are marked with approval notation from Architect's action stamp.

## **PART 2 - PRODUCTS**

### **2.1 SUBMITTAL PROCEDURES**

- A. General Submittal Procedure Requirements: Prepare and submit submittals required by individual Specification Sections. Types of submittals are indicated in individual Specification Sections.
  - 1. Submit electronic submittals via email as PDF electronic files.
    - a. Architect will return annotated file. Annotate and retain one copy of file as an electronic Project record document file.
  - 2. Action Submittals: Submit three paper copies of each submittal unless otherwise indicated. Architect will return two copies.
  - 3. Informational Submittals: Submit two paper copies of each submittal unless otherwise indicated. Architect will not return copies.
  - 4. Certificates and Certifications Submittals: Provide a statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity.
    - a. Provide a digital signature with digital certificate on electronically submitted certificates and certifications where indicated.
- B. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.
  - 1. If information must be specially prepared for submittal because standard published data are not suitable for use, submit as Shop Drawings, not as Product Data.
  - 2. Mark each copy of each submittal to show which products and options are applicable.
  - 3. Include the following information, as applicable:
    - a. Manufacturer's catalog cuts.
    - b. Manufacturer's product specifications.
    - c. Standard color charts.
    - d. Statement of compliance with specified referenced standards.
    - e. Testing by recognized testing agency.
    - f. Notation of coordination requirements.
    - g. Availability and delivery time information.
  - 4. For equipment, include the following in addition to the above, as applicable:
    - a. Printed performance curves.
    - b. Operational range diagrams.
    - c. Clearances required to other construction, if not indicated on accompanying Shop Drawings.
  - 5. Submit Product Data before or concurrent with Samples.
  - 6. Submit Product Data in the following format:



- a. Three paper copies of Product Data unless otherwise indicated. Architect will return two copies.
- C. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data.
  1. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:
    - a. Identification of products.
    - b. Schedules.
    - c. Compliance with specified standards.
    - d. Notation of coordination requirements.
    - e. Notation of dimensions established by field measurement.
    - f. Relationship and attachment to adjoining construction clearly indicated.
    - g. Seal and signature of professional engineer if specified.
  2. Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches, but no larger than 30 by 42 inches.
  3. Submit Shop Drawings in the following format:
    - a. PDF electronic file.
    - b. Two opaque (bond) copies of each submittal. Architect will return one copy.
- D. Samples: Submit Samples for review of kind, color, pattern, and texture for a check of these characteristics with other elements and for a comparison of these characteristics between submittal and actual component as delivered and installed.
  1. Transmit Samples that contain multiple, related components such as accessories together in one submittal package.
  2. Identification: Attach label on unexposed side of Samples that includes the following:
    - a. Generic description of Sample.
    - b. Product name and name of manufacturer.
    - c. Sample source.
    - d. Number and title of applicable Specification Section.
    - e. Specification paragraph number and generic name of each item.
  3. For projects where electronic submittals are permitted, provide corresponding electronic submittal of Sample transmittal, digital image file illustrating Sample characteristics, and identification information for record.
  4. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.
    - a. Samples not incorporated into the Work, or otherwise designated as Owner's property, are the property of Contractor.
  5. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available.
    - a. Number of Samples: Submit one full set(s) 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.
  6. Samples for Verification: Submit full-size units or Samples 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.
    - a. Number of Samples: Submit two sets of Samples. Architect will retain one sample set; remainder will be returned.

- 1) Submit a single Sample where assembly details, workmanship, fabrication techniques, connections, operation, and other similar characteristics are to be demonstrated.
  - 2) If variation in color, pattern, texture, or other characteristic is inherent in material or product represented by a Sample, submit at least three sets of paired units that show approximate limits of variations.
- E. Product Schedule: As required in individual Specification Sections, prepare a written summary indicating types of products required for the Work and their intended location. Include the following information in tabular form:
1. Type of product. Include unique identifier for each product indicated in the Contract Documents or assigned by Contractor if none is indicated.
  2. Manufacturer and product name, and model number if applicable.
  3. Number and name of room or space.
  4. Location within room or space.
  5. Submit product schedule in the following format:
    - a. PDF electronic file.
    - b. Three paper copies of product schedule or list unless otherwise indicated. Architect will return two copies.
- F. Coordination Drawing Submittals: Comply with requirements specified in Section 013100 "Project Management and Coordination."
- G. Contractor's Construction Schedule: Comply with requirements specified in Section 013200 "Construction Progress Documentation."
- H. Application for Payment and Schedule of Values: Comply with requirements specified in Section 012900 "Payment Procedures."
- I. Test and Inspection Reports and Schedule of Tests and Inspections Submittals: Comply with requirements specified in Section 014000 "Quality Requirements."
- J. Closeout Submittals and Maintenance Material Submittals: Comply with requirements specified in Section 017700 "Closeout Procedures."
- K. Maintenance Data: Comply with requirements specified in Section 017823 "Operation and Maintenance Data."
- L. Installer Certificates: Submit written statements on manufacturer's letterhead certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.
- M. Manufacturer Certificates: Submit written statements on manufacturer's letterhead certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.
- N. Product Certificates: Submit written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.
- O. Material Certificates: Submit written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.
- P. Material Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.
- Q. Product Test Reports: Submit written reports indicating that current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.
- R. Preconstruction Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements in the Contract Documents.

- S. Compatibility Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for primers and substrate preparation needed for adhesion.
- T. Field Test Reports: Submit written reports indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.
- U. Design Data: Prepare and submit written and graphic information, including, but not limited to, performance and design criteria, list of applicable codes and regulations, and calculations. Include list of assumptions and other performance and design criteria and a summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Include page numbers.

## 2.2 DELEGATED-DESIGN SERVICES

- A. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.
  - 1. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to Architect.
- B. Delegated-Design Services Certification: In addition to Shop Drawings, Product Data, and other required submittals, submit digitally signed PDF electronic file and three paper copies of certificate, signed and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional.
  - 1. Indicate that products and systems comply with performance and design criteria in the Contract Documents. Include list of codes, loads, and other factors used in performing these services.

## PART 3 - EXECUTION

### 3.1 CONTRACTOR'S REVIEW

- A. Action and Informational Submittals: Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. **Mark with approval stamp before submitting to Architect.**
- B. Project Closeout and Maintenance Material Submittals: See requirements in Section 017700 "Closeout Procedures."
- C. Approval Stamp: Stamp each submittal with a uniform, approval stamp. Include Project name and location, submittal number, Specification Section title and number, name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

### 3.2 ARCHITECT'S ACTION

- A. Action Submittals: Architect will review each submittal, make marks to indicate corrections or revisions required, and return it. Architect will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action.
- B. Informational Submittals: Architect will review each submittal and will not return it or will return it if it does not comply with requirements. Architect will forward each submittal to appropriate party.
- C. Partial submittals prepared for a portion of the Work will be reviewed when use of partial submittals has received prior approval from Architect.
- D. Incomplete submittals are unacceptable, will be considered nonresponsive, and will be returned for resubmittal without review.

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PROCEDURES

- E. Submittals not required by the Contract Documents may be returned by the Architect without action.

END OF SECTION 013300

## QUALITY REQUIREMENTS

### **PART 1 - GENERAL**

#### **1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

#### **1.2 SUMMARY**

- A. Section includes administrative and procedural requirements for quality assurance and quality control.
- B. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.
  - 1. Specific quality-assurance and -control requirements for individual construction activities are specified in the Sections that specify those activities. Requirements in those Sections may also cover production of standard products.
  - 2. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and -control procedures that facilitate compliance with the Contract Document requirements.
  - 3. Requirements for Contractor to provide quality-assurance and -control services required by Architect, Owner, or authorities having jurisdiction are not limited by provisions of this Section.
- C. Related Requirements:
  - 1. Section 012100 "Allowances" for testing and inspecting allowances.
  - 2. Geotechnical Report of existing subgrade conditions.

#### **1.3 DEFINITIONS**

- A. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.
- B. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that actual products incorporated into the Work and completed construction comply with requirements. Services do not include contract enforcement activities performed by Architect.
- C. Mockups: Full-size physical assemblies that are constructed on-site. Mockups are constructed to verify selections made under Sample submittals; to demonstrate aesthetic effects and, where indicated, qualities of materials and execution; to review coordination, testing, or operation; to show interface between dissimilar materials; and to demonstrate compliance with specified installation tolerances. Mockups are not Samples. Unless otherwise indicated, approved mockups establish the standard by which the Work will be judged.
  - 1. Integrated Exterior Mockups: Mockups of the exterior envelope erected separately from the building but on Project site, consisting of multiple products, assemblies, and subassemblies.
  - 2. Room Mockups: Mockups of typical interior spaces complete with wall, floor, and ceiling finishes, doors, windows, millwork, casework, specialties, furnishings and equipment, and lighting.
- D. Preconstruction Testing: Tests and inspections performed specifically for Project before products and materials are incorporated into the Work, to verify performance or compliance with specified criteria.

- E. Product Testing: Tests and inspections that are performed by an NRTL, an NVLAP, or a testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with specified requirements.
- F. Source Quality-Control Testing: Tests and inspections that are performed at the source, e.g., plant, mill, factory, or shop.
- G. Field Quality-Control Testing: Tests and inspections that are performed on-site for installation of the Work and for completed Work.
- H. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.
- I. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, Subcontractor, or Sub-subcontractor, to perform a particular construction operation, including installation, erection, application, and similar operations.
  - 1. Use of trade-specific terminology in referring to a trade or entity does not require that certain construction activities be performed by accredited or unionized individuals, or that requirements specified apply exclusively to specific trade(s).
- J. Experienced: When used with an entity or individual, "experienced" means having successfully completed a minimum of five previous projects similar in nature, size, and extent to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.

#### **1.4 CONFLICTING REQUIREMENTS**

- A. Referenced Standards: If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer conflicting requirements that are different, but apparently equal, to Architect for a decision before proceeding.
- B. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to Architect for a decision before proceeding.

#### **1.5 ACTION SUBMITTALS**

- A. Shop Drawings: For integrated exterior mockups, provide plans, sections, and elevations, indicating materials and size of mockup construction.
  - 1. Indicate manufacturer and model number of individual components.
  - 2. Provide axonometric drawings for conditions difficult to illustrate in two dimensions.

#### **1.6 REPORTS AND DOCUMENTS**

- A. Test and Inspection Reports: Prepare and submit certified written reports specified in other Sections. Include the following:
  - 1. Date of issue.
  - 2. Project title and number.
  - 3. Name, address, and telephone number of testing agency.
  - 4. Dates and locations of samples and tests or inspections.
  - 5. Names of individuals making tests and inspections.
  - 6. Description of the Work and test and inspection method.
  - 7. Identification of product and Specification Section.
  - 8. Complete test or inspection data.
  - 9. Test and inspection results and an interpretation of test results.
  - 10. Record of temperature and weather conditions at time of sample taking and testing and inspecting.

11. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
  12. Name and signature of laboratory inspector.
  13. Recommendations on retesting and reinspecting.
- B. Manufacturer's Technical Representative's Field Reports: Prepare written information documenting manufacturer's technical representative's tests and inspections specified in other Sections. Include the following:
1. Name, address, and telephone number of technical representative making report.
  2. Statement on condition of substrates and their acceptability for installation of product.
  3. Statement that products at Project site comply with requirements.
  4. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
  5. Results of operational and other tests and a statement of whether observed performance complies with requirements.
  6. Statement whether conditions, products, and installation will affect warranty.
  7. Other required items indicated in individual Specification Sections.
- C. Factory-Authorized Service Representative's Reports: Prepare written information documenting manufacturer's factory-authorized service representative's tests and inspections specified in other Sections. Include the following:
1. Name, address, and telephone number of factory-authorized service representative making report.
  2. Statement that equipment complies with requirements.
  3. Results of operational and other tests and a statement of whether observed performance complies with requirements.
  4. Statement whether conditions, products, and installation will affect warranty.
  5. Other required items indicated in individual Specification Sections.
- D. Permits, Licenses, and Certificates: For Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents, established for compliance with standards and regulations bearing on performance of the Work.

## 1.7 QUALITY ASSURANCE

- A. General: Qualifications paragraphs in this article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.
- B. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- C. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- D. Installer Qualifications: A firm or individual experienced in installing, erecting, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.
- E. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or product that are similar in material, design, and extent to those indicated for this Project.
- F. Testing Agency Qualifications: An NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspecting indicated, as documented according to ASTM E 329; and with additional qualifications specified in individual Sections; and, where required by authorities having jurisdiction, that is acceptable to authorities.

1. NRTL: A nationally recognized testing laboratory according to 29 CFR 1910.7.
  2. NVLAP: A testing agency accredited according to NIST's National Voluntary Laboratory Accreditation Program.
- G. Manufacturer's Technical Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to observe and inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.
- H. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.
- I. Mockups: Before installing portions of the Work requiring mockups, build mockups for each form of construction and finish required to comply with the following requirements, using materials indicated for the completed Work:
1. Build mockups in location and of size indicated or, if not indicated, as directed by Architect.
  2. Notify Architect seven days in advance of dates and times when mockups will be constructed.
  3. Employ supervisory personnel who will oversee mockup construction. Employ workers that will be employed during the construction at Project.
  4. Demonstrate the proposed range of aesthetic effects and workmanship.
  5. Obtain Architect's approval of mockups before starting work, fabrication, or construction.
    - a. Allow seven days for initial review and each re-review of each mockup.
  6. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.
  7. Demolish and remove mockups when directed unless otherwise indicated.
- J. Integrated Exterior Mockups: Construct integrated exterior mockup as indicated on Drawings or according to approved Shop Drawings as applicable. Coordinate installation of exterior envelope materials and products for which mockups are required in individual Specification Sections, along with supporting materials.

## 1.8 QUALITY CONTROL

- A. Owner Responsibilities: Where quality-control services are indicated as Owner's responsibility, Owner will engage a qualified testing agency to perform these services.
1. Owner will furnish Contractor with names, addresses, and telephone numbers of testing agencies engaged and a description of types of testing and inspecting they are engaged to perform.
  2. Payment for these services will be made from testing and inspecting allowances, as authorized by Change Orders.
  3. Costs for retesting and reinspecting construction that replaces or is necessitated by work that failed to comply with the Contract Documents will be charged to Contractor, and the Contract Sum will be adjusted by Change Order.
- B. Contractor Responsibilities: Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Perform additional quality-control activities required to verify that the Work complies with requirements, whether specified or not.
1. Unless otherwise indicated, provide quality-control services specified and those required by authorities having jurisdiction. Perform quality-control services required of Contractor by authorities having jurisdiction, whether specified or not.
  2. Where services are indicated as Contractor's responsibility, engage a qualified testing agency to perform these quality-control services.
  3. Notify testing agencies at least 24 hours in advance of time when Work that requires testing or inspecting will be performed.



4. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.
  5. Testing and inspecting requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
  6. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.
- C. **Manufacturer's Field Services:** Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing as specified in Section 013300 "Submittal Procedures."
- D. **Manufacturer's Technical Services:** Where indicated, engage a manufacturer's technical representative to observe and inspect the Work. Manufacturer's technical representative's services include participation in preinstallation conferences, examination of substrates and conditions, verification of materials, observation of Installer activities, inspection of completed portions of the Work, and submittal of written reports.
- E. **Retesting/Reinspecting:** Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspecting, for construction that replaced Work that failed to comply with the Contract Documents.
- F. **Testing Agency Responsibilities:** Cooperate with Architect and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.
1. Notify Architect and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
  2. Determine the location from which test samples will be taken and in which in-situ tests are conducted.
  3. Conduct and interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from requirements.
  4. Submit a certified written report, in duplicate, of each test, inspection, and similar quality-control service through Contractor.
  5. Do not release, revoke, alter, or increase the Contract Document requirements or approve or accept any portion of the Work.
  6. Do not perform any duties of Contractor.
- G. **Associated Services:** Cooperate with agencies performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:
1. Access to the Work.
  2. Incidental labor and facilities necessary to facilitate tests and inspections.
  3. Adequate quantities of representative samples of materials that require testing and inspecting. Assist agency in obtaining samples.
  4. Facilities for storage and field curing of test samples.
  5. Delivery of samples to testing agencies.
  6. Preliminary design mix proposed for use for material mixes that require control by testing agency.
  7. Security and protection for samples and for testing and inspecting equipment at Project site.
- H. **Coordination:** Coordinate sequence of activities to accommodate required quality-assurance and -control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.
1. Schedule times for tests, inspections, obtaining samples, and similar activities.
- I. **Schedule of Tests and Inspections:** Prepare a schedule of tests, inspections, and similar quality-control services required by the Contract Documents. Coordinate and submit concurrently with Contractor's construction schedule. Update as the Work progresses.

1. Distribution: Distribute schedule to Owner, Architect, testing agencies, and each party involved in performance of portions of the Work where tests and inspections are required.

### **1.9 SPECIAL TESTS AND INSPECTIONS**

- A. Special Tests and Inspections: Conducted by a qualified testing agency as required by authorities having jurisdiction, as indicated in individual Specification Sections, and as follows:
  1. Verifying that manufacturer maintains detailed fabrication and quality-control procedures and reviews the completeness and adequacy of those procedures to perform the Work.
  2. Notifying Architect and Contractor promptly of irregularities and deficiencies observed in the Work during performance of its services.
  3. Submitting a certified written report of each test, inspection, and similar quality-control service to Architect with copy to Contractor and to authorities having jurisdiction.
  4. Submitting a final report of special tests and inspections at Substantial Completion, which includes a list of unresolved deficiencies.
  5. Interpreting tests and inspections and stating in each report whether tested and inspected work complies with or deviates from the Contract Documents.
  6. Retesting and reinspecting corrected work.

### **PART 2 - PRODUCTS (Not Used)**

### **PART 3 - EXECUTION**

#### **3.1 TEST AND INSPECTION LOG**

- A. Test and Inspection Log: Prepare a record of tests and inspections. Include the following:
  1. Date test or inspection was conducted.
  2. Description of the Work tested or inspected.
  3. Date test or inspection results were transmitted to Architect.
  4. Identification of testing agency or special inspector conducting test or inspection.
- B. Maintain log at Project site. Post changes and revisions as they occur. Provide access to test and inspection log for Architect's reference during normal working hours.

#### **3.2 REPAIR AND PROTECTION**

- A. General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.
  1. Provide materials and comply with installation requirements specified in other Specification Sections or matching existing substrates and finishes. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible. Comply with the Contract Document requirements for cutting and patching in Section 017300 "Execution."
- B. Protect construction exposed by or for quality-control service activities.
- C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

END OF SECTION 014000

## **SECTION 014200 -REFERENCES**

### **PART 1 - GENERAL**

#### **1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

#### **1.2 DEFINITIONS**

- A. General: Basic Contract definitions are included in the Conditions of the Contract.
- B. "Approved": When used to convey Architect's action on Contractor's submittals, applications, and requests, "approved" is limited to Architect's duties and responsibilities as stated in the Conditions of the Contract.
- C. "Directed": A command or instruction by Architect. Other terms including "requested," "authorized," "selected," "required," and "permitted" have the same meaning as "directed."
- D. "Indicated": Requirements expressed by graphic representations or in written form on Drawings, in Specifications, and in other Contract Documents. Other terms including "shown," "noted," "scheduled," and "specified" have the same meaning as "indicated."
- E. "Regulations": Laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, and rules, conventions, and agreements within the construction industry that control performance of the Work.
- F. "Furnish": Supply and deliver to Project site, ready for unloading, unpacking, assembly, installation, and similar operations.
- G. "Install": Unload, temporarily store, unpack, assemble, erect, place, anchor, apply, work to dimension, finish, cure, protect, clean, and similar operations at Project site.
- H. "Provide": Furnish and install, complete and ready for the intended use.
- I. "Project Site": Space available for performing construction activities. The extent of Project site is shown on Drawings and may or may not be identical with the description of the land on which Project is to be built.

#### **1.3 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 unless otherwise indicated.
- C. Copies of Standards: Each entity engaged in construction on Project should 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.

#### **1.4 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 indicated in Gale's "Encyclopedia of Associations: National Organizations of the U.S." or in Columbia Books' "National Trade & Professional Associations of the United States."
- B. 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.

This information is subject to change and is believed to be accurate as of the date of the Contract Documents.

1. AABC - Associated Air Balance Council; [www.aabc.com](http://www.aabc.com).
2. AAMA - American Architectural Manufacturers Association; [www.aamanet.org](http://www.aamanet.org).
3. AAPFCO - Association of American Plant Food Control Officials; [www.aapfco.org](http://www.aapfco.org).
4. AASHTO - American Association of State Highway and Transportation Officials; [www.transportation.org](http://www.transportation.org).
5. AATCC - American Association of Textile Chemists and Colorists; [www.aatcc.org](http://www.aatcc.org).
6. ABMA - American Bearing Manufacturers Association; [www.americanbearings.org](http://www.americanbearings.org).
7. ACI - American Concrete Institute; (Formerly: ACI International); [www.concrete.org](http://www.concrete.org).
8. ACPA - American Concrete Pipe Association; [www.concrete-pipe.org](http://www.concrete-pipe.org).
9. AEIC - Association of Edison Illuminating Companies, Inc. (The); [www.aeic.org](http://www.aeic.org).
10. AF&PA - American Forest & Paper Association; [www.afandpa.org](http://www.afandpa.org).
11. AGA - American Gas Association; [www.aga.org](http://www.aga.org).
12. AHAM - Association of Home Appliance Manufacturers; [www.aham.org](http://www.aham.org).
13. AHRI - Air-Conditioning, Heating, and Refrigeration Institute (The); [www.ahrinet.org](http://www.ahrinet.org).
14. AI - Asphalt Institute; [www.asphaltinstitute.org](http://www.asphaltinstitute.org).
15. AIA - American Institute of Architects (The); [www.aia.org](http://www.aia.org).
16. AISC - American Institute of Steel Construction; [www.aisc.org](http://www.aisc.org).
17. AISI - American Iron and Steel Institute; [www.steel.org](http://www.steel.org).
18. AITC - American Institute of Timber Construction; [www.aitc-glulam.org](http://www.aitc-glulam.org).
19. AMCA - Air Movement and Control Association International, Inc.; [www.amca.org](http://www.amca.org).
20. ANSI - American National Standards Institute; [www.ansi.org](http://www.ansi.org).
21. AOSA - Association of Official Seed Analysts, Inc.; [www.aosaseed.com](http://www.aosaseed.com).
22. APA - APA - The Engineered Wood Association; [www.apawood.org](http://www.apawood.org).
23. APA - Architectural Precast Association; [www.archprecast.org](http://www.archprecast.org).
24. API - American Petroleum Institute; [www.api.org](http://www.api.org).
25. ARI - Air-Conditioning & Refrigeration Institute; (See AHRI).
26. ARI - American Refrigeration Institute; (See AHRI).
27. ARMA - Asphalt Roofing Manufacturers Association; [www.asphaltroofing.org](http://www.asphaltroofing.org).
28. ASCE - American Society of Civil Engineers; [www.asce.org](http://www.asce.org).
29. ASCE/SEI - American Society of Civil Engineers/Structural Engineering Institute; (See ASCE).
30. ASHRAE - American Society of Heating, Refrigerating and Air-Conditioning Engineers; [www.ashrae.org](http://www.ashrae.org).
31. ASME - ASME International; (American Society of Mechanical Engineers); [www.asme.org](http://www.asme.org).
32. ASSE - American Society of Safety Engineers (The); [www.asse.org](http://www.asse.org).
33. ASSE - American Society of Sanitary Engineering; [www.asse-plumbing.org](http://www.asse-plumbing.org).
34. ASTM - ASTM International; (American Society for Testing and Materials International); [www.astm.org](http://www.astm.org).
35. ATIS - Alliance for Telecommunications Industry Solutions; [www.atis.org](http://www.atis.org).
36. AWEA - American Wind Energy Association; [www.awea.org](http://www.awea.org).
37. AWI - Architectural Woodwork Institute; [www.awinet.org](http://www.awinet.org).
38. AWMAC - Architectural Woodwork Manufacturers Association of Canada; [www.awmac.com](http://www.awmac.com).
39. AWPA - American Wood Protection Association; (Formerly: American Wood-Preservers' Association); [www.awpa.com](http://www.awpa.com).
40. AWS - American Welding Society; [www.aws.org](http://www.aws.org).
41. AWWA - American Water Works Association; [www.awwa.org](http://www.awwa.org).
42. BHMA - Builders Hardware Manufacturers Association; [www.buildershardware.com](http://www.buildershardware.com).
43. BIA - Brick Industry Association (The); [www.gobrick.com](http://www.gobrick.com).
44. BICSI - BICSI, Inc.; [www.bicsi.org](http://www.bicsi.org).
45. BIFMA - BIFMA International; (Business and Institutional Furniture Manufacturer's Association); [www.bifma.com](http://www.bifma.com).

46. BISSC - Baking Industry Sanitation Standards Committee; [www.bissc.org](http://www.bissc.org).
47. BOCA - BOCA; (Building Officials and Code Administrators International Inc.); (See ICC).
48. BWF - Badminton World Federation; (Formerly: International Badminton Federation); [www.bwfbadminton.org](http://www.bwfbadminton.org).
49. CDA - Copper Development Association; [www.copper.org](http://www.copper.org).
50. CEA - Canadian Electricity Association; [www.electricity.ca](http://www.electricity.ca).
51. CEA - Consumer Electronics Association; [www.ce.org](http://www.ce.org).
52. CFFA - Chemical Fabrics & Film Association, Inc.; [www.chemicalfabricsandfilm.com](http://www.chemicalfabricsandfilm.com).
53. CFSEI - Cold-Formed Steel Engineers Institute; [www.cfsei.org](http://www.cfsei.org).
54. CGA - Compressed Gas Association; [www.cganet.com](http://www.cganet.com).
55. CIMA - Cellulose Insulation Manufacturers Association; [www.cellulose.org](http://www.cellulose.org).
56. CISCA - Ceilings & Interior Systems Construction Association; [www.cisca.org](http://www.cisca.org).
57. CISPI - Cast Iron Soil Pipe Institute; [www.cispi.org](http://www.cispi.org).
58. CLFMI - Chain Link Fence Manufacturers Institute; [www.chainlinkinfo.org](http://www.chainlinkinfo.org).
59. CPA - Composite Panel Association; [www.pbmdf.com](http://www.pbmdf.com).
60. CRI - Carpet and Rug Institute (The); [www.carpet-rug.org](http://www.carpet-rug.org).
61. CRRC - Cool Roof Rating Council; [www.coolroofs.org](http://www.coolroofs.org).
62. CRSI - Concrete Reinforcing Steel Institute; [www.crsi.org](http://www.crsi.org).
63. CSA - Canadian Standards Association; [www.csa.ca](http://www.csa.ca).
64. CSA - CSA International; (Formerly: IAS - International Approval Services); [www.csa-international.org](http://www.csa-international.org).
65. CSI - Construction Specifications Institute (The); [www.csinet.org](http://www.csinet.org).
66. CSSB - Cedar Shake & Shingle Bureau; [www.cedarbureau.org](http://www.cedarbureau.org).
67. CTI - Cooling Technology Institute; (Formerly: Cooling Tower Institute); [www.cti.org](http://www.cti.org).
68. CWC - Composite Wood Council; (See CPA).
69. DASMA - Door and Access Systems Manufacturers Association; [www.dasma.com](http://www.dasma.com).
70. DHI - Door and Hardware Institute; [www.dhi.org](http://www.dhi.org).
71. ECA - Electronic Components Association; [www.ec-central.org](http://www.ec-central.org).
72. ECAMA - Electronic Components Assemblies & Materials Association; (See ECA).
73. EIA - Electronic Industries Alliance; (See TIA).
74. EIMA - EIFS Industry Members Association; [www.eima.com](http://www.eima.com).
75. EJMA - Expansion Joint Manufacturers Association, Inc.; [www.ejma.org](http://www.ejma.org).
76. ESD - ESD Association; (Electrostatic Discharge Association); [www.esda.org](http://www.esda.org).
77. ESTA - Entertainment Services and Technology Association; (See PLASA).
78. EVO - Efficiency Valuation Organization; [www.evo-world.org](http://www.evo-world.org).
79. FM Approvals - FM Approvals LLC; [www.fmglobal.com](http://www.fmglobal.com).
80. FM Global - FM Global; [www.fmglobal.com](http://www.fmglobal.com).
81. FRSA - Florida Roofing, Sheet Metal & Air Conditioning Contractors Association, Inc.; [www.floridarroof.com](http://www.floridarroof.com).
82. FSA - Fluid Sealing Association; [www.fluidsealing.com](http://www.fluidsealing.com).
83. FSC - Forest Stewardship Council U.S.; [www.fscus.org](http://www.fscus.org).
84. GA - Gypsum Association; [www.gypsum.org](http://www.gypsum.org).
85. GANA - Glass Association of North America; [www.glasswebsite.com](http://www.glasswebsite.com).
86. GS - Green Seal; [www.greenseal.org](http://www.greenseal.org).
87. HI - Hydraulic Institute; [www.pumps.org](http://www.pumps.org).
88. HI/GAMA - Hydronics Institute/Gas Appliance Manufacturers Association; (See AHRI).
89. HMMA - Hollow Metal Manufacturers Association; (See NAAMM).
90. HPVA - Hardwood Plywood & Veneer Association; [www.hpva.org](http://www.hpva.org).
91. HPW - H. P. White Laboratory, Inc.; [www.hpwhite.com](http://www.hpwhite.com).
92. IAPSC - International Association of Professional Security Consultants; [www.iapsc.org](http://www.iapsc.org).
93. IAS - International Approval Services; (See CSA).
94. ICBO - International Conference of Building Officials; (See ICC).
95. ICC - International Code Council; [www.iccsafe.org](http://www.iccsafe.org).
96. ICEA - Insulated Cable Engineers Association, Inc.; [www.icea.net](http://www.icea.net).
97. ICPA - International Cast Polymer Alliance; [www.icpa-hq.org](http://www.icpa-hq.org).

98. ICRI - International Concrete Repair Institute, Inc.; [www.icri.org](http://www.icri.org).
99. IEC - International Electrotechnical Commission; [www.iec.ch](http://www.iec.ch).
100. IEEE - Institute of Electrical and Electronics Engineers, Inc. (The); [www.ieee.org](http://www.ieee.org).
101. IES - Illuminating Engineering Society; [www.ies.org](http://www.ies.org).
102. IESNA - Illuminating Engineering Society of North America; (See IES).
103. IEST - Institute of Environmental Sciences and Technology; [www.iest.org](http://www.iest.org).
104. IGMA - Insulating Glass Manufacturers Alliance; [www.igmaonline.org](http://www.igmaonline.org).
105. IGSHPA - International Ground Source Heat Pump Association; [www.igshpa.okstate.edu](http://www.igshpa.okstate.edu).
106. ILI - Indiana Limestone Institute of America, Inc.; [www.iliai.com](http://www.iliai.com).
107. Intertek - Intertek Group; [www.intertek.com](http://www.intertek.com).
108. ISA - International Society of Automation (The); [isa.org](http://isa.org).
109. ISAS - Instrumentation, Systems, and Automation Society (The); (See ISA).
110. ISFA - International Surface Fabricators Association; [www.isfanow.org](http://www.isfanow.org).
111. ISO - International Organization for Standardization; [www.iso.org](http://www.iso.org).
112. ISSFA - International Solid Surface Fabricators Association; (See ISFA).
113. ITU - International Telecommunication Union; [www.itu.int/home](http://www.itu.int/home).
114. KCMA - Kitchen Cabinet Manufacturers Association; [www.kcma.org](http://www.kcma.org).
115. LMA - Laminating Materials Association; (See CPA).
116. LPI - Lightning Protection Institute; [www.lightning.org](http://www.lightning.org).
117. MBMA - Metal Building Manufacturers Association; [www.mbma.com](http://www.mbma.com).
118. MCA - Metal Construction Association; [www.metalconstruction.org](http://www.metalconstruction.org).
119. MFMA - Maple Flooring Manufacturers Association, Inc.; [www.maplefloor.org](http://www.maplefloor.org).
120. MFMA - Metal Framing Manufacturers Association, Inc.; [www.metalframingmfg.org](http://www.metalframingmfg.org).
121. MHIA - Material Handling Industry of America; [www.mhia.org](http://www.mhia.org).
122. MIA - Marble Institute of America; [www.marble-institute.com](http://www.marble-institute.com).
123. MMPA - Moulding & Millwork Producers Association; (Formerly: Wood Moulding & Millwork Producers Association); [www.wmmpa.com](http://www.wmmpa.com).
124. MPI - Master Painters Institute; [www.paintinfo.com](http://www.paintinfo.com).
125. MSS - Manufacturers Standardization Society of The Valve and Fittings Industry Inc.; [www.mss-hq.org](http://www.mss-hq.org).
126. NAAMM - National Association of Architectural Metal Manufacturers; [www.naamm.org](http://www.naamm.org).
127. NACE - NACE International; (National Association of Corrosion Engineers International); [www.nace.org](http://www.nace.org).
128. NADCA - National Air Duct Cleaners Association; [www.nadca.com](http://www.nadca.com).
129. NAIMA - North American Insulation Manufacturers Association; [www.naima.org](http://www.naima.org).
130. NBGQA - National Building Granite Quarries Association, Inc.; [www.nbgqa.com](http://www.nbgqa.com).
131. NCAA - National Collegiate Athletic Association (The); [www.ncaa.org](http://www.ncaa.org).
132. NCMA - National Concrete Masonry Association; [www.ncma.org](http://www.ncma.org).
133. NEBB - National Environmental Balancing Bureau; [www.nebb.org](http://www.nebb.org).
134. NECA - National Electrical Contractors Association; [www.necanet.org](http://www.necanet.org).
135. NeLMA - Northeastern Lumber Manufacturers Association; [www.nelma.org](http://www.nelma.org).
136. NEMA - National Electrical Manufacturers Association; [www.nema.org](http://www.nema.org).
137. NETA - InterNational Electrical Testing Association; [www.netaworld.org](http://www.netaworld.org).
138. NFHS - National Federation of State High School Associations; [www.nfhs.org](http://www.nfhs.org).
139. NFPA - NFPA; (National Fire Protection Association); [www.nfpa.org](http://www.nfpa.org).
140. NFPA - NFPA International; (See NFPA).
141. NFRC - National Fenestration Rating Council; [www.nfrc.org](http://www.nfrc.org).
142. NHLA - National Hardwood Lumber Association; [www.nhla.com](http://www.nhla.com).
143. NLGA - National Lumber Grades Authority; [www.nlga.org](http://www.nlga.org).
144. NOFMA - National Oak Flooring Manufacturers Association; (See NWFA).
145. NOMMA - National Ornamental & Miscellaneous Metals Association; [www.nomma.org](http://www.nomma.org).
146. NRCA - National Roofing Contractors Association; [www.nrca.net](http://www.nrca.net).
147. NRMCA - National Ready Mixed Concrete Association; [www.nrmca.org](http://www.nrmca.org).
148. NSF - NSF International; (National Sanitation Foundation International); [www.nsf.org](http://www.nsf.org).
149. NSPE - National Society of Professional Engineers; [www.nspe.org](http://www.nspe.org).

150. NSSGA - National Stone, Sand & Gravel Association; [www.nssga.org](http://www.nssga.org).
151. NTMA - National Terrazzo & Mosaic Association, Inc. (The); [www.ntma.com](http://www.ntma.com).
152. NWFA - National Wood Flooring Association; [www.nwfa.org](http://www.nwfa.org).
153. PCI - Precast/Prestressed Concrete Institute; [www.pci.org](http://www.pci.org).
154. PDI - Plumbing & Drainage Institute; [www.pdionline.org](http://www.pdionline.org).
155. PLASA - PLASA; [www.plasa.org](http://www.plasa.org).
156. RCSC - Research Council on Structural Connections; [www.boltcouncil.org](http://www.boltcouncil.org).
157. RFCI - Resilient Floor Covering Institute; [www.rfci.com](http://www.rfci.com).
158. RIS - Redwood Inspection Service; [www.redwoodinspection.com](http://www.redwoodinspection.com).
159. SAE - SAE International; (Society of Automotive Engineers); [www.sae.org](http://www.sae.org).
160. SCTE - Society of Cable Telecommunications Engineers; [www.scte.org](http://www.scte.org).
161. SDI - Steel Deck Institute; [www.sdi.org](http://www.sdi.org).
162. SDI - Steel Door Institute; [www.steeldoor.org](http://www.steeldoor.org).
163. SEFA - Scientific Equipment and Furniture Association; [www.sefalabs.com](http://www.sefalabs.com).
164. SEI/ASCE - Structural Engineering Institute/American Society of Civil Engineers; (See ASCE).
165. SIA - Security Industry Association; [www.siaonline.org](http://www.siaonline.org).
166. SJI - Steel Joist Institute; [www.steeljoist.org](http://www.steeljoist.org).
167. SMA - Screen Manufacturers Association; [www.smainfo.org](http://www.smainfo.org).
168. SMACNA - Sheet Metal and Air Conditioning Contractors' National Association; [www.smacna.org](http://www.smacna.org).
169. SMPTE - Society of Motion Picture and Television Engineers; [www.smpte.org](http://www.smpte.org).
170. SPFA - Spray Polyurethane Foam Alliance; [www.sprayfoam.org](http://www.sprayfoam.org).
171. SPIB - Southern Pine Inspection Bureau; [www.spib.org](http://www.spib.org).
172. SPRI - Single Ply Roofing Industry; [www.spri.org](http://www.spri.org).
173. SRCC - Solar Rating and Certification Corporation; [www.solar-rating.org](http://www.solar-rating.org).
174. SSINA - Specialty Steel Industry of North America; [www.ssina.com](http://www.ssina.com).
175. SSPC - SSPC: The Society for Protective Coatings; [www.sspc.org](http://www.sspc.org).
176. STI - Steel Tank Institute; [www.steeltank.com](http://www.steeltank.com).
177. SWI - Steel Window Institute; [www.steelwindows.com](http://www.steelwindows.com).
178. SWPA - Submersible Wastewater Pump Association; [www.swpa.org](http://www.swpa.org).
179. TCA - Tilt-Up Concrete Association; [www.tilt-up.org](http://www.tilt-up.org).
180. TCNA - Tile Council of North America, Inc.; [www.tileusa.com](http://www.tileusa.com).
181. TEMA - Tubular Exchanger Manufacturers Association, Inc.; [www.tema.org](http://www.tema.org).
182. TIA - Telecommunications Industry Association; [www.tiaonline.org](http://www.tiaonline.org).
183. TIA/EIA - Telecommunications Industry Association/Electronic Industries Alliance
184. TMS - The Masonry Society; [www.masonrysociety.org](http://www.masonrysociety.org).
185. TPI - Truss Plate Institute; [www.tpinst.org](http://www.tpinst.org).
186. TPI - Turfgrass Producers International; [www.turfgrassod.org](http://www.turfgrassod.org).
187. TRI - Tile Roofing Institute; [www.tilerroofing.org](http://www.tilerroofing.org).
188. UBC - Uniform Building Code; (See ICC).
189. UL - Underwriters Laboratories Inc.; [www.ul.com](http://www.ul.com).
190. UNI - Uni-Bell PVC Pipe Association; [www.uni-bell.org](http://www.uni-bell.org).
191. USGBC - U.S. Green Building Council; [www.usgbc.org](http://www.usgbc.org).
192. USITT - United States Institute for Theatre Technology, Inc.; [www.usitt.org](http://www.usitt.org).
193. WASTEC - Waste Equipment Technology Association; [www.wastec.org](http://www.wastec.org).
194. WCLIB - West Coast Lumber Inspection Bureau; [www.wclib.org](http://www.wclib.org).
195. WCMA - Window Covering Manufacturers Association; [www.wcmanet.org](http://www.wcmanet.org).
196. WDMA - Window & Door Manufacturers Association; [www.wdma.com](http://www.wdma.com).
197. WI - Woodwork Institute; (Formerly: WIC - Woodwork Institute of California); [www.wicnet.org](http://www.wicnet.org).
198. WMMPA - Wood Moulding & Millwork Producers Association; (See MMPA).
199. WSRCA - Western States Roofing Contractors Association; [www.wsrca.com](http://www.wsrca.com).
200. WPA - Western Wood Products Association; [www.wwpa.org](http://www.wwpa.org).

- C. 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. This information is believed to be accurate as of the date of the Contract Documents.
1. IAPMO - International Association of Plumbing and Mechanical Officials; [www.iapmo.org](http://www.iapmo.org).
  2. ICC - International Code Council; [www.iccsafe.org](http://www.iccsafe.org).
  3. ICC-ES - ICC Evaluation Service, LLC; [www.icc-es.org](http://www.icc-es.org).
- D. 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. Information is subject to change and is up-to-date as of the date of the Contract Documents.
1. COE - Army Corps of Engineers; [www.usace.army.mil](http://www.usace.army.mil).
  2. CPSC - Consumer Product Safety Commission; [www.cpsc.gov](http://www.cpsc.gov).
  3. DOC - Department of Commerce; National Institute of Standards and Technology; [www.nist.gov](http://www.nist.gov).
  4. DOD - Department of Defense; <http://dodssp.daps.dla.mil>.
  5. DOE - Department of Energy; [www.energy.gov](http://www.energy.gov).
  6. EPA - Environmental Protection Agency; [www.epa.gov](http://www.epa.gov).
  7. FAA - Federal Aviation Administration; [www.faa.gov](http://www.faa.gov).
  8. FG - Federal Government Publications; [www.gpo.gov](http://www.gpo.gov).
  9. GSA - General Services Administration; [www.gsa.gov](http://www.gsa.gov).
  10. HUD - Department of Housing and Urban Development; [www.hud.gov](http://www.hud.gov).
  11. MSHA – Mine Safety and Health Administration
  12. OSHA - Occupational Safety & Health Administration; [www.osha.gov](http://www.osha.gov).
  13. SD - Department of State; [www.state.gov](http://www.state.gov).
  14. TRB - Transportation Research Board; National Cooperative Highway Research Program; [www.trb.org](http://www.trb.org).
  15. USDA - Department of Agriculture; Agriculture Research Service; U.S. Salinity Laboratory; [www.ars.usda.gov](http://www.ars.usda.gov).
  16. USDJ - Department of Justice; Office of Justice Programs; National Institute of Justice; [www.ojp.usdoj.gov](http://www.ojp.usdoj.gov).
  17. USP - U.S. Pharmacopeia; [www.usp.org](http://www.usp.org).
  18. USPS - United States Postal Service; [www.usps.com](http://www.usps.com).
- E. 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. This information is subject to change and is believed to be accurate as of the date of the Contract Documents.
1. CFR - Code of Federal Regulations; Available from Government Printing Office; [www.gpo.gov/fdsys](http://www.gpo.gov/fdsys).
  2. DOD - Department of Defense; Military Specifications and Standards; Available from Department of Defense Single Stock Point; <http://dodssp.daps.dla.mil>.
  3. FED-STD - Federal Standard; (See FS).
  4. FS - Federal Specification; Available from Department of Defense Single Stock Point; <http://dodssp.daps.dla.mil>.
    - a. Available from Defense Standardization Program; [www.dsp.dla.mil](http://www.dsp.dla.mil).
    - b. Available from General Services Administration; [www.gsa.gov](http://www.gsa.gov).
    - c. Available from National Institute of Building Sciences/Whole Building Design Guide; [www.wbdg.org/ccb](http://www.wbdg.org/ccb).
  5. MILSPEC - Military Specification and Standards; (See DOD).
  6. TAS – Texas Accessibility Standards
  7. USAB - United States Access Board; [www.access-board.gov](http://www.access-board.gov).
  8. USATBCB - U.S. Architectural & Transportation Barriers Compliance Board; (See USAB).
- F. State 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



Gregg County Youth Center  
Building Renovations  
310 Turk Street  
Longview, TX 75601

014200 - REFERENCES

list. This information is subject to change and is believed to be accurate as of the date of the Contract Documents.

1. TFS - Texas Forest Service; Forest Resource Development and Sustainable Forestry;  
<http://txforestsservice.tamu.edu>.

**PART 2 - PRODUCTS (Not Used)**

**PART 3 - EXECUTION (Not Used)**

END OF SECTION 014200



## TEMPORARY FACILITIES AND CONTROLS

### **PART 1 - GENERAL**

#### **1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

#### **1.2 SUMMARY**

- A. Section includes requirements for temporary utilities, support facilities, and security and protection facilities.
- B. Related Requirements:
  - 1. Section 011000 "Summary" for work restrictions and limitations on utility interruptions.
  - 2. Civil drawings for construction and maintenance of cement concrete pavement for temporary roads and paved areas.

#### **1.3 USE CHARGES**

- A. General: Installation and removal of and use charges for temporary facilities shall be included in the Contract Sum unless otherwise indicated. Allow other entities to use temporary services and facilities without cost, including, but not limited to, Owner's construction forces, Architect, testing agencies, and authorities having jurisdiction.
- B. Sewer Service: Pay sewer-service use charges for sewer usage by all entities for construction operations.
- C. Water Service: Pay water-service use charges for water used by all entities for construction operations.
- D. Electric Power Service: Pay electric-power-service use charges for electricity used by all entities for construction operations.

#### **1.4 INFORMATIONAL SUBMITTALS**

- A. Site Plan: Show temporary facilities, utility hookups, staging areas, and parking areas for construction personnel.
  - 1. Temporary Electrical Service: provide design basis for connections and safety procedures for installation.
- B. Erosion- and Sedimentation-Control Plan: Show compliance with requirements of EPA Construction General Permit or authorities having jurisdiction, whichever is more stringent.
- C. Fire-Safety Program: Show compliance with requirements of NFPA 241 and authorities having jurisdiction. Indicate Contractor personnel responsible for management of fire-prevention program.
- D. Moisture-Protection Plan: Describe procedures and controls for protecting materials and construction from water absorption and damage.
  - 1. Describe delivery, handling, and storage provisions for materials subject to water absorption or water damage.
  - 2. Indicate procedures for discarding water-damaged materials, protocols for mitigating water intrusion into completed Work, and replacing water-damaged Work.
  - 3. Indicate sequencing of work that requires water, such as sprayed fire-resistive materials, plastering, and terrazzo grinding, and describe plans for dealing with water from these operations. Show procedures for verifying that wet construction has dried sufficiently to permit installation of finish materials.
- E. Dust- and HVAC-Control Plan: Submit coordination drawing and narrative that indicates the dust- and HVAC-control measures proposed for use, proposed locations, and proposed time

frame for their operation. Identify further options if proposed measures are later determined to be inadequate. Include the following:

1. Locations of dust-control partitions at each phase of work.
2. HVAC system isolation schematic drawing.
3. Location of proposed air-filtration system discharge.
4. Waste handling procedures.
5. Other dust-control measures.

#### **1.5 QUALITY ASSURANCE**

- A. Electric Service: Comply with NECA, NEMA, and UL standards and regulations for temporary electric service. Install service to comply with NFPA 70.
- B. Tests and Inspections: Arrange for authorities having jurisdiction to test and inspect each temporary utility before use. Obtain required certifications and permits.
- C. Accessible Temporary Egress: Comply with applicable provisions in the U.S. Architectural & Transportation Barriers Compliance Board's ADA-ABA Accessibility Guidelines, and ICC/ANSI A117.1.

#### **1.6 PROJECT CONDITIONS**

- A. Temporary Use of Permanent Facilities: Engage Installer of each permanent service to assume responsibility for operation, maintenance, and protection of each permanent service during its use as a construction facility before Owner's acceptance, regardless of previously assigned responsibilities.

### **PART 2 - PRODUCTS**

#### **2.1 MATERIALS**

- A. Portable Chain-Link Fencing: Minimum 2-inch, 0.148-inch- thick, galvanized-steel, chain-link fabric fencing; minimum 6 feet high with galvanized-steel pipe posts; minimum 2-3/8-inch- OD line posts and 2-7/8-inch- OD corner and pull posts, with 1-5/8-inch- OD top and bottom rails. Provide concrete bases for supporting posts.
  1. Electrically ground fences
- B. Dust-Control Adhesive-Surface Walk-off Mats: Provide mats minimum 36 by 60 inches.
- C. Insulation: Unfaced mineral-fiber blanket, manufactured from glass, slag wool, or rock wool; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively.

#### **2.2 TEMPORARY FACILITIES**

- A. Field Offices, General: Prefabricated or mobile units with serviceable finishes, temperature controls, and foundations adequate for normal loading.
- B. Common-Use Field Office: Of sufficient size to accommodate needs of Owner, Architect, and construction personnel office activities and to accommodate Project meetings specified in other Division 01 Sections. Keep office clean and orderly. Furnish and equip offices as follows:
  1. Provide level stoop at door with protective rain canopy.
  2. Furniture required for Project-site documents including file cabinets, plan tables, plan racks, and bookcases.
  3. Conference room of sufficient size to accommodate meetings of 10 individuals. Provide electrical power service and 120-V ac duplex receptacles, with no less than one receptacle on each wall. Furnish room with conference table, chairs, and 4-foot- square tack and marker boards.
  4. Drinking water and private toilet.
  5. Heating and cooling equipment necessary to maintain a uniform indoor temperature of 68 to 72 degrees F.
  6. Lighting fixtures capable of maintaining average illumination of 20 fc at desk height.

- C. Storage and Fabrication Sheds: Provide sheds sized, furnished, and equipped to accommodate materials and equipment for construction operations.
  - 1. Store combustible materials apart from building.

### **2.3 EQUIPMENT**

- A. Fire Extinguishers: Portable, UL rated; with class and extinguishing agent as required by locations and classes of fire exposures.

## **PART 3 - EXECUTION**

### **3.1 INSTALLATION, GENERAL**

- A. Locate facilities where they will serve Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required by progress of the Work.
- B. Provide each facility ready for use when needed to avoid delay. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.

### **3.2 TEMPORARY UTILITY INSTALLATION**

- A. General: Install temporary service or connect to existing service.
  - 1. Arrange with utility company, Owner, and existing users for time when service can be interrupted, if necessary, to make connections for temporary services.
- B. Sewers and Drainage: Provide temporary utilities to remove effluent lawfully.
  - 1. Connect temporary sewers to municipal system as directed by authorities having jurisdiction.
- C. Water Service: Install water service and distribution piping in sizes and pressures adequate for construction.
- D. Sanitary Facilities: Provide temporary toilets, wash facilities, and drinking water for use of construction personnel. Comply with requirements of authorities having jurisdiction for type, number, location, operation, and maintenance of fixtures and facilities.
- E. Heating and Cooling: Provide temporary heating and cooling required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of low temperatures or high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed.
- F. Ventilation and Humidity Control: Provide temporary ventilation required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed. Coordinate ventilation requirements to produce ambient condition required and minimize energy consumption.
  - 1. Provide dehumidification systems when required to reduce substrate moisture levels to level required to allow installation or application of finishes.
- G. Electric Power Service: Provide electric power service and distribution system of sufficient size, capacity, and power characteristics required for construction operations.
  - 1. Install electric power service underground unless otherwise indicated.
- H. Lighting: Provide temporary lighting with local switching that provides adequate illumination for construction operations, observations, inspections, and traffic conditions.
  - 1. Install and operate temporary lighting that fulfills security and protection requirements without operating entire system.
  - 2. Install lighting for Project identification sign.
  - 3. Provide superintendent with cellular telephone or portable two-way radio.

### **3.3 SUPPORT FACILITIES INSTALLATION**

- A. General: Comply with the following:

1. Provide construction for temporary offices, shops, and sheds located within construction area or within 30 feet of building lines that is noncombustible according to ASTM E 136. Comply with NFPA 241.
  2. Maintain support facilities until Architect schedules Substantial Completion inspection. Remove before Substantial Completion. Personnel remaining after Substantial Completion will be permitted to use permanent facilities, under conditions acceptable to Owner.
- B. Temporary Roads and Paved Areas: Construct and maintain temporary roads and paved areas adequate for construction operations. Locate temporary roads and paved areas as indicated on Drawings.
1. Provide dust-control treatment that is nonpolluting and nontracking. Reapply treatment as required to minimize dust.
- C. Temporary Use of Permanent Roads and Paved Areas: Locate temporary roads and paved areas in same location as permanent roads and paved areas. Construct and maintain temporary roads and paved areas adequate for construction operations. Extend temporary roads and paved areas, within construction limits indicated, as necessary for construction operations.
1. Coordinate elevations of temporary roads and paved areas with permanent roads and paved areas.
  2. Prepare subgrade and install subbase and base for temporary roads and paved areas according to Section 312000 "Earth Moving."
  3. Delay installation of final course of permanent hot-mix asphalt pavement until immediately before Substantial Completion. Repair hot-mix asphalt base-course pavement before installation of final course according to Section 321216 "Asphalt Paving."
- D. Parking: Provide temporary parking areas for construction personnel.
- E. Project Signs: Provide Project signs including information on Owner, Architect, Engineer and Contractor. Unauthorized signs are not permitted.
1. Identification Signs: Provide Project identification signs. Submit sketch to architect for approval.
  2. Temporary Signs: Provide other signs as indicated and as required to inform public and individuals seeking entrance to Project.
    - a. Provide temporary, directional signs for construction personnel and visitors.
  3. Maintain and touchup signs so they are legible at all times.
- F. Waste Disposal Facilities: Comply with requirements specified in Section 017419 "Construction Waste Management and Disposal."
- G. Temporary Stairs: Until permanent stairs are available, provide temporary stairs where ladders are not adequate.

### **3.4 SECURITY AND PROTECTION FACILITIES INSTALLATION**

- A. Protection of Existing Facilities: Protect existing vegetation, equipment, structures, utilities, and other improvements at Project site and on adjacent properties, except those indicated to be removed or altered. Repair damage to existing facilities.
- B. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction as required to comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.
1. Comply with work restrictions specified in Section 011000 "Summary."
- C. Storm water Control: Comply with requirements of authorities having jurisdiction. Provide barriers in and around excavations and subgrade construction to prevent flooding by runoff of storm water from heavy rains.
- D. Tree and Plant Protection: Comply with requirements specified in Section 015639 "Temporary Tree and Plant Protection."

- E. Pest Control: Engage pest-control service to recommend practices to minimize attraction and harboring of rodents, roaches, and other pests and to perform extermination and control procedures at regular intervals so Project will be free of pests and their residues at Substantial Completion. Perform control operations lawfully, using environmentally safe materials.
- F. Site Enclosure Fence: Before commencing Earthwork, furnish and install site enclosure fence in a manner that will prevent people and animals from easily entering site except by entrance gates.
  - 1. Extent of Fence: As required to enclose entire Project site or portion determined sufficient to accommodate construction operations, as indicated on drawings.
  - 2. Maintain security by limiting number of keys and restricting distribution to authorized personnel. Furnish one set of keys to the Owner.
- G. Barricades, Warning Signs, and Lights: Comply with requirements of authorities having jurisdiction for erecting structurally adequate barricades, including warning signs and lighting.
  - 1. Use AEP standard colors for barricades, signs and lights

### **3.5 MOISTURE AND MOLD CONTROL**

- A. Contractor's Moisture-Protection Plan: Avoid trapping water in finished work. Document visible signs of mold that may appear during construction.
- B. Exposed Construction Phase: Before installation of weather barriers, when materials are subject to wetting and exposure and to airborne mold spores, protect as follows:
  - 1. Protect porous materials from water damage.
  - 2. Protect stored and installed material from flowing or standing water.
  - 3. Keep porous and organic materials from coming into prolonged contact with concrete.
  - 4. Remove standing water from decks.
  - 5. Keep deck openings covered or dammed.
- C. Partially Enclosed Construction Phase: After installation of weather barriers but before full enclosure and conditioning of building, when installed materials are still subject to infiltration of moisture and ambient mold spores, protect as follows:
  - 1. Do not load or install drywall or other porous materials or components, or items with high organic content, into partially enclosed building.
  - 2. Keep interior spaces reasonably clean and protected from water damage.
  - 3. Periodically collect and remove waste containing cellulose or other organic matter.
  - 4. Discard or replace water-damaged material.
  - 5. Do not install material that is wet.
  - 6. Discard, replace, or clean stored or installed material that begins to grow mold.
  - 7. Perform work in a sequence that allows any wet materials adequate time to dry before enclosing the material in drywall or other interior finishes.
- D. Controlled Construction Phase of Construction: After completing and sealing of the building enclosure but prior to the full operation of permanent HVAC systems, maintain as follows:
  - 1. Control moisture and humidity inside building by maintaining effective dry-in conditions.
  - 2. Use permanent HVAC system to control humidity.
  - 3. Comply with manufacturer's written instructions for temperature, relative humidity, and exposure to water limits.
    - a. Hygroscopic materials that may support mold growth, including wood and gypsum-based products, that become wet during the course of construction and remain wet for 48 hours are considered defective.
    - b. Measure moisture content of materials that have been exposed to moisture during construction operations or after installation. Record readings beginning at time of exposure and continuing daily for 48 hours. Identify materials containing moisture levels higher than allowed. Report findings in writing to Architect.
    - c. Remove materials that cannot be completely restored to their manufactured moisture level within 48 hours.

### **3.6 OPERATION, TERMINATION, AND REMOVAL**

- A. Supervision: Enforce strict discipline in use of temporary facilities. To minimize waste and abuse, limit availability of temporary facilities to essential and intended uses.
- B. Maintenance: Maintain facilities in good operating condition until removal.
  - 1. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.
- C. Operate Project-identification-sign lighting daily from dusk until 12:00 midnight.
- D. Temporary Facility Changeover: Do not change over from using temporary security and protection facilities to permanent facilities until Substantial Completion.
- E. Termination and Removal: Remove each temporary facility when need for its service has ended, when it has been replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.
  - 1. Materials and facilities that constitute temporary facilities are property of Contractor. Owner reserves right to take possession of Project identification signs.
  - 2. Remove temporary roads and paved areas not intended for or acceptable for integration into permanent construction. Where area is intended for landscape development, remove soil and aggregate fill that do not comply with requirements for fill or subsoil. Remove materials contaminated with road oil, asphalt and other petrochemical compounds, and other substances that might impair growth of plant materials or lawns. Repair or replace street paving, curbs, and sidewalks at temporary entrances, as required by authorities having jurisdiction.
  - 3. At Substantial Completion, repair, renovate, and clean permanent facilities used during construction period. Comply with final cleaning requirements specified in Section 017700 "Closeout Procedures."

END OF SECTION 015000



## PRODUCT REQUIREMENTS

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

#### 1.2 SUMMARY

- A. Section includes administrative and procedural requirements for selection of products for use in Project; product delivery, storage, and handling; manufacturers' standard warranties on products; special warranties; and comparable products.
- B. Related Requirements:
  - 1. Section 012300 "Alternates" for products selected under an alternate.
  - 2. Section 012500 "Substitution Procedures" for requests for substitutions.
  - 3. Section 014200 "References" for applicable industry standards for products specified.

#### 1.3 DEFINITIONS

- A. Products: Items obtained for incorporating into the Work, whether purchased for Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.
  - 1. Named Products: Items identified by manufacturer's product name, including make or model number or other designation shown or listed in manufacturer's published product literature that is current as of date of the Contract Documents.
  - 2. New Products: Items that have not previously been incorporated into another project or facility. Products salvaged or recycled from other projects are not considered new products.
  - 3. Comparable Product: Product that is demonstrated and approved through submittal process to have the indicated qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified product.
- B. Basis-of-Design Product Specification: A specification in which a specific manufacturer's product is named and accompanied by the words "basis-of-design product," including make or model number or other designation, to establish the significant qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics for purposes of evaluating comparable products of additional manufacturers named in the specification.

#### 1.4 ACTION SUBMITTALS

- A. Comparable Product Requests: Submit request for consideration of each comparable product. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.
  - 1. Include data to indicate compliance with the requirements specified in "Comparable Products" Article.
  - 2. Architect's Action: If necessary, Architect will request additional information or documentation for evaluation within one week of receipt of a comparable product request. Architect will notify Contractor of approval or rejection of proposed comparable product request within 15 days of receipt of request, or seven days of receipt of additional information or documentation, whichever is later.
    - a. Form of Approval: As specified in Section 013300 "Submittal Procedures."

- b. Use product specified if Architect does not issue a decision on use of a comparable product request within time allocated.
- B. Basis-of-Design Product Specification Submittal: Comply with requirements in Section 013300 "Submittal Procedures." Show compliance with requirements.

### **1.5 QUALITY ASSURANCE**

- A. Compatibility of Options: If Contractor is given option of selecting between two or more products for use on Project, select product compatible with products previously selected, even if previously selected products were also options.

### **1.6 PRODUCT DELIVERY, STORAGE, AND HANDLING**

- A. Deliver, store, and handle products using means and methods that will prevent damage, deterioration, and loss, including theft and vandalism. Comply with manufacturer's written instructions.
- B. Delivery and Handling:
  - 1. Schedule delivery to minimize long-term storage at Project site and to prevent overcrowding of construction spaces.
  - 2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
  - 3. Deliver products to Project site in an undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
  - 4. Inspect products on delivery to determine compliance with the Contract Documents and to determine that products are undamaged and properly protected.
- C. Storage:
  - 1. Store products to allow for inspection and measurement of quantity or counting of units.
  - 2. Store materials in a manner that will not endanger Project structure.
  - 3. Store products that are subject to damage by the elements, under cover in a weathertight enclosure above ground, with ventilation adequate to prevent condensation.
  - 4. Protect foam plastic from exposure to sunlight, except to extent necessary for period of installation and concealment.
  - 5. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.
  - 6. Protect stored products from damage and liquids from freezing.
  - 7. Provide a secure location and enclosure at Project site for storage of materials and equipment by Owner's construction forces. Coordinate location with Owner.

### **1.7 PRODUCT WARRANTIES**

- A. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.
  - 1. Manufacturer's Warranty: Written warranty furnished by individual manufacturer for a particular product and specifically endorsed by manufacturer to Owner.
  - 2. Special Warranty: Written warranty required by the Contract Documents to provide specific rights for Owner.
- B. Special Warranties: Prepare a written document that contains appropriate terms and identification, ready for execution.
  - 1. Manufacturer's Standard Form: Modified to include Project-specific information and properly executed.
  - 2. See other Sections for specific content requirements and particular requirements for submitting special warranties.

- C. Submittal Time: Comply with requirements in Section 017700 "Closeout Procedures."

## **PART 2 - PRODUCTS**

### **2.1 PRODUCT SELECTION PROCEDURES**

- A. General Product Requirements: Provide products that comply with the Contract Documents, are undamaged and, unless otherwise indicated, are new at time of installation.
1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.
  2. Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.
  3. Owner reserves the right to limit selection to products with warranties not in conflict with requirements of the Contract Documents.
  4. Where products are accompanied by the term "as selected," Architect will make selection.
  5. Descriptive, performance, and reference standard requirements in the Specifications establish salient characteristics of products.
  6. Or Equal: For products specified by name and accompanied by the term "or equal," or "or approved equal," or "or approved," comply with requirements in "Comparable Products" Article to obtain approval for use of an unnamed product.
- B. Product Selection Procedures:
1. Product: Where Specifications name a single manufacturer and product, provide the named product that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.
  2. Manufacturer/Source: Where Specifications name a single manufacturer or source, provide a product by the named manufacturer or source that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.
  3. Products:
    - a. Restricted List: Where Specifications include a list of names of both manufacturers and products, provide one of the products listed that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered, unless otherwise indicated.
  4. Manufacturers:
    - a. Restricted List: Where Specifications include a list of manufacturers' names, provide a product by one of the manufacturers listed that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered, unless otherwise indicated.
  5. Basis-of-Design Product: Where Specifications name a product, or refer to a product indicated on Drawings, and include a list of manufacturers, provide the specified or indicated product or a comparable product by one of the other named manufacturers. Drawings and Specifications indicate sizes, profiles, dimensions, and other characteristics that are based on the product named. Comply with requirements in "Comparable Products" Article for consideration of an unnamed product by one of the other named manufacturers.

### **2.2 COMPARABLE PRODUCTS**

- A. Conditions for Consideration: Architect will consider Contractor's request for comparable product when the following conditions are satisfied. If the following conditions are not satisfied, Architect may return requests without action, except to record noncompliance with these requirements:

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Building Renovations  
310 Turk Street  
Longview, TX 75601

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REQUIREMENTS

1. Evidence that the proposed product does not require revisions to the Contract Documents, that it is consistent with the Contract Documents and will produce the indicated results, and that it is compatible with other portions of the Work.
2. Detailed comparison of significant qualities of proposed product with those named in the Specifications. Significant qualities include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.
3. Evidence that proposed product provides specified warranty.
4. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners, if requested.
5. Samples, if requested.

**PART 3 - EXECUTION (Not Used)**

END OF SECTION 016000

EXECUTION

**PART 1 - GENERAL**

**1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

**1.2 SUMMARY**

- A. Section includes general administrative and procedural requirements governing execution of the Work including, but not limited to, the following:
  - 1. Construction layout.
  - 2. Field engineering and surveying.
  - 3. Installation of the Work.
  - 4. Cutting and patching.
  - 5. Coordination of Owner-installed products.
  - 6. Progress cleaning.
  - 7. Starting and adjusting.
  - 8. Protection of installed construction.
- B. Related Requirements:
  - 1. Section 011000 "Summary" for limits on use of Project site.

**1.3 DEFINITIONS**

- A. Cutting: Removal of in-place construction necessary to permit installation or performance of other work.
- B. Patching: Fitting and repair work required to restore construction to original conditions after installation of other work.

**1.4 QUALITY ASSURANCE**

- A. Cutting and Patching: Comply with requirements for and limitations on cutting and patching of construction elements.
  - 1. Structural Elements: When cutting and patching structural elements, notify Architect of locations and details of cutting and await directions from Architect before proceeding. Shore, brace, and support structural elements during cutting and patching. Do not cut and patch structural elements in a manner that could change their load-carrying capacity or increase deflection
  - 2. Operational Elements: Do not cut and patch operating elements and related components in a manner that results in reducing their capacity to perform as intended or that results in increased maintenance or decreased operational life or safety. Operational elements include the following:
    - a. Primary operational systems and equipment.
    - b. Fire separation assemblies.
    - c. Air or smoke barriers.
    - d. Fire-suppression systems.
    - e. Mechanical systems piping and ducts.
    - f. Control systems.
    - g. Communication systems.
    - h. Fire-detection and -alarm systems.
    - i. Conveying systems.
    - j. Electrical wiring systems.
    - k. Operating systems of special construction.

3. Other Construction Elements: Do not cut and patch other construction elements or components in a manner that could change their load-carrying capacity, that results in reducing their capacity to perform as intended, or that results in increased maintenance or decreased operational life or safety. Other construction elements include but are not limited to the following:
    - a. Water, moisture, or vapor barriers.
    - b. Membranes and flashings.
    - c. Exterior curtain-wall construction.
    - d. Sprayed fire-resistive material.
    - e. Equipment supports.
    - f. Piping, ductwork, vessels, and equipment.
    - g. Noise- and vibration-control elements and systems.
  4. Visual Elements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch exposed construction in a manner that would, in Architect's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.
- B. Cutting and Patching Conference: Before proceeding, meet at Project site with parties involved in cutting and patching, including mechanical and electrical trades. Review areas of potential interference and conflict. Coordinate procedures and resolve potential conflicts before proceeding.
- C. Manufacturer's Installation Instructions: Obtain and maintain on-site manufacturer's written recommendations and instructions for installation of products and equipment.

## **PART 2 - PRODUCTS**

### **2.1 MATERIALS**

- A. General: Comply with requirements specified in other Sections.
- B. In-Place Materials: Use materials for patching identical to in-place materials. For exposed surfaces, use materials that visually match in-place adjacent surfaces to the fullest extent possible.
  1. If identical materials are unavailable or cannot be used, use materials that, when installed, will provide a match acceptable to Architect for the visual and functional performance of in-place materials.

## **PART 3 - EXECUTION**

### **3.1 EXAMINATION**

- A. Existing Conditions: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning sitework, investigate and verify the existence and location of underground utilities, mechanical and electrical systems, and other construction affecting the Work.
  1. Before construction, verify the location and invert elevation at points of connection of sanitary sewer, storm sewer, and water-service piping; underground electrical services, and other utilities.
  2. Furnish location data for work related to Project that must be performed by public utilities serving Project site.
- B. Examination and Acceptance of Conditions: Before proceeding with each component of the Work, examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.
  1. Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.

2. Examine walls, floors, and roofs for suitable conditions where products and systems are to be installed.
  3. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
- C. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

### **3.2 PREPARATION**

- A. Existing Utility Information: Furnish information to local utility that is necessary to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction. Coordinate with authorities having jurisdiction.
- B. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
- C. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.
- D. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents caused by differing field conditions outside the control of Contractor, submit a request for information to Architect according to requirements in Section 013100 "Project Management and Coordination."

### **3.3 CONSTRUCTION LAYOUT**

- A. Verification: Before proceeding to lay out the Work, verify layout information shown on Drawings, in relation to the property survey and existing benchmarks. If discrepancies are discovered, notify Architect promptly.
- B. Site Improvements: Locate and lay out site improvements, including pavements, grading, fill and topsoil placement, utility slopes, and rim and invert elevations.
- C. Building Lines and Levels: Locate and lay out control lines and levels for structures, building foundations, column grids, and floor levels, including those required for mechanical and electrical work. Transfer survey markings and elevations for use with control lines and levels. Level foundations and piers from two or more locations.
- D. Record Log: Maintain a log of layout control work. Record deviations from required lines and levels. Include beginning and ending dates and times of surveys, weather conditions, name and duty of each survey party member, and types of instruments and tapes used. Make the log available for reference by Architect.

### **3.4 INSTALLATION**

- A. General: Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.
1. Make vertical work plumb and make horizontal work level.
  2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.
  3. Conceal pipes, ducts, and wiring in finished areas unless otherwise indicated.
  4. Maintain minimum headroom clearance of 96 inches in occupied spaces and 90 inches in unoccupied spaces.
- B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.
- C. Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Substantial Completion.

- D. Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.
- E. Sequence the Work and allow adequate clearances to accommodate movement of construction items on site and placement in permanent locations.
- F. Tools and Equipment: Do not use tools or equipment that produce harmful noise levels.
- G. Templates: Obtain and distribute to the parties involved templates for work specified to be factory prepared and field installed. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing products to comply with indicated requirements.
- H. Attachment: Provide blocking and attachment plates and anchors and fasteners of adequate size and number to securely anchor each component in place, accurately located and aligned with other portions of the Work. Where size and type of attachments are not indicated, verify size and type required for load conditions.
  - 1. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by Architect.
  - 2. Allow for building movement, including thermal expansion and contraction.
  - 3. Coordinate installation of anchorages. 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.
- I. Joints: Make joints of uniform width. Where joint locations in exposed work are not indicated, arrange joints for the best visual effect. Fit exposed connections together to form hairline joints.
- J. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.

### **3.5 CUTTING AND PATCHING**

- A. Cutting and Patching, General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.
  - 1. Cut in-place construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.
- B. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during installation or cutting and patching operations, by methods and with materials so as not to void existing warranties.
- C. Temporary Support: Provide temporary support of work to be cut.
- D. Protection: Protect in-place construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.
- E. Cutting: Cut in-place construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.
  - 1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots neatly to minimum size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
  - 2. Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
  - 3. Concrete and Masonry: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.
  - 4. Excavating and Backfilling: Comply with requirements in applicable Sections where required by cutting and patching operations.



5. Mechanical and Electrical Services: Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after cutting.
6. Proceed with patching after construction operations requiring cutting are complete.
- F. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other work. Patch with durable seams that are as invisible as practicable. Provide materials and comply with installation requirements specified in other Sections, where applicable.
  1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate physical integrity of installation.
  2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will minimize evidence of patching and refinishing.
    - a. Clean piping, conduit, and similar features before applying paint or other finishing materials.
    - b. Restore damaged pipe covering to its original condition.
  3. Floors and Walls: Where walls or partitions that are removed extend one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform finish, color, texture, and appearance. Remove in-place floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.
    - a. Where patching occurs in a painted surface, prepare substrate and apply primer and intermediate paint coats appropriate for substrate over the patch, and apply final paint coat over entire unbroken surface containing the patch. Provide additional coats until patch blends with adjacent surfaces.
  4. Ceilings: Patch, repair, or rehang in-place ceilings as necessary to provide an even-plane surface of uniform appearance.
  5. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weather tight condition and ensures thermal and moisture integrity of building enclosure.
- G. Cleaning: Clean areas and spaces where cutting and patching are performed. Remove paint, mortar, oils, putty, and similar materials from adjacent finished surfaces.

### **3.6 OWNER-INSTALLED PRODUCTS**

- A. Site Access: Provide access to Project site for Owner's construction personnel.
- B. Coordination: Coordinate construction and operations of the Work with work performed by Owner's construction personnel.
  1. Construction Schedule: Inform Owner of Contractor's preferred construction schedule for Owner's portion of the Work. Adjust construction schedule based on a mutually agreeable timetable. Notify Owner if changes to schedule are required due to differences in actual construction progress.
  2. Pre-installation Conferences: Include Owner's construction personnel at pre-installation conferences covering portions of the Work that are to receive Owner's work. Attend pre-installation conferences conducted by Owner's construction personnel if portions of the Work depend on Owner's construction.

### **3.7 PROGRESS CLEANING**

- A. General: Clean Project site and work areas daily, including common areas. Enforce requirements strictly. Dispose of materials lawfully.
  1. Comply with requirements in NFPA 241 for removal of combustible waste materials and debris.
  2. Do not hold waste materials more than seven days during normal weather or three days if the temperature is expected to rise above 80 degree F.
  3. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.

4. Coordinate progress cleaning for joint-use areas where Contractor and other contractors are working concurrently.
- B. Site: Maintain Project site free of waste materials and debris.
- C. Work Areas: Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the Work.
  1. Remove liquid spills promptly.
  2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.
- D. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.
- E. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.
- F. Exposed Surfaces in Finished Areas: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.
- G. Waste Disposal: Do not bury or burn waste materials on-site. Do not wash waste materials down sewers or into waterways. Comply with waste disposal requirements in Section 015000 "Temporary Facilities and Controls."
- H. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.
- I. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.
- J. Limiting Exposures: Supervise construction operations to assure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

### **3.8 STARTING AND ADJUSTING**

- A. Coordinate startup and adjusting of equipment and operating components with requirements in Section 019113 "General Commissioning Requirements."
- B. Start equipment and operating components to confirm proper operation. Remove malfunctioning units, replace with new units, and retest.
- C. Adjust equipment for proper operation. Adjust operating components for proper operation without binding.
- D. Test each piece of equipment to verify proper operation. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
- E. Manufacturer's Field Service: Comply with qualification requirements in Section 014000 "Quality Requirements."

### **3.9 PROTECTION OF INSTALLED CONSTRUCTION**

- A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.
- B. Comply with manufacturer's written instructions for temperature and relative humidity.

END OF SECTION 017300

## CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

#### 1.2 SUMMARY

- A. Section includes administrative and procedural requirements for the following:
  - 1. Disposing of nonhazardous demolition and construction waste.
- B. Related Requirements:
  - 1. Section 042000 "Unit Masonry" for disposal requirements for masonry waste.

#### 1.3 DEFINITIONS

- A. Construction/Demolition (C&D) Debris—nonhazardous waste generally considered not water-soluble that is produced in the process of construction, remodeling, repair, renovation, or demolition of structures, including buildings of all types (both residential and nonresidential). Solid waste that is not C&D debris (even if resulting from the construction, remodeling, repair, renovation, or demolition of structures) includes, but is not limited to, regulated asbestos-containing material (RACM) as defined in LAC 33:III.5151.B, white goods, creosote-treated lumber, and any other item not an integral part of the structure.
- B. Neither packaging nor empty containers which previously held products or building materials are included in the definition of "Construction/Demolition (C&D) Debris."
- C. Disposal: Removal off-site of demolition and construction waste and subsequent sale, recycling, reuse, or deposit in landfill or incinerator acceptable to authorities having jurisdiction.
- D. Recycle: Recovery of demolition or construction waste for subsequent processing in preparation for reuse.
- E. Salvage: Recovery of demolition or construction waste and subsequent sale or reuse in another facility.
- F. Salvage and Reuse: Recovery of demolition or construction waste and subsequent incorporation into the Work.

#### 1.4 QUALITY ASSURANCE

- A. Regulatory Requirements: Comply with hauling and disposal regulations of authorities having jurisdiction. Waste transporter must be registered with LDEQ as a collector / transporter of solid waste.

### PART 2 - PRODUCTS (Not Used)

### PART 3 - EXECUTION

#### 3.1 DISPOSAL OF WASTE

- A. General: Except for items or materials to be salvaged, recycled, or otherwise reused, remove waste materials from Project site and legally dispose of them in a landfill permitted or approved by LDEQ and approved by Owner.
  - 1. Except as otherwise specified, do not allow waste materials that are to be disposed of accumulate on-site beyond the time required to accumulate a quantity amenable to transportation.

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2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas. All loads must be tarped or covered prior to transport.
- B. Burning: Do not burn waste materials.
- C. Disposal: Remove waste materials from Owner's property and legally dispose of them in a landfill permitted or approved by LDEQ and approved by Owner.

END OF SECTION 017419

## **SECTION 017700 CLOSEOUT PROCEDURES**

### **PART 1 - GENERAL**

#### **1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

#### **1.2 SUMMARY**

- A. Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:
  - 1. Substantial Completion procedures.
  - 2. Final completion procedures.
  - 3. Warranties.
  - 4. Final cleaning.
  - 5. Repair of the Work.
- B. Related Requirements:
  - 1. Section 017300 "Execution" for progress cleaning of Project site.
  - 2. Section 017823 "Operation and Maintenance Data" for operation and maintenance manual requirements.
  - 3. Section 017900 "Demonstration and Training" for requirements for instructing Owner's personnel.

#### **1.3 ACTION SUBMITTALS**

- A. Product Data: For cleaning agents.
- B. Contractor's List of Incomplete Items: Initial submittal at Substantial Completion.
- C. Certified List of Incomplete Items: Final submittal at Final Completion.

#### **1.4 CLOSEOUT SUBMITTALS**

- A. Certificates of Release: From authorities having jurisdiction.
- B. Certificate of Insurance: For continuing coverage.
- C. Field Report: For pest control inspection.

#### **1.5 MAINTENANCE MATERIAL SUBMITTALS**

- A. Schedule of Maintenance Material Items: For maintenance material submittal items specified in other Sections.

#### **1.6 SUBSTANTIAL COMPLETION PROCEDURES**

- A. Contractor's List of Incomplete Items: Prepare and submit a list of items to be completed and corrected (Contractor's punch list), indicating the value of each item on the list and reasons why the Work is incomplete.
- B. Submittals Prior to Substantial Completion: Complete the following a minimum of 10 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.
  - 1. Certificates of Release: Obtain and submit releases from authorities having jurisdiction permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
  - 2. Submit closeout submittals specified in other Division 01 Sections, including project record documents, operation and maintenance manuals, damage or settlement surveys, and similar final record information.

3. Submit closeout submittals specified in individual Sections, including specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
  4. Submit maintenance material submittals specified in individual Sections, including tools, spare parts, extra materials, and similar items, and deliver to location designated by Architect. Label with manufacturer's name and model number where applicable.
    - a. Schedule of Maintenance Material Items: Prepare and submit schedule of maintenance material submittal items, including name and quantity of each item and name and number of related Specification Section. Obtain Architect's signature for receipt of submittals.
  5. Submit test/adjust/balance records.
  6. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.
- C. Procedures Prior to Substantial Completion: Complete the following a minimum of 10 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.
1. Advise Owner of pending insurance changeover requirements.
  2. Make final changeover of permanent locks and deliver keys to Owner. Advise Owner's personnel of changeover in security provisions.
  3. Complete startup and testing of systems and equipment.
  4. Perform preventive maintenance on equipment used prior to Substantial Completion.
  5. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems. Submit demonstration and training video recordings specified in Section 017900 "Demonstration and Training."
  6. Advise Owner of changeover in heat and other utilities.
  7. Participate with Owner in conducting inspection and walkthrough with local emergency responders.
  8. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
  9. Complete final cleaning requirements, including touchup painting.
  10. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.
- D. Inspection: Submit a written request for inspection to determine Substantial Completion a minimum of 10 days prior to date the work will be completed and ready for final inspection and tests. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Architect, that must be completed or corrected before certificate will be issued.
1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.
  2. Results of completed inspection will form the basis of requirements for final completion.

#### **1.7 FINAL COMPLETION PROCEDURES**

- A. Submittals Prior to Final Completion: Before requesting final inspection for determining final completion, complete the following:
1. Submit a final Application for Payment according to Section 012900 "Payment Procedures."
  2. Certified List of Incomplete Items: Submit certified copy of Architect's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Architect. Certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
  3. Certificate of Insurance: Submit evidence of final, continuing insurance coverage complying with insurance requirements.
  4. Submit pest-control final inspection report.

- B. Inspection: Submit a written request for final inspection to determine acceptance a minimum of 10 days prior to date the work will be completed and ready for final inspection and tests. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.

- 1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

### **1.8 LIST OF INCOMPLETE ITEMS (PUNCH LIST)**

- A. Organization of List: Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction. Use CSI Form 14.1A.

- 1. Organize list of spaces in sequential order, starting with exterior areas first and proceeding from lowest floor to highest floor.
  - 2. Organize items applying to each space by major element, including categories for ceiling, individual walls, floors, equipment, and building systems.
  - 3. Include the following information at the top of each page:
    - a. Project name.
    - b. Date.
    - c. Name of Architect.
    - d. Name of Contractor.
    - e. Page number.
  - 4. Submit list of incomplete items in the following format:
    - a. MS Excel electronic file. Architect will return annotated file.
    - b. PDF electronic file. Architect will return annotated file.
    - c. Three paper copies. Architect will return two copies.

### **1.9 SUBMITTAL OF PROJECT WARRANTIES**

- A. Time of Submittal: Submit written warranties on request of Architect for designated portions of the Work where commencement of warranties other than date of Substantial Completion is indicated, or when delay in submittal of warranties might limit Owner's rights under warranty.
- B. Partial Occupancy: Submit properly executed warranties within 15 days of completion of designated portions of the Work that are completed and occupied or used by Owner during construction period by separate agreement with Contractor.
- C. Organize warranty documents into an orderly sequence based on the table of contents of Project Manual.
  - 1. Bind warranties and bonds in heavy-duty, three-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch paper.
  - 2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.
  - 3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Contractor.
  - 4. Warranty Electronic File: Scan warranties and bonds and assemble complete warranty and bond submittal package into a single indexed electronic PDF file with links enabling navigation to each item. Provide bookmarked table of contents at beginning of document.
- D. Provide additional copies of each warranty to include in operation and maintenance manuals.

## **PART 2 - PRODUCTS**

## 2.1 MATERIALS

- A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

## PART 3 - EXECUTION

### 3.1 FINAL CLEANING

- A. General: Perform final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.
- B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.
  - 1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a designated portion of Project:
    - a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
    - b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
    - c. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
    - d. Remove tools, construction equipment, machinery, and surplus material from Project site.
    - e. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
    - f. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
    - g. Sweep concrete floors broom clean in unoccupied spaces.
    - h. Vacuum carpet and similar soft surfaces, removing debris and excess nap; clean according to manufacturer's recommendations if visible soil or stains remain.
    - i. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Polish mirrors and glass, taking care not to scratch surfaces.
    - j. Remove labels that are not permanent.
    - k. Wipe surfaces of mechanical and electrical equipment and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.
    - l. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.
    - m. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.
    - n. Clean ducts, blowers, and coils if units were operated without filters during construction or that display contamination with particulate matter on inspection.
      - 1) Clean HVAC system in compliance with NADCA Standard 1992-01.  
Provide written report on completion of cleaning.
    - o. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency.
    - p. Leave Project clean and ready for occupancy.
- C. Pest Control: Comply with pest control requirements in Section 015000 "Temporary Facilities and Controls." Prepare written report.



- D. Construction Waste Disposal: Comply with waste disposal requirements in Section 015000 "Temporary Facilities and Controls." AND Section 017419 "Construction Waste Management and Disposal."

**3.2 REPAIR OF THE WORK**

- A. Complete repair and restoration operations before requesting inspection for determination of Substantial Completion.
- B. Repair or remove and replace defective construction. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment. Where damaged or worn items cannot be repaired or restored, provide replacements. Remove and replace operating components that cannot be repaired. Restore damaged construction and permanent facilities used during construction to specified condition.
  - 1. Remove and replace chipped, scratched, and broken glass, reflective surfaces, and other damaged transparent materials.
  - 2. Touch up and otherwise repair and restore marred or exposed finishes and surfaces. Replace finishes and surfaces that that already show evidence of repair or restoration.
    - a. Do not paint over "UL" and other required labels and identification, including mechanical and electrical nameplates. Remove paint applied to required labels and identification.
  - 3. Replace parts subject to operating conditions during construction that may impede operation or reduce longevity.
  - 4. Replace burned-out bulbs, bulbs noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.

END OF SECTION 017700



## **SECTION 017823 - OPERATION AND MAINTENANCE DATA**

### **PART 1 - GENERAL**

#### **1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

#### **1.2 SUMMARY**

- A. Section includes administrative and procedural requirements for preparing operation and maintenance manuals, including the following:
  - 1. Operation and maintenance documentation directory.
  - 2. Emergency manuals.
  - 3. Operation manuals for systems, subsystems, and equipment.
  - 4. Product maintenance manuals.
  - 5. Systems and equipment maintenance manuals.
- B. Related Requirements:
  - 1. Section 013300 "Submittal Procedures" for submitting copies of submittals for operation and maintenance manuals.

#### **1.3 DEFINITIONS**

- A. System: An organized collection of parts, equipment, or subsystems united by regular interaction.
- B. Subsystem: A portion of a system with characteristics similar to a system.

#### **1.4 CLOSEOUT SUBMITTALS**

- A. Manual Content: Operations and maintenance manual content is specified in individual Specification Sections to be reviewed at the time of Section submittals. Submit reviewed manual content formatted and organized as required by this Section.
  - 1. Where applicable, clarify and update reviewed manual content to correspond to revisions and field conditions.
- B. Format: Submit operations and maintenance manuals in the following format:
  - 1. PDF electronic file. Assemble each manual into a composite electronically indexed file. Submit on digital media acceptable to Architect.
    - a. Name each indexed document file in composite electronic index with applicable item name. Include a complete electronically linked operation and maintenance directory.
    - b. Enable inserted reviewer Comments on draft submittals.
  - 2. Three paper copies. Include a complete operation and maintenance directory. Enclose title pages and directories in clear plastic sleeves. Architect will return two copies.
- C. Initial Manual Submittal: Submit draft copy of each manual at least 30 days before commencing demonstration and training. Design Professional will comment on whether general scope and content of manual are acceptable.
  - 1. Correct or revise each manual to comply with Architect's comments. Submit copies of each corrected manual within 15 days of receipt of Architect's comments and prior to commencing demonstration and training.
- D. Final Manual Submittal: Submit each manual in final form prior to requesting inspection for Substantial Completion and at least 15 days before commencing demonstration and training.

### **PART 2 - PRODUCTS**

#### **2.1 OPERATION AND MAINTENANCE DOCUMENTATION DIRECTORY**

- A. Directory: Prepare a single, comprehensive directory of emergency, operation, and maintenance data and materials, listing items and their location to facilitate ready access to desired information. Include a section in the directory for each of the following:
  - 1. List of documents.
  - 2. List of systems.
  - 3. List of equipment.
  - 4. Table of contents.
- B. List of Systems and Subsystems: List systems alphabetically. Include references to operation and maintenance manuals that contain information about each system.
- C. List of Equipment: List equipment for each system, organized alphabetically by system. For pieces of equipment not part of system, list alphabetically in separate list.
- D. Tables of Contents: Include a table of contents for each emergency, operation, and maintenance manual.
- E. Identification: In the documentation directory and in each operation and maintenance manual, identify each system, subsystem, and piece of equipment with same designation used in the Contract Documents. If no designation exists, assign a designation according to ASHRAE Guideline 4, "Preparation of Operating and Maintenance Documentation for Building Systems."

## **2.2 REQUIREMENTS FOR EMERGENCY, OPERATION, AND MAINTENANCE MANUALS**

- A. Organization: Unless otherwise indicated, organize each manual into a separate section for each system and subsystem, and a separate section for each piece of equipment not part of a system. Each manual shall contain the following materials, in the order listed:
  - 1. Title page.
  - 2. Table of contents.
  - 3. Manual contents.
- B. Title Page: Include the following information:
  - 1. Subject matter included in manual.
  - 2. Name and address of Project.
  - 3. Name and address of Owner.
  - 4. Date of submittal.
  - 5. Name and contact information for Contractor.
  - 6. Name and contact information for Commissioning Authority.
- C. Table of Contents: List each product included in manual, identified by product name, indexed to the content of the volume, and cross-referenced to Specification Section number in Project Manual.
  - 1. If operation or maintenance documentation requires more than one volume to accommodate data, include comprehensive table of contents for all volumes in each volume of the set.
- D. Manual Contents: Organize into sets of manageable size. Arrange contents alphabetically by system, subsystem, and equipment. If possible, assemble instructions for subsystems, equipment, and components of one system into a single binder.
- E. Manuals, Electronic Files: Submit manuals in the form of a multiple file composite electronic PDF file for each manual type required.
  - 1. Electronic Files: Use electronic files prepared by manufacturer where available. Where scanning of paper documents is required, configure scanned file for minimum readable file size.
  - 2. File Names and Bookmarks: Enable bookmarking of individual documents based on file names. Name document files to correspond to system, subsystem, and equipment names used in manual directory and table of contents. Group documents for each system and subsystem into individual composite bookmarked files, then create composite manual, so that resulting bookmarks reflect the system, subsystem, and equipment

names in a readily navigated file tree. Configure electronic manual to display bookmark panel on opening file.

- F. Manuals, Paper Copy: Submit manuals in the form of hard copy, bound and labeled volumes.
1. Binders: Heavy-duty, three-ring, vinyl-covered, loose-leaf binders, in thickness necessary to accommodate contents, sized to hold 8-1/2-by-11-inch paper; with clear plastic sleeve on spine to hold label describing contents and with pockets inside covers to hold folded oversize sheets.
    - a. If two or more binders are necessary to accommodate data of a system, organize data in each binder into groupings by subsystem and related components. Cross-reference other binders if necessary to provide essential information for proper operation or maintenance of equipment or system.
    - b. Identify each binder on front and spine, with printed title "OPERATION AND MAINTENANCE MANUAL," Project title or name, and subject matter of contents, and indicate Specification Section number on bottom of spine. Indicate volume number for multiple-volume sets.
  2. Dividers: Heavy-paper dividers with plastic-covered tabs for each section of the manual. Mark each tab to indicate contents. Include typed list of products and major components of equipment included in the section on each divider, cross-referenced to Specification Section number and title of Project Manual.
  3. Protective Plastic Sleeves: Transparent plastic sleeves designed to enclose diagnostic software storage media for computerized electronic equipment.
  4. Supplementary Text: Prepared on 8-1/2-by-11-inch white bond paper.
  5. Drawings: Attach reinforced, punched binder tabs on drawings and bind with text.
    - a. If oversize drawings are necessary, fold drawings to same size as text pages and use as foldouts.
    - b. If drawings are too large to be used as foldouts, fold and place drawings in labeled envelopes and bind envelopes in rear of manual. At appropriate locations in manual, insert typewritten pages indicating drawing titles, descriptions of contents, and drawing locations.

## 2.3 EMERGENCY MANUALS

- A. Content: Organize manual into a separate section for each of the following:
1. Type of emergency.
  2. Emergency instructions.
  3. Emergency procedures.
- B. Type of Emergency: Where applicable for each type of emergency indicated below, include instructions and procedures for each system, subsystem, piece of equipment, and component:
1. Fire.
  2. Gas leak.
  3. Power failure.
  4. System, subsystem, or equipment failure.
- C. Emergency Instructions: Describe and explain warnings, trouble indications, error messages, and similar codes and signals. Include responsibilities of Owner's operating personnel for notification of Installer, supplier, and manufacturer to maintain warranties.
- D. Emergency Procedures: Include the following, as applicable:
1. Instructions on stopping.
  2. Shutdown instructions for each type of emergency.
  3. Operating instructions for conditions outside normal operating limits.
  4. Required sequences for electric or electronic systems.
  5. Special operating instructions and procedures.

## 2.4 OPERATION MANUALS

- A. Content: In addition to requirements in this Section, include operation data required in individual Specification Sections and the following information:

1. System, subsystem, and equipment descriptions. Use designations for systems and equipment indicated on Contract Documents.
  2. Operating standards.
  3. Operating procedures.
  4. Operating logs.
  5. Wiring diagrams.
  6. Control diagrams.
  7. Piped system diagrams.
  8. Precautions against improper use.
  9. License requirements including inspection and renewal dates.
- B. Descriptions: Include the following:
1. Product name and model number. Use designations for products indicated on Contract Documents.
  2. Manufacturer's name.
  3. Equipment identification with serial number of each component.
  4. Equipment function.
  5. Operating characteristics.
  6. Limiting conditions.
  7. Complete nomenclature and number of replacement parts.
- C. Operating Procedures: Include the following, as applicable:
1. Startup procedures.
  2. Routine and normal operating instructions.
  3. Normal shutdown instructions.
  4. Required sequences for electric or electronic systems.
- D. Systems and Equipment Controls: Describe the sequence of operation, and diagram controls as installed.
- E. Piped Systems: Diagram piping as installed, and identify color-coding where required for identification.

## **2.5 PRODUCT MAINTENANCE MANUALS**

- A. Content: Organize manual into a separate section for each product, material, and finish. Include source information, product information, maintenance procedures, repair materials and sources, and warranties and bonds, as described below.
- B. Source Information: List each product included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual and drawing or schedule designation or identifier where applicable.
- C. Product Information: Include the following, as applicable:
1. Product name and model number.
  2. Manufacturer's name.
  3. Color, pattern, and texture.
- D. Maintenance Procedures: Include manufacturer's written recommendations and the following:
1. Inspection procedures.
  2. Types of cleaning agents to be used and methods of cleaning.
  3. List of cleaning agents and methods of cleaning detrimental to product.
  4. Schedule for routine cleaning and maintenance.
- E. Repair Materials and Sources: Include lists of materials and local sources of materials and related services.
- F. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.
1. Include procedures to follow and required notifications for warranty claims.

## **2.6 SYSTEMS AND EQUIPMENT MAINTENANCE MANUALS**

- A. Content: For each system, subsystem, and piece of equipment not part of a system, include source information, manufacturers' maintenance documentation, maintenance procedures, maintenance and service schedules, spare parts list and source information, maintenance service contracts, and warranty and bond information, as described below.
  - 1. Content shall include AEP lockout / tagout procedures.
- B. Source Information: List each system, subsystem, and piece of equipment included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual and drawing or schedule designation or identifier where applicable.
- C. Manufacturers' Maintenance Documentation: Manufacturers' maintenance documentation including the following information for each component part or piece of equipment:
  - 1. Standard maintenance instructions and bulletins.
  - 2. Drawings, diagrams, and instructions required for maintenance, including disassembly and component removal, replacement, and assembly.
  - 3. Identification and nomenclature of parts and components.
  - 4. List of items recommended to be stocked as spare parts.
- D. Maintenance Procedures: Include the following information and items that detail essential maintenance procedures:
  - 1. Troubleshooting guide.
  - 2. Precautions against improper maintenance.
  - 3. Disassembly; component removal, repair, and replacement; and reassembly instructions.
- E. Maintenance and Service Schedules: Include service and lubrication requirements, list of required lubricants for equipment, and separate schedules for preventive and routine maintenance and service with standard time allotment.
  - 1. Scheduled Maintenance and Service: Tabulate actions for daily, weekly, monthly, quarterly, semiannual, and annual frequencies.
  - 2. Maintenance and Service Record: Include manufacturers' forms for recording maintenance.
- F. Spare Parts List and Source Information: Include lists of replacement and repair parts, with parts identified and cross-referenced to manufacturers' maintenance documentation and local sources of maintenance materials and related services.
- G. Maintenance Service Contracts: Include copies of maintenance agreements with name and telephone number of service agent.
- H. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.
  - 1. Include procedures to follow and required notifications for warranty claims.

## **PART 3 - EXECUTION**

### **3.1 MANUAL PREPARATION**

- A. Operation and Maintenance Documentation Directory: Prepare a separate manual that provides an organized reference to emergency, operation, and maintenance manuals.
- B. Emergency Manual: Assemble a complete set of emergency information indicating procedures for use by emergency personnel and by Owner's operating personnel for types of emergencies indicated.
- C. Product Maintenance Manual: Assemble a complete set of maintenance data indicating care and maintenance of each product, material, and finish incorporated into the Work.

- D. Operation and Maintenance Manuals: Assemble a complete set of operation and maintenance data indicating operation and maintenance of each system, subsystem, and piece of equipment not part of a system.
  - 1. Engage a factory-authorized service representative to assemble and prepare information for each system, subsystem, and piece of equipment not part of a system.
  - 2. Prepare a separate manual for each system and subsystem, in the form of an instructional manual for use by Owner's operating personnel.
- E. Manufacturers' Data: Where manuals contain manufacturers' standard printed data, include only sheets pertinent to product or component installed. Mark each sheet to identify each product or component incorporated into the Work. If data include more than one item in a tabular format, identify each item using appropriate references from the Contract Documents. Identify data applicable to the Work and delete references to information not applicable.
  - 1. Prepare supplementary text if manufacturers' standard printed data are not available and where the information is necessary for proper operation and maintenance of equipment or systems.
- F. Drawings: Prepare drawings supplementing manufacturers' printed data to illustrate the relationship of component parts of equipment and systems and to illustrate control sequence and flow diagrams. Coordinate these drawings with information contained in record Drawings to ensure correct illustration of completed installation.
  - 1. Do not use original project record documents as part of operation and maintenance manuals.
  - 2. Comply with requirements of newly prepared record Drawings in Section 017839 "Project Record Documents."
- G. Comply with Section 017700 "Closeout Procedures" for schedule for submitting operation and maintenance documentation.

END OF SECTION 017823



## **SECTION 017839 - PROJECT RECORD DOCUMENTS**

### **PART 1 - GENERAL**

#### **1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

#### **1.2 SUMMARY**

- A. Section includes administrative and procedural requirements for project record documents, including the following:
  - 1. Record Drawings.
  - 2. Record Product Data.
  - 3. Miscellaneous record submittals.
- B. Related Requirements:
  - 1. Section 017300 "Execution" for final property survey.
  - 2. Section 017700 "Closeout Procedures" for general closeout procedures.
  - 3. Section 017823 "Operation and Maintenance Data" for operation and maintenance manual requirements.

#### **1.3 CLOSEOUT SUBMITTALS**

- A. Record Drawings: Comply with the following:
  - 1. Number of Copies: Submit one set(s) of marked-up record prints.
  - 2. Number of Copies: Submit copies of record Drawings as follows:
    - a. Initial Submittal:
      - 1) Submit one paper-copy set(s) of marked-up record prints.
      - 2) Submit PDF electronic files of scanned record prints and one of file prints.
      - 3) Submit record digital data files and one set(s) of plots.
      - 4) Architect will indicate whether general scope of changes, additional information recorded, and quality of drafting are acceptable.
    - b. Final Submittal:
      - 1) Submit three paper-copy set(s) of marked-up record prints.
      - 2) Submit PDF electronic files of scanned record prints and three set(s) of prints.
      - 3) Print each drawing, whether or not changes and additional information were recorded.
- B. Record Specifications: Submit one paper copy annotated PDF electronic files of Project's Specifications, including addenda and contract modifications.
- C. Record Product Data: Submit one paper copy annotated PDF electronic files and directories of each submittal.
  - 1. Where record Product Data are required as part of operation and maintenance manuals, submit duplicate marked-up Product Data as a component of manual.
- D. Miscellaneous Record Submittals: See other Specification Sections for miscellaneous record-keeping requirements and submittals in connection with various construction activities. Submit one paper copy annotated PDF electronic files and directories of each submittal.

### **PART 2 - PRODUCTS**

#### **2.1 RECORD DRAWINGS**

- A. Record Prints: Maintain one set of marked-up paper copies of the Contract Drawings and Shop Drawings, incorporating new and revised drawings as modifications are issued.

1. Preparation: Mark record prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to provide information for preparation of corresponding marked-up record prints.
    - a. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
    - b. Accurately record information in an acceptable drawing technique.
    - c. Record data as soon as possible after obtaining it.
    - d. Record and check the markup before enclosing concealed installations.
    - e. Cross-reference record prints to corresponding archive photographic documentation.
  2. Content: Types of items requiring marking include, but are not limited to, the following:
    - a. Dimensional changes to Drawings.
    - b. Revisions to details shown on Drawings.
    - c. Depths of foundations below first floor.
    - d. Locations and depths of underground utilities.
    - e. Revisions to routing of piping and conduits.
    - f. Revisions to electrical circuitry.
    - g. Actual equipment locations.
    - h. Locations of concealed internal utilities.
    - i. Changes made by Change Order or Work Change Directive.
    - j. Changes made following Architect's written orders.
    - k. Field records for variable and concealed conditions.
    - l. Record information on the Work that is shown only schematically.
  3. Mark the Contract Drawings and Shop Drawings completely and accurately. Use personnel proficient at recording graphic information in production of marked-up record prints.
  4. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at same location.
  5. Mark important additional information that was either shown schematically or omitted from original Drawings.
  6. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.
- B. Record Digital Data Files: Immediately before inspection for Certificate of Substantial Completion, review marked-up record prints with Architect. When authorized, prepare a full set of corrected digital data files of the Contract Drawings, as follows:
1. Format: Same digital data software program, version, and operating system as the original Contract Drawings.
  2. Incorporate changes and additional information previously marked on record prints. Delete, redraw, and add details and notations where applicable.
  3. Refer instances of uncertainty to Architect for resolution.
  4. Architect will furnish Contractor one set of digital data files of the Contract Drawings for use in recording information.
    - a. See Section 013300 "Submittal Procedures" for requirements related to use of Architect's digital data files.
    - b. Architect will provide data file layer information. Record markups in separate layers.
- C. Newly Prepared Record Drawings: Prepare new Drawings instead of preparing record Drawings where Architect determines that neither the original Contract Drawings nor Shop Drawings are suitable to show actual installation.
1. New Drawings may be required when a Change Order is issued as a result of accepting an alternate, substitution, or other modification.
  2. Consult Architect for proper scale and scope of detailing and notations required to record the actual physical installation and its relation to other construction. Integrate newly

prepared record Drawings into record Drawing sets; comply with procedures for formatting, organizing, copying, binding, and submitting.

- D. Format: Identify and date each record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.
  - 1. Record Prints: Organize record prints and newly prepared record Drawings into manageable sets. Bind each set with durable paper cover sheets. Include identification on cover sheets.
  - 2. Record Digital Data Files: Organize digital data information into separate electronic files that correspond to each sheet of the Contract Drawings. Name each file with the sheet identification. Include identification in each digital data file.
  - 3. Identification: As follows:
    - a. Project name.
    - b. Date.
    - c. Designation "PROJECT RECORD DRAWINGS."
    - d. Name of Architect.
    - e. Name of Contractor.

## **2.2 RECORD PRODUCT DATA**

- A. Preparation: Mark Product Data to indicate the actual product installation where installation varies substantially from that indicated in Product Data submittal.
  - 1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
  - 2. Include significant changes in the product delivered to Project site and changes in manufacturer's written instructions for installation.
  - 3. Note related Change Orders, record Specifications, and record Drawings where applicable.
- B. Include Safety Data Sheets and Material Safety Data Sheets.
- C. Format: Submit record Product Data as paper copy.
  - 1. Include record Product Data directory organized by Specification Section number and title, electronically linked to each item of record Product Data.

## **2.3 MISCELLANEOUS RECORD SUBMITTALS**

- A. Assemble miscellaneous records required by other Specification Sections for miscellaneous record keeping and submittal in connection with actual performance of the Work. Bind or file miscellaneous records and identify each, ready for continued use and reference.
- B. Format: Submit miscellaneous record submittals as paper copy.
  - 1. Include miscellaneous record submittals directory organized by Specification Section number and title, electronically linked to each item of miscellaneous record submittals.

## **PART 3 - EXECUTION**

### **3.1 RECORDING AND MAINTENANCE**

- A. Recording: Maintain one copy of each submittal during the construction period for project record document purposes. Post changes and revisions to project record documents as they occur; do not wait until end of Project.
- B. Maintenance of Record Documents and Samples: Store record documents and Samples in the field office apart from the Contract Documents used for construction. Do not use project record documents for construction purposes. Maintain record documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to project record documents for Architect's reference during normal working hours.

END OF SECTION 017839



## **SECTION 017900 DEMONSTRATION AND TRAINING**

### **PART 1 - GENERAL**

#### **1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

#### **1.2 SUMMARY**

- A. Section includes administrative and procedural requirements for instructing Owner's personnel, including the following:
  - 1. Demonstration of operation of systems, subsystems, and equipment.
  - 2. Training in operation and maintenance of systems, subsystems, and equipment.
  - 3. Demonstration and training video recordings.

#### **1.3 INFORMATIONAL SUBMITTALS**

- A. Instruction Program: Submit outline of instructional program for demonstration and training, including a list of training modules and a schedule of proposed dates, times, length of instruction time, and instructors' names for each training module. Include learning objective and outline for each training module.
  - 1. Indicate proposed training modules using manufacturer-produced demonstration and training video recordings for systems, equipment, and products in lieu of video recording of live instructional module.
- B. Attendance Record: For each training module, submit list of participants and length of instruction time.
- C. Evaluations: For each participant and for each training module, submit results and documentation of performance-based test.

#### **1.4 CLOSEOUT SUBMITTALS**

- A. Demonstration and Training Video Recordings: Submit two copies within seven days of end of each training module.
  - 1. Identification: On each copy, provide an applied label with the following information:
    - a. Name of Project.
    - b. Name and address of videographer.
    - c. Name of Architect.
    - d. Name of Contractor.
    - e. Date of video recording.
  - 2. Transcript: Prepared and bound in format matching operation and maintenance manuals. Mark appropriate identification on front and spine of each binder. Include a cover sheet with same label information as the corresponding video recording. Include name of Project and date of video recording on each page.
  - 3. Transcript: Prepared in PDF electronic format. Include a cover sheet with same label information as the corresponding video recording and a table of contents with links to corresponding training components. Include name of Project and date of video recording on each page.
  - 4. At completion of training, submit complete training manual(s) for Owner's use prepared and bound in format matching operation and maintenance manuals and in PDF electronic file format on compact disc.

#### **1.5 QUALITY ASSURANCE**

- A. Facilitator Qualifications: A firm or individual experienced in training or educating maintenance personnel in a training program similar in content and extent to that indicated for this Project,

and whose work has resulted in training or education with a record of successful learning performance.

- B. Instructor Qualifications: A factory-authorized service representative, complying with requirements in Section 014000 "Quality Requirements," experienced in operation and maintenance procedures and training.
- C. Videographer Qualifications: A professional videographer who is experienced photographing demonstration and training events similar to those required.
- D. Preinstruction Conference: Conduct conference at Project site to comply with requirements in Section 013100 "Project Management and Coordination." Review methods and procedures related to demonstration and training including, but not limited to, the following:
  - 1. Inspect and discuss locations and other facilities required for instruction.
  - 2. Review and finalize instruction schedule and verify availability of educational materials, instructors' personnel, audiovisual equipment, and facilities needed to avoid delays.
  - 3. Review required content of instruction.
  - 4. For instruction that must occur outside, review weather and forecasted weather conditions and procedures to follow if conditions are unfavorable.

## 1.6 COORDINATION

- A. Coordinate instruction schedule with Owner's operations. Adjust schedule as required to minimize disrupting Owner's operations and to ensure availability of Owner's personnel.
- B. Coordinate instructors, including providing notification of dates, times, length of instruction time, and course content.
- C. Coordinate content of training modules with content of approved emergency, operation, and maintenance manuals. Do not submit instruction program until operation and maintenance data has been reviewed and approved by Architect.

## PART 2 - PRODUCTS

### 2.1 INSTRUCTION PROGRAM

- A. Program Structure: Develop an instruction program that includes individual training modules for each system and for equipment not part of a system, as required by individual Specification Sections.
- B. Training Modules: Develop a learning objective and teaching outline for each module. Include a description of specific skills and knowledge that participant is expected to master. For each module, include instruction for the following as applicable to the system, equipment, or component:
  - 1. Basis of System Design, Operational Requirements, and Criteria: Include the following:
    - a. System, subsystem, and equipment descriptions.
    - b. Performance and design criteria if Contractor is delegated design responsibility.
    - c. Operating standards.
    - d. Regulatory requirements.
    - e. Equipment function.
    - f. Operating characteristics.
    - g. Limiting conditions.
    - h. Performance curves.
  - 2. Documentation: Review the following items in detail:
    - a. Emergency manuals.
    - b. Operations manuals.
    - c. Maintenance manuals.
    - d. Project record documents.
    - e. Identification systems.
    - f. Warranties and bonds.

- g. Maintenance service agreements and similar continuing commitments.
  3. Emergencies: Include the following, as applicable:
    - a. Instructions on meaning of warnings, trouble indications, and error messages.
    - b. Instructions on stopping.
    - c. Shutdown instructions for each type of emergency.
    - d. Operating instructions for conditions outside of normal operating limits.
    - e. Sequences for electric or electronic systems.
    - f. Special operating instructions and procedures.
  4. Operations: Include the following, as applicable:
    - a. Startup procedures.
    - b. Equipment or system break-in procedures.
    - c. Routine and normal operating instructions.
    - d. Regulation and control procedures.
    - e. Control sequences.
    - f. Safety procedures.
    - g. Instructions on stopping.
    - h. Normal shutdown instructions.
    - i. Operating procedures for emergencies.
    - j. Operating procedures for system, subsystem, or equipment failure.
    - k. Seasonal and weekend operating instructions.
    - l. Required sequences for electric or electronic systems.
    - m. Special operating instructions and procedures.
  5. Adjustments: Include the following:
    - a. Alignments.
    - b. Checking adjustments.
    - c. Noise and vibration adjustments.
    - d. Economy and efficiency adjustments.
  6. Troubleshooting: Include the following:
    - a. Diagnostic instructions.
    - b. Test and inspection procedures.
  7. Maintenance: Include the following:
    - a. Inspection procedures.
    - b. Types of cleaning agents to be used and methods of cleaning.
    - c. List of cleaning agents and methods of cleaning detrimental to product.
    - d. Procedures for routine cleaning
    - e. Procedures for preventive maintenance.
    - f. Procedures for routine maintenance.
    - g. Instruction on use of special tools.
  8. Repairs: Include the following:
    - a. Diagnosis instructions.
    - b. Repair instructions.
    - c. Disassembly; component removal, repair, and replacement; and reassembly instructions.
    - d. Instructions for identifying parts and components.
    - e. Review of spare parts needed for operation and maintenance.

### **PART 3 - EXECUTION**

#### **3.1 PREPARATION**

- A. Assemble educational materials necessary for instruction, including documentation and training module. Assemble training modules into a training manual organized in coordination with requirements in Section 017823 "Operation and Maintenance Data."
- B. Set up instructional equipment at instruction location.

### **3.2 INSTRUCTION**

- A. Facilitator: Engage a qualified facilitator to prepare instruction program and training modules, to coordinate instructors, and to coordinate between Contractor and Owner for number of participants, instruction times, and location.
- B. Engage qualified instructors to instruct Owner's personnel to adjust, operate, and maintain systems, subsystems, and equipment not part of a system.
  - 1. Owner will furnish an instructor to describe Owner's operational philosophy.
  - 2. Owner will furnish Contractor with names and positions of participants.
- C. Scheduling: Provide instruction at mutually agreed on times. For equipment that requires seasonal operation, provide similar instruction at start of each season.
  - 1. Schedule training with Owner, copying Architect, with at least seven days' advance notice.
- D. Training Location and Reference Material: Conduct training on-site in the completed and fully operational facility using the actual equipment in-place. Conduct training using final operation and maintenance data submittals.
- E. Evaluation: At conclusion of each training module, assess and document each participant's mastery of module by use of an oral, written or demonstration performance-based test.
- F. Cleanup: Collect used and leftover educational materials and remove from Project site. Remove instructional equipment. Restore systems and equipment to condition existing before initial training use.

### **3.3 DEMONSTRATION AND TRAINING VIDEO RECORDINGS**

- A. General: Engage a qualified commercial videographer to record demonstration and training video recordings. Record each training module separately. Include classroom instructions and demonstrations, board diagrams, and other visual aids, but not student practice.
  - 1. At beginning of each training module, record each chart containing learning objective and lesson outline.
- B. Video: Provide minimum 640 x 480 video resolution converted to format file type acceptable to Owner, on electronic media.
  - 1. Electronic Media: Read-only format compact disc acceptable to Owner, with commercial-grade graphic label.
  - 2. File Hierarchy: Organize folder structure and file locations according to project manual table of contents. Provide complete screen-based menu.
  - 3. File Names: Utilize file names based upon name of equipment generally described in video segment, as identified in Project specifications.
  - 4. Contractor and Installer Contact File: Using appropriate software, create a file for inclusion on the Equipment Demonstration and Training DVD that describes the following for each Contractor involved on the Project, arranged according to Project table of contents:
    - a. Name of Contractor/Installer.
    - b. Business address.
    - c. Business phone number.
    - d. Point of contact.
    - e. E-mail address.
- C. Recording: Mount camera on tripod before starting recording, unless otherwise necessary to adequately cover area of demonstration and training. Display continuous running time.
  - 1. Film training session(s) in segments not to exceed 15 minutes.
    - a. Produce segments to present a single significant piece of equipment per segment.
    - b. Organize segments with multiple pieces of equipment to follow order of Project Manual table of contents.



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- c. Where a training session on a particular piece of equipment exceeds 15 minutes, stop filming and pause training session. Begin training session again upon commencement of new filming segment.
- D. Light Levels: Verify light levels are adequate to properly light equipment. Verify equipment markings are clearly visible prior to recording.
  - 1. Furnish additional portable lighting as required.
- E. Transcript: Provide a transcript of the narration. Display images and running time captured from videotape opposite the corresponding narration segment.

END OF SECTION 017900



## **SECTION 024119 - SELECTIVE DEMOLITION**

### **PART 1 - GENERAL**

#### **1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

#### **1.2 SUMMARY**

- A. Section Includes:
  - 1. Demolition and removal of selected site elements.
  - 2. Salvage of existing items to be remitted to Owner for auction or recycled.
- B. Related Requirements:
  - 1. Section 011000 "Summary" for restrictions on use of the premises, Owner-occupancy requirements, and phasing requirements.
  - 2. Section 017300 "Execution" for cutting and patching procedures.

#### **1.3 DEFINITIONS**

- A. Remove: Detach items from existing construction and dispose of them off-site unless indicated to be salvaged or reinstalled.
- B. Remove and Salvage: Detach items from existing construction, in a manner to prevent damage, and store.
- C. Remove and Reinstall: Detach items from existing construction, in a manner to prevent damage, prepare for reuse, and reinstall where indicated.
- D. Existing to Remain: Leave existing items that are not to be removed and that are not otherwise indicated to be salvaged or reinstalled.
- E. Dismantle: To remove by disassembling or detaching an item from a surface, using gentle methods and equipment to prevent damage to the item and surfaces; disposing of items unless indicated to be salvaged or reinstalled.

#### **1.4 MATERIALS OWNERSHIP**

- A. Unless otherwise indicated, demolition waste becomes property of Contractor.

#### **1.5 FIELD CONDITIONS**

- A. Owner will occupy portions of building immediately adjacent to selective demolition area. Conduct selective demolition so Owner's operations will not be disrupted.
- B. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.
  - 1. Before selective demolition, Owner will remove the following items:
    - a. <insert items to be removed by Owner>.
- C. Notify Architect of discrepancies between existing conditions and Drawings before proceeding with selective demolition.
- D. Storage or sale of removed items or materials on-site is not permitted.
- E. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.
  - 1. Maintain fire-protection facilities in service during selective demolition operations.

#### **1.6 COORDINATION**

- A. Arrange selective demolition schedule so as not to interfere with Owner's operations.

## **PART 2 - PRODUCTS**

### **2.1 PERFORMANCE REQUIREMENTS**

- A. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.
- B. Standards: Comply with ASSE A10.6 and NFPA 241.

## **PART 3 - EXECUTION**

### **3.1 EXAMINATION**

- A. Verify that hazardous materials have been remediated before proceeding with building demolition operations.

### **3.2 PROTECTION**

- A. Temporary Protection: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.
  - 1. Provide protection to ensure safe passage of people around selective demolition area and to and from occupied portions of building.
- B. Remove temporary barricades and protections where hazards no longer exist.

### **3.3 SELECTIVE DEMOLITION, GENERAL**

- A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:
  - 1. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping. Temporarily cover openings to remain.
  - 2. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
  - 3. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.
  - 4. Dispose of demolished items and materials promptly.
- B. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with other adjacent occupied and used facilities.
- C. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by Architect, items may be removed to a suitable, protected storage location during selective demolition and cleaned and reinstalled in their original locations after selective demolition operations are complete.

### **3.4 SELECTIVE DEMOLITION PROCEDURES FOR SPECIFIC MATERIALS**

- A. Masonry: Demolish in small sections. Cut masonry at junctures with construction to remain, using power-driven saw, and then remove masonry between saw cuts.
- B. Resilient Floor Coverings: Remove floor coverings and adhesive according to recommendations in RFCI's "Recommended Work Practices for the Removal of Resilient Floor Coverings."

### **3.5 DISPOSAL OF DEMOLISHED MATERIALS**

- A. Remove demolition waste materials from Project site and recycle or dispose of them according to Section 017419 "Construction Waste Management and Disposal."
  - 1. Do not allow demolished materials to accumulate on-site.
  - 2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.

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**3.6 CLEANING**

- A. Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

END OF SECTION 024119



## **SECTION 033000 - CAST-IN-PLACE CONCRETE**

### **1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

### **1.2 SUMMARY**

- A. Section includes cast-in-place concrete, including formwork, reinforcement, concrete materials, mixture design, placement procedures, and finishes.

### **1.3 DEFINITIONS**

- A. Cementitious Materials: Portland cement alone or in combination with one or more of the following: blended hydraulic cement, fly ash, slag cement, other pozzolans, and silica fume; materials subject to compliance with requirements.
- B. W/C Ratio: The ratio by weight of water to cementitious materials.

### **1.4 ACTION SUBMITTALS**

- A. Product Data: For each type of product.
- B. Design Mixtures: For each concrete mixture. Submit alternate design mixtures when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.
  - 1. Indicate amounts of mixing water to be withheld for later addition at Project site.
- C. Steel Reinforcement Shop Drawings: Placing Drawings that detail fabrication, bending, and placement. Include bar sizes, lengths, material, grade, bar schedules, stirrup spacing, bent bar diagrams, bar arrangement, splices and laps, mechanical connections, tie spacing, hoop spacing, and supports for concrete reinforcement.
- D. Construction Joint Layout: Indicate proposed construction joints required to construct the structure.
  - 1. Location of construction joints is subject to approval of the Architect.

### **1.5 INFORMATIONAL SUBMITTALS**

- A. Material Certificates: For each of the following, signed by manufacturers:
  - 1. Cementitious materials.
  - 2. Admixtures.
  - 3. Form materials and form-release agents.
  - 4. Steel reinforcement and accessories.
  - 5. Curing compounds.
  - 6. Floor and slab treatments.
  - 7. Bonding agents.
  - 8. Adhesives.

### **1.6 DELIVERY, STORAGE, AND HANDLING**

- A. Steel Reinforcement: Deliver, store, and handle steel reinforcement to prevent bending and damage.

### **1.7 FIELD CONDITIONS**

- A. Cold-Weather Placement: Comply with ACI 306.1 and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.
  - 1. When average high and low temperature is expected to fall below 40 deg F for three successive days, maintain delivered concrete mixture temperature within the temperature range required by ACI 301.
  - 2. Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.

3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in mixture designs.
- B. Hot-Weather Placement: Comply with ACI 301 and ACI 305.1, and as follows:
  1. Maintain concrete temperature below 90 deg F at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated to total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
  2. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade uniformly moist without standing water, soft spots, or dry areas.

## **PART 2 - PRODUCTS**

### **2.1 CONCRETE, GENERAL**

- A. ACI Publications: Comply with the following unless modified by requirements in the Contract Documents:
  1. ACI 301.
  2. ACI 117.

### **2.2 FORM-FACING MATERIALS**

- A. Smooth-Formed Finished Concrete: Form-facing panels that provide continuous, true, and smooth concrete surfaces. Furnish in largest practicable sizes to minimize number of joints.
  1. Plywood, metal, or other approved panel materials.
  2. Exterior-grade plywood panels, suitable for concrete forms, complying with DOC PS 1, and as follows:
    - a. High-density overlay, Class 1 or better.
    - b. Medium-density overlay, Class 1 or better; mill-release agent treated and edge sealed.
    - c. Structural 1, B-B or better; mill oiled and edge sealed.
    - d. B-B (Concrete Form), Class 1 or better; mill oiled and edge sealed.
  3. Overlaid Finnish birch plywood.
- B. Rough-Formed Finished Concrete: Plywood, lumber, metal, or another approved material. Provide lumber dressed on at least two edges and one side for tight fit.
- C. Chamfer Strips: Wood, metal, PVC, or rubber strips, 3/4 by 3/4 inch, minimum.
- D. Rustication Strips: Wood, metal, PVC, or rubber strips, kerfed for ease of form removal.
- E. Form-Release Agent: Commercially formulated form-release agent that does not bond with, stain, or adversely affect concrete surfaces and does not impair subsequent treatments of concrete surfaces.
  1. Formulate form-release agent with rust inhibitor for steel form-facing materials.
- F. Form Ties: Factory-fabricated, removable or snap-off glass-fiber-reinforced plastic or metal form ties designed to resist lateral pressure of fresh concrete on forms and to prevent spalling of concrete on removal.
  1. Furnish units that leave no corrodible metal closer than 1 inch to the plane of exposed concrete surface.
  2. Furnish ties that, when removed, leave holes no larger than 1 inch in diameter in concrete surface.
  3. Furnish ties with integral water-barrier plates to walls indicated to receive dampproofing or waterproofing.

### **2.3 STEEL REINFORCEMENT**

- A. Reinforcing Bars: ASTM A 615/A 615M, Grade 60, deformed.
- B. Plain-Steel Wire: ASTM A 1064/A 1064M, as drawn.
- C. Plain-Steel Welded-Wire Reinforcement: ASTM A 1064/A 1064M, plain, fabricated from as-drawn steel wire into flat sheets.



## 2.4 REINFORCEMENT ACCESSORIES

- A. Joint Dowel Bars: ASTM A 615/A 615M, Grade 60, plain-steel bars, cut true to length with ends square and free of burrs.
- B. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded-wire reinforcement in place. Manufacture bar supports from steel wire, plastic, or precast concrete according to CRSI's "Manual of Standard Practice," of greater compressive strength than concrete and as follows:
  - 1. For concrete surfaces exposed to view, where legs of wire bar supports contact forms, use CRSI Class 1 plastic-protected steel wire or CRSI Class 2 stainless-steel bar supports.
  - 2. For epoxy-coated reinforcement, use epoxy-coated or other dielectric-polymer-coated wire bar supports.

## 2.5 CONCRETE MATERIALS

- A. Source Limitations: Obtain each type or class of cementitious material of the same brand from the same manufacturer's plant, obtain aggregate from single source, and obtain admixtures from single source from single manufacturer.
- B. Cementitious Materials:
  - 1. Portland Cement: ASTM C 150/C 150M, Type I.
  - 2. Fly Ash: ASTM C 618, Class F or C.
  - 3. Blended Hydraulic Cement: ASTM C 595/C 595M, cement.
- C. Normal-Weight Aggregates: ASTM C 33/C 33M, Class 3M coarse aggregate or better, graded. Provide aggregates from a single source with documented service record data of at least 10 years' satisfactory service in similar applications and service conditions using similar aggregates and cementitious materials.
  - 1. Maximum Coarse-Aggregate Size: 1 inch nominal.
  - 2. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.
- D. Air-Entraining Admixture: ASTM C 260/C 260M.
- E. Chemical Admixtures: Certified by manufacturer to be compatible with other admixtures and that do not contribute water-soluble chloride ions exceeding those permitted in hardened concrete. Do not use calcium chloride or admixtures containing calcium chloride.
  - 1. Water-Reducing Admixture: ASTM C 494/C 494M, Type A.
  - 2. Retarding Admixture: ASTM C 494/C 494M, Type B.
  - 3. Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type D.
- F. Water: ASTM C 94/C 94M and potable.

## 2.6 VAPOR RETARDERS

- A. Sheet Vapor Retarder: ASTM E 1745, Class A. Include manufacturer's recommended adhesive or pressure-sensitive tape.
  - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. ISI Building Products.
    - b. Poly-America, L.P.
    - c. Raven Industries, Inc.
    - d. Stego Industries, LLC.
    - e. Tex-Trude, LP.
    - f. W.R. Meadows, Inc.

## 2.7 LIQUID FLOOR TREATMENTS

- A. Penetrating Liquid Floor Treatment: Clear, chemically reactive, waterborne solution of inorganic silicate or silicate materials and proprietary components; odorless; that penetrates, hardens, and densifies concrete surfaces.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - a. BASF Corporation.
  - b. Euclid Chemical Company (The); an RPM company.
  - c. W.R. Meadows, Inc.

## 2.8 CURING MATERIALS

- A. Absorptive Cover: AASHTO M 182, Class 2, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. when dry.
- B. Water: Potable.
- C. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B, 18 to 25 percent solids, nondissipating, certified by curing compound manufacturer to not interfere with bonding of floor covering.
  1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. BASF Corporation.
    - b. Euclid Chemical Company (The); an RPM company.
    - c. W.R. Meadows, Inc.
- D. Clear, Waterborne, Membrane-Forming Curing and Sealing Compound: ASTM C 1315, Type 1, Class A.

## 2.9 RELATED MATERIALS

- A. Expansion- and Isolation-Joint-Filler Strips: ASTM D 1751, asphalt-saturated cellulosic fiber.
- B. Semirigid Joint Filler: Two-component, semirigid, 100 percent solids, epoxy resin with a Type A shore durometer hardness of 80 according to ASTM D 2240.
- C. Epoxy Bonding Adhesive: ASTM C 881, two-component epoxy resin, capable of humid curing and bonding to damp surfaces, of class suitable for application temperature and of grade to suit requirements, and as follows:
  1. Types IV and V, load bearing, for bonding hardened or freshly mixed concrete to hardened concrete.

## 2.10 CONCRETE MIXTURES, GENERAL

- A. Prepare design mixtures for each type and strength of concrete, proportioned on the basis of laboratory trial mixture or field test data, or both, according to ACI 301.
  1. Use a qualified independent testing agency for preparing and reporting proposed mixture designs based on laboratory trial mixtures.
- B. Cementitious Materials: Limit percentage, by weight, of cementitious materials other than portland cement in concrete as follows:
  1. Fly Ash: 25 percent.
  2. Silica Fume: 10 percent.
- C. Limit water-soluble, chloride-ion content in hardened concrete to 0.30 percent by weight of cement.
- D. Admixtures: Use admixtures according to manufacturer's written instructions.
  1. Use water-reducing high-range water-reducing or plasticizing admixture in concrete, as required, for placement and workability.
  2. Use water-reducing and -retarding admixture when required by high temperatures, low humidity, or other adverse placement conditions.
  3. Use water-reducing admixture in pumped concrete, concrete for heavy-use industrial slabs and parking structure slabs, concrete required to be watertight, and concrete with a w/c ratio below 0.50.

## 2.11 CONCRETE MIXTURES FOR BUILDING ELEMENTS

- A. Footings: Normal-weight concrete.

1. Minimum Compressive Strength: 4000 psi at 28 days.
  2. Maximum W/C Ratio: 0.50.
  3. Slump Limit: 5 inches 8 inches for concrete with verified slump of 2 to 4 inches before adding high-range water-reducing admixture or plasticizing admixture, plus or minus 1 inch.
  4. Air Content: 6 percent, plus or minus 1.5 percent at point of delivery for 1-inch nominal maximum aggregate size.
- B. Foundation Walls: Normal-weight concrete.
1. Minimum Compressive Strength: 4000 psi at 28 days.
  2. Maximum W/C Ratio: 0.50.
  3. Slump Limit: 5 inches 8 inches for concrete with verified slump of 2 to 4 inches before adding high-range water-reducing admixture or plasticizing admixture, plus or minus 1 inch.
  4. Air Content: 6 percent, plus or minus 1.5 percent at point of delivery for 1-inch nominal maximum aggregate size.
- C. Slabs-on-Grade: Normal-weight concrete.
1. Minimum Compressive Strength: 4000 psi at 28 days.
  2. Maximum W/C Ratio: 0.50.
  3. Minimum Cementitious Materials Content: 470 lb/cu. yd..
  4. Slump Limit: 5 inches 8 inches for concrete with verified slump of 2 to 4 inches before adding high-range water-reducing admixture or plasticizing admixture, plus or minus 1 inch.
  5. Air Content: 6 percent, plus or minus 1.5 percent at point of delivery for 1-inch nominal maximum aggregate size.
  6. Air Content: Do not allow air content of trowel-finished floors to exceed 3 percent.

## **2.12 FABRICATING REINFORCEMENT**

- A. Fabricate steel reinforcement according to CRSI's "Manual of Standard Practice."

## **2.13 CONCRETE MIXING**

- A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C 94/C 94M, and furnish batch ticket information.
1. When air temperature is between 85 and 90 deg F, reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F, reduce mixing and delivery time to 60 minutes.

## **PART 3 - EXECUTION**

### **3.1 FORMWORK INSTALLATION**

- A. Design, erect, shore, brace, and maintain formwork, according to ACI 301, to support vertical, lateral, static, and dynamic loads, and construction loads that might be applied, until structure can support such loads.
- B. Construct formwork so concrete members and structures are of size, shape, alignment, elevation, and position indicated, within tolerance limits of ACI 117.
- C. Limit concrete surface irregularities, designated by ACI 347 as abrupt or gradual, as follows:
1. Class A, 1/8 inch for smooth-formed finished surfaces.
  2. Class B, 1/4 inch for rough-formed finished surfaces.
- D. Construct forms tight enough to prevent loss of concrete mortar.
- E. Construct forms for easy removal without hammering or prying against concrete surfaces. Provide crush or wrecking plates where stripping may damage cast-concrete surfaces. Provide top forms for inclined surfaces steeper than 1.5 horizontal to 1 vertical.
1. Install keyways, reglets, recesses, and the like, for easy removal.
  2. Do not use rust-stained steel form-facing material.

- F. Set edge forms, bulkheads, and intermediate screed strips for slabs to achieve required elevations and slopes in finished concrete surfaces. Provide and secure units to support screed strips; use strike-off templates or compacting-type screeds.
- G. Provide temporary openings for cleanouts and inspection ports where interior area of formwork is inaccessible. Close openings with panels tightly fitted to forms and securely braced to prevent loss of concrete mortar. Locate temporary openings in forms at inconspicuous locations.
- H. Chamfer exterior corners and edges of permanently exposed concrete.
- I. Form openings, chases, offsets, sinkages, keyways, reglets, blocking, screeds, and bulkheads required in the Work. Determine sizes and locations from trades providing such items.
- J. Clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, and other debris just before placing concrete.
- K. Retighten forms and bracing before placing concrete, as required, to prevent mortar leaks and maintain proper alignment.
- L. Coat contact surfaces of forms with form-release agent, according to manufacturer's written instructions, before placing reinforcement.

### **3.2 EMBEDDED ITEM INSTALLATION**

- A. Place and secure anchorage devices and other embedded items required for adjoining work that is attached to or supported by cast-in-place concrete. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
  - 1. Install anchor rods, accurately located, to elevations required and complying with tolerances in Section 7.5 of AISC 303.

### **3.3 REMOVING AND REUSING FORMS**

- A. General: Formwork for sides of beams, walls, columns, and similar parts of the Work that does not support weight of concrete may be removed after cumulatively curing at not less than 50 deg F for 24 hours after placing concrete. Concrete has to be hard enough to not be damaged by form-removal operations, and curing and protection operations need to be maintained.
  - 1. Leave formwork for beam soffits, joists, slabs, and other structural elements that support weight of concrete in place until concrete has achieved at least 70 percent of its 28-day design compressive strength.
  - 2. Remove forms only if shores have been arranged to permit removal of forms without loosening or disturbing shores.
- B. Clean and repair surfaces of forms to be reused in the Work. Split, frayed, delaminated, or otherwise damaged form-facing material are not acceptable for exposed surfaces. Apply new form-release agent.
- C. When forms are reused, clean surfaces, remove fins and laitance, and tighten to close joints. Align and secure joints to avoid offsets. Do not use patched forms for exposed concrete surfaces unless approved by Architect.

### **3.4 VAPOR-RETARDER INSTALLATION**

- A. Sheet Vapor Retarders: Place, protect, and repair sheet vapor retarder according to ASTM E 1643 and manufacturer's written instructions.
  - 1. Lap joints 6 inches and seal with manufacturer's recommended tape.
- B. Bituminous Vapor Retarders: Place, protect, and repair bituminous vapor retarder according to manufacturer's written instructions.

### **3.5 STEEL REINFORCEMENT INSTALLATION**

- A. General: Comply with CRSI's "Manual of Standard Practice" for fabricating, placing, and supporting reinforcement.
  - 1. Do not cut or puncture vapor retarder. Repair damage and reseal vapor retarder before placing concrete.

- B. Clean reinforcement of loose rust and mill scale, earth, ice, and other foreign materials that reduce bond to concrete.
- C. Accurately position, support, and secure reinforcement against displacement. Locate and support reinforcement with bar supports to maintain minimum concrete cover. Do not tack weld crossing reinforcing bars.
  - 1. Weld reinforcing bars according to AWS D1.4/D 1.4M, where indicated.
- D. Set wire ties with ends directed into concrete, not toward exposed concrete surfaces.
- E. Install welded-wire reinforcement in longest practicable lengths on bar supports spaced to minimize sagging. Lap edges and ends of adjoining sheets at least one mesh spacing. Offset laps of adjoining sheet widths to prevent continuous laps in either direction. Lace overlaps with wire.

### 3.6 JOINTS

- A. General: Construct joints true to line with faces perpendicular to surface plane of concrete.
- B. Construction Joints: Install so strength and appearance of concrete are not impaired, at locations indicated or as approved by Architect.
  - 1. Place joints perpendicular to main reinforcement. Continue reinforcement across construction joints unless otherwise indicated. Do not continue reinforcement through sides of strip placements of floors and slabs.
  - 2. Form keyed joints as indicated. Embed keys at least 1-1/2 inches into concrete.
  - 3. Locate joints for beams, slabs, joists, and girders in the middle third of spans. Offset joints in girders a minimum distance of twice the beam width from a beam-girder intersection.
  - 4. Locate horizontal joints in walls and columns at underside of floors, slabs, beams, and girders and at the top of footings or floor slabs.
  - 5. Space vertical joints in walls as indicated. Locate joints beside piers integral with walls, near corners, and in concealed locations where possible.
  - 6. Use epoxy-bonding adhesive at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.
- C. Contraction Joints in Slabs-on-Grade: Form weakened-plane contraction joints, sectioning concrete into areas as indicated. Construct contraction joints for a depth equal to at least one-fourth of concrete thickness as follows:
  - 1. Grooved Joints: Form contraction joints after initial floating by grooving and finishing each edge of joint to a radius of 1/8 inch. Repeat grooving of contraction joints after applying surface finishes. Eliminate groover tool marks on concrete surfaces.
  - 2. Sawed Joints: Form contraction joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 1/8-inch-wide joints into concrete when cutting action does not tear, abrade, or otherwise damage surface and before concrete develops random contraction cracks.
- D. Isolation Joints in Slabs-on-Grade: After removing formwork, install joint-filler strips at slab junctions with vertical surfaces, such as column pedestals, foundation walls, grade beams, and other locations, as indicated.
  - 1. Extend joint-filler strips full width and depth of joint, terminating flush with finished concrete surface unless otherwise indicated.
  - 2. Terminate full-width joint-filler strips not less than 1/2 inch or more than 1 inch below finished concrete surface where joint sealants, specified in Section 079200 "Joint Sealants," are indicated.
  - 3. Install joint-filler strips in lengths as long as practicable. Where more than one length is required, lace or clip sections together.
- E. Doweled Joints: Install dowel bars and support assemblies at joints where indicated. Lubricate or asphalt coat one-half of dowel length to prevent concrete bonding to one side of joint.

### **3.7 CONCRETE PLACEMENT**

- A. Before placing concrete, verify that installation of formwork, reinforcement, and embedded items is complete and that required inspections are completed.
- B. Do not add water to concrete during delivery, at Project site, or during placement unless approved by Architect.
- C. Before test sampling and placing concrete, water may be added at Project site, subject to limitations of ACI 301.
  - 1. Do not add water to concrete after adding high-range water-reducing admixtures to mixture.
- D. Deposit concrete continuously in one layer or in horizontal layers of such thickness that no new concrete is placed on concrete that has hardened enough to cause seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as indicated. Deposit concrete to avoid segregation.
  - 1. Deposit concrete in horizontal layers of depth not to exceed formwork design pressures and in a manner to avoid inclined construction joints.
  - 2. Consolidate placed concrete with mechanical vibrating equipment according to ACI 301.
  - 3. Do not use vibrators to transport concrete inside forms. Insert and withdraw vibrators vertically at uniformly spaced locations to rapidly penetrate placed layer and at least 6 inches into preceding layer. Do not insert vibrators into lower layers of concrete that have begun to lose plasticity. At each insertion, limit duration of vibration to time necessary to consolidate concrete and complete embedment of reinforcement and other embedded items without causing mixture constituents to segregate.
- E. Deposit and consolidate concrete for floors and slabs in a continuous operation, within limits of construction joints, until placement of a panel or section is complete.
  - 1. Consolidate concrete during placement operations, so concrete is thoroughly worked around reinforcement and other embedded items and into corners.
  - 2. Maintain reinforcement in position on chairs during concrete placement.
  - 3. Screed slab surfaces with a straightedge and strike off to correct elevations.
  - 4. Slope surfaces uniformly to drains where required.
  - 5. Begin initial floating using bull floats or darbies to form a uniform and open-textured surface plane, before excess bleedwater appears on the surface. Do not further disturb slab surfaces before starting finishing operations.

### **3.8 FINISHING FORMED SURFACES**

- A. Rough-Formed Finish: As-cast concrete texture imparted by form-facing material with tie holes and defects repaired and patched. Remove fins and other projections that exceed specified limits on formed-surface irregularities.
  - 1. Apply to concrete surfaces not exposed to public view.
- B. Related Unformed Surfaces: At tops of walls, horizontal offsets, and similar unformed surfaces adjacent to formed surfaces, strike off smooth and finish with a texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces unless otherwise indicated.

### **3.9 FINISHING FLOORS AND SLABS**

- A. General: Comply with ACI 302.1R recommendations for screeding, restraighening, and finishing operations for concrete surfaces. Do not wet concrete surfaces.
- B. Trowel Finish: After applying float finish, apply first troweling and consolidate concrete by hand or power-driven trowel. Continue troweling passes and restraighen until surface is free of trowel marks and uniform in texture and appearance. Grind smooth any surface defects that would telegraph through applied coatings or floor coverings.

1. Apply a trowel finish to surfaces exposed to view or to be covered with resilient flooring, carpet, ceramic or quarry tile set over a cleavage membrane, paint, or another thin-film-finish coating system.
  2. Finish surfaces to the following tolerances, according to ASTM E 1155, for a randomly trafficked floor surface:
    - a. Specified overall values of flatness, F(F) 25; and of levelness, F(L) 20; with minimum local values of flatness, F(F) 17; and of levelness, F(L) 15.
- C. Broom Finish: Apply a broom finish to exterior concrete platforms, steps, ramps, and elsewhere as indicated.
1. Immediately after float finishing, slightly roughen trafficked surface by brooming with fiber-bristle broom perpendicular to main traffic route. Coordinate required final finish with Architect before application.
- D. Slip-Resistive Finish: Before final floating, apply slip-resistive aggregate finish where indicated and to concrete stair treads, platforms, and ramps. Apply according to manufacturer's written instructions and as follows:
1. Uniformly spread 25 lb/100 sq. ft. of dampened slip-resistive aggregate over surface in one or two applications. Tamp aggregate flush with surface, but do not force below surface.
  2. After broadcasting and tamping, apply trowel finish.
  3. After curing, lightly work surface with a steel wire brush or an abrasive stone and water to expose slip-resistive aggregate.

### **3.10 MISCELLANEOUS CONCRETE ITEM INSTALLATION**

- A. Filling In: Fill in holes and openings left in concrete structures after work of other trades is in place unless otherwise indicated. Mix, place, and cure concrete, as specified, to blend with in-place construction. Provide other miscellaneous concrete filling indicated or required to complete the Work.
- B. Curbs: Provide monolithic finish to interior curbs by stripping forms while concrete is still green and by steel-troweling surfaces to a hard, dense finish with corners, intersections, and terminations slightly rounded.

### **3.11 CONCRETE PROTECTING AND CURING**

- A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and ACI 305.1 for hot-weather protection during curing.
- B. Formed Surfaces: Cure formed concrete surfaces, including underside of beams, supported slabs, and other similar surfaces. If forms remain during curing period, moist cure after loosening forms. If removing forms before end of curing period, continue curing for remainder of curing period.
- C. Unformed Surfaces: Begin curing immediately after finishing concrete. Cure unformed surfaces, including floors and slabs, concrete floor toppings, and other surfaces.
- D. Cure concrete according to ACI 308.1, by one or a combination of the following methods:
1. Moisture Curing: Keep surfaces continuously moist for not less than seven days with the following materials:
    - a. Water.
    - b. Continuous water-fog spray.
    - c. Absorptive cover, water saturated, and kept continuously wet. Cover concrete surfaces and edges with 12-inch lap over adjacent absorptive covers.
  2. Curing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating and repair damage during curing period.

- a. Removal: After curing period has elapsed, remove curing compound without damaging concrete surfaces by method recommended by curing compound manufacturer unless manufacturer certifies curing compound does not interfere with bonding of floor covering used on Project.

### **3.12 LIQUID FLOOR TREATMENT APPLICATION**

- A. Penetrating Liquid Floor Treatment: Prepare, apply, and finish penetrating liquid floor treatment according to manufacturer's written instructions.
  1. Remove curing compounds, sealers, oil, dirt, laitance, and other contaminants and complete surface repairs.
  2. Do not apply to concrete that is less than 28 days' old.
  3. Apply liquid until surface is saturated, scrubbing into surface until a gel forms; rewet; and repeat brooming or scrubbing. Rinse with water; remove excess material until surface is dry. Apply a second coat in a similar manner.

### **3.13 JOINT FILLING**

- A. Prepare, clean, and install joint filler according to manufacturer's written instructions.
  1. Defer joint filling until concrete has aged at least one month(s). Do not fill joints until construction traffic has permanently ceased.
- B. Remove dirt, debris, saw cuttings, curing compounds, and sealers from joints; leave contact faces of joints clean and dry.
- C. Install semirigid joint filler full depth in saw-cut joints and at least 2 inches deep in formed joints. Overfill joint and trim joint filler flush with top of joint after hardening.

### **3.14 CONCRETE SURFACE REPAIRS**

- A. Defective Concrete: Repair and patch defective areas when approved by Architect. Remove and replace concrete that cannot be repaired and patched to Architect's approval.
- B. Patching Mortar: Mix dry-pack patching mortar, consisting of 1 part portland cement to 2-1/2 parts fine aggregate passing a No. 16 sieve, using only enough water for handling and placing.
- C. Repairing Formed Surfaces: Surface defects include color and texture irregularities, cracks, spalls, air bubbles, honeycombs, rock pockets, fins and other projections on the surface, and stains and other discolorations that cannot be removed by cleaning.
  1. Immediately after form removal, cut out honeycombs, rock pockets, and voids more than 1/2 inch in any dimension to solid concrete. Limit cut depth to 3/4 inch. Make edges of cuts perpendicular to concrete surface. Clean, dampen with water, and brush-coat holes and voids with bonding agent. Fill and compact with patching mortar before bonding agent has dried. Fill form-tie voids with patching mortar or cone plugs secured in place with bonding agent.
  2. Repair defects on surfaces exposed to view by blending white portland cement and standard portland cement so that, when dry, patching mortar matches surrounding color. Patch a test area at inconspicuous locations to verify mixture and color match before proceeding with patching. Compact mortar in place and strike off slightly higher than surrounding surface.
  3. Repair defects on concealed formed surfaces that affect concrete's durability and structural performance as determined by Architect.
- D. Repairing Unformed Surfaces: Test unformed surfaces, such as floors and slabs, for finish and verify surface tolerances specified for each surface. Correct low and high areas. Test surfaces sloped to drain for trueness of slope and smoothness; use a sloped template.
  1. Repair finished surfaces containing defects. Surface defects include spalls, popouts, honeycombs, rock pockets, crazing and cracks in excess of 0.01 inch wide or that penetrate to reinforcement or completely through unreinforced sections regardless of width, and other objectionable conditions.
  2. After concrete has cured at least 14 days, correct high areas by grinding.



3. Correct localized low areas during or immediately after completing surface finishing operations by cutting out low areas and replacing with patching mortar. Finish repaired areas to blend into adjacent concrete.
  4. Correct other low areas scheduled to receive floor coverings with a repair underlayment. Prepare, mix, and apply repair underlayment and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface. Feather edges to match adjacent floor elevations.
  5. Correct other low areas scheduled to remain exposed with a repair topping. Cut out low areas to ensure a minimum repair topping depth of 1/4 inch to match adjacent floor elevations. Prepare, mix, and apply repair topping and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface.
  6. Repair defective areas, except random cracks and single holes 1 inch or less in diameter, by cutting out and replacing with fresh concrete. Remove defective areas with clean, square cuts and expose steel reinforcement with at least a 3/4-inch clearance all around. Dampen concrete surfaces in contact with patching concrete and apply bonding agent. Mix patching concrete of same materials and mixture as original concrete, except without coarse aggregate. Place, compact, and finish to blend with adjacent finished concrete. Cure in same manner as adjacent concrete.
  7. Repair random cracks and single holes 1 inch or less in diameter with patching mortar. Groove top of cracks and cut out holes to sound concrete and clean off dust, dirt, and loose particles. Dampen cleaned concrete surfaces and apply bonding agent. Place patching mortar before bonding agent has dried. Compact patching mortar and finish to match adjacent concrete. Keep patched area continuously moist for at least 72 hours.
- E. Perform structural repairs of concrete, subject to Architect's approval, using epoxy adhesive and patching mortar.
- F. Repair materials and installation not specified above may be used, subject to Architect's approval.

### **3.15 FIELD QUALITY CONTROL**

- A. Special Inspections: Owner will engage a qualified testing and inspecting agency to perform field tests and inspections and prepare test reports.
- B. Concrete Tests: Testing of composite samples of fresh concrete obtained according to ASTM C 172/C 172M shall be performed according to the following requirements:
1. Testing Frequency: Obtain one composite sample for each day's pour of each concrete mixture exceeding 5 cu. yd., but less than 25 cu. yd., plus one set for each additional 50 cu. yd. or fraction thereof.
  2. Slump: ASTM C 143/C 143M; one test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mixture. Perform additional tests when concrete consistency appears to change.
  3. Air Content: ASTM C 231/C 231M, pressure method, for normal-weight concrete; one test for each composite sample, but not less than one test for each day's pour of each concrete mixture.
  4. Concrete Temperature: ASTM C 1064/C 1064M; one test hourly when air temperature is 40 deg F and below or 80 deg F and above, and one test for each composite sample.
  5. Compression Test Specimens: ASTM C 31/C 31M.
    - a. Cast and field cure two sets of standard cylinder specimens for each composite sample.
  6. Compressive-Strength Tests: ASTM C 39/C 39M; test one set of specimens at 7 days and one set of specimens at 28 days.
    - a. A compressive-strength test shall be the average compressive strength from a set of specimens obtained from same composite sample and tested at age indicated.

7. When strength of field-cured cylinders is less than 85 percent of companion laboratory-cured cylinders, Contractor shall evaluate operations and provide corrective procedures for protecting and curing in-place concrete.
8. Strength of each concrete mixture will be satisfactory if every average of any three consecutive compressive-strength tests equals or exceeds specified compressive strength and no compressive-strength test value falls below specified compressive strength by more than 500 psi.
9. Test results shall be reported in writing to Architect, concrete manufacturer, and Contractor within 48 hours of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in Work, design compressive strength at 28 days, concrete mixture proportions and materials, compressive breaking strength, and type of break for both 7- and 28-day tests.
10. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by Architect but will not be used as sole basis for approval or rejection of concrete.
11. Additional Tests: Testing and inspecting agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by Architect. Testing and inspecting agency may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C 42/C 42M or by other methods as directed by Architect.
12. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.
13. Correct deficiencies in the Work that test reports and inspections indicate do not comply with the Contract Documents.

- C. Measure floor and slab flatness and levelness according to ASTM E 1155 within 24 hours of finishing.

**3.16 PROTECTION OF LIQUID FLOOR TREATMENTS**

- A. Protect liquid floor treatment from damage and wear during the remainder of construction period. Use protective methods and materials, including temporary covering, recommended in writing by liquid floor treatments installer.

END OF SECTION 033000

## **SECTION 040100 – MAINTENANCE OF MASONRY**

### **PART 1 - GENERAL**

#### **1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

#### **1.2 SUMMARY**

- A. Section Includes:
  - 1. Final cleaning of all standard masonry surfaces in detention areas.
  - 2. Final cleaning of all glazed masonry surfaces in detention areas.
  - 3. Repointing all mortar joints of standard and glazed masonry in:
    - a. Girls 148
    - b. Boys 164
  - 4. Repair of damaged masonry walls throughout detention area but particularly anchor holes in restrooms and shower rooms
- B. Related Requirements:
  - 1. Section 04 2000 - Unit Masonry: Concrete Masonry Units.

#### **1.3 PREINSTALLATION MEETINGS**

- A. Preinstallation Conference: Conduct conference at Project site.

#### **1.4 ACTION SUBMITTALS**

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on cleaning compounds and cleaning solutions.
  - 1. Cleaning Plan: Written description of cleaning process, including materials, methods, equipment, and sequencing of work.
- C. Applicator Qualifications: Submit qualifications of applicator.
  - 1. Certification stating applicator is experienced in the application of the specified products.
  - 2. List of recently completed masonry cleaning projects, including project name and location, names of owner and architect, description of cleaning products used and substrates, applicable local environmental regulations, and application procedures.
- D. Environmental Regulations: Submit description for testing, handling, treatment, containment, collection, transport, disposal, and discharge of hazardous wastes and cleaning effluents. Describe any hazardous materials to be cleaned from substrates. Submit applicable local environmental regulations.
- E. Protection: Submit description for protecting surrounding areas, landscaping, building occupants, pedestrians, vehicles, and non-masonry surfaces during the work from contact with masonry cleaners, residues, rinse water, fumes, wastes, and cleaning effluents.
- F. Surface Preparation: Submit description for surface preparation of substrates to be completed before application of masonry cleaners.
- G. Application: Submit description for application procedures of masonry cleaners.

#### **1.5 QUALITY ASSURANCE**

- A. Comply with provisions of ACI 530/530.1/ERTA, except where exceeded by requirements of the contract documents.
- B. Manufacturer Qualifications:
  - 1. Manufacturer capable of providing field service representation during installation and who will approve the installer and application method.

C. Installer Qualifications:

1. Installer experienced in performing this type of work and who has specialized in work similar to the type required for this project.

D. Pre-installation Meetings

1. Comply with provisions of Section 01 3000 - Administrative Requirements.
  - a. Applicator and Product representative shall be present during meeting.

E. Test Panels:

1. Before full-scale application, test products to be used on test panels.
2. Review manufacturer's product data sheets to determine suitability of each product for each surface.
3. Apply products using manufacturer-approved application methods, determining actual requirements for application.
4. After 48 hours, review effectiveness of cleaning or treatment, compatibility with substrates, and ability to achieve desired results.
5. Obtain approval by Architect and Owner of workmanship, color, and texture before proceeding with work.
6. Test Panels: Inconspicuous sections of actual construction.
  - a. Location and number as selected by Architect.
  - b. Size; 4 feet by 4 feet.
  - c. Repair unacceptable work to the satisfaction of the Architect and Owner.

F. Acceptable panel and procedures employed will become the standard for work of this section.

G. Mock-up may remain as part of the Work.

**1.6 DELIVERY, STORAGE, AND HANDLING**

- A. Deliver masonry neatly stacked and tied on pallets. Store clear of ground with adequate waterproof covering.
- B. Store cleaning materials in manufacturer's packaging.

**1.7 FIELD CONDITIONS**

- A. Do not apply products under conditions outside manufacturer's requirements, which include:
  1. Surfaces that are frozen; allow complete thawing prior to installation.
  2. Surface and air temperatures below 40degrees F.
  3. Surface and air temperatures above 95 degrees F.
  4. When surface or air temperature is not expected to remain above 40 degrees F for at least 8 hours after application.
  5. Wind conditions that may blow materials onto surfaces not intended to be treated.
  6. Less than 24 hours after a rain or 6 hours before rain is expected after installation.

**PART 2 - PRODUCTS**

**2.1 MANUFACTURERS**

- A. Source Limitations for Masonry Units: Obtain exposed masonry units of a uniform texture and color, or a uniform blend within the ranges accepted for these characteristics, from single source from single manufacturer for each product required.
- B. Restoration and Cleaning Chemicals:
  1. Diedrich Technologies, Inc: [www.diedrichtechnologies.com](http://www.diedrichtechnologies.com).
  2. PROSOCO: [www.prosoco.com](http://www.prosoco.com).
  3. Substitutions: See Section 01 6000 - Product Requirements.

**2.2 UNIT MASONRY, GENERAL**

- A. Unit Masonry: Section 04 2000.

**2.3 CLEANING MATERIALS**

- A. Water: Clean, potable, and free of oils, acids, alkalis, salts, and organic matter. Use to rinse masonry surfaces and dilute concentrated cleaners.
- B. Cleaning Agent: Product types listed are manufactured by Prosoco, inc. as basis of design.

MATERIAL	COLOR/TEXTURE	CLEANER
CMU	Standard	Custom Masonry Cleaner
CMU	Glazed	Vana Trol

**PART 3 - EXECUTION**

**3.1 EXAMINATION**

- A. Verify that surfaces to be cleaned and restored are ready for work of this section.
- B. Do not begin until test panels have been approved by Architect.

**3.2 PREPARATION**

- A. Protect surrounding elements from damage due to restoration procedures.
- B. Carefully remove and store removable items located in areas to be restored, including fixtures, fittings, finish hardware, and accessories; reinstall upon completion.
- C. Separate areas to be protected from restoration areas using means adequate to prevent damage.
- D. Cover existing landscaping with tarpaulins or similar covers.
- E. Mask immediately adjacent surfaces with material that will withstand cleaning and restoration procedures.
- F. Close off adjacent occupied areas with dust proof and weatherproof partitions.
- G. Protect roof membrane and flashings from damage with 1/2 inch plywood laid on roof surfaces over full extent of work area .
- H. When using cleaning methods that involve water or other liquids, install drainage devices to prevent runoff over adjacent surfaces unless those surfaces are impervious to damage from runoff.
- I. Do not allow cleaning runoff to drain into sanitary or storm sewers.

**3.3 REBUILDING**

- A. Cut out damaged and deteriorated masonry with care in a manner to prevent damage to any adjacent remaining materials.
- B. Support structure as necessary in advance of cutting out units.
- C. Cut away loose or unsound adjoining masonry and mortar to provide firm and solid bearing for new work.
- D. Build in new units following procedures for new work specified in other section(s).
- E. Mortar Mix: Colored and proportioned to match existing work.
- F. Ensure that anchors, ties, reinforcing, and flashings are correctly located and built in.
- G. Install built in masonry work to match and align with existing, with joints and coursing true and level, faces plumb and in line. Build in all openings, accessories and fittings.

### **3.4 REPOINTING**

- A. Perform repointing prior to cleaning masonry surfaces.
- B. Cut out loose or disintegrated mortar in joints to minimum 1/2 inch depth or until sound mortar is reached.
- C. Use power tools only after test cuts determine no damage to masonry units will result.
- D. Do not damage masonry units.
- E. When cutting is complete, remove dust and loose material by brushing.
- F. Premoisten joint and apply mortar. Pack tightly in maximum 1/4 inch layers. Form a smooth, compact concave joint to match existing.
- G. Moist cure for 72 hours.

### **3.5 CLEANING OF MASONRY**

- A. Comply with provisions of Section 01 7000 - Execution and Closeout Requirements.
- B. Clean all exposed surfaces of new masonry of excess mortar, efflorescence, stains, and job dirt, using materials specified.
- C. Clean from top down; prevent cleaning materials and rinse water from contacting non-cementitious materials.
- D. Clean in accordance with manufacturer's instructions and recommendations, product data, and container label instructions.
- E. Mix materials in strict accordance with manufacturer's instructions; do not dilute unless permitted by manufacturer.
- F. Prevent overspray, wind drift, and splash onto surfaces not to be treated.
- G. No high pressure washers are allowed.
- H. Low pressure spray for wetting and rinsing is permitted. Pressure should be in the range of 400-700 psi. Equipment should produce 4-6 gallons of water per minute using a 15-40 degree fan tip (no fan tip less than a 15-degree is allowed).

### **3.6 AGING**

- A. Rub in new masonry work to match, as close as possible, adjacent original work.
  - 1. Use carbon black in small amounts, rubbing in well with burlap rags.
- B. After each application, dust off surplus and wash down with low pressure hose. Allow surface to dry before proceeding with succeeding applications.
- C. Continue process until acceptance.

### **3.7 FIELD QUALITY CONTROL**

- A. Inspection:
  - 1. Inspect the masonry cleaning work with the Contractor, Architect, applicator, and product representative, and compare with test panel results approved by the Architect. Determine if the substrates are suitably clean.
- B. Manufacturers' Field Services
  - 1. Provide the services of the manufacturer's authorized field representative to verify that installed products comply with manufacturer's requirements and with the standard established by the Architect-approved test panels.

### **3.8 CLEANING**

- A. Immediately remove stains, efflorescence, or other excess resulting from the work of this section.
- B. Remove excess mortar, smears, and droppings as work proceeds and upon completion.

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- C. Clean surrounding surfaces.
- D. Repair, restore, or replace to the satisfaction of the Architect, all materials, landscaping, and non-masonry surfaces damaged by exposure to the cleaning process.

END OF SECTION 040100





## **SECTION 042000 - UNIT MASONRY**

### **PART 1 - GENERAL**

#### **1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

#### **1.2 SUMMARY**

- A. Section Includes:
  - 1. Concrete masonry units.
  - 2. Mortar and grout.
  - 3. Steel reinforcing bars.
  - 4. Masonry-joint reinforcement.
  - 5. Ties and anchors.
  - 6. Embedded flashing.
  - 7. Miscellaneous masonry accessories.

#### **1.3 DEFINITIONS**

- A. CMU(s): Concrete masonry unit(s).
- B. Reinforced Masonry: Masonry containing reinforcing steel in grouted cells.

#### **1.4 PREINSTALLATION MEETINGS**

- A. Preinstallation Conference: Conduct conference at Project site.

#### **1.5 ACTION SUBMITTALS**

- A. Product Data: For each type of product.
- B. Shop Drawings: For the following:
  - 1. Masonry Units: Show sizes, profiles, coursing, and locations of special shapes.
  - 2. Reinforcing Steel: Detail bending, lap lengths, and placement of unit masonry reinforcing bars. Comply with ACI 315. Show elevations of reinforced walls.
  - 3. Fabricated Flashing: Detail corner units, end-dam units, and other special applications.
- C. Samples for Verification: For each type and color of the following:
  - 1. Exposed CMUs.
  - 2. Exposed CMU Mortar
  - 3. Weep holes and cavity vents.
  - 4. Accessories embedded in masonry.
  - 5. Exposed metal flashings and metal portions of flexible flashings.

#### **1.6 INFORMATIONAL SUBMITTALS**

- A. Material Certificates: For each type and size of the following:
  - 1. Masonry units.
  - 2. Integral water repellent used in CMUs.
  - 3. Cementitious materials. Include name of manufacturer, brand name, and type.
  - 4. Mortar admixtures.
  - 5. Preblended, dry mortar mixes. Include description of type and proportions of ingredients.
  - 6. Grout mixes. Include description of type and proportions of ingredients.
  - 7. Reinforcing bars.
  - 8. Joint reinforcement.
  - 9. Anchors, ties, and metal accessories.
- B. Mix Designs: For each type of mortar and grout. Include description of type and proportions of ingredients.

1. Include test reports for mortar mixes required to comply with property specification. Test according to ASTM C109/C109M for compressive strength, ASTM C1506 for water retention, and ASTM C91/C91M for air content.
2. Include test reports, according to ASTM C1019, for grout mixes required to comply with compressive strength requirement.
- C. Statement of Compressive Strength of Masonry: For each combination of masonry unit type and mortar type, provide statement of average net-area compressive strength of masonry units, mortar type, and resulting net-area compressive strength of masonry determined according to TMS 602/ACI 530.1/ASCE 6.
- D. Cold-Weather and Hot-Weather Procedures: Detailed description of methods, materials, and equipment to be used to comply with requirements.

#### **1.7 QUALITY ASSURANCE**

- A. Mockups: Build mockups to verify selections made under Sample submittals, to demonstrate aesthetic effects, and to set quality standards for materials and execution.
  1. Build mockups for each type of exposed unit masonry construction typical exterior and interior walls in sizes approximately 72 inches long by 48 inches high by full thickness, including face and backup wythes and accessories.
    - a. Include a sealant-filled joint at least 16 inches long in each exterior wall mockup.
    - b. Include lower corner of window opening at upper corner of exterior wall mockup. Make opening approximately 12 inches wide by 16 inches high.
    - c. Include through-wall flashing installed for a 24-inch length in corner of exterior wall mockup approximately 16 inches down from top of mockup, with a 12-inch length of flashing left exposed to view (omit masonry above half of flashing).
    - d. Include studs, sheathing, sheathing joint-and-penetration treatment air barrier, veneer anchors, flashing, cavity drainage material, and weep holes in exterior masonry-veneer wall mockup.
    - e. Include on one face of interior unit masonry wall mockup.
  2. Clean one-half of exposed faces of mockups with masonry cleaner as indicated.
  3. Protect accepted mockups from the elements with weather-resistant membrane.
  4. Approval of mockups is for color, texture, and blending of masonry units; relationship of mortar and sealant colors to masonry unit colors; tooling of joints; and aesthetic qualities of workmanship.
    - a. Approval of mockups is also for other material and construction qualities specifically approved by Architect in writing.
    - b. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
  5. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

#### **1.8 DELIVERY, STORAGE, AND HANDLING**

- A. Store masonry units on elevated platforms in a dry location. If units are not stored in an enclosed location, cover tops and sides of stacks with waterproof sheeting, securely tied. If units become wet, do not install until they are dry.
- B. Store cementitious materials on elevated platforms, under cover, and in a dry location. Do not use cementitious materials that have become damp.
- C. Store aggregates where grading and other required characteristics can be maintained and contamination avoided.
- D. Deliver preblended, dry mortar mix in moisture-resistant containers. Store preblended, dry mortar mix in delivery containers on elevated platforms in a dry location or in covered weatherproof dispensing silos.
- E. Store masonry accessories, including metal items, to prevent corrosion and accumulation of dirt and oil.

### **1.9 FIELD CONDITIONS**

- A. Protection of Masonry: During construction, cover tops of walls, projections, and sills with waterproof sheeting at end of each day's work. Cover partially completed masonry when construction is not in progress.
  - 1. Extend cover a minimum of 24 inches down both sides of walls, and hold cover securely in place.
  - 2. Where one wythe of multiwythe masonry walls is completed in advance of other wythes, secure cover a minimum of 24 inches down face next to unconstructed wythe, and hold cover in place.
- B. Do not apply uniform floor or roof loads for at least 12 hours and concentrated loads for at least three days after building masonry walls or columns.
- C. Stain Prevention: Prevent grout, mortar, and soil from staining the face of masonry to be left exposed or painted. Immediately remove grout, mortar, and soil that come in contact with such masonry.
  - 1. Protect base of walls from rain-splashed mud and from mortar splatter by spreading coverings on ground and over 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 onto completed masonry.
- D. Cold-Weather Requirements: Do not use frozen materials or materials mixed or coated with ice or frost. Do not build on frozen substrates. Remove and replace unit masonry damaged by frost or by freezing conditions. Comply with cold-weather construction requirements contained in TMS 602/ACI 530.1/ASCE 6.
  - 1. Cold-Weather Cleaning: Use liquid cleaning methods only when air temperature is 40 deg F and higher and will remain so until masonry has dried, but not less than seven days after completing cleaning.
- E. Hot-Weather Requirements: Comply with hot-weather construction requirements contained in TMS 602/ACI 530.1/ASCE 6.

## **PART 2 - PRODUCTS**

### **2.1 MANUFACTURERS**

- A. Source Limitations for Masonry Units: Obtain exposed masonry units of a uniform texture and color, or a uniform blend within the ranges accepted for these characteristics, from single source from single manufacturer for each product required.
- B. Source Limitations for Mortar Materials: Obtain mortar ingredients of a uniform quality, including color for exposed masonry, from single manufacturer for each cementitious component and from single source or producer for each aggregate.

### **2.2 PERFORMANCE REQUIREMENTS**

- A. Provide structural unit masonry that develops indicated net-area compressive strengths at 28 days.
  - 1. Determine net-area compressive strength of masonry from average net-area compressive strengths of masonry units and mortar types (unit-strength method) according to TMS 602/ACI 530.1/ASCE 6.
  - 2. Determine net-area compressive strength of masonry by testing masonry prisms according to ASTM C1314.

### **2.3 UNIT MASONRY, GENERAL**

- A. Masonry Standard: Comply with TMS 602/ACI 530.1/ASCE 6, except as modified by requirements in the Contract Documents.

- B. Defective Units: Referenced masonry unit standards may allow a certain percentage of units to contain chips, cracks, or other defects exceeding limits stated. Do not use units where such defects are exposed in the completed Work.
- C. Fire-Resistance Ratings: Comply with requirements for fire-resistance-rated assembly designs indicated.
  - 1. Where fire-resistance-rated construction is indicated, units shall be listed and labeled by a qualified testing agency acceptable to authorities having jurisdiction.

## **2.4 CONCRETE MASONRY**

- A. Shapes: Provide shapes indicated and as follows, with exposed surfaces matching exposed faces of adjacent units unless otherwise indicated.
  - 1. Provide special shapes for lintels, corners, jambs, sashes, movement joints, headers, bonding, and other special conditions.
  - 2. Provide square-edged units for outside corners unless otherwise indicated.
- B. Integral Water Repellent: Provide units made with integral water repellent for exposed units and where indicated.
  - 1. Integral Water Repellent: Liquid polymeric, integral water-repellent admixture that does not reduce flexural bond strength. Units made with integral water repellent, when tested according to ASTM E514/E514M as a wall assembly made with mortar containing integral water-repellent manufacturer's mortar additive, with test period extended to 24 hours, shall show no visible water or leaks on the back of test specimen.
- C. CMUs: ASTM C90.
  - 1. Unit Compressive Strength: Provide units with minimum average net-area compressive strength of 2150 psi.
  - 2. Density Classification: Normal weight unless otherwise indicated.
  - 3. Size (Width): Manufactured to dimensions 3/8 inch less than nominal dimensions.
  - 4. Unit Type: Match thickness of existing CMU walls
  - 5. CMU at exterior: Standard CMU
  - 6. CMU interior partitions: Standard CMU
  - 7. Faces to Receive Plaster: Where units are indicated to receive a direct application of plaster, provide textured-face units made with gap-graded aggregates.

## **2.5 MORTAR AND GROUT MATERIALS**

- A. Portland Cement-Lime Mix: Packaged blend of portland cement and hydrated lime containing no other ingredients.
- B. Water: Potable.
- C. Color: Mortar for Exposed Faces on Exterior of Building shall match mortar of Power Lab.

## **2.6 REINFORCEMENT**

- A. Uncoated-Steel Reinforcing Bars: ASTM A615/A615M or ASTM A996/A996M, Grade 60.
- B. Masonry-Joint Reinforcement, General: ASTM A951/A951M.
  - 1. Interior Walls: Hot-dip galvanized carbon steel.
  - 2. Exterior Walls: Hot-dip galvanized carbon steel.
  - 3. Wire Size for Side Rods: 0.187-inch diameter.
  - 4. Wire Size for Cross Rods: 0.187-inch diameter.
  - 5. Wire Size for Veneer Ties: 0.187-inch diameter.
  - 6. Spacing of Cross Rods, Tabs, and Cross Ties: Not more than 16 inches o.c.
  - 7. Provide in lengths of not less than 10 feet, with prefabricated corner and tee units.
- C. Masonry-Joint Reinforcement for Single-Wythe Masonry: Ladder or truss type with single pair of side rods.
- D. Masonry-Joint Reinforcement for Multiwythe Masonry:

1. Adjustable (two-piece) type, either ladder or truss design, with one side rod at each face shell of backing wythe and with separate adjustable ties with pintle-and-eye connections having a maximum horizontal play of 1/16 inch and maximum vertical adjustment of 1-1/4 inches . Size ties to extend at least halfway through facing wythe but with at least 5/8-inch cover on outside face.

- E. Masonry-Joint Reinforcement for Veneers Anchored with Seismic Masonry-Veneer Anchors: Single 0.187-inch-diameter, steel continuous wire.

## **2.7 TIES AND ANCHORS**

- A. General: Ties and anchors shall extend at least 1-1/2 inches into veneer but with at least a 5/8-inch cover on outside face.
- B. Materials: Provide ties and anchors specified in this article that are made from materials that comply with the following unless otherwise indicated:
1. Mill-Galvanized, Carbon-Steel Wire: ASTM A82/A82M, with ASTM A641/A641M, Class 1 coating.
  2. Hot-Dip Galvanized, Carbon-Steel Wire: ASTM A82/A82M, with ASTM A153/A153M, Class B-2 coating.
  3. Galvanized-Steel Sheet: ASTM A653/A653M, Commercial Steel, G60 zinc coating.
  4. Steel Sheet, Galvanized after Fabrication: ASTM A1008/A1008M, Commercial Steel, with ASTM A153/A153M, Class B coating.
  5. Steel Plates, Shapes, and Bars: ASTM A36/A36M.
  6. Stainless Steel Bars: ASTM A276 or ASTM A666, Type 304.
- C. Adjustable Anchors for Connecting to Structural Steel Framing: Provide anchors that allow vertical or horizontal adjustment but resist tension and compression forces perpendicular to plane of wall.
1. Anchor Section for Welding to Steel Frame: Crimped 1/4-inch-diameter, hot-dip galvanized steel wire.
  2. Tie Section: Triangular-shaped wire tie made from 0.187-inch-diameter, hot-dip galvanized steel wire.
- D. Rigid Anchors: Fabricate from steel bars 1-1/2 inches wide by 1/4 inch thick by 24 inches long, with ends turned up 2 inches or with cross pins unless otherwise indicated.
1. Corrosion Protection: Hot-dip galvanized to comply with ASTM A153/A153M.
- E. Adjustable Masonry-Veneer Anchors:
1. General: Provide anchors that allow vertical adjustment but resist a 100-lbf load in both tension and compression perpendicular to plane of wall without deforming or developing play in excess of 1/16 inch .
  2. Fabricate wire ties from 0.187-inch-diameter, hot-dip galvanized-steel wire unless otherwise indicated.
  3. Screw-Attached, Masonry-Veneer Anchors: Wire tie and a rib-stiffened, sheet metal anchor section with screw holes top and bottom, with projecting tabs having holes for inserting vertical legs of wire tie formed to fit anchor section.

## **2.8 EMBEDDED FLASHING MATERIALS**

- A. Metal Flashing: Provide metal flashing complying with SMACNA's "Architectural Sheet Metal Manual" and as follows:
1. Stainless Steel: ASTM A240/A240M or ASTM A666, Type 304, 0.016 inch thick.
  2. Fabricate continuous flashings in sections 96 inches long minimum, but not exceeding 12 feet. Provide splice plates at joints of formed, smooth metal flashing.
  3. Fabricate through-wall flashing with snaplock receiver on exterior face where indicated to receive counterflashing.
  4. Fabricate through-wall flashing with drip edge unless otherwise indicated. Fabricate by extending flashing 1/2 inch out from wall, with outer edge bent down 30 degrees and hemmed.
  5. Solder metal items at corners.

6. Exposed metal flashings and exposed metal portions of flexible flashings shall match color of Exposed CMU.
- B. Flexible Flashing: Use the following unless otherwise indicated:
  1. Rubberized-Asphalt Flashing: Composite flashing product consisting of a pliable, adhesive rubberized-asphalt compound, bonded to a high-density, cross-laminated polyethylene film to produce an overall thickness of not less than 0.040 inch.
    - a. Advanced Building Products, Inc.
    - b. Heckmann Building Products, Inc.
    - c. Hohmann & Barnard, Inc.
    - d. Carlisle Coatings & Waterproofing, Inc.
    - e. W.R. Meadows, Inc.
    - f. Accessories: Provide preformed corners, end dams, other special shapes, and seaming materials produced by flashing manufacturer.
- C. Application: Unless otherwise indicated, use the following:
  1. Where flashing is indicated to receive counterflashing, use metal flashing.
  2. Where flashing is indicated to be turned down at or beyond the wall face, use metal flashing.
  3. Where flashing is partly exposed and is indicated to terminate at the wall face, use metal flashing or flexible flashing with a metal drip edge.
  4. Where flashing is fully concealed, use metal flashing or flexible flashing.
- D. Single-Wythe CMU Flashing System: System of CMU cell flashing pans and interlocking CMU web covers made from UV-resistant, high-density polyethylene. Cell flashing pans have integral weep spouts designed to be built into mortar bed joints and that extend into the cell to prevent clogging with mortar.
- E. Solder and Sealants for Sheet Metal Flashings:
  1. Solder for Stainless Steel: ASTM B32, Grade Sn60 or Grade Sn96, with acid flux of type recommended by stainless steel sheet manufacturer.
  2. Solder for Copper: ASTM B32, Grade Sn50 with maximum lead content of 0.2 percent.
  3. Elastomeric Sealant: ASTM C920, chemically curing urethane sealant; of type, grade, class, and use classifications required to seal joints in sheet metal flashing and remain watertight.
- F. Adhesives, Primers, and Seam Tapes for Flashings: Flashing manufacturer's standard products or products recommended by flashing manufacturer for bonding flashing sheets to each other and to substrates.
- G. Termination Bars for Flexible Flashing: Aluminum bars 0.075 inch by 1 inch.

## 2.9 MISCELLANEOUS MASONRY ACCESSORIES

- A. Compressible Filler: Pre-molded filler strips complying with ASTM D1056, Grade 2A1; compressible up to 35 percent; of width and thickness indicated; formulated from neoprene, urethane or PVC.
- B. Preformed Control-Joint Gaskets: Made from styrene-butadiene-rubber compound, complying with ASTM D2000, Designation M2AA-805 or PVC, complying with ASTM D2287, Type PVC-65406 and designed to fit standard sash block and to maintain lateral stability in masonry wall; size and configuration as indicated.
- C. Bond-Breaker Strips: Asphalt-saturated felt complying with ASTM D226/D226M, Type I (No. 15 asphalt felt).
- D. Weep/Cavity Vent Products: Use the following unless otherwise indicated:
  1. Vinyl Weep Hole/Vent: Units made from flexible PVC, designed to fit into a head joint and consisting of a louvered vertical leg, flexible wings to seal against ends of masonry units, and a top flap to keep mortar out of the head joint; in color to match finish of exposed CMU.

- E. Cavity Drainage Material: Free-draining mesh, made from polymer strands that will not degrade within the wall cavity.
  - 1. Advanced Building Products, Inc.
  - 2. Heckmann Building Products, inc.
  - 3. Hohmann & Barnard, Inc.
  - 4. Mortar Net Solutions
  - 5. Configuration: Provide one of the following:
    - a. Strips, full depth of cavity and 10 inches high, with dovetail-shaped notches 7 inches deep that prevent clogging with mortar droppings.
    - b. Strips, not less than 3/4 inch thick and 10 inches high, with dimpled surface designed to catch mortar droppings and prevent weep holes from clogging with mortar.

## 2.10 MASONRY CLEANERS

- A. Proprietary Acidic Cleaner: Manufacturer's standard-strength cleaner designed for removing mortar/grout stains, efflorescence, and other new construction stains from new masonry without discoloring or damaging masonry surfaces. Use product expressly approved for intended use by cleaner manufacturer and manufacturer of masonry units being cleaned.

## 2.11 MORTAR AND GROUT MIXES

- A. General: Do not use admixtures, including pigments, air-entraining agents, accelerators, retarders, water-repellent agents, antifreeze compounds, or other admixtures unless otherwise indicated.
  - 1. Do not use calcium chloride in mortar or grout.
  - 2. For reinforced masonry, use portland cement-lime mortar.
  - 3. Add cold-weather admixture (if used) at same rate for all mortar that will be exposed to view, regardless of weather conditions, to ensure that mortar color is consistent.
- B. Preblended, Dry Mortar Mix: Furnish dry mortar ingredients in form of a preblended mix. Measure quantities by weight to ensure accurate proportions, and thoroughly blend ingredients before delivering to Project site.
- C. Mortar for Unit Masonry: Comply with ASTM C270, Proportion Specification. Provide the following types of mortar for applications stated unless another type is indicated.
  - 1. For masonry below grade or in contact with earth, use Type M.
  - 2. For reinforced masonry, use Type S.
  - 3. For mortar parge coats, use Type S.
  - 4. For exterior, above-grade, load-bearing and nonload-bearing walls and parapet walls; for interior load-bearing walls; for interior nonload-bearing partitions; and for other applications where another type is not indicated, use Type S.
- D. Pigmented Mortar: Use colored cement product or select and proportion pigments with other ingredients to produce color required. Do not add pigments to colored cement products.
  - 1. Pigments shall not exceed 10 percent of portland cement by weight.
  - 2. Mix to match mortar at adjacent Power Lab and as approved by Architect.
  - 3. Application: Use pigmented mortar for exposed mortar joints with the following units:
    - a. CMU at exterior face of exterior wall.
- E. Colored-Aggregate Mortar: Produce required mortar color by using colored aggregates and natural color or white cement as necessary to produce required mortar color.
  - 1. Mix to match Architect's sample.
  - 2. Application: Use colored-aggregate mortar for exposed mortar joints with the following units:
    - a. Cast-stone trim units.
- F. Grout for Unit Masonry: Comply with ASTM C476.
  - 1. Use grout of type indicated or, if not otherwise indicated, of type (fine or coarse) that will comply with TMS 602/ACI 530.1/ASCE 6 for dimensions of grout spaces and pour height.

2. Proportion grout in accordance with ASTM C476, Table 1 or paragraph 4.2.2 for specified 28-day compressive strength indicated, but not less than 2000 psi.
  3. Provide grout with a slump of 8 to 11 inches as measured according to ASTM C143/C143M.
- G. Epoxy Pointing Mortar: Mix epoxy pointing mortar to comply with mortar manufacturer's written instructions.

### **PART 3 - EXECUTION**

#### **3.1 EXAMINATION**

- A. Examine conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
1. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.
  2. Verify that foundations are within tolerances specified.
  3. Verify that reinforcing dowels are properly placed.
  4. Verify that substrates are free of substances that impair mortar bond.
- B. Before installation, examine rough-in and built-in construction for piping systems to verify actual locations of piping connections.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

#### **3.2 INSTALLATION, GENERAL**

- A. Thickness: Build cavity and composite walls and other masonry construction to full thickness shown. Build single-wythe walls to actual widths of masonry units, using units of widths indicated.
- B. Build chases and recesses to accommodate items specified in this and other Sections.
- C. Leave openings for equipment to be installed before completing masonry. After installing equipment, complete masonry to match construction immediately adjacent to opening.
- D. Use full-size units without cutting if possible. If cutting is required to provide a continuous pattern or to fit adjoining construction, cut units with motor-driven saws; provide clean, sharp, unchipped edges. Allow units to dry before laying unless wetting of units is specified. Install cut units with cut surfaces and, where possible, cut edges concealed.
- E. Select and arrange units for exposed unit masonry to produce a uniform blend of colors and textures. Mix units from several pallets or cubes as they are placed.

#### **3.3 TOLERANCES**

- A. Dimensions and Locations of Elements:
1. For dimensions in cross section or elevation, do not vary by more than plus 1/2 inch or minus 1/4 inch .
  2. For location of elements in plan, do not vary from that indicated by more than plus or minus 1/2 inch .
  3. For location of elements in elevation, do not vary from that indicated by more than plus or minus 1/4 inch in a story height or 1/2 inch total.
- B. Lines and Levels:
1. For bed joints and top surfaces of bearing walls, do not vary from level by more than 1/4 inch in 10 feet, or 1/2-inch maximum.
  2. For conspicuous horizontal lines, such as lintels, sills, parapets, and reveals, do not vary from level by more than 1/8 inch in 10 feet, 1/4 inch in 20 feet , or 1/2-inch maximum.
  3. For vertical lines and surfaces, do not vary from plumb by more than 1/4 inch in 10 feet, 3/8 inch in 20 feet, or 1/2-inch maximum.
  4. For conspicuous vertical lines, such as external corners, door jambs, reveals, and expansion and control joints, do not vary from plumb by more than 1/8 inch in 10 feet, 1/4 inch in 20 feet, or 1/2-inch maximum.



5. For lines and surfaces, do not vary from straight by more than 1/4 inch in 10 feet, 3/8 inch in 20 feet, or 1/2-inch maximum.
6. For vertical alignment of exposed head joints, do not vary from plumb by more than 1/4 inch in 10 feet or 1/2-inch maximum.
7. For faces of adjacent exposed masonry units, do not vary from flush alignment by more than 1/16 inch except due to warpage of masonry units within tolerances specified for warpage of units.

C. Joints:

1. For bed joints, do not vary from thickness indicated by more than plus or minus 1/8 inch, with a maximum thickness limited to 1/2 inch .
2. For exposed bed joints, do not vary from bed-joint thickness of adjacent courses by more than 1/8 inch.
3. For head and collar joints, do not vary from thickness indicated by more than plus 3/8 inch or minus 1/4 inch.
4. For exposed head joints, do not vary from thickness indicated by more than plus or minus 1/8 inch. Do not vary from adjacent bed-joint and head-joint thicknesses by more than 1/8 inch.
5. For exposed bed joints and head joints of stacked bond, do not vary from a straight line by more than 1/16 inch from one masonry unit to the next.

### 3.4 LAYING MASONRY WALLS

- A. Lay out walls in advance for accurate spacing of surface bond patterns with uniform joint thicknesses and for accurate location of openings, movement-type joints, returns, and offsets. Avoid using less-than-half-size units, particularly at corners, jambs, and, where possible, at other locations.
- B. Bond Pattern for Exposed Masonry: Unless otherwise indicated, lay exposed masonry in running bond; do not use units with less-than-nominal 4-inch horizontal face dimensions at corners or jambs.
- C. Lay concealed masonry with all units in a wythe in running bond or bonded by lapping not less than 4 inches. Bond and interlock each course of each wythe at corners. Do not use units with less-than-nominal 4-inch horizontal face dimensions at corners or jambs.
- D. Stopping and Resuming Work: Stop work by stepping back units in each course from those in course below; do not tooth. When resuming work, clean masonry surfaces that are to receive mortar, remove loose masonry units and mortar, and wet brick if required before laying fresh masonry.
- E. Built-in Work: As construction progresses, build in items specified in this and other Sections. Fill in solidly with masonry around built-in items.
- F. Fill space between steel frames and masonry solidly with mortar unless otherwise indicated.
- G. Where built-in items are to be embedded in cores of hollow masonry units, place a layer of metal lath, wire mesh, or plastic mesh in the joint below, and rod mortar or grout into core.
- H. Fill cores in hollow CMUs with grout 24 inches under bearing plates, beams, lintels, posts, and similar items unless otherwise indicated.
- I. Build nonload-bearing interior partitions full height of story to underside of solid floor or roof structure above unless otherwise indicated.
  1. Install compressible filler in joint between top of partition and underside of structure above.
  2. Fasten partition top anchors to structure above and build into top of partition. Grout cells of CMUs solidly around plastic tubes of anchors and push tubes down into grout to provide 1/2-inch clearance between end of anchor rod and end of tube. Space anchors 48 inches o.c. unless otherwise indicated.

3. Wedge nonload-bearing partitions against structure above with small pieces of tile, slate, or metal. Fill joint with mortar after dead-load deflection of structure above approaches final position.
4. At fire-rated partitions, treat joint between top of partition and underside of structure above to comply with Section 078443 "Joint Firestopping."

### **3.5 MORTAR BEDDING AND JOINTING**

- A. Lay CMUs as follows:
  1. Bed face shells in mortar and make head joints of depth equal to bed joints.
  2. Bed webs in mortar in all courses of piers, columns, and pilasters.
  3. Bed webs in mortar in grouted masonry, including starting course on footings.
  4. Fully bed entire units, including areas under cells, at starting course on footings where cells are not grouted.
  5. Fully bed units and fill cells with mortar at anchors and ties as needed to fully embed anchors and ties in mortar.
- B. Lay solid masonry units with completely filled bed and head joints; butter ends with sufficient mortar to fill head joints and shove into place. Do not deeply furrow bed joints or slush head joints.
- C. Rake out mortar joints at and to a uniform depth of 1/4 inch and point with epoxy mortar to comply with epoxy-mortar manufacturer's written instructions.
- D. Tool exposed joints slightly concave when thumbprint hard, using a jointer larger than joint thickness unless otherwise indicated.
  1. For glazed masonry units, use a nonmetallic jointer 3/4 inch or more in width.
- E. Cut joints flush for masonry walls to receive plaster or other direct-applied finishes (other than paint) unless otherwise indicated.
- F. Cut joints flush where indicated to receive cavity wall insulation or air barriers unless otherwise indicated.

### **3.6 CAVITY WALLS**

- A. Bond wythes of cavity walls together as follows:
  1. Individual Metal Ties: Provide ties as shown installed in horizontal joints, but not less than one metal tie for 1.77 sq. ft. of wall area spaced not to exceed 16 inches o.c. horizontally and 16 inches o.c. vertically. Stagger ties in alternate courses. Provide additional ties within 12 inches of openings and space not more than 36 inches apart around perimeter of openings. At intersecting and abutting walls, provide ties at no more than 24 inches o.c. vertically.
    - a. Where bed joints of wythes do not align, use adjustable-type (two-piece-type) ties.
    - b. Where one wythe is of clay masonry and the other of concrete masonry, use adjustable-type (two-piece-type) ties to allow for differential movement regardless of whether bed joints align.
  2. Masonry-Joint Reinforcement: Installed in horizontal mortar joints.
    - a. Where bed joints of both wythes align, use tab-type reinforcement.
    - b. Where bed joints of wythes do not align, use adjustable-type (two-piece-type) reinforcement.
    - c. Where one wythe is of clay masonry and the other of concrete masonry, use adjustable-type (two-piece-type) reinforcement to allow for differential movement regardless of whether bed joints align.
  3. Header Bonding: Provide masonry unit headers extending not less than 3 inches into each wythe. Space headers not more than 8 inches clear horizontally and 16 inches clear vertically unless indicated otherwise.
  4. Masonry-Veneer Anchors: Comply with requirements for anchoring masonry veneers.
- B. Keep cavities clean of mortar droppings and other materials during construction. Bevel beds away from cavity, to minimize mortar protrusions into cavity. Do not attempt to trowel or remove mortar fins protruding into cavity.

- C. Rake cavity face of backup wythe in a single coat approximately 3/8 inch thick. Trowel face of parge coat smooth.
- D. Installing Cavity Wall Insulation: Place small dabs of adhesive, spaced approximately 12 inches o.c. both ways, on inside face of insulation boards, or attach with plastic fasteners designed for this purpose. Fit courses of insulation between wall ties and other confining obstructions in cavity, with edges butted tightly both ways. Press units firmly against inside wythe of masonry or other construction as shown.
  - 1. Fill cracks and open gaps in insulation with crack sealer compatible with insulation and masonry.

### **3.7 MASONRY-JOINT REINFORCEMENT**

- A. General: Install entire length of longitudinal side rods in mortar with a minimum cover of 5/8 inch on exterior side of walls, 1/2 inch elsewhere. Lap reinforcement a minimum of 6 inches .
  - 1. Space reinforcement not more than 16 inches o.c.
  - 2. Space reinforcement not more than 8 inches o.c. in foundation walls and parapet walls.
  - 3. Provide reinforcement not more than 8 inches above and below wall openings and extending 12 inches beyond openings in addition to continuous reinforcement.
- B. Interrupt joint reinforcement at control and expansion joints unless otherwise indicated.
- C. Provide continuity at wall intersections by using prefabricated T-shaped units.
- D. Provide continuity at corners by using prefabricated L-shaped units.
- E. Cut and bend reinforcing units as directed by manufacturer for continuity at corners, returns, offsets, column fireproofing, pipe enclosures, and other special conditions.

### **3.8 CONTROL AND EXPANSION JOINTS**

- A. General: Install control- and expansion-joint materials in unit masonry as masonry progresses. Do not allow materials to span control and expansion joints without provision to allow for in-plane wall or partition movement.
- B. Form control joints in concrete masonry using one of the following methods:
  - 1. Fit bond-breaker strips into hollow contour in ends of CMUs on one side of control joint. Fill resultant core with grout and rake out joints in exposed faces for application of sealant.
  - 2. Install preformed control-joint gaskets designed to fit standard sash block.
  - 3. Install interlocking units designed for control joints. Install bond-breaker strips at joint. Keep head joints free and clear of mortar or rake out joint for application of sealant.
  - 4. Install temporary foam-plastic filler in head joints and remove filler when unit masonry is complete for application of sealant.
- C. Form expansion joints in brick as follows:
  - 1. Build flanges of metal expansion strips into masonry. Lap each joint 4 inches in direction of water flow. Seal joints below grade and at junctures with horizontal expansion joints if any.
  - 2. Build flanges of factory-fabricated, expansion-joint units into masonry.
  - 3. Build in compressible joint fillers where indicated.
  - 4. Form open joint full depth of brick wythe and of width indicated, but not less than 3/8 inch for installation of sealant and backer rod specified in Section 079200 "Joint Sealants."
- D. Provide horizontal, pressure-relieving joints by either leaving an airspace or inserting a compressible filler of width required for installing sealant and backer rod specified in Section 079200 "Joint Sealants," but not less than 3/8 inch.
  - 1. Locate horizontal, pressure-relieving joints beneath shelf angles supporting masonry.

### **3.9 FLASHING, WEEP HOLES, AND CAVITY VENTS**

- A. General: Install embedded flashing and weep holes in masonry at shelf angles, lintels, ledges, other obstructions to downward flow of water in wall, and where indicated. Install cavity vents at

shelf angles, ledges, and other obstructions to upward flow of air in cavities, and where indicated.

- B. Install single-wythe CMU flashing system in bed joints of CMU walls where indicated to comply with manufacturer's written instructions. Install CMU cell pans with upturned edges located below face shells and webs of CMUs above and with weep spouts aligned with face of wall. Install CMU web covers so that they cover upturned edges of CMU cell pans at CMU webs and extend from face shell to face shell.
- C. Install reglets and nailers for flashing and other related construction where they are shown to be built into masonry.
- D. Install weep holes in exterior wythes and veneers in head joints of first course of masonry immediately above embedded flashing.
  - 1. Use specified weep/cavity vent products to form weep holes.
  - 2. Use wicking material to form weep holes above flashing under brick sills. Turn wicking down at lip of sill to be as inconspicuous as possible.
  - 3. Space weep holes 24 inches o.c. unless otherwise indicated.
  - 4. Space weep holes formed from plastic tubing 16 inches o.c.
  - 5. Cover cavity side of weep holes with plastic insect screening at cavities insulated with loose-fill insulation.
  - 6. Trim wicking material flush with outside face of wall after mortar has set.
- E. Place pea gravel in cavities as soon as practical to a height equal to height of first course above top of flashing, but not less than 2 inches, to maintain drainage.
  - 1. Fill cavities full height by placing pea gravel in cavities as masonry is laid, so that at any point, masonry does not extend more than 24 inches above top of pea gravel.
- F. Place cavity drainage material in airspace behind veneers to comply with configuration requirements for cavity drainage material in "Miscellaneous Masonry Accessories" Article.
- G. Install cavity vents in head joints in exterior wythes at spacing indicated. Use specified weep/cavity vent products to form cavity vents.
  - 1. Close cavities off vertically and horizontally with blocking in manner indicated. Install through-wall flashing and weep holes above horizontal blocking.

### **3.10 REPAIRING, POINTING, AND CLEANING**

- 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. Pointing: During the tooling of joints, enlarge voids and holes, except weep holes, and completely fill with mortar. Point up joints, including corners, openings, and adjacent construction, to provide a neat, uniform appearance. Prepare joints for sealant application, where indicated.
- C. In-Progress Cleaning: Clean unit masonry as work progresses by dry brushing to remove mortar fins and smears before tooling joints.
- D. Final Cleaning: After mortar is thoroughly set and cured, clean exposed masonry as follows:
  - 1. Remove large mortar particles by hand with wooden paddles and nonmetallic scrape hoes or chisels.
  - 2. Test cleaning methods on sample wall panel; leave one-half of panel uncleaned for comparison purposes. Obtain Architect's approval of sample cleaning before proceeding with cleaning of masonry.
  - 3. Protect adjacent stone and nonmasonry surfaces from contact with cleaner by covering them with liquid strippable masking agent or polyethylene film and waterproof masking tape.
  - 4. Wet wall surfaces with water before applying cleaners; remove cleaners promptly by rinsing surfaces thoroughly with clear water.

5. Clean masonry with a proprietary acidic cleaner applied according to manufacturer's written instructions.

**3.11 MASONRY WASTE DISPOSAL**

- A. Salvageable Materials: Unless otherwise indicated, excess masonry materials are Contractor's property. At completion of unit masonry work, remove from Project site.
- B. Waste Disposal as Fill Material: Dispose of clean masonry waste, including excess or soil-contaminated sand, waste mortar, and broken masonry units, by crushing and mixing with fill material as fill is placed.
  1. Crush masonry waste to less than 4 inches in each dimension.
  2. Mix masonry waste with at least two parts of specified fill material for each part of masonry waste. Fill material is specified in Section 312000 "Earth Moving."
  3. Do not dispose of masonry waste as fill within 18 inches of finished grade.
- C. Masonry Waste Recycling: Return broken CMUs not used as fill to manufacturer for recycling.
- D. Excess Masonry Waste: Remove excess clean masonry waste that cannot be used as fill, as described above or recycled, and other masonry waste, and legally dispose of off Owner's property.

END OF SECTION 042000



## **SECTION 055000 METAL FABRICATIONS**

### **PART 1 - GENERAL**

#### **1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

#### **1.2 SUMMARY**

- A. Section Includes:
  - 1. Steel frames for Window Security Screens.
  - 2. Expanded Steel Mesh for Window Security Screens.
  - 3. Steel framing and supports for applications where framing and supports are not specified in other Sections.
  - 4. Miscellaneous steel trim including steel angle corner guards and steel edgings.

#### **1.3 COORDINATION**

- A. Coordinate selection of shop primers with topcoats to be applied over them. Comply with paint and coating manufacturers' written instructions to ensure that shop primers and topcoats are compatible with one another.
- B. Coordinate installation of metal fabrications that are anchored to or that receive other work. 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.

#### **1.4 ACTION SUBMITTALS**

- A. Product Data: For the following:
  - 1. Fasteners.
  - 2. Shop primers.
  - 3. Shrinkage-resisting grout.
- B. Shop Drawings: Show fabrication and installation details. Include plans, elevations, sections, and details of metal fabrications and their connections. Show anchorage and accessory items. Provide Shop Drawings for the following:
  - 1. Steel framing and supports and expanded wire mesh for Window Screens.
  - 2. Steel framing and supports for applications where framing and supports are not specified in other Sections
  - 3. Loose Lintels.
  - 4. Miscellaneous steel trim including steel angle corner guards steel edgings and loading-dock edge angles.

#### **1.5 INFORMATIONAL SUBMITTALS**

- A. Welding certificates.
- B. Paint Compatibility Certificates: From manufacturers of topcoats applied over shop primers, certifying that shop primers are compatible with topcoats.

#### **1.6 QUALITY ASSURANCE**

- A. Welding Qualifications: Qualify procedures and personnel in accordance with the following:
  - 1. AWS D1.1/D1.1M, "Structural Welding Code - Steel."
  - 2. AWS D1.2/D1.2M, "Structural Welding Code - Aluminum."
  - 3. AWS D1.6/D1.6M, "Structural Welding Code - Stainless Steel."

#### **1.7 FIELD CONDITIONS**

- A. Field Measurements: Verify actual locations of walls, floor slabs, decks, and other construction contiguous with metal fabrications by field measurements before fabrication.

## **PART 2 - PRODUCTS**

### **2.1 PERFORMANCE REQUIREMENTS**

- A. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes acting on exterior metal fabrications by preventing buckling, opening of joints, overstressing of components, failure of connections, and other detrimental effects.
  - 1. Temperature Change: 120 deg F, ambient; 180 deg F, material surfaces.

### **2.2 METALS**

- A. Metal Surfaces, General: Provide materials with smooth, flat surfaces unless otherwise indicated. For metal fabrications exposed to view in the completed Work, provide materials without seam marks, roller marks, rolled trade names, or blemishes.
- B. Steel Plates, Shapes, and Bars: ASTM A36/A36M.
- C. Steel Tubing: ASTM A500/A500M, cold-formed steel tubing.
- D. Steel Pipe: ASTM A53/A53M, Standard Weight (Schedule 40) unless otherwise indicated.
- E. Expanded Metal for Window Security Screens: equal to Metalex: Barrier mesh/Security Mesh F750-13 complying with Military Specification MIL-M-17194 Type II, Class 1; ASTM 1267. Weight per 100 square feet: 75 lbs.
- F. Aluminum Plate and Sheet: ASTM B209, Alloy 6061-T6.
- G. Aluminum Extrusions: ASTM B221, Alloy 6063-T6.

### **2.3 FASTENERS**

- A. General: Unless otherwise indicated, provide Type 304 stainless steel fasteners for exterior use and zinc-plated fasteners with coating complying with ASTM B633 or ASTM F1941/F1941M, Class Fe/Zn 5, at exterior walls. Select fasteners for type, grade, and class required.
  - 1. Provide stainless steel fasteners for fastening aluminum.
- B. Steel Bolts and Nuts: Regular hexagon-head bolts, ASTM A307, Grade A; with hex nuts, ASTM A563; and, where indicated, flat washers.
- C. High-Strength Bolts, Nuts, and Washers: ASTM F3125/F3125M, Grade A325, Type 3, heavy-hex steel structural bolts; ASTM A563, Grade DH3, heavy-hex carbon-steel nuts; and where indicated, flat washers.
- D. Stainless Steel Bolts and Nuts: Regular hexagon-head annealed stainless steel bolts, ASTM F593; with hex nuts, ASTM F594; and, where indicated, flat washers; Alloy Group 1.
- E. Anchor Bolts: ASTM F1554, Grade 36, of dimensions indicated; with nuts, ASTM A563; and, where indicated, flat washers.
  - 1. Hot-dip galvanize or provide mechanically deposited, zinc coating where item being fastened is indicated to be galvanized.
- F. Anchors, General: Capable of sustaining, without failure, a load equal to six times the load imposed when installed in unit masonry and four times the load imposed when installed in concrete, as determined by testing in accordance with ASTM E488/E488M, conducted by a qualified independent testing agency.
- G. Cast-in-Place Anchors in Concrete: Either threaded or wedge type unless otherwise indicated; galvanized ferrous castings, either ASTM A47/A47M malleable iron or ASTM A27/A27M cast steel. Provide bolts, washers, and shims as needed, all hot-dip galvanized per ASTM F2329/F2329M.
- H. Post-Installed Anchors: Torque-controlled expansion anchors or chemical anchors.
  - 1. Material for Interior Locations: Carbon-steel components zinc plated to comply with ASTM B633 or ASTM F1941/F1941M, Class Fe/Zn 5, unless otherwise indicated.
  - 2. Material for Exterior Locations and Where Stainless Steel Is Indicated: Alloy Group 1 stainless steel bolts, ASTM F593, and nuts, ASTM F594.



#### **2.4 MISCELLANEOUS MATERIALS**

- A. Shop Primers: Provide primers that comply with
- B. Galvanizing Repair Paint: High-zinc-dust-content paint complying with SSPC-Paint 20 and compatible with paints specified to be used over it.

#### **2.5 FABRICATION, GENERAL**

- A. Shop Assembly: Preassemble items in the shop to greatest extent possible. Disassemble units only as necessary for shipping and handling limitations. Use connections that maintain structural value of joined pieces. Clearly mark units for reassembly and coordinated installation.
- B. Cut, drill, and punch metals cleanly and accurately. Remove burrs and ease edges to a radius of approximately 1/32 inch unless otherwise indicated. Remove sharp or rough areas on exposed surfaces.
- C. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing work.
- D. Form exposed work with accurate angles and surfaces and straight edges.
- E. Weld corners and seams continuously to comply with the following:
  - 1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
  - 2. Obtain fusion without undercut or overlap.
  - 3. Remove welding flux immediately.
  - 4. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.
- F. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners or welds where possible. Where exposed fasteners are required, use Phillips flat-head (countersunk) fasteners unless otherwise indicated. Locate joints where least conspicuous.
- G. Fabricate seams and other connections that are exposed to weather in a manner to exclude water. Provide weep holes where water may accumulate.
- H. Cut, reinforce, drill, and tap metal fabrications as indicated to receive finish hardware, screws, and similar items.
- I. Provide for anchorage of type indicated; coordinate with supporting structure. Space anchoring devices to secure metal fabrications rigidly in place and to support indicated loads.
- J. Where units are indicated to be cast into concrete or built into masonry, equip with integrally welded steel strap anchors, 1/8 by 1-1/2 inches, with a minimum 6-inch embedment and 2-inch hook, not less than 8 inches from ends and corners of units and 24 inches o.c., unless otherwise indicated.

#### **2.6 WINDOW SCREEN FRAMING AND EXPANDED WIRE MESH SCREENS**

- A. General: Provide security screens of steel expanded wire mesh welded to steel channel framing and as indicated.
- B. Galvanize or powder coat finished screen assemblies prior to installation.

#### **2.7 MISCELLANEOUS FRAMING AND SUPPORTS**

- A. General: Provide steel framing and supports not specified in other Sections as needed to complete the Work.
- B. Fabricate units from steel shapes, plates, and bars of welded construction unless otherwise indicated. Fabricate to sizes, shapes, and profiles indicated and as necessary to receive adjacent construction.
  - 1. Fabricate units from slotted channel framing where indicated.
  - 2. Furnish inserts for units installed after concrete is placed.
- C. Galvanize miscellaneous framing and supports where indicated.

- D. Prime miscellaneous framing and supports with zinc-rich primer where indicated.

## **2.8 MISCELLANEOUS STEEL TRIM**

- A. Unless otherwise indicated, fabricate units from steel shapes, plates, and bars of profiles shown with continuously welded joints and smooth exposed edges. Miter corners and use concealed field splices where possible.
- B. Provide cutouts, fittings, and anchorages as needed to coordinate assembly and installation with other work.
- C. Galvanize and prime exterior miscellaneous steel trim with primer acceptable to manufacturer of scheduled paint finish.

## **2.9 STEEL WELD PLATES AND ANGLES**

- A. Provide steel weld plates and angles not specified in other Sections, for items supported from concrete construction as needed to complete the Work. Provide each unit with no fewer than two integrally welded steel strap anchors for embedding in concrete.

## **2.10 GENERAL FINISH REQUIREMENTS**

- A. Finish metal fabrications after assembly.
- B. Finish exposed surfaces to remove tool and die marks and stretch lines, and to blend into surrounding surface.

## **2.11 STEEL AND IRON FINISHES**

- A. Galvanizing: Hot-dip galvanize items as indicated to comply with ASTM A153/A153M for steel and iron hardware and with ASTM A123/A123M for other steel and iron products.
  - 1. Do not quench or apply post galvanizing treatments that might interfere with paint adhesion.
- B. Preparation for Shop Priming Galvanized Items: After galvanizing, thoroughly clean galvanized surfaces of grease, dirt, oil, flux, and other foreign matter, and treat with metallic phosphate process.
- C. Shop prime iron and steel items unless otherwise indicated.
  - 1. Shop prime with unless indicated.
- D. Preparation for Shop Priming: Prepare surfaces to comply with requirements indicated below:
  - 1. Exterior Items: SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning."
  - 2. Items Indicated to Receive Zinc-Rich Primer: SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning."
  - 3. Items Indicated to Receive Primers Specified in Section 099600 "High-Performance Coatings": SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning."
  - 4. Other Steel Items: SSPC-SP 3, "Power Tool Cleaning."
  - 5. Galvanized-Steel Items: SSPC-SP 16, "Brush-off Blast Cleaning of Coated and Uncoated Galvanized Steel, Stainless Steels, and Non-Ferrous Metals."
- E. Shop Priming: Apply shop primer to comply with SSPC-PA 1, "Paint Application Specification No. 1: Shop, Field, and Maintenance Painting of Steel," for shop painting.
  - 1. Stripe paint corners, crevices, bolts, welds, and sharp edges.

## **PART 3 - EXECUTION**

### **3.1 INSTALLATION, GENERAL**

- A. Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required for installing metal fabrications. Set metal fabrications accurately in location, alignment, and elevation; with edges and surfaces level, plumb, true, and free of rack; and measured from established lines and levels.
- B. Fit exposed connections accurately together to form hairline joints. Weld connections that are not to be left as exposed joints but cannot be shop welded because of shipping size limitations.

Do not weld, cut, or abrade surfaces of exterior units that have been hot-dip galvanized after fabrication and are for bolted or screwed field connections.

- C. Field Welding: Comply with the following requirements:
  - 1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
  - 2. Obtain fusion without undercut or overlap.
  - 3. Remove welding flux immediately.
  - 4. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.
- D. Fastening to In-Place Construction: Provide anchorage devices and fasteners where metal fabrications are required to be fastened to in-place construction. Provide threaded fasteners for use with concrete and masonry inserts, toggle bolts, through bolts, lag screws, wood screws, and other connectors.
- E. Provide temporary bracing or anchors in formwork for items that are to be built into concrete, masonry, or similar construction.
- F. Corrosion Protection: Coat concealed surfaces of aluminum that come into contact with grout, concrete, masonry, wood, or dissimilar metals with the following:
  - 1. Cast Aluminum: Heavy coat of bituminous paint.
  - 2. Extruded Aluminum: Two coats of clear lacquer.

### **3.2 INSTALLATION OF FRAMING AND SUPPORTS**

- A. General: Install framing and supports to comply with requirements of items being supported, including manufacturers' written instructions and requirements indicated on Shop Drawings.

### **3.3 REPAIRS**

- A. Touchup Painting:
  - 1. Immediately after erection, clean field welds, bolted connections, and abraded areas. Paint uncoated and abraded areas with same material as used for shop painting to comply with SSPC-PA 1 for touching up shop-painted surfaces.
    - a. Apply by brush or spray to provide a minimum 2.0-mil dry film thickness.
  - 2. Cleaning and touchup painting of field welds, bolted connections, and abraded areas of shop paint are specified in
- B. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing to comply with ASTM A780/A780M.

END OF SECTION 055000

## **SECTION 055213 - PIPE AND TUBE RAILINGS**

### **PART 1 - GENERAL**

#### **1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

#### **1.2 SUMMARY**

- A. Section Includes:
  - 1. Steel tube railings.
- B. Related Requirements:
  - 1. Section 03 3000 "Cast In Place Concrete" for steel tube railing associated with formed concrete stairs.

#### **1.3 COORDINATION**

- A. Coordinate selection of shop primers with topcoats to be applied over them. Comply with paint and coating manufacturers' written recommendations to ensure that shop primers and topcoats are compatible with one another.
- B. 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.
- C. 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.

#### **1.4 ACTION SUBMITTALS**

- A. Product Data: For the following:
  - 1. Grout, anchoring cement, and paint products.
- B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.

#### **1.5 DELIVERY, STORAGE, AND HANDLING**

- A. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

#### **1.6 FIELD CONDITIONS**

- A. Field Measurements: Verify actual locations of walls and other construction contiguous with metal fabrications by field measurements before fabrication.

### **PART 2 - PRODUCTS**

#### **2.1 MANUFACTURERS**

- A. Source Limitations: Obtain each type of railing from single source from single manufacturer.

#### **2.2 PERFORMANCE REQUIREMENTS**

- A. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes.
  - 1. Temperature Change: 120 deg F, ambient; 180 deg F, material surfaces.

#### **2.3 METALS, GENERAL**

- 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: Cast or formed metal of same type of material and finish as supported rails unless otherwise indicated.

## **2.4 STEEL AND IRON**

- A. Tubing: ASTM A 500 (cold formed) or ASTM A 513.

## **2.5 FASTENERS**

- A. General: Provide the following:
  - 1. Ungalvanized-Steel Railings: Plated steel fasteners complying with ASTM B 633 or ASTM F 1941, Class Fe/Zn 5 for zinc coating.
  - 2. Provide exposed fasteners with finish matching appearance, including color and texture, of railings.
- B. Fasteners for Anchoring Railings to Other Construction: Select fasteners of type, grade, and class required to produce connections suitable for anchoring railings to other types of construction indicated.

## **2.6 MISCELLANEOUS MATERIALS**

- A. Welding Rods and Bare Electrodes: Select according to AWS specifications for metal alloy welded.
- B. Epoxy Zinc-Rich Primer: Complying with MPI#20 and compatible with topcoat.
- C. Epoxy Intermediate Coat: Complying with MPI #77 and compatible with primer and topcoat.
- D. Polyurethane Topcoat: Complying with MPI #72 and compatible with undercoat.
- E. Nonshrink, Nonmetallic Grout: Factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C 1107/C 1107M. Provide grout specifically recommended by manufacturer for interior and exterior applications.

## **2.7 FABRICATION**

- A. General: Fabricate railings to comply with requirements indicated for design, dimensions, member sizes and spacing, details, finish, and anchorage.
- B. Shop assemble railings to greatest extent possible to minimize field splicing and assembly. Disassemble units only as necessary for shipping and handling limitations. Clearly mark units for reassembly and coordinated installation. Use connections that maintain structural value of joined pieces.
- C. Cut, drill, and punch metals cleanly and accurately. Remove burrs and ease edges to a radius of approximately 1/32 inch unless otherwise indicated. Remove sharp or rough areas on exposed surfaces.
- D. Form work true to line and level with accurate angles and surfaces.
- E. Fabricate connections that are exposed to weather in a manner that excludes water. Provide weep holes where water may accumulate.
- F. Cut, reinforce, drill, and tap as indicated to receive finish hardware, screws, and similar items.
- G. Connections: Fabricate railings with welded connections unless otherwise indicated.
- H. Welded Connections: Cope components at connections to provide close fit, or use fittings designed for this purpose. Weld all around at connections, including at fittings.
  - 1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
  - 2. Obtain fusion without undercut or overlap.
  - 3. Remove flux immediately.
  - 4. At exposed connections, finish exposed surfaces smooth and blended so no roughness shows after finishing and welded surface matches contours of adjoining surfaces.
- I. Nonwelded Connections: Connect members with concealed mechanical fasteners and fittings. Fabricate members and fittings to produce flush, smooth, rigid, hairline joints.
  - 1. Fabricate splice joints for field connection using an epoxy structural adhesive if this is manufacturer's standard splicing method.
- J. Form Changes in Direction as Follows:

1. As detailed.
- K. For changes in direction made by bending, use jigs to produce uniform curvature for each repetitive configuration required. Maintain cross section of member throughout entire bend without buckling, twisting, cracking, or otherwise deforming exposed surfaces of components.
- L. Close exposed ends of railing members with prefabricated end fittings.
- M. Provide wall returns at ends of wall-mounted handrails unless otherwise indicated. Close ends of returns unless clearance between end of rail and wall is 1/4 inch or less.
- N. Brackets, Flanges, Fittings, and Anchors: Provide wall brackets, flanges, miscellaneous fittings, and anchors to interconnect railing members to other work unless otherwise indicated.
  1. At brackets and fittings fastened to plaster or gypsum board partitions, provide crush-resistant fillers or other means to transfer loads through wall finishes to structural supports and prevent bracket or fitting rotation and crushing of substrate.
- O. Provide inserts and other anchorage devices for connecting railings to concrete or masonry work. Fabricate anchorage devices capable of withstanding loads imposed by railings. Coordinate anchorage devices with supporting structure.
- P. For railing posts set in concrete: unless indicated otherwise, provide 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.
- Q. Toe Boards: Where indicated, provide toe boards at railings around openings and at edge of open-sided floors and platforms. Fabricate to dimensions and details indicated.

## **2.8 STEEL AND IRON FINISHES**

- A. For nongalvanized-steel railings, provide nongalvanized ferrous-metal fittings, brackets, fasteners, and sleeves; however, galvanize anchors to be embedded in exterior concrete or masonry.
- B. Preparation for Shop Priming: Prepare uncoated ferrous-metal surfaces to comply with requirements indicated below:
  1. Exterior Railings: SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning."
  2. Railings Indicated to Receive Zinc-Rich Primer: SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning."
  3. Railings Indicated to Receive Primers Specified in Section 099600 "High-Performance Coatings": SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning."
- C. Primer Application: Apply shop primer to prepared surfaces of railings unless otherwise indicated. Comply with requirements in SSPC-PA 1, "Shop, Field, and Maintenance Painting of Steel," for shop painting. Primer need not be applied to surfaces to be embedded in concrete or masonry.
  1. Shop prime uncoated railings with universal shop primer unless zinc-rich primer is indicated.
- D. Shop-Painted Finish: Comply with
  1. Color: As selected by Architect from manufacturer's full range.

## **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 are clearly marked for Installer. Locate reinforcements and mark locations if not already done.

### **3.2 INSTALLATION, GENERAL**

- A. Fit exposed connections together to form tight, hairline joints.
- B. Perform cutting, drilling, and fitting required for installing railings. Set railings accurately in location, alignment, and elevation; measured from established lines and levels and free of rack.

1. Do not weld, cut, or abrade surfaces of railing components that are coated or finished after fabrication and that are intended for field connection by mechanical or other means without further cutting or fitting.
  2. Set posts plumb within a tolerance of 1/16 inch in 3 feet.
  3. 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 inch in 12 feet.
- C. Control of Corrosion: Prevent galvanic action and other forms of corrosion by insulating metals and other materials from direct contact with incompatible materials.
1. Coat, with a heavy coat of bituminous paint, concealed surfaces of aluminum that are in contact with grout, concrete, masonry, wood, or dissimilar metals.
- 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. 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.
- B. 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 inches beyond joint on either side, fasten internal sleeve securely to one side, and locate joint within 6 inches of post.

### **3.4 ANCHORING POSTS**

- A. After posts are inserted into sleeves, or cored holes, fill annular space with nonshrink, nonmetallic grout, mixed and placed to comply with anchoring material manufacturer's written instructions.
- B. Install removable railing sections, where indicated, in slip-fit metal sockets cast in concrete.

### **3.5 ATTACHING RAILINGS**

- A. Anchor railing ends at walls as follows unless indicated otherwise on drawings:
- B. Attach railings to wall with wall brackets, except where end flanges are used. Locate brackets as indicated or, if not indicated, at spacing required to support structural loads.
- C. Secure wall brackets and railing end flanges to building construction 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. For wood stud partitions, use hanger or lag bolts set into studs or wood backing between studs. Coordinate with carpentry work to locate backing members.
  4. For steel-framed partitions, use toggle bolts installed through flanges of steel framing or through concealed steel reinforcements.

### **3.6 ADJUSTING AND CLEANING**

- A. Clean by washing thoroughly with clean water and soap and rinsing with clean water.
- B. Touchup Painting: Clean and touchup painting of field welds, bolted connections, and abraded areas of shop paint.

### **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.

END OF SECTION 055213

**SECTION 061000 - ROUGH CARPENTRY**

**PART 1 - GENERAL**

**1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

**1.2 SUMMARY**

- A. Section Includes:
  - 1. Wood blocking and nailers.

**1.3 DEFINITIONS**

- A. Boards or Strips: Lumber of less than 2 inches nominal size in least dimension.
- B. Dimension Lumber: Lumber of 2 inches nominal size or greater but less than 5 inches nominal size in least dimension.
- C. Exposed Framing: Framing not concealed by other construction.
- D. OSB: Oriented strand board.
- E. Timber: Lumber of 5 inches nominal size or greater in least dimension.

**1.4 ACTION SUBMITTALS**

- A. Product Data: For each type of process and factory-fabricated product. Indicate component materials and dimensions and include construction and application details.
  - 1. Include data for wood-preservative treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements. Indicate type of preservative used and net amount of preservative retained.
  - 2. Include data for fire-retardant treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements. Include physical properties of treated materials based on testing by a qualified independent testing agency.
  - 3. For fire-retardant treatments, include physical properties of treated lumber both before and after exposure to elevated temperatures, based on testing by a qualified independent testing agency according to ASTM D 5664.
  - 4. For products receiving a waterborne treatment, include statement that moisture content of treated materials was reduced to levels specified before shipment to Project site.
- B. Fastener Patterns: Full-size templates for fasteners in exposed framing.

**1.5 INFORMATIONAL SUBMITTALS**

- A. Material Certificates: For dimension lumber specified to comply with minimum allowable unit stresses. Indicate species and grade selected for each use and design values approved by the ALSC Board of Review.
- B. Evaluation Reports: For the following, if used in the project, from ICC-ES:
  - 1. Wood-preservative-treated wood.
  - 2. Fire-retardant-treated wood.
  - 3. Engineered wood products.
  - 4. Shear panels.
  - 5. Power-driven fasteners.
  - 6. Post-installed anchors.
  - 7. Metal framing anchors.

**1.6 DELIVERY, STORAGE, AND HANDLING**

- A. Stack wood products flat with spacers beneath and between each bundle to provide air circulation. Protect wood products from weather by covering with waterproof sheeting, securely anchored. Provide for air circulation around stacks and under coverings.



## **PART 2 - PRODUCTS**

### **2.1 WOOD PRODUCTS, GENERAL**

- A. Lumber: DOC PS 20 and applicable rules of grading agencies indicated. If no grading agency is indicated, comply with the applicable rules of any rules-writing agency certified by the ALSC Board of Review. Grade lumber by an agency certified by the ALSC Board of Review to inspect and grade lumber under the rules indicated.
  - 1. Factory mark each piece of lumber with grade stamp of grading agency.
  - 2. For exposed lumber indicated to receive a stained or natural finish, mark grade stamp on end or back of each piece.
  - 3. Dress lumber, S4S, unless otherwise indicated.
- B. Maximum Moisture Content of Lumber: 19 percent unless otherwise indicated.
- C. Engineered Wood Products: Acceptable to authorities having jurisdiction and for which current model code research or evaluation reports exist that show compliance with building code in effect for Project.
  - 1. Allowable design stresses, as published by manufacturer, shall meet or exceed those indicated. Manufacturer's published values shall be determined from empirical data or by rational engineering analysis and demonstrated by comprehensive testing performed by a qualified independent testing agency.

### **2.2 WOOD-PRESERVATIVE-TREATED LUMBER**

- A. Preservative Treatment by Pressure Process: AWWA U1; Use Category UC2 for interior construction not in contact with ground, Use Category UC3b for exterior construction not in contact with ground, and Use Category UC4a for items in contact with ground.
  - 1. Preservative Chemicals: Acceptable to authorities having jurisdiction and containing no arsenic or chromium. Do not use inorganic boron (SBX) for sill plates.
  - 2. 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.
- B. Kiln-dry lumber after treatment to a maximum moisture content of 19 percent. Do not use material that is warped or that does not comply with requirements for untreated material.
- C. Mark lumber with treatment quality mark of an inspection agency approved by the ALSC Board of Review.
  - 1. For exposed lumber indicated to receive a stained or natural finish, mark end or back of each piece.
- D. Application: Treat items indicated on drawings, and the following:
- E. Wood cants, nailers, curbs, equipment support bases, blocking, stripping, and similar members in connection with roofing, flashing, vapor barriers, and waterproofing.
- F. Wood sills, sleepers, blocking, furring, stripping, and similar concealed members in contact with masonry or concrete.
- G. Wood framing and furring attached directly to the interior of below-grade exterior masonry or concrete walls.
- H. Wood framing members that are less than 18 inches above the ground in crawlspaces or unexcavated areas.
- I. Wood floor plans that are installed over concrete slabs-on-grade.

### **2.3 FIRE-RETARDANT-TREATED MATERIALS**

- A. 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.

- B. Fire-Retardant-Treated Lumber and Plywood by Pressure Process: Products with a flame-spread index of 25 or less 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.
  - 1. Treatment shall not promote corrosion of metal fasteners.
  - 2. 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.
  - 3. 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.
  - 4. 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. For enclosed roof framing, framing in attic spaces, and where high temperature fire-retardant treatment is indicated, provide material with adjustment factors of not less than 0.85 modulus of elasticity and 0.75 for extreme fiber in bending for Project's climatological zone.
- C. Kiln-dry lumber after treatment to maximum moisture content of 19 percent. Kiln-dry plywood after treatment to maximum moisture content of 15 percent.
- D. Identify fire-retardant-treated wood with appropriate classification marking of qualified testing agency.
  - 1. For exposed lumber indicated to receive a stained or natural finish, mark end or back of each piece.
- E. For exposed items indicated to receive a stained or natural finish, chemical formulations shall not bleed through, contain colorants, or otherwise adversely affect finishes.
- F. Application: Treat items indicated on drawings, and the following:
- G. Wood cants, nailers, curbs, equipment support bases, blocking, stripping, and similar members in connection with roofing, flashing, vapor barriers, and waterproofing.
- H. Wood sills, sleepers, blocking, furring, stripping, and similar concealed members in contact with masonry or concrete.
- I. Wood framing and furring attached directly to the interior of below-grade exterior masonry or concrete walls.
- J. Wood framing members that are less than 18 inches above the ground in crawlspaces or unexcavated areas.
- K. Wood floor plans that are installed over concrete slabs-on-grade.
- L. All backer panels for phones and IT areas.

### **PART 3 - EXECUTION**

#### **3.1 PROTECTION**

- A. Protect wood that has been treated with inorganic boron (SBX) from weather. If, despite protection, inorganic boron-treated wood becomes wet, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.
- B. Protect rough carpentry from weather. If, despite protection, rough carpentry becomes wet enough that moisture content exceeds that specified, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.

END OF SECTION 061000

## **SECTION 064116 - PLASTIC-LAMINATE-CLAD ARCHITECTURAL CABINETS**

### **PART 1 - GENERAL**

#### **1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

#### **1.2 SUMMARY**

- A. Section Includes:
  - 1. Plastic-laminate-clad architectural cabinets and countertops.
  - 2. Wood furring, blocking, shims, and hanging strips for installing plastic-laminate-clad architectural cabinets that are not concealed within other construction.
- B. Related Requirements:
  - 1. Section 061000 "Rough Carpentry" for wood furring, blocking, shims, and hanging strips required for installing cabinets that are concealed within other construction before cabinet installation.

#### **1.3 COORDINATION**

- A. Coordinate sizes and locations of framing, blocking, furring, reinforcements, and other related units of Work specified in other Sections to support loads imposed by installed and fully loaded cabinets.
- B. Hardware Coordination: Distribute copies of approved hardware schedule specified in to manufacturer of architectural cabinets; coordinate Shop Drawings and fabrication with hardware requirements.

#### **1.4 ACTION SUBMITTALS**

- A. Product Data: For each type of product.
- B. Shop Drawings:
  - 1. Include plans, elevations, sections, and attachment details.
  - 2. Show large-scale details.
  - 3. Show locations and sizes of furring, blocking, and hanging strips, including concealed blocking and reinforcement specified in other Sections.
  - 4. Show locations and sizes of cutouts and holes for items installed in plastic-laminate architectural cabinets.
  - 5. Apply AWI Quality Certification Program label to Shop Drawings.
- C. Samples for Initial Selection: For each type of exposed finish.
- D. Samples for Verification: For the following:
  - 1. Plastic Laminates: 8 by 10 inches, for each type, color, pattern, and surface finish required.
    - a. Provide one sample applied to core material with specified edge material applied to one edge.

#### **1.5 INFORMATIONAL SUBMITTALS**

- A. Qualification Data: For manufacturer and Installer.

#### **1.6 CLOSEOUT SUBMITTALS**

- A. Quality Standard Compliance Certificates: AWI Quality Certification Program WI Certified Compliance Program certificates.

#### **1.7 QUALITY ASSURANCE**

- A. Manufacturer's Qualifications: Employs skilled workers who custom fabricate products similar to those required for this Project and whose products have a record of successful in-service performance.

1. Manufacturer's Certification: Licensed participant in AWI's Quality Certification Program.
- B. Installer Qualifications: Manufacturer of products.

### **1.8 DELIVERY, STORAGE, AND HANDLING**

- A. Do not deliver cabinets until painting and similar finish operations that might damage architectural cabinets have been completed in installation areas. Store cabinets in installation areas or in areas where environmental conditions comply with requirements specified in "Field Conditions" Article.

### **1.9 FIELD CONDITIONS**

- A. Environmental Limitations: Do not deliver or install cabinets until building is enclosed, wet-work is complete, and HVAC system is operating and maintaining temperature and relative humidity at levels planned for building occupants during the remainder of the construction period.
- B. Field Measurements: Where cabinets are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication, and indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
  1. Locate concealed framing, blocking, and reinforcements that support cabinets by field measurements before being enclosed/concealed by construction, and indicate measurements on Shop Drawings.

## **PART 2 - PRODUCTS**

### **2.1 ARCHITECTURAL CABINET MANUFACTURERS**

- A. Quality Standard: Unless otherwise indicated, comply with the Architectural Woodwork Standards for grades of cabinets indicated for construction, finishes, installation, and other requirements.
  1. Provide labels and certificates from AWI certification program indicating that woodwork and installation complies with requirements of grades specified.

### **2.2 PLASTIC-LAMINATE-CLAD ARCHITECTURAL CABINETS**

- A. Quality Standard: Unless otherwise indicated, comply with the Architectural Woodwork Standards for grades of cabinets indicated for construction, finishes, installation, and other requirements.
  1. Provide labels and certificates from AWI certification program indicating that woodwork and installation complies with requirements of grades specified.
- B. Architectural Woodwork Standards Grade: Premium.
- C. Type of Construction: Frameless.
- D. Door and Drawer-Front Style: Flush overlay.
  1. Reveal Dimension: 1/2 inch unless otherwise indicated.
- E. High-Pressure Decorative Laminate: NEMA LD 3, grades as indicated or if not indicated, as required by quality standard.
  1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. Formica Corporation.
    - b. Wilsonart LLC.
- F. Laminate Cladding for Exposed Surfaces:
  1. Horizontal Surfaces: Grade HGS.
  2. Postformed Surfaces: Grade HGP.
  3. Vertical Surfaces: Grade HGS.
  4. Edges: Grade HGS.

5. Pattern Direction: Vertically for drawer fronts, doors, and fixed panels [Horizontally for drawer fronts, doors, and fixed panels] [Vertically for doors and fixed panels, horizontally for drawer fronts] [As indicated].
- G. Dust Panels: 1/4-inch plywood or tempered hardboard above compartments and drawers unless located directly under tops.
- H. Concealed Backs of Panels with Exposed Plastic-Laminate Surfaces: High-pressure decorative laminate, NEMA LD 3, Grade BKL.
- I. Drawer Construction: Fabricate with exposed fronts fastened to subfront with mounting screws from interior of body.
  1. Join subfronts, backs, and sides with glued rabbeted joints supplemented by mechanical fasteners or glued dovetail joints.
- J. Colors, Patterns, and Finishes: See Section 01 6210 - Colors.

### **2.3 WOOD MATERIALS**

- A. Wood Products: Provide materials that comply with requirements of referenced quality standard for each type of architectural cabinet and quality grade specified unless otherwise indicated.
  1. Wood Moisture Content: 5 to 10 percent.
- B. Composite Wood and Agrifiber Products: Provide materials that comply with requirements of referenced quality standard for each type of architectural cabinet and quality grade specified unless otherwise indicated.

### **2.4 CABINET HARDWARE AND ACCESSORIES**

- A. General: Provide cabinet hardware and accessory materials associated with architectural cabinets except for items specified in
  1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. Accuride International.
    - b. Blum, Julius & Co., Inc.
    - c. Knape & Vogt Manufacturing Company.
- B. Frameless Concealed Hinges (European Type): BHMA A156.9, B01602, 100 degrees of opening, self-closing.
- C. Wire Pulls: Back mounted, solid metal, 4 inches long, 5/16 inch in diameter.
- D. Shelf Rests: BHMA A156.9, B04013; metal.
- E. Drawer Slides: BHMA A156.9.
  1. Grade 1 and Grade 2: Side mounted and extending under bottom edge of drawer.
    - a. Type: Full extension.
    - b. Material: Epoxy-coated steel with polymer rollers.
  2. Grade 1HD-100 and Grade 1HD-200: Side mounted; full-overtravel-extension type; zinc-plated-steel ball-bearing slides.
  3. For drawers not more than 3 inches high and not more than 24 inches wide, provide Grade 1.
  4. For drawers more than 3 inches high, but not more than 6 inches high and not more than 24 inches wide, provide Grade 1HD-100.
  5. For drawers more than 6 inches high or more than 24 inches wide, provide Grade 1HD-200.
  6. For computer keyboard shelves, provide Grade 1.
  7. For trash bins not more than 20 inches high and 16 inches wide, provide Grade 1HD-200.
- F. Door Locks: BHMA A156.11, E07121.
- G. Drawer Locks: BHMA A156.11, E07041.
- H. Door and Drawer Silencers: BHMA A156.16, L03011.

- I. Grommets for Cable Passage: 2-inch OD, molded-plastic grommets and matching plastic caps with slot for wire passage.
  - 1. Color: Black.
- J. Exposed Hardware Finishes: For exposed hardware, provide finish that complies with BHMA A156.18 for BHMA finish number indicated.
  - 1. Satin Chromium Plated: BHMA 626 for brass or bronze base; BHMA 652 for steel base.
  - 2. Satin Stainless Steel: BHMA 630.
- K. For concealed hardware, provide manufacturer's standard finish that complies with product class requirements in BHMA A156.9.

## **2.5 MISCELLANEOUS MATERIALS**

- A. Furring, Blocking, Shims, and Hanging Strips: Softwood or hardwood lumber, kiln-dried to less than 15 percent moisture content.

## **2.6 FABRICATION**

- A. Fabricate architectural cabinets to dimensions, profiles, and details indicated.
- B. Complete fabrication, including assembly and hardware application, to maximum extent possible before shipment to Project site. Disassemble components only as necessary for shipment and installation. Where necessary for fitting at site, provide ample allowance for scribing, trimming, and fitting.
  - 1. Notify Architect seven days in advance of the dates and times architectural cabinet fabrication will be complete.
  - 2. Trial fit assemblies at manufacturer's shop that cannot be shipped completely assembled. Install dowels, screws, bolted connectors, and other fastening devices that can be removed after trial fitting. Verify that various parts fit as intended and check measurements of assemblies against field measurements before disassembling for shipment.
- C. Shop-cut openings to maximum extent possible to receive hardware, appliances, electrical work, and similar items. Locate openings accurately and use templates or roughing-in diagrams to produce accurately sized and shaped openings. Sand edges of cutouts to remove splinters and burrs.
- D. Install glass to comply with applicable requirements in Section 088000 "Glazing" and in GANA's "Glazing Manual."
  - 1. For glass in frames, secure glass with removable stops.
  - 2. For exposed glass edges, polish and grind smooth.

## **PART 3 - EXECUTION**

### **3.1 PREPARATION**

- A. Before installation, condition cabinets to humidity conditions in installation areas for not less than 72 hours.

### **3.2 INSTALLATION**

- A. Architectural Woodwork Standards Grade: Install cabinets to comply with quality standard grade of item to be installed.
- B. Assemble cabinets and complete fabrication at Project site to extent that it was not completed in the shop.
- C. Anchor cabinets to anchors or blocking built in or directly attached to substrates. Secure with wafer-head cabinet installation screws.
- D. Install cabinets level, plumb, and true in line to a tolerance of 1/8 inch in 96 inches using concealed shims.
  - 1. Scribe and cut cabinets to fit adjoining work, refinish cut surfaces, and repair damaged finish at cuts.

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2. Install cabinets without distortion so doors and drawers fit openings and are accurately aligned. Adjust hardware to center doors and drawers in openings and to provide unencumbered operation. Complete installation of hardware and accessory items as indicated.
3. Fasten wall cabinets through back, near top and bottom, and at ends not more than 16 inches o.c. with No. 10 wafer-head screws sized for not less than 1-1/2-inch penetration into wood framing, blocking, or hanging strips.

### **3.3 ADJUSTING AND CLEANING**

- A. Repair damaged and defective cabinets, where possible, to eliminate functional and visual defects. Where not possible to repair, replace architectural cabinets. Adjust joinery for uniform appearance.
- B. Clean, lubricate, and adjust hardware.
- C. Clean cabinets on exposed and semiexposed surfaces.

END OF SECTION 064116





**SECTION 07 9005 - JOINT SEALERS**

**PART 1 - PART 1 – GENERAL**

**1.1 DESCRIPTION**

- A. Work included:
  - 1. Scope - All labor, materials and equipment to provide the joint sealants shown on drawings and as described in this specification.
- B. Related Specifications Sections
  - 1. Section 01 4000 – Quality Requirements
  - 2. Section 03 3000 – Cast-In-Place Concrete
  - 3. Section 04 2000 – Unit Masonry
  - 4. Section 07 6200 – Sheet Metal Flashing and Trim
  - 5. Section 08 5663 – Detention Windows
  - 6. Section 10 2813.63 – Detention Toilet Accessories

**1.2 REFERENCE**

- A. ASTM C 920 (Latest Edition) Elastomeric Joint Sealants

**1.3 QUALITY ASSURANCE**

- A. A. Use adequate numbers of skilled workmen who have successfully completed a minimum of 3 projects in the last five years of similar type and scope as the project herein. The workmen shall be thoroughly trained and experienced in joint sealant applications and completely familiar with the specified requirements and methods needed for the proper performance of the work of this section.
- B. Joint sealer products shall be obtained from a single manufacturer for each product required.
- C. Job site testing;
  - 1. 1. All joint sealants shall be field tested for proper adhesion to the joint substrates prior to installation. Do not proceed with work until job site tests have been approved by the Architect.
  - 2. Locate and provide test joints for each type of joint sealant, and substrate as directed by the Architect.
  - 3. Acceptable test joints will be used as the standard for all joint sealant work on the project.
  - 4. Sealants which fail to adhere to the substrates shall be removed and replaced at no extra cost to the Owner.

**1.4 SUBMITTALS**

- A. Comply with pertinent provisions of Section 01 3000 – Administrative Requirements.
- B. Product data: Within 15 calendar days after the Contractor has received the Owner's Notice to Proceed, submit:
  - 1. Materials list of items proposed to be provided under this Section;
  - 2. Manufacturer's specifications and other data needed to prove compliance with the specified requirements;
  - 3. Manufacturer's recommended installation procedures which, when approved by the Architect, will become the basis for accepting or rejecting actual installation procedures used on the Work.
- C. Samples: Accompanying the submittal described above, submit Samples of each sealant, each backstop material, each primer, and each bond breaker proposed to be used. Include color samples of full standard product color range.
- D. Submit Material Safety Data Sheets under provisions of Section 01 7800 – Closeout Submittals for the following items:
  - 1. All mastics, glues, and adhesives
  - 2. Sealant and accessories.

**1.5 ENVIRONMENTAL CONDITIONS**

- A. The ambient temperature shall be within the limits of 4 and 38 degrees C 40 and 100 degrees F when sealant is applied.

**1.6 PRODUCT HANDLING**

- A. Comply with pertinent provisions of Section 01 6000 – Product Requirements.
- B. Do not retain at the job site material which has exceeded the shelf life recommended by its manufacturer.
- C. Store products on site in compliance with the manufacturer's recommendations and as necessary to prevent damage or deterioration to the materials.
- D. Carefully handle and store materials to prevent inclusion of foreign materials or subsection to sustained temperatures exceeding 38 degrees C 100 F degrees or less than 4 degrees C 0 degrees F.

**PART 2 – PRODUCTS**

**1.7 ACCEPTABLE MANUFACTURERS**

- A. Pecora, 11501 Hillguard Street, Dallas, Texas; 800-233-9754; www.pecora.com.
- B. Sonneborne/ChemRex, 889 Valley Park Drive, Shakopee, MN; 612-496-6000;.
- C. Tremco, 3735 Green Road, Beachwood, OH 44122, 800-562-2728, www.tremcoroofing.com.
- D. Equal products of other manufacturers with Architect's approval prior to bidding.

**1.8 SEALANTS**

- A. Use elastomeric Sealants (ASTM C 920) for interior and exterior applications.
- B. Chemically curing sealants should not be used adjacent to or above membrane surfaces of asphaltic or bituminous materials; a sealant based on asphalt or bituminous materials similar to those in the membrane should be used.
- C. Applicable type, grade, class, and use for each intended purpose is outlined below:
  - 1. Type S: Single-component
  - 2. Type M: Multicomponent
  - 3. Grade P: Pourable or self-leveling sealant for horizontal applications
  - 4. Grade NS: Nonsag for vertical applications
  - 5. Class 25: Withstands increase and decrease of at least 25 percent of joint width
  - 6. Class 12.5: Withstands increase and decrease of at least 12.5 percent of joint width
  - 7. Use T: Pedestrian and vehicular traffic areas such as walkways, plazas, decks, and parking garages
  - 8. Use NT: Non traffic areas, horizontal and vertical surfaces
  - 9. Use M: Meets this specification when tested on mortar
  - 10. Use G: Meets this specification when tested on glass
  - 11. Use A: Meets this specification when tested on aluminum
  - 12. Use O: Meets this specification when tested on substrates other than above.
- D. Provide sealant that has been tested and found suitable for the substrates to which it will be applied.

**1.9 INTERIOR SEALANT**

- A. Provide interior sealant in accordance to ASTM C 920, Type S or M, Grade NS, Class 12.5, Use NT. Color as selected by architect. Location(s) of sealant shall be as follows:
- B. LOCATION
  - 1. Small voids between walls or partitions and adjacent lockers, casework, shelving, door frames, built-in or surface-mounted equipment and fixtures, and similar items.
  - 2. Perimeter of frames at doors, windows, and access panels which adjoin exposed interior concrete and masonry surfaces.

3. Joints of interior masonry walls and partitions which adjoin columns, pilasters, concrete walls, and exterior walls unless otherwise detailed.
4. Joints between edge members for acoustical tile and adjoining vertical surfaces.
5. Interior locations, not otherwise indicated or specified, where small voids exist between materials specified to be painted.
6. Joints between bathtubs and ceramic tile; joints between shower receptors and ceramictile; joints formed where non-planer tile surfaces meet.
7. Joints formed between tile floors and tile base cove; joints between tile and dissimilar materials; joints occurring where substrates change.
8. Behind escutcheon plates at valve pipe penetrations and showerheads in showers.
9. At expansion joint locations between wall and floor as detailed on the drawings provide Pecora Urexpan HR 200.

#### **1.10 EXTERIOR SEALANT**

- A. For Joints at perimeters of windows and toilet accessories in detention areas, refer to Section 08 5663 – Detention Windows and Section 10 2813.63 – Detention Toilet Accessories.
- B. For joints in vertical surfaces, provide ASTM C 920, Type S or M, Grade NS, Class 25, Use NT. For joints in horizontal surfaces, provide ASTM C 920, Type S or M, Grade P, Class 25, Use T. Color as selected by architect. Location(s) of sealant shall be as follows:
- C. Location
  1. Joints and recesses formed where frames (Match adjacent and subsills of windows, doors, louvers, surface color) and vents adjoin masonry, concrete, or metal frames. Use sealant at both exterior and interior surfaces of exterior wall penetrations.
  2. Joints between new and existing exterior masonry walls.
  3. Masonry joints where shelf angles occur.
  4. Joints in wash surfaces of stonework.
  5. Expansion and control joints.
  6. Interior face of expansion joints in exterior concrete or masonry walls where metal expansion joint covers are not required.
  7. Voids where items pass through exterior walls.
  8. Metal reglets, where flashing is inserted into masonry joints, and where flashing is penetrated by coping dowels.
  9. Metal-to-metal joints where sealant is indicated or specified.
  10. Joints between ends of gravel stops, fascias, copings, and adjacent walls.
  11. Joints at thru wall flashing.
  12. Joints between concrete columns and CMU.
  13. Joints between insulated metal wall panels to seal assembly as an air barrier.
  14. Joints between insulated metal roof panels to seal assembly as an air barrier.

#### **1.11 FLOOR JOINT SEALANT**

- A. For Floor Joint Sealant provide ASTM C 920, Type S or M, Grade P, Class 25, Use T. Color as selected by architect. Location(s) of sealant shall be as follows:
- B. LOCATION
  1. Seats of metal thresholds for exterior doors.
  2. Control and expansion joints in floors, slabs, ceramic tile, and walkways.

#### **1.12 PRIMERS**

- A. Use only those primers which are non-staining, have been tested for durability on the surfaces to be sealed and are specifically recommended for this installation by the manufacturer of the sealant used.

#### **1.13 BACKSTOP MATERIALS**

- A. Provide glass fiber roving or neoprene, butyl, polyurethane, or polyethylene foams free from oil or other staining elements as recommended by sealant manufacturer. Backstop material shall

be compatible with sealant. Do not use oakum and other types of absorptive materials as backstops.

**1.14 BOND-PREVENTATIVE MATERIALS**

- A. Use only one of the following as best suited for the application, and as recommended by the manufacturer of the sealant used:
  - 1. Polyethylene tape, pressure-sensitive adhesive, with the adhesive required only to hold tape to the construction materials as indicated;
  - 2. Aluminum foil complying with MIL-A-148E;
  - 3. Wax paper complying with Fed Spec UU-P-270.

**1.15 MASKING TAPE**

- A. For masking around joints, provide masking tape complying with Fed Spec UU-T-106c.

**1.16 CLEANING SOLVENTS**

- A. Provide type(s) recommended by the sealant manufacturer, except for aluminum and bronze surfaces that will be in contact with sealant.

**1.17 WARRANTY**

- A. All sealants and caulking shall be provided with a 5 year manufacturer's warranty.

**PART 2 - PART 3 – EXECUTION**

**2.1 SEALANTS IN DETENTION AREAS**

- A. For Joints at perimeters of windows and toilet accessories in detention areas, refer to Section 08 5663 – Detention Windows and Section 10 2813.63 – Detention Toilet Accessories.

**2.2 SURFACE CONDITIONS**

- A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.

**2.3 PREPARATION**

- A. Concrete and ceramic tile surfaces:
  - 1. Install only on surfaces which are dry, sound, and well brushed, wiping free from dust.
  - 2. At open joints, remove dust by mechanically blown compressed air if so required.
  - 3. Use solvent to remove oil and grease, wiping the surfaces with clean rags.
  - 4. Where surfaces have been treated, remove the surface treatment by sandblasting or wire brushing.
  - 5. Remove laitance and mortar from joint cavities.
  - 6. Where backstop is required, insert the approved backup material into the joint cavity to the depth needed.
- B. Steel surfaces:
  - 1. Steel surfaces in contact with sealant:
  - 2. Sandblast as required to achieve acceptable surface for bond.
  - 3. If sandblasting is not practical, or would damage adjacent finish, scrape the metal or wire brush to remove mill scale.
  - 4. Use solvent to remove oil and grease, wiping the surfaces with clean rags.
  - 5. Remove protective coatings on steel by sandblasting or by using a solvent which leaves no residue.
- C. Aluminum surfaces:
  - 1. Aluminum surfaces in contact with sealant:
  - 2. Remove temporary protective coatings, dirt, oil, and grease.
  - 3. When masking tape is used for protective cover, remove the tape just prior to applying the sealant.

4. Use only such solvents to remove protective coatings as are recommended for that purpose by the manufacturer of the aluminum work, and which are non-staining.

#### **2.4 INSTALLATION OF BACKSTOP MATERIAL**

- A. Use only the backup material recommended by the manufacturer of the sealant used, and approved by the Architect for the particular installation, compressing the backup material 25% to 50% to achieve a positive and secure fit.
- B. When using backup of tube or rod stock, avoid lengthwise stretching of the material. Do not twist or braid hose or rod backup stock.

#### **2.5 PRIMING**

- A. Use only the primer recommended by the manufacturer of the sealant, and approved by the Architect for the particular installation, applying in strict accordance with the manufacturer's recommendations as approved by the Architect.

#### **2.6 BOND-BREAKER INSTALLATION**

- A. Provide an approved bond-breaker where recommended by the manufacturer of the sealant for preventing the sealant to adhering to rigid, inflexible joint filler materials or to joint surfaces at back of joint where such adhesion would result in sealant failure. Adhere strictly to the installation recommendations as approved by the Architect.

#### **2.7 JOINT WIDTH-TO-DEPTH RATIOS**

- A. Acceptable Ratios
  1. 0.25" to 0.5" – use a 1:1 width to depth ratio
  2. 0.5" to 1" – use a 2:1 width to depth ratio
  3. 1" to 2" – depth should be kept to between .375" to 0.5"
  4. Over 2 inches (As recommended by sealant manufacturer)
- B. Unacceptable Ratios: Where joints of acceptable width-to-depth ratios have not been provided, clean out joints to acceptable depths and grind or cut to acceptable widths without damage to the adjoining work. Grinding shall not be required on metal surfaces.

#### **2.8 INSTALLATION OF SEALANTS**

- A. Color shall be selected from on-site samples as selected by the Architect.
- B. Prior to start of installation in each joint, verify the joint type according to details on the Drawings, or as otherwise directed by the Architect, and verify that the required proportion of width of joint to depth of joint has been secured.
- C. Comply with ASTM C1193 for application of joint sealants.
- D. Equipment
  1. Apply sealant under pressure with power-actuated or hand gun, or by other appropriate means.
  2. Use guns with nozzle of proper size, and providing sufficient pressure to completely fill the joints as designed.
- E. Thoroughly and completely mask joints where the appearance of sealant on adjacent surfaces would be objectionable.
- F. Install the sealant in strict accordance with the manufacturer's recommendations as approved by the Architect, thoroughly filling joints to the recommended depth.
- G. Tool joints to the profile shown on the Drawings, or as otherwise required if such profiles are not shown on the Drawings.
- H. Do not install sealant when air temperature is under 40 deg. F. Sealant temperature to be at least 50 deg. F.; controlled warming permitted to ease installation.
- I. Cleaning up
  1. Remove masking tape immediately after joints have been tooled.

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07 9200 - JOINT SEALANTS

2. Clean adjacent surfaces free from sealant as the installation progresses, using solvent or cleaning agent recommended by the manufacturer of the sealant used.

END OF SECTION 079200

## **SECTION 083113.53 - SECURITY ACCESS DOORS AND FRAMES**

### **PART 1 - GENERAL**

#### **1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

#### **1.2 SUMMARY**

- A. Section includes security access doors and frames for walls and ceilings.
- B. Related Requirements
  - 1. Section 083113 "Access Doors and Frames" for access doors and frames for nonsecurity applications.

#### **1.3 ALLOWANCES**

- A. Security access doors and frames are part of a security access door and frame allowance.

#### **1.4 ACTION SUBMITTALS**

- A. Product Data: For each type of product.
  - 1. Include construction details materials, individual components and profiles, and finishes.
- B. Shop Drawings:
  - 1. Include plans, elevations, sections, details, and attachments to other work.
  - 2. Detail fabrication and installation of access doors and frames for each type of substrate.

### **PART 2 - PRODUCTS**

#### **2.1 SECURITY ACCESS DOORS AND FRAMES**

- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
- B. Source Limitations: Obtain each type of access door and frame from single source from single manufacturer.
- C. High-Security Flush Access Doors (New Access Panels and Plumbing Access Hatches):
  - 1. Assembly Description: Fabricate door to fit flush to frame. Provide manufacturer's standard-width exposed flange, proportional to door size.
  - 2. Locations: Stucco-on-lath ceiling, CMU walls.
  - 3. Door Size: <Insert door size>.
  - 4. Uncoated Steel Sheet for Door: Nominal 0.134-inch, 10-gage.
    - a. Finish: Factory prime.
  - 5. Stainless-Steel Sheet for Door: Nominal 0.141-inch, 10-gage.
    - a. Finish: No. 4.
  - 6. Frame Material: Same material, thickness, and finish as door: angle welded with joints ground smooth; factory primed for field painting.
  - 7. Hinges: Manufacturer's standard security hinge.
  - 8. Hardware: Tamper-resistant lock.
- D. Hardware:
  - 1. Lock: Cylinder.
  - 2. Keying: Coordinate with Owner.

#### **2.2 MATERIALS**

- A. Steel Plates, Shapes, and Bars: ASTM A 36/A 36M.
- B. Steel Sheet: Uncoated or electrolytic zinc coated, ASTM A 879/A 879M, with cold-rolled steel sheet substrate complying with ASTM A 1008/A 1008M, Commercial Steel (CS), exposed.
- C. Frame Anchors: Same type as door face.

- D. Inserts, Bolts, and Anchor Fasteners: Hot-dip galvanized steel according to ASTM A 153/A 153M or ASTM F 2329.

### **2.3 FABRICATION**

- A. General: Provide access door and frame assemblies manufactured as integral units ready for installation.
- B. Metal Surfaces: For metal surfaces 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, rolled trade names, or roughness.
- C. Doors and Frames: Grind exposed welds smooth and flush with adjacent surfaces. Furnish attachment devices and fasteners of type required to secure access doors to types of supports indicated.
  - 1. For mounting in existing stucco ceilings, provide manufacturer's retrofit type frames and anchors , steel sub-frame, other and accessories necessary to securely anchor hatch frame in ceiling, proofed against attack, removal, interference or tamper by Residents.
  - 2. Provide mounting holes in frame for attachment of masonry anchors.
- D. Latching Mechanisms: Furnish number required to hold doors in flush, smooth plane when closed.
  - 1. For cylinder lock, furnish two keys per lock and key all locks alike.

### **2.4 FINISHES**

- 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: 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. Steel and Metallic-Coated-Steel Finishes:
  - 1. Factory Prime: Apply manufacturer's standard, fast-curing, lead- and chromate-free, universal primer immediately after surface preparation and pretreatment.
  - 2. Factory Finish: Immediately after cleaning and pretreating, apply manufacturer's standard two-coat, baked-on finish consisting of prime coat and thermosetting topcoat, with a minimum dry-film thickness of 1 mil for topcoat.

## **PART 3 - EXECUTION**

### **3.1 EXAMINATION**

- A. Examine substrates for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

### **3.2 INSTALLATION**

- A. Comply with manufacturer's written instructions for installing access doors and frames.
- B. Install doors flush with adjacent finish surfaces or recessed to receive finish material.

### **3.3 ADJUSTING**

- A. Adjust doors and hardware, after installation, for proper operation.
- B. Remove and replace doors and frames that are warped, bowed, or otherwise damaged.

## **END OF SECTION 083113.53**



## **SECTION 085663 – DETENTION DOOR VISION LITE**

### **PART 1 - GENERAL**

#### **1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

#### **1.2 SUMMARY**

- A. Section Includes:
  - 1. Detention Door Vision Lite
- B. Related Requirements:
  - 1. Section 08 8400 "Plastic Glazing" for polycarbonate glazing to be installed in vision lite.
  - 2. Section 09 9113 " Painting" for field painting detention areas.

#### **1.3 COORDINATION**

- A. Coordinate installation of detention door vision lite with Owner.

#### **1.4 ACTION SUBMITTALS**

- A. Product Data: For each type of product.
  - 1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.

#### **1.5 FIELD CONDITIONS**

- A. Field Measurements: Verify actual dimensions of openings by field measurements before fabrication.

### **PART 2 - PRODUCTS**

#### **2.1 MANUFACTURER**

- A. Subject to compliance with requirements indicated herein, provide products by:
  - 1. Activar Inc.
    - a. Basis-of Design Product: VLFS10

#### **2.2 SECURITY FASTENERS**

- A. Operable only by tools produced by fastener manufacturer or other licensed fabricator for use on specific type of fastener. Drive-system type, head style, and material, as required for assembly, installation, and strength, and as follows:
  - 1. #8 x 32 Torx head security binder bolt with blank head one side, to match finish.

#### **2.3 SECURITY SEALANTS**

- A. Subject to compliance with requirements indicated herein, provide products of one of the listed manufacturers.
  - 1. BASF Construction Chemicals, LLC
  - 2. Euclid Chemical Company
  - 3. Pecora Corporation
- B. Epoxy Security Sealants: Manufacturer's standard, nonsag, tamper-resistant sealant for joints with no movement.

### **PART 3 - EXECUTION**

#### **3.1 EXAMINATION**

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of detention door vision lite.
- 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 detention window anchors whose installation is specified in other Sections.
  - 1. Furnish cast-in-place anchors and similar devices to other trades for installation well in advance of time needed for coordinating other work.
- B. In-Place-Construction Anchors: Install [embedded plate anchors][**3/16-inch**-thick steel angle or formed-steel plate anchors with attached **1/2-inch**-diameter anchor studs] in window openings at locations corresponding to detention window-frame anchors.

#### **3.3 INSTALLATION**

- A. General: Install detention door vision lites level, plumb, , properly aligned, and securely fastened in place, complying with Drawings, Coordination Drawings, and manufacturer's written instructions.
- B. Sealants: Comply with manufactures written instructions for installing sealants, fillers, and gaskets.
- C. Install plastic glazing in vision lite in accordance with manufacturer's instructions for installation in detention areas.

#### **3.4 CLEANING AND PROTECTION**

- A. Clean surfaces promptly after installation. Take care to avoid damaging the finish. Remove excess sealant compounds, dirt, and other substances.

END OF SECTION 08463

**SECTION 087100 - DOOR HARDWARE GENERAL**

**1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

**1.2 SUMMARY**

- A. Section includes:
  - 1. Mechanical door hardware for the following:
    - a. Existing swinging doors.
  - 2. Cylinders for door hardware specified in other Sections.
  - 3. Electrified door hardware for existing door.

**1.3 ACTION SUBMITTALS**

- A. Product Data: For each type of product indicated. Include construction and installation details, material descriptions, dimensions of individual components and profiles, and finishes.
- B. Shop Drawings: Details of electrified door hardware, indicating the following:
  - 1. Wiring Diagrams: For power, signal, and control wiring and including the following:
    - a. Details of interface of electrified door hardware and building safety and security systems.
    - b. Schematic diagram of systems that interface with electrified door hardware.
    - c. Point-to-point wiring.
    - d. Risers.
    - e. Elevations doors controlled by electrified door hardware.
  - 2. Operation Narrative: Describe the operation of doors controlled by electrified door hardware.
- C. Samples for Verification: For exposed door hardware of each type required, in each finish specified, prepared on Samples of size indicated below. Tag Samples with full description for coordination with the door hardware schedule. Submit Samples before, or concurrent with, submission of door hardware schedule.
  - 1. Sample Size: Full-size units or minimum 2-by-4-inch Samples for sheet and 4-inchlong Samples for other products.
    - a. Full-size Samples will be returned to Contractor. Units that are acceptable and remain undamaged through submittal, review, and field comparison process may, after final check of operation, be incorporated into the Work, within limitations of keying requirements.
- D. Other Action Submittals:
  - 1. Door Hardware Schedule: Prepared by or under the supervision of Installer, detailing fabrication and assembly of door hardware, as well as installation procedures and diagrams. Coordinate final door hardware schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.
    - a. Submittal Sequence: Submit door hardware schedule after or concurrent with submissions of Product Data, Samples, and Shop Drawings. Coordinate submission of door hardware schedule with scheduling requirements of other work to facilitate the fabrication of other work that is critical in Project construction schedule.

- b. Format: Comply with scheduling sequence and vertical format in DHI's "Sequence and Format for the Hardware Schedule." Double space entries, and number and date each page.
  - c. Content: Include the following information:
    - 1) Identification number, location, hand, fire rating, size, and material of each door and frame.
    - 2) Locations of each door hardware set cross-referenced to Drawings on floor plans and to door and frame schedule.
    - 3) Complete designations, including name and manufacturer, type, style, function, size, quantity, function, and finish of each door hardware product.
    - 4) Description of electrified door hardware sequences of operation and interfaces with other building control systems.
    - 5) Fastenings and other pertinent information.
    - 6) Explanation of abbreviations, symbols, and codes contained in schedule.
    - 7) Mounting locations for door hardware.
    - 8) List of related door devices specified in other Sections for each door and frame.
2. Keying Schedule: Prepared by or under the supervision of Installer, detailing Owner's final keying instructions for locks. Include schematic keying diagram and index each key set to unique door designations that are coordinated with the Contract Documents.

#### **1.4 INFORMATIONAL SUBMITTALS**

- A. Qualification Data: For Installer.
- B. Product Certificates: For electrified door hardware, from the manufacturer.
- C. Warranty: Special warranty specified in this Section.

#### **1.5 CLOSEOUT SUBMITTALS**

- A. Maintenance Data: For each type of door hardware to include in maintenance manuals. Include final hardware and keying schedule.

#### **1.6 QUALITY ASSURANCE**

- A. Installer Qualifications: Supplier of products and an employer of workers trained and approved by product manufacturers and an Architectural Hardware Consultant who is available during the course of the Work to consult with Contractor, Architect, and Owner about door hardware and keying.
  - 1. Warehousing Facilities: In Project's vicinity.
  - 2. Scheduling Responsibility: Preparation of door hardware and keying schedules.
  - 3. Engineering Responsibility: Preparation of data for electrified door hardware, including Shop Drawings, based on testing and engineering analysis of manufacturer's standard units in assemblies similar to those indicated for this Project.
- B. Source Limitations: Obtain each type of door hardware from a single manufacturer.
  - 1. Provide electrified door hardware from same manufacturer as mechanical door hardware, unless otherwise indicated. Manufacturers that perform electrical modifications and that are listed by a testing and inspecting agency acceptable to authorities having jurisdiction are acceptable.
- C. Electrified Door Hardware: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction.
- D. Means of Egress Doors: Latches do not require more than 15 lbf to release the latch. Locks do not require use of a key, tool, or special knowledge for operation.
- E. Accessibility Requirements: For door hardware on doors in an accessible route, comply with the U.S. Architectural & Transportation Barriers Compliance Board's ADA-ABA Accessibility Guidelines and ICC/ANSI A117.1.

1. Provide operating devices that do not require tight grasping, pinching, or twisting of the wrist and that operate with a force of not more than 5 lbf.
  2. Comply with the following maximum opening-force requirements:
    - a. Interior, Non-Fire-Rated Hinged Doors: 5 lbf applied perpendicular to door.
    - b. Sliding or Folding Doors: 5 lbf applied parallel to door at latch.
    - c. Fire Doors: Minimum opening force allowable by authorities having jurisdiction.
  3. Bevel raised thresholds with a slope of not more than 1:2. Provide thresholds not more than 1/2 inch-high and 3/4 inch-high for exterior sliding doors.
  4. Adjust door closer sweep periods so that, from an open position of 70 degrees, the door will take at least 3 seconds to move to a point 3 inches from the latch, measured to the leading edge of the door.
- F. Keying Conference: Conduct conference at Project site to comply with requirements in Section 013100 "Project Management and Coordination." In addition to Owner Contractor, and Architect, conference participants shall also include Installer's Architectural Hardware Consultant. Incorporate keying conference decisions into final keying schedule after reviewing door hardware keying system including, but not limited to, the following:
1. Function of building, flow of traffic, purpose of each area, degree of security required, and plans for future expansion.
  2. Preliminary key system schematic diagram.
  3. Requirements for access control.
  4. Address for delivery of keys.

#### **1.7 DELIVERY, STORAGE, AND HANDLING**

- A. Inventory door hardware on receipt and provide secure lock-up for door hardware delivered to Project site.
- B. Tag each item or package separately with identification coordinated with the final door hardware schedule, and include installation instructions, templates, and necessary fasteners with each item or package.

#### **1.8 COORDINATION**

- A. Coordinate layout and installation of floor-recessed door hardware with floor construction. Cast anchoring inserts into concrete. Concrete, reinforcement, and formwork requirements are specified elsewhere.
- B. Installation Templates: Distribute for doors, frames, and other work specified to be factory prepared. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing door hardware to comply with indicated requirements.
- C. Security: Coordinate installation of door hardware, keying, and access control with Owner's security consultant.
- D. Electrical System Roughing-In: Coordinate layout and installation of electrified door hardware with connections to power supplies and building safety and security systems.
- E. Existing Openings: Where hardware components are scheduled for application to existing construction or where modifications to existing door hardware are required, field verify existing conditions and coordinate installation of door hardware to suit opening conditions and to provide proper door operation.

#### **1.9 WARRANTY**

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of door hardware that fail in materials or workmanship within specified warranty period.
  1. Failures include, but are not limited to, the following:
    - a. Structural failures including excessive deflection, cracking, or breakage.
    - b. Faulty operation of doors and door hardware.

- c. Deterioration of metals, metal finishes, and other materials beyond normal weathering and use.
2. Warranty Period: Three years from date of Substantial Completion, unless otherwise indicated.
  - a. Electromagnetic Locks: Five years from date of Substantial Completion.
  - b. Exit Devices: Two years from date of Substantial Completion.
  - c. Manual Closers: 10 years from date of Substantial Completion.

#### **1.10 MAINTENANCE SERVICE**

- A. Maintenance Tools and Instructions: Furnish a complete set of specialized tools and maintenance instructions for Owner's continued adjustment, maintenance, and removal and replacement of door hardware.
- B. Maintenance Service: Beginning at Substantial Completion, provide six months' full maintenance by skilled employees of door hardware Installer. Include quarterly preventive maintenance, repair or replacement of worn or defective components, lubrication, cleaning, and adjusting as required for proper door and door hardware operation. Provide parts and supplies that are the same as those used in the manufacture and installation of original products.

### **PART 2 - PRODUCTS**

#### **2.1 SCHEDULED DOOR HARDWARE**

- A. Provide door hardware for each door as scheduled on Drawings to comply with requirements in this Section.
  1. Door Hardware Sets: Provide quantity, item, size, finish or color indicated.
  2. Sequence of Operation: Provide electrified door hardware function, sequence of operation, and interface with other building control systems indicated.
- B. Designations: Requirements for design, grade, function, finish, size, and other distinctive qualities of each type of door hardware are indicated in Part 3 "Door Hardware Schedule" Article. Products are identified by descriptive titles corresponding to requirements specified in Part 2.

#### **2.2 MECHANICAL LOCKS AND LATCHES: (L+ letter to indicate function (E,O,P,R,S..))**

- A. Provide new mechanical locks to replace locks in existing doors. Verify fit of locks specified for existing doors.
- B. Heavy Duty Cylindrical Locks: BHMA A156.2 Series: Grade 1. ANSI A117.1. ADA Compliant
- C. Lock Functions: As indicated in door hardware schedule.
- D. Lock Throw: Comply with testing requirements for length of bolts required for labeled fire doors, and as follows:
  1. Bored Locks: Minimum 1/2-inch latch bolt throw.
  2. Deadbolts: Minimum 1-inch bolt throw.
- E. Lock Backset: 2-3/4 inches, unless otherwise indicated.
- F. Lock Trim:
  1. Lever style #15 with smallest trim that will fit all existing doors.
- G. Strikes: Provide manufacturer's standard strike for each lock bolt or latchbolt complying with requirements indicated for applicable lock or latch and with strike box and curved lip extended to protect frame; finished to match lock or latch.
  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: Manufacturer's special strike box fabricated for aluminum framing.
- H. Manufacturers: Best Access Systems

1. 9K Series Heavy Duty Cylindrical Locks

### **2.3 ELECTROMECHANICAL LOCKS (EL)**

- A. Coordinate with Owners access control system specifications.
- B. Electromechanical Locks: BHMA A156.25; Grade 1; motor or solenoid driven; bored; with Folger or HES Electric Strikes suitable for door frame.
  1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
    - a. Allegion , PLC
    - b. Best Access Systems
    - c. DynaLock Corp.
    - d. Schlage; an Allegion brand.
    - e. Yale Security Inc; an Assa Abloy Group Company

### **2.4 EXIT DEVICES AND AUXILIARY ITEMS: (ED)**

- A. Exit Devices and Auxiliary Items: BHMA A156.3. Listed under Category G in BHMA's "Certified products Directory"
  1. Manufacturers: Subject to compliance with requirements, provide products manufactured by one of the following:
    - a. Von Duprin; an Allegion brand.
      - 1) 99 Series rim-device with electronic latch retraction. Function: NL
- B. Accessibility Requirements: Where handles, pulls, latches, locks and other operating devices are indicated to comply with accessibility requirements, comply with the U.S. Architectural & Transportation Barriers Compliance Board's "Americans with Disabilities Act (ADA) Accessibility Guidelines for Buildings and Facilities (ADAAG)"
- C. Exit Devices for Means of Egress Doors: Comply with NFPA 101.
- D. Panic Exit Devices: Listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for panic protection, based on testing according to UL 305.
- E. Fire Exit Devices: Devices complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire and panic protection, based on testing according to UL 305 and NFPA 252.
- F. Exit Device Outside Trim: Lever with cylinder; material and finish to match locksets, unless otherwise indicated.
  1. Match design for lock trim, unless otherwise indicated.
- G. When adding Electric Latch Retraction to existing exit device, field verify brand and condition. Provide Von Duprin QEL device. Addition of RX switch only to existing device is acceptable. Field verify quantity of devices required.

### **2.5 LOCK CYLINDERS: (KC)**

- A. Standard Lock Cylinders: BHMA A156.5; Grade 1; permanent cores that are interchangeable; face finished to match lockset.
- B. Construction Master Keys: Provide cylinders with feature that permits voiding of construction keys without cylinder removal. Provide 10 construction master keys.
- C. Construction Cores: Provide construction cores that are replaceable by permanent cores. Provide 10 construction master keys.
- D. Manufacturer: Same as for locks and latches.

## 2.6 KEYING

- A. Keying System: Factory registered, complying with guidelines in BHMA A156.28, Appendix A. Incorporate decisions made in keying conference.
  - 1. General: Provide a grandmaster/master key system for the building that coordinates with Owner's existing system.
    - a. Contractor to coordinate keying requirements with Owner.
  - 2. Master Key System: Change keys and a master key operate cylinders.
  - 3. Keyed Alike: Key all cylinders to same change key.
- B. Keys: Nickel silver.
  - 1. Stamping: Permanently inscribe each key with a visual key control number and include the following notation:
    - a. Notation: Information to be furnished by Owner.
  - 2. Quantity: In addition to one extra key blank for each lock, provide the following:
    - a. Contractor to coordinate keying requirements with Owner.

## 2.7 DOOR GASKETING

- A. Door Gasketing: BHMA A156.22, listed under Category J in BHMA's "certified Products Directory"; air leakage not to exceed 0.50 cfm per foot of crack length for gasketing other than for smoke control, as tested according to ASTM E 283; with resilient or flexible seal strips that are easily replaceable and readily available from stocks maintained by manufacturer.
  - 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
    - a. Hager Companies.
    - b. M-D Building Products, Inc.
    - c. National Guard Products, Inc.
    - d. Pemko Manufacturing Co.
    - e. Reese Enterprises, Inc.
    - f. Sealeze.
    - g. Zero International, Inc.
- B. General: Provide continuous weather strip gasketing on exterior doors and provide smoke, light or sound gasketing on interior doors where indicated or scheduled. Provide non-corrosive fasteners for exterior applications and elsewhere as indicated.
  - 1. Perimeter Gasketing: Apply to head and jamb, forming seal between door and frame.
  - 2. Meeting Stile Gasketing: Fasten to meeting stiles, forming seal when doors are closed.
  - 3. Door Bottoms: Apply to bottom of door, forming seal between door and threshold when door is closed.
- C. Air Leakage: Not to exceed 0.50 cfm per foot of crack length for gasketing other than smoke control as tested to ASTM E 283.
- D. Smoke-Labeled Gasketing: Assemblies complying with NFPA 105 that are listed and labeled by a testing agency acceptable to authorities having jurisdiction, for smoke control ratings indicated, based on testing according to UL 1784.
  - 1. Provide smoke-labeled gasketing on 20-minute-rated doors and on smoke-labeled doors.
- E. 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 rating indicated, based on testing according to NFPA 252.



- F. Sound-Rated Gasketing: Assemblies complying with NFPA 80 that are listed and labeled by a testing and inspecting agency for sound ratings indicated, based on testing according to ASTM E 1408.
- G. Replaceable Seal Strips: Provide only those units where resilient or flexible seal strips are easily replaceable and readily available from stocks maintained by Manufacturer.
- H. Gasketing Materials: ASTM D 2000 and AAMA 701/702.

## 2.8 THRESHOLDS: (TH)

- A. Thresholds: BHMA A156.21; fabricated to full width of opening indicated.
  - 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
    - a. Hager Companies.
    - b. National Guard Products, Inc.
    - c. Pemko Manufacturing Co.
    - d. Sealeze.
    - e. Zero International, Inc.
- B. Accessibility Requirements: Where thresholds are indicated to comply with accessibility requirements, comply with the U.S. Architectural & Transportation Barriers Compliance Board's "Americans with Disabilities Act (ADA) Accessibility Guidelines for Buildings and Facilities (ADAAG)"
- C. Thresholds for Means of Egress Doors: Comply with NFPA 101. Maximum 1/2" high.

## 2.9 METAL PROTECTIVE TRIM UNITS: (KP)

- A. Metal Protective Trim Units: BHMA A156.6; beveled top and two sides, fabricated from 0.050-inch-thick stainless steel; with manufacturer's standard machine or self-tapping screw fasteners.
  - 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
    - a. Burns Manufacturing Incorporated.
    - b. Don-Jo Mfg., Inc.
    - c. Ives; an Allegion brand.
    - d. Trimco.
- B. Kick Plates: Unless indicated otherwise, 12 inches high by 1-1/2 inches less than door width on push side and 1/2 inch less than door width on pull side.

## 2.10 AUXILIARY DOOR HARDWARE

- A. Auxiliary Door Hardware: BHMA A156.16, Grade 1. Provide where indicated and where recommended by manufacturer or industry standard for best results.
  - 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
    - a. SARGENT Manufacturing Company; ASSA ABLOY.
    - b. Schlage; an Allegion brand.
    - c. Don-Jo Mfg., Inc.
    - d. Stanley Commercial Hardware
    - e. Trimco
- B. Boxed Power Supplies: Modular unit in NEMA ICS 6, Type 4 enclosure; filtered and regulated; voltage rating and type matching requirements of door hardware served; listed and labeled for use with fire alarm systems.
- C. Monitor Strikes: Cast strike with toggle.

## **2.11 FABRICATION**

- A. Manufacturer's Nameplate: Do not provide products that have manufacturer's name or trade name displayed in a visible location except in conjunction with required fire-rated labels and as otherwise approved by Architect.
  - 1. Manufacturer's identification is permitted on rim of lock cylinders only.
- B. Base Metals: Produce door hardware units of base metal indicated, fabricated by forming method indicated, using manufacturer's standard metal alloy, composition, temper, and hardness. Furnish metals of a quality equal to or greater than that of specified door hardware units and BHMA A156.18.
- C. Fasteners: Provide door hardware manufactured to comply with published templates prepared for machine, wood, and sheet metal screws. Provide screws that comply with commercially recognized industry standards for application intended, except aluminum fasteners are not permitted. Provide Phillips flat-head screws with finished heads to match surface of door hardware, unless otherwise indicated.
  - 1. Concealed Fasteners: For door hardware units that are exposed when door is closed, except for units already specified with concealed fasteners. Do not use through bolts for installation where bolt head or nut on opposite face is exposed unless it is the only means of securely attaching the door hardware. Where through bolts are used on hollow door and frame construction, provide sleeves for each through bolt.
  - 2. Fire-Rated Applications:
    - a. Wood or Machine Screws: For the following:
      - 1) Hinges mortised to doors or frames.
      - 2) Strike plates to frames.
      - 3) Closers to doors and frames.
    - b. Steel Through Bolts: For the following unless door blocking is provided:
      - 1) Surface hinges to doors.
      - 2) Closers to doors and frames.
      - 3) Surface-mounted exit devices.
  - 3. Spacers or Sex Bolts: For through bolting of hollow-metal doors.
  - 4. Fasteners for Wood Doors: Comply with requirements in DHI WDHS.2, "Recommended Fasteners for Wood Doors."
  - 5. Gasketing Fasteners: Provide noncorrosive fasteners for exterior applications and elsewhere as indicated.

## **2.12 FINISHES**

- A. Provide finishes complying with BHMA A156.18: Match existing which appears to be "Satin Chrome" US26D. Verify. At aluminum entrances, match existing finish.
- 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.

## **PART 3 - EXECUTION**

### **3.1 EXAMINATION**

- A. Examine doors and frames, with Installer present, for compliance with requirements for installation tolerances, labeled fire-rated door assembly construction, wall and floor construction, and other conditions affecting performance.

- B. Examine roughing-in for electrical power systems to verify actual locations of wiring connections before electrified door hardware installation.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.2 PREPARATION

- A. Steel Doors and Frames: For surface applied door hardware, drill and tap doors and frames according to ANSI/SDI A250.6.
- B. Wood Doors: Comply with DHI WDHS.5 "Recommended Hardware Reinforcement Locations for Mineral Core Wood Flush Doors."

### 3.3 INSTALLATION

- A. Mounting Heights: Mount door hardware units at heights indicated on Drawings unless otherwise indicated or required to comply with governing regulations.
  - 1. Standard Steel Doors and Frames: ANSI/SDI A250.8.
  - 2. Custom Steel Doors and Frames: HMMA 831.
  - 3. Wood Doors: DHI WDHS.3, "Recommended Locations for Architectural Hardware for Wood Flush Doors."
- B. Install each door hardware item to comply with manufacturer's 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. Do not install surface-mounted items until finishes have been completed on substrates involved.
  - 1. Set units level, plumb, and true to line and location. Adjust and reinforce attachment substrates as necessary for proper installation and operation.
  - 2. Drill and countersink units that are not factory prepared for anchorage fasteners. Space fasteners and anchors according to industry standards.
- C. Hinges: Install types and in quantities indicated in door hardware schedule but not fewer than the number recommended by manufacturer for application indicated or one hinge for every 30 inches of door height, whichever is more stringent, unless other equivalent means of support for door, such as spring hinges or pivots, are provided.
- D. Intermediate Offset Pivots: Where offset pivots are indicated, provide intermediate offset pivots in quantities indicated in door hardware schedule but not fewer than one intermediate offset pivot per door and one additional intermediate offset pivot for every 30 inches of door height greater than 90 inches.
- E. Lock Cylinders: Install construction cores to secure building and areas during construction period.
  - 1. Replace construction cores with permanent cores as indicated in keying schedule.
- F. Boxed Power Supplies: Locate power supplies as indicated or, if not indicated, in equipment room. Verify location with Architect.
  - 1. Configuration: Provide least number of power supplies required to adequately serve doors with electrified door hardware.
- G. Thresholds: Set thresholds for exterior doors and other doors indicated in full bed of sealant complying with requirements specified in Section 079200 "Joint Sealants."
- H. Key Control System: Tag keys and place them on markers and hooks in key control system cabinet, as determined by final keying schedule.
- I. Stops: Provide floor stops for doors unless wall or other type stops are indicated in door hardware schedule. Do not mount floor stops where they will impede traffic.
- J. Perimeter Gasketing: Apply to head and jamb, forming seal between door and frame.
- K. Meeting Stile Gasketing: Fasten to meeting stiles, forming seal when doors are closed.
- L. Door Bottoms: Apply to bottom of door, forming seal with threshold when door is closed.

**3.4 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.
  - 1. Door Closers: Adjust sweep period to comply with accessibility requirements and requirements of authorities having jurisdiction.
- B. Occupancy Adjustment: Approximately three months after date of Substantial Completion, Installer's Architectural Hardware Consultant shall examine and readjust each item of door hardware, including adjusting operating forces, as necessary to ensure function of doors, door hardware, and electrified door hardware.

**3.5 CLEANING AND PROTECTION**

- A. Clean adjacent surfaces soiled by door hardware installation.
- B. Clean operating items as necessary to restore proper function and finish.
- C. Provide final protection and maintain conditions that ensure that door hardware is without damage or deterioration at time of Substantial Completion.

**3.6 DEMONSTRATION**

- A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain door hardware and door hardware finishes. Refer to Section 017900 "Demonstration and Training."

END OF SECTION 087100

SECTION 088000 - GLAZING

**PART 1 - GENERAL**

**1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

**1.2 SUMMARY**

- A. Section includes:
  - 1. Vison Glass for interior aluminum entrance door, lite and transom into dayroom 118.
  - 2. Vison Glass for existing interior windows looking into Dayroom 161.

**1.3 DEFINITIONS**

- A. Glass Manufacturers: Firms that produce primary glass, fabricated glass, or both, as defined in referenced glazing publications.
- B. Glass Thicknesses: Indicated by thickness designations in millimeters according to ASTM C 1036.
- C. IBC: International Building Code.
- D. Interspace: Space between lites of an insulating-glass unit.

**1.4 COORDINATION**

- A. Coordinate glazing channel dimensions to provide necessary bite on glass, minimum edge and face clearances, and adequate sealant thicknesses, with reasonable tolerances.

**1.5 ACTION SUBMITTALS**

- A. Product Data: For each type of product.
- B. Glass Samples: For each type of glass product other than clear monolithic vision glass the following products; 12 inches square.
  - 1. Laminated glass.
- C. Glazing Schedule: List glass types and thicknesses for each size opening and location. Use same designations indicated on Drawings.
- D. Delegated-Design Submittal: For glass indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

**1.6 INFORMATIONAL SUBMITTALS**

- A. Qualification Data: For Installer.
- B. Product Certificates: For glass.
- C. Sample Warranties: For special warranties.

**1.7 QUALITY ASSURANCE**

- A. Manufacturer Qualifications for Flat Glass Materials: Minimum five (5) years documented experience producing glass products specified in this section.
- B. Installer Qualifications: Minimum five (5) years documented experience installing products specified in this section, and approved by fabricator.
- C. Glass Testing Agency Qualifications: A qualified independent testing agency accredited according to the NFRC CAP 1 Certification Agency Program.
- D. Sealant Testing Agency Qualifications: An independent testing agency qualified according to ASTM C 1021 to conduct the testing indicated.

**1.8 DELIVERY, STORAGE, AND HANDLING**

- A. Protect glazing materials according to manufacturer's written instructions. Prevent damage to glass and glazing materials from condensation, temperature changes, direct exposure to sun, or other causes.
- B. Comply with insulating-glass manufacturer's written instructions for venting and sealing units to avoid hermetic seal ruptures due to altitude change.

**1.9 FIELD CONDITIONS**

- A. Environmental Limitations: Do not proceed with glazing when ambient and substrate temperature conditions are outside limits permitted by glazing material manufacturers and when glazing channel substrates are wet from rain, frost, condensation, or other causes.
  - 1. Do not install glazing sealants when ambient and substrate temperature conditions are outside limits permitted by sealant manufacturer or are below 40 deg F.

**1.10 WARRANTY**

- A. Manufacturer's Special Warranty for Coated-Glass Products: Manufacturer agrees to replace coated-glass units that deteriorate within specified warranty period. Deterioration of coated glass is defined as defects developed from normal use that are not attributed to glass breakage or to maintaining and cleaning coated glass contrary to manufacturer's written instructions. Defects include peeling, cracking, and other indications of deterioration in coating.
  - 1. Warranty Period: 10 years from date of Substantial Completion.
- B. Manufacturer's Special Warranty for Laminated Glass: Manufacturer agrees to replace laminated-glass units that deteriorate within specified warranty period. Deterioration of laminated glass is defined as defects developed from normal use that are not attributed to glass breakage or to maintaining and cleaning laminated glass contrary to manufacturer's written instructions. Defects include edge separation, delamination materially obstructing vision through glass, and blemishes exceeding those allowed by referenced laminated-glass standard.

**PART 2 - PRODUCTS**

- A. Subject to compliance with requirements indicated herein, provide products of one of the listed manufacturers.
  - 1. Guardian Industries Corp.: [www.sunguardglass.com](http://www.sunguardglass.com)
  - 2. Pilkington North America, Inc.: [www.pilkington.com](http://www.pilkington.com)
  - 3. PPG Industries, Inc.: [www.ppgglazing.com](http://www.ppgglazing.com)
  - 4. Viracon, Inc.: [www.viracon.com](http://www.viracon.com)
  - 5. Technical Glass Products: [www.fireglass.com](http://www.fireglass.com)
  - 6. Safti First: [www.safti.com](http://www.safti.com)
  - 7. Substitutions: Under provisions of Section 01 6000 - Product Requirements

**2.2 MATERIALS – GENERAL**

- A. Vison Glass for doors and interior windows: Clear Laminated Security Glass, Kind LT, complying with ASTM D 1172. Resist manual penetration, including physical attack from hand-held or hand-thrown objects.
  - 1. Cut laminated glass materials to indicated sizes and provide cut-outs and holes, if indicated, before heat strengthening.
  - 2. Color: clear
  - 3. Laminated glass thickness: ½" consisting of two ¼" layers of tempered glass bonded to interlayer.
  - 4. Fully temper laminated glass materials in accordance with ASTM C 1048, Kind FT.
  - 5. Interlayer Material: Polyvinyl butyral, ionomeric polymer, or cast-in-place and cured-transparent resin.

6. Forced-Entry Resistance: ASTM F1233 Class III /ASTM 1915 Grade 2
7. Meet Category II of CPSC 16 CFR 1201, in locations where applicable.

- B. 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.

### **2.3 MISCELLANEOUS MATERIALS**

- A. Provide setting blocks, spacer shims, glazing gaskets and other miscellaneous items necessary to install glazing in existing windows and doors indicated.
- B. Security Sealant: Manufacturer's standard, nonsag, tamper-resistant sealant for joints with low movement complying with ASTM C 920, Grade NS, Class 12.5 or 25, Use NT, and with a Shore A hardness of at least 45 when tested according to ASTM C 661.

## **PART 3 - EXECUTION**

### **3.1 EXAMINATION**

- A. Site Verification of Conditions:
  1. Verify that openings for glazing are correct size and within tolerance.
  2. Verify that glazing channels and recesses are clean and free of obstructions, that weeps are clear, and that channels and recesses are ready for glazing.
- B. Inspection
  1. Inspect each piece of glass immediately prior to start of installation.
  2. Do not install items which are improperly sized, have damaged edges, or are scratched, abraded, or damaged in any other manner.
  3. Do not remove labels from glass until so directed by the Architect.
  4. Install glass so distortion waves, if present, run in the horizontal direction.

### **3.2 PREPARATION**

- A. Comply with provisions of Section 01 7000 – Execution and Closeout Requirements.
- B. Surface Preparation
  1. Clean contact surfaces to receive sealant with solvent; wipe dry.
  2. Seal porous glazing channels and recesses with primer or sealer compatible with substrate.
  3. Prime surfaces to receive sealant in accordance with sealant manufacturer's instructions.

### **3.3 INSTALLATION**

- A. Comply with provisions of Section 01 7000 – Execution and Closeout Requirements.
- B. Install sealants in accordance with Section 07 9200 – Joint Sealants.
- C. Installation of glazing in flush wood doors is specified in Section 08 1416 - Flush Wood Doors.
- D. Installation of glazing in aluminum entrances and storefronts is specified in Section 08 4100 - Entrances and Storefronts.

### **3.4 CLEANING**

- A. Comply with requirements of Section 01 7000 – Execution and Closeout Requirements.
- B. Remove glazing materials from finish surfaces.
- C. Remove labels only after glass installation is complete and energy compliance inspection is complete.
- D. Clean glass surfaces and adjacent surfaces.

**3.5 PROTECTION**

- A. A. Protect glass from breakage after installation by promptly installing streamers or ribbons, suitably attached to the framing and held free from glass. Do not apply warning markings, streamers, ribbons, or other items directly to the glass except as specifically directed by the Architect

**3.6 END OF SECTION 088000**



**SECTION 088400 - PLASTIC GLAZING**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. This Section specifies the following types of plastic glazing:
  - 1. Laminated polycarbonate glazing for detention door vision lites specified in section 085663

**1.2 RELATED SECTIONS**

- A. Section 07 9000 - Joint Sealers
- B. Section 08 8000 – Glazing
- C. Section 08 3463 – Detention Door Vision Lites

**1.3 REFERENCES**

- A. ANSI Z97.1 - American National Standard for Glazing Materials Used in Buildings -- Safety Performance Specifications and Methods of Test.
- B. CPSC 16 CFR 1201 – Safety Standard for Architectural Glazing Materials
- C. ASTM C 297 - Standard Test Method for Tensile. Strength on Flat Sandwich Constructions in. Flatwise Plane.
- D. ASTM D 256 - Standard Test Method for Determining the Pendulum Impact Resistance of Notched Specimens of Plastics.
- E. ASTM D 790 - Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials.
- F. ASTM D 792 - Standard Test Methods for Density and Specific Gravity (Relative Density) of Plastics by Displacement.
- G. ASTM D1003 Standard Test Method for Haze and Luminous Transmittance of Transparent Plastics.
- H. ASTM D 1929 - Standard Test Method for Ignition Properties of Plastics.
- I. ASTM F 1233 - Standard Test Method for Security Glazing Materials and Systems.
- J. ASTM F 1915 - Standard Test Method for Glazing for Detention Facilities.
- K. UL 752 - Standard for Bullet-Resisting Equipment.
- L. ASTM F 1233 – Standard Test Method for Security Glazing Materials and Systems
- M. ASTM F 1642-04 – Standard Test Method for Glazing and Glazing Systems Subject to Airblast Loading
- N. H.P.WHITE TP-0050.03 – Transparent Materials for Use in Forced Entry or Containment Barriers
- P. US General Services Administration (GSA) Test Protocol GSA-TS01-2003 “Standard Test Method for Glazing and Window Systems Subject to Dynamic Overpressure Loadings”,
- P. Department of Defense (DoD) Antiterrorism / Force Protection Construction Standards UFC 4-010-01 “United Facilities Criteria (UFC) DoD Minimum Antiterrorism Standards for Buildings”,

**1.4 SUBMITTALS**

- A. Submit under provisions of Section 01300.
- B. Product Data: Manufacturer's data sheets on each product to be used, including:
  - 1. Physical properties including data on material weight, windload capacity, light transmission, shading coefficient, and thermal expansion
  - 2. Preparation instructions and recommendations.
  - 3. Storage and handling requirements and recommendations.
  - 4. Installation methods and glazing procedures, including edge engagement guidelines.
- C. Selection Samples: For each finish product specified, two complete sets of color chips representing manufacturer's full range of available colors and patterns.
- D. Verification Samples: Submit samples for each finish product specified, two samples, minimum size 6 inches (150 mm) square, representing actual product and framed on two adjacent sides to show glazing system.
- E. Manufacturer's Certificates: Certify products meet or exceed specified requirements.

#### 1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver polycarbonate sheets on enclosed pallets.
- B. Store products in manufacturer's unopened packaging until ready for installation.
- C. Store in dry, well-ventilated and covered areas at temperatures below 80 degrees F
- D. Handle polycarbonate sheets carefully to prevent damage; do not drop, slide, or drag

#### 1.6 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.

#### 1.7 WARRANTY

- A. Provide manufacturer's written warranty covering breakage.
- B. Provide manufacturer's written warranty covering breakage, loss of light transmission, and yellowing.
- C. Provide manufacturer's written warranty covering breakage, abrasion resistance, coating failure, loss of light transmission, and yellowing.

### PART 2 - PRODUCTS

#### 2.1 MANUFACTURER

- A. Plastic Glazing: Basis-of-Design products by Bayer Material Science LLC

#### 2.2 MATERIALS

- A. Laminated 2-Ply plastic glazing for containment & forced entry security glazing: Polycarbonate sheets with polyurethane bonding interlayer and polished finish on both sides complying with ANSI Z97.1 and the following:
  - 1. Material: Basis-of-Design Hygard® CG375 by Bayer MaterialScience LLC
  - 2. Overall Thickness: 0.390 inches (9.9 mm).
  - 3. Forced Entry Rating: ASTM F1233.08, Class 1.4 Contraband Passage.
  - 4. Forced Entry Rating:ASTM F1233.08, Class 2.8, Body Passage.
  - 5. Forced Entry Rating:ASTM F1915.03 Grade 3.
  - 6. Forced Entry Rating:HP White TP 0500.03 Level I Sequence 15.
  - 7. Color: Clear A00.

**PART 3 - EXECUTION**

**3.1 EXAMINATION**

- A. Prior to start of installation, inspect existing conditions to ensure surfaces are suitable for installation of plastic glazing. Starting work indicates installers' acceptance of existing conditions.

**3.2 INSTALLATION**

- A. Installation: Comply with manufacturer's installation instructions including but not limited to the following:
  - 1. Clean contact surfaces with material recommended by manufacturer.
  - 2. Remove factory-applied protective masking to allow engagement at edges.
  - 3. Cut material as recommended by manufacturer; sand edges smooth after cutting.
  - 4. Attach using mechanical and non-mechanical methods as recommended by the manufacturer for the particular application.
  - 5. Remove protective masking after glazing work is complete.

**3.2 CLEANING AND PROTECTION**

- A. Cleaning: Use non-abrasive materials and methods acceptable to the manufacturer.
- B. Protection: Protect from damage during construction operations. Promptly repair any damaged or deteriorated surfaces.

END OF SECTION



## **SECTION 092900 - GYPSUM BOARD**

### **PART 1 - GENERAL**

#### **1.01 SUMMARY**

- A. Related Documents: General and Supplementary Conditions of the Contract, Division 1 General Requirements, and Drawings are applicable to this Section.
- B. Section Includes, but is not limited to:
  - 1. Gypsum board and accessories.
  - 2. Gypsum board finishing.
  - 3. Trim and accessories.
- C. Related Sections:
  - 1. Section 09 9200 – Metal Framing
  - 2. Section 09 3000 – Tiling
  - 3. Section 09 9000 – Painting

#### **1.02 REFERENCES**

- D. American Society for Testing and Materials (ASTM):
  - 1. C36 - Specification for Gypsum Wallboard.
  - 2. C475 - Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board.
  - 3. C754 - Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Board.
  - 4. C840 - Specification for Application and Finishing of Gypsum Board.
  - 5. C1002 - Specification for Steel Drill Screws for the Application of Gypsum Board or Metal Plaster Bases.
  - 6. E119 - Standard Test Methods for Fire Tests of Building Construction and Materials
- E. Association References:
  - 1. Gypsum Association GA 216, "Recommended Specifications for the Application and Finishing of Gypsum Board"

#### **1.03 SYSTEM DESCRIPTION**

- F. Design Requirements: Fabricate and install systems as indicated but not less than that required to comply with ASTM C754 under the following conditions:
  - 1. Gypsum board partitions:
    - a. Standard systems: Maximum deflection of 1/240 of partition height.
    - b. Systems to receive water resistant gypsum board or backer board: Maximum deflection of 1/360 of partition height.
  - 2. Interior suspended ceilings and soffits: Maximum deflection of 1/360 of distance between supports.
- G. Do not install panels that are wet, moisture damaged, and mold damaged.
  - 1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
  - 2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

### **PART 2 - PRODUCTS**

#### **2.1 MANUFACTURERS**

- A. Subject to compliance with requirements indicated herein, provide products of one of the listed manufacturers.

1. United States Gypsum Company (USG), 125 South Franklin, Chicago, IL; 800-874-4968; www.usg.com.
2. National Gypsum Co., 2001 Rexford Rd., Charlotte, NC; 800-628-4662; www.national-gypsum.com.
3. Georgia Pacific Corp, 133 Peachtree St. N.E., Atlanta, GA; 800-284-5347; www.gp.com.
4. CertainTeed Co; www.certainteed.com.
5. Substitutions: Under provisions of Section 01 6000 – Product Requirements.

## 2.2 PERFORMANCE REQUIREMENTS

- A. STC-Rated Assemblies: For STC-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E 90 and classified according to ASTM E 413 by an independent testing agency.

## 2.3 GYPSUM BOARD, GENERAL

- A. Size: Provide maximum lengths and widths available that will minimize joints in each area and that correspond with support system indicated.

## 2.4 INTERIOR GYPSUM BOARD

- A. Gypsum Board, Type X: ASTM C 1396/C 1396M. For use on probation side of building.
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. CertainTeed Corporation.
    - b. Georgia-Pacific Gypsum LLC.
    - c. National Gypsum Company.
    - d. USG Corporation.
  2. Thickness: 5/8 inch.
  3. Long Edges: Tapered.
  4. Mold-Resistant Gypsum Board: ASTM C 1396/C 1396M. With moisture- and mold-resistant core and paper surfaces.
  5. Core: 5/8 inch, Type X
  6. Long Edges: Tapered.
  7. Mold Resistance: ASTM D 3273, score of 10 as rated according to ASTM D 3274.
- B. Abuse-Resistant Gypsum Board: ASTM C 1396/C 1396M gypsum board, tested according to ASTM C 1629/C 1629M. For use on detention side of building.
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. CertainTeed Corporation.
    - b. Georgia-Pacific Gypsum LLC.
    - c. National Gypsum Company.
    - d. USG Corporation.
  2. Core: 5/8 inch, Type X.
  3. Surface Abrasion: ASTM C 1629/C 1629M, meets or exceeds Level 1 requirements.
  4. Indentation: ASTM C 1629/C 1629M, meets or exceeds Level 1 requirements.
  5. Soft-Body Impact: ASTM C 1629/C 1629M, meets or exceeds Level 1 requirements.
  6. Long Edges: Tapered.
  7. Mold Resistance: ASTM D 3273, score of 10 as rated according to ASTM D 3274.

## 2.5 MOISTURE RESISTANT BOARD: For walls containing plumbing and as a backer for ceramic wall tile where indicated.

- A. Water-Resistant Gypsum Backing Board: ASTM C 1396/C 1396M, with manufacturer's standard edges.
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. CertainTeed Corporation.
    - b. Georgia-Pacific Gypsum LLC.

- c. National Gypsum Company.
- d. USG Corporation.
2. Core: 5/8 inch, Type X.

## **2.6 ADHESIVES AND JOINT TREATMENT MATERIALS**

- A. Conform to requirements of ASTM C475.
  1. Joint compounds: Joint Compounds shall be drying-type products which are non-asbestos, vinyl based formulations equal to USG Taping Joint Compound and Topping Joint Compound.
- B. Reinforcing joint tape:
  1. ASTM C475, 2 inch nominal width.
  2. For backer board, provide fiberglass tape as recommended by board manufacturer and acceptable to manufacturer of ceramic tile setting materials.
- C. Gypsum Board Screws: Self-drilling, self-tapping steel screws.
  1. For steel framing less than 0.03 inch thick: Comply with ASTM C1002.
  2. For steel framing from 0.033 inch thick to 0.112 inch thick: Comply with ASTM C954.
  3. Provide Type S or Type S-12 screws.
- D. Acoustical Sealant: Equivalent to Acoustical Sealant by USG.
  1. Acoustical Sealant shall be a highly elastic, water-based caulking for sound-rated partition and ceiling systems. Comply with ASTM C919 and ASTM C834.

## **2.7 ACCESSORIES**

- A. Metal Trim for Gypsum Board:
  1. Conform to profile and dimensions indicated.
  2. Material for interior Work: Galvanized steel, 26 gage minimum.
  3. Corner beads: Equal to Dur-A-Bead No. 103 - USG.
  4. Casing beads (edge beads): Equal to 200A - USG.
- B. Control joints:
  1. Roll-formed zinc with perforated flanges.
  2. Size: 1-3/4 inch wide, with 1/4 inch wide center channel.
  3. Provide with removable tape strip over channel.
  4. Control joint locations and spacing shall be as shown on the drawings or as designated by the Architect.
  5. Acceptable product: Equivalent to No. 093 by USG.
- C. Special Trim and Reveals: Extruded aluminum alloy 6063-T5, profiles as indicated.
  1. Interior Wall to Exterior Wall Trim: Equal to Gordon, Interior Specialties Division, Series #915 – “Reveal Trim”.
  2. Wall Reveal: Equal to Gordon, Interior Specialties Division, Series # 500 – “Wall Reveal”.
- D. Miscellaneous Accessories: Provide as required for complete installations.

## **PART 3 - EXECUTION**

### **3.1 EXAMINATION**

- A. Site Verification of Conditions:
  1. Examine substrates and adjoining construction and conditions under which Work is to be installed. Do not proceed with Work until unsatisfactory conditions are corrected.
  2. Temperature:
    - a. Air Temperature in Rooms to Receive Board Materials: Between 40 degrees to 100 degrees F unless otherwise recommended by manufacturers of materials being installed.

### **3.2 INSTALLATION**

- A. Comply with provisions of Section 01 7000 – Execution and Closeout Requirements.

- B. Wall Tile shall be installed on Concrete Unit Masonry or Tile Backer Board only in toilet/shower if CMU is not provided in these areas, Tile Backer Board shall be used. Wall tile to be installed on moisture resistant gyp board where located in corridors.
- C. FRP shall be installed in toilet rooms, janitor closets, around water fountains or other areas in which the tile might be exposed to moisture.

### 3.3 BOARD INSTALLATION

- A. Single Layer Gypsum Board on Metal Studs or ICF System
  1. Loosely butt gypsum board joints together and neatly fit.
  2. Do not place butt ends against tapered edges.
  3. Maximum allowable gap at end joints: 1/8 inch.
  4. Stagger joints on opposite sides of partitions.
  5. Apply ceiling boards first where gypsum board ceilings and wall occur.
  6. Cut openings in gypsum board to fit electrical outlets, plumbing, light fixtures and piping snugly and small enough to be covered by plates and escutcheons. Cut both face and back paper.
  7. Screw board in place securely with screws spaced according to manufacturer's recommendations.
  8. At internal and external corners, conceal the cut edges of the boards by the overlapping covered edges of the abutting boards.
  9. Stagger the boards so that corners of any four boards will not meet at a common point except in vertical corners.
  10. At internal and external corners, conceal the cut edges of the boards by the overlapping covered edges of the abutting boards.
  11. In all installations, gypsum wallboard shall be held above the finished floor a minimum of 1/2". Failure to comply with this requirement will be grounds for rejection on removal of the entire application.
  12. Where gypsum board is applied to ICF, the wallboard shall continue to the top of the ICF wall system.
- B. Single Layer Gypsum Board on Furring
  1. Apply gypsum board with long dimension at right angles to furring channel.
  2. Center end joints over channel web; stagger end joints from those in adjacent rows of board.
  3. Fasten boards to furring channels with screws spaced according to manufacturer's recommendations.

### 3.4 ACCESSORY INSTALLATION

- A. Trim
  1. Use same fasteners to anchor trim accessory flanges as required to fasten gypsum board to supports, unless otherwise recommended by trim manufacturer.
  2. Install metal corner beads at external corners.
  3. Install metal casing bead trim whenever edge of gypsum board would otherwise be exposed or semi-exposed.

### 3.5 FINISHING

- A. Provide levels of gypsum board finish for locations as follows, in accordance with Gypsum Association GA 214, "Recommended Specification: Levels of Gypsum Board Finish".
  1. Level 1: Ceiling plenum areas and concealed areas, except provide higher level of finish as required to comply with fire resistance ratings and acoustical ratings.
  2. Level 2: Gypsum board substrate at tile, except remove tool marks and ridges.
  3. Level 3: Gypsum board surfaces, where textured finishes will be used or heavy vinyl wall papering.
  4. Level 4: Gypsum board surfaces, except where another finish level is indicated.
- B. Joint Treatment



1. General:
    - a. Inspect areas to be joint treated, verifying that the gypsum wallboard fits snugly against supporting framework.
    - b. In areas where joint treatment and compound finishing will be performed, maintain a temperature of not less than 55 degrees for 24 hours prior to commencing the treatment, and until joint and finishing compounds have dried.
    - c. Apply the joint treatment and finishing compound by machine or hand tool.
    - d. Provide a minimum drying time of 24 hours between coats, with additional drying time in poorly ventilated areas.
    - e. Joint Treatment is required at all gypsum board walls including fire protection assemblies and ICF installations above the ceiling line.
  2. Embedding compounds:
    - a. Apply to gypsum wallboard joints and fastener heads in a thin uniform layer.
    - b. Spread the compound not less than 3" wide at joints, center the reinforcing tape in the joint, and embed the tape in the compound. Then spread a thin layer of compound over the tape.
    - c. After this treatment has dried, apply a second coat of embedding compound to joints and fastener heads, spreading in a thin uniform coat to not less than 6" wide at joints, and feather edged.
    - d. Sandpaper between coats as required.
    - e. When thoroughly dry, sandpaper to eliminate ridges and high points.
- C. Texturing
1. All drywall texturing shall be a part of Section 09 9000 – Painting and Coating
- D. Trim
1. Use same fasteners to anchor trim accessory flanges as required to fasten gypsum board to supports, unless otherwise recommended by trim manufacturer.
  2. Install metal corner beads at external corners.
  3. Install metal casing bead trim whenever edge of gypsum base would otherwise be exposed or semi-exposed, and where gypsum base terminates against dissimilar material.
- E. Special Trim and Reveal Joints: Install as indicated on Drawings and in accordance with manufacturer's instructions.

### **3.6 ADJUSTING**

- A. Correct damage and defects which may telegraph through finished work.
- B. Leave Work smooth and uniform.

### **3.7 CLEANING**

- A. Cleaning
  1. Comply with requirements of Section 01 7000 – Execution and Closeout Requirements.
- B. In addition to other requirements for cleaning, use necessary care to prevent scattering gypsum wallboard scraps and dust, and to prevent tracking gypsum and joint finishing compound onto floor surfaces.
- C. At completion of each segment of installation in a room or space, promptly pick up and remove from the working area all scrap, debris, and surplus material of this Section.

END OF SECTION 09 2982



**PART 1 - GENERAL**

**1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

**1.2 SUMMARY**

- A. Section Includes:
  - 1. Ceramic tile.
  - 2. Crack isolation membrane.
- B. Related Requirements:
  - 1. Section 079200 "Joint Sealants" for sealing of expansion, contraction, control, and isolation joints in tile surfaces.
  - 2. Section 092900 "Gypsum Board."

**1.3 DEFINITIONS**

- A. General: Definitions in the ANSI A108 series of tile installation standards and in ANSI A137.1 apply to Work of this Section unless otherwise specified.
- B. ANSI A108 Series: ANSI A108.01, ANSI A108.02, ANSI A108.1A, ANSI A108.1B, ANSI A108.1C, ANSI A108.4, ANSI A108.5, ANSI A108.6, ANSI A108.8, ANSI A108.9, ANSI A108.10, ANSI A108.11, ANSI A108.12, ANSI A108.13, ANSI A108.14, ANSI A108.15, ANSI A108.16, and ANSI A108.17, which are contained in its "Specifications for Installation of Ceramic Tile."
- C. Module Size: Actual tile size plus joint width indicated.
- D. Face Size: Actual tile size, excluding spacer lugs.

**1.4 ACTION SUBMITTALS**

- A. Product Data: For each type of product.
- B. Shop Drawings: Show locations of each type of tile and tile pattern. Show widths, details, and locations of expansion, contraction, control, and isolation joints in tile substrates and finished tile surfaces.
- C. Samples for Verification:
  - 1. Full-size units of each type and composition of tile and for each color and finish required. For ceramic mosaic tile in color blend patterns, provide full sheets of each color blend.
  - 2. Assembled samples mounted on a rigid panel, with grouted joints, for each type and composition of tile and for each color and finish required. Make samples at least 12 inches square, but not fewer than four tiles. Use grout of type and in color or colors approved for completed Work.
  - 3. Full-size units of each type of trim and accessory for each color and finish required.

**1.5 INFORMATIONAL SUBMITTALS**

- A. Qualification Data: For Installer.

**1.6 MAINTENANCE MATERIAL SUBMITTALS**

- A. Furnish extra materials that match and are from same production runs as products installed and that are packaged with protective covering for storage and identified with labels describing contents.
  - 1. Tile and Trim Units: Furnish quantity of full-size units equal to 3 percent of amount installed for each type, composition, color, pattern, and size indicated.
  - 2. Grout: Furnish quantity of grout equal to 3 percent of amount installed for each type, composition, and color indicated.

**1.7 QUALITY ASSURANCE**

- A. Maintain one copy of The Tile Council of North America Handbook and ANSI A108 Series/A118 Series on site.
- B. Installer Qualifications:
  - 1. Tile: Minimum five (5) years' experience in manufacture of tile products.
  - 2. Setting Materials: Minimum ten (10) years' experience in manufacture of setting and grout materials specified.
  - 3. Membrane: Minimum five (5) years' experience in manufacture of membrane materials specified.
- C. Installer Qualifications: Company specializing in performing tile installation, with minimum of 5 years of documented experience.
- D. Mockups: Build mockups to verify selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.
  - 1. Build mockup of each type of floor tile installation.
  - 2. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

**1.8 DELIVERY, STORAGE, AND HANDLING**

- A. Deliver and store packaged materials in original containers with seals unbroken and labels intact until time of use. Comply with requirements in ANSI A137.1 for labeling tile packages.
- B. Cementitious materials on elevated platforms, under cover, and in a dry location.
- C. Store aggregates where grading and other required characteristics can be maintained and contamination can be avoided.
- D. Store liquid materials in unopened containers and protected from freezing.

**1.9 FIELD CONDITIONS**

- A. Environmental Limitations: Do not install tile until construction in spaces is complete and ambient temperature and humidity conditions are maintained at the levels indicated in referenced standards and manufacturer's written instructions.

**PART 2 - PRODUCTS**

**2.1 MANUFACTURERS**

- A. Source Limitations for Tile: Obtain tile of each type and color or finish from single source or producer.
  - 1. Obtain tile of each type and color or finish from same production run and of consistent quality in appearance and physical properties for each contiguous area.
- B. Source Limitations for Setting and Grouting Materials: Obtain ingredients of a uniform quality for each mortar, adhesive, and grout component from single manufacturer and each aggregate from single source or producer.
  - 1. Obtain setting and grouting materials, except for unmodified Portland cement and aggregate, from single manufacturer.
  - 2. Obtain waterproof membrane, except for sheet products, from manufacturer of setting and grouting materials.
- C. Source Limitations for Other Products: Obtain each of the following products specified in this Section from a single manufacturer:
  - 1. Waterproof membrane.
  - 2. Crack isolation membrane.

**2.2 PRODUCTS, GENERAL**

- A. ANSI Ceramic Tile Standard: Provide tile that complies with ANSI A137.1 for types, compositions, and other characteristics indicated.

1. Provide tile complying with Standard grade requirements unless otherwise indicated.
- B. ANSI Standards for Tile Installation Materials: Provide materials complying with ANSI A108.02, ANSI standards referenced in other Part 2 articles, ANSI standards referenced by TCNA installation methods specified in tile installation schedules, and other requirements specified.
- C. Factory Blending: For tile exhibiting color variations within ranges, blend tile in factory and package so tile units taken from one package show same range in colors as those taken from other packages and match approved Samples.
- D. Mounting: For factory-mounted tile, provide back- or edge-mounted tile assemblies as standard with manufacturer unless otherwise indicated.

### 2.3 TILE PRODUCTS

- A. Manufacturers: All products by the same manufacturer.
  1. American Olean Corporation: [www.americanolean.com](http://www.americanolean.com).
  2. Arizona Tile: [www.arizonatile.com](http://www.arizonatile.com).
  3. Dal-Tile Corporation: [www.daltile.com](http://www.daltile.com).
  4. Crossville Inc.: [www.crossvilleinc.com](http://www.crossvilleinc.com).
  5. Interceramic Tile: [www.interceramic.com](http://www.interceramic.com).
  6. Emser Tile, LLC: [www.emser.com](http://www.emser.com).
  7. Substitutions: See Section 01 6000 - Product Requirements.
- B. Provide the following types of tile to match existing in the building:
  1. Non-skid 2x2 mosaic floor tile and special shapes for cove tile base and outside corners of base – match gray in some locations, match blue with fleck in other locations.
  2. Nominal 4x4 ceramic wall tile - white
  3. Nominal 2x6 ceramic edge tile - white
  4. Match colors of existing tile in area where repair or new tile is to be installed

### 2.4 THRESHOLDS

- A. General: Fabricate to sizes and profiles indicated or required to provide transition between adjacent floor finishes.
  1. Bevel edges at 1:2 slope, with lower edge of bevel aligned with or up to 1/16 inch above adjacent floor surface. Finish bevel to match top surface of threshold. Limit height of threshold to 1/2 inch or less above adjacent floor surface.

### 2.5 SETTING MATERIALS

- A. Water-Cleanable, Tile-Setting Epoxy: ANSI A118.3.
  1. Manufacturers: Subject to compliance with requirements, provide products by the following:
  2. Atlas Minerals & Chemicals, Inc.
  3. Bonsal American, an Oldcastle Company.
  4. Bostik, Inc.
  5. H.B. Fuller Construction Products, Inc.
  6. Southern Grouts & Mortars, Inc.
  7. Provide product capable of withstanding continuous and intermittent exposure to temperatures of up to 140 and 212 deg F, respectively, and certified by manufacturer for intended use.

### 2.6 GROUT MATERIALS

- A. Water-Cleanable Epoxy Grout: ANSI A118.3, with a VOC content of 65 g/L or less.
  1. Manufacturers: Subject to compliance with requirements, provide products by the following:
  2. Atlas Minerals & Chemicals, Inc.
  3. Bonsal American, an Oldcastle Company.
  4. Bostik, Inc.

5. H.B. Fuller Construction Products, Inc.
6. Southern Grouts & Mortars, Inc.
7. Provide product capable of withstanding continuous and intermittent exposure to temperatures of up to 140 and 212 deg F, respectively, and certified by manufacturer for intended use.

## **2.7 ACCESSORY MATERIALS**

- A. Waterproofing Membrane at shower floors: Specifically designed for bonding to cementitious substrate under thick mortar bed; complying with ANSI A118.10.
  1. Type: Mortar-bonded sheet.
  2. Material: PVC or CPE sheet membrane, 40 mils, thick, minimum.
  3. Products:
    - a. COMPOTITE Corporation; Composeal Gold: [www.compotite.com](http://www.compotite.com).
    - b. Noble Company; Chloraloy (CPE): [www.noblecompany.com](http://www.noblecompany.com).
    - c. Substitutions: See Section 01 6000 - Product Requirements.

## **2.8 MIXING MORTARS AND GROUT**

- A. Mix mortars and grouts to comply with referenced standards and mortar and grout manufacturers' written instructions.
- B. Add materials, water, and additives in accurate proportions.
- C. Obtain and use type of mixing equipment, mixer speeds, mixing containers, mixing time, and other procedures to produce mortars and grouts of uniform quality with optimum performance characteristics for installations indicated.

## **PART 3 - EXECUTION**

### **3.1 EXAMINATION**

- A. Examine substrates, areas, and conditions where tile will be installed, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
  1. Verify that substrates for setting tile are firm; dry; clean; free of coatings that are incompatible with tile-setting materials, including curing compounds and other substances that contain soap, wax, oil, or silicone; and comply with flatness tolerances required by ANSI A108.01 for installations indicated.
  2. Verify that concrete substrates for tile floors installed with adhesives comply with surface finish requirements in ANSI A108.01 for installations indicated.
    - a. Verify that surfaces that received a steel trowel finish have been mechanically scarified.
    - b. Verify that protrusions, bumps, and ridges have been removed by sanding or grinding.
  3. Verify that installation of grounds, anchors, recessed frames, electrical and mechanical units of work, and similar items located in or behind tile has been completed.
  4. Verify that joints and cracks in tile substrates are coordinated with tile joint locations; if not coordinated, adjust joint locations in consultation with Architect.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

### **3.2 PREPARATION**

- A. Fill cracks, holes, and depressions in concrete substrates for tile floors installed with adhesives with trowel-able leveling and patching compound specifically recommended by tile-setting material manufacturer.
- B. Where indicated, prepare substrates to receive waterproofing by applying a reinforced mortar bed that complies with ANSI A108.1A and is sloped 1/4 inch per foot toward drains.

- C. Blending: For tile exhibiting color variations, verify that tile has been factory blended and packaged so tile units taken from one package show same range of colors as those taken from other packages and match approved Samples. If not factory blended, either return to manufacturer or blend tiles at Project site before installing.

### **3.3 CERAMIC TILE INSTALLATION**

- A. Comply with TCNA's "Handbook for Ceramic, Glass, and Stone Tile Installation" for TCNA installation methods specified in tile installation schedules. Comply with parts of the ANSI A108 series "Specifications for Installation of Ceramic Tile" that are referenced in TCNA installation methods, specified in tile installation schedules, and apply to types of setting and grouting materials used.
  - 1. For the following installations, follow procedures in the ANSI A108 series of tile installation standards for providing 95 percent mortar coverage:
    - a. Tile floors consisting of tiles 8 by 8 inches or larger.
- B. Extend tile work into recesses and under or behind equipment and fixtures to form complete covering without interruptions unless otherwise indicated. Terminate work neatly at obstructions, edges, and corners without disrupting pattern or joint alignments.
- C. Accurately form intersections and returns. Perform cutting and drilling of tile without marring visible surfaces. Carefully grind cut edges of tile abutting trim, finish, or built-in items for straight aligned joints. Fit tile closely to electrical outlets, piping, fixtures, and other penetrations so plates, collars, or covers overlap tile.
- D. Provide manufacturer's standard trim shapes where necessary to eliminate exposed tile edges.
- E. Where accent tile differs in thickness from field tile, vary setting-bed thickness so that tiles are flush.
- F. Jointing Pattern: Lay tile in grid pattern unless otherwise indicated. Lay out tile work and center tile fields in both directions in each space or on each wall area. Lay out tile work to minimize the use of pieces that are less than half of a tile. Provide uniform joint widths unless otherwise indicated.
  - 1. For tile mounted in sheets, make joints between tile sheets same width as joints within tile sheets so joints between sheets are not apparent in finished work.
  - 2. Where adjoining tiles on floor, base, walls, or trim are specified or indicated to be same size, align joints.
  - 3. Where tiles are specified or indicated to be whole integer multiples of adjoining tiles on floor, base, walls, or trim, align joints unless otherwise indicated.
- G. Joint Widths: Unless otherwise indicated, match existing joint widths.
- H. Lay out tile wainscots to dimensions indicated or to next full tile beyond dimensions indicated.
- I. Expansion Joints: Provide expansion joints and other sealant-filled joints, including control, contraction, and isolation joints, where indicated. Form joints during installation of setting materials, mortar beds, and tile. Do not saw-cut joints after installing tiles.
  - 1. Where joints occur in concrete substrates, locate joints in tile surfaces directly above them.
- J. Waterproofing Membrane: Install in shower floors as recommended by manufacturer
- K. Floor Sealer: Apply floor sealer to grout joints according to floor-sealer manufacturer's written instructions. As soon as floor sealer has penetrated grout joints, remove excess sealer and sealer from tile faces by wiping with soft cloth.

### **3.4 CERAMIC TILE REPAIR**

- A. Remove damaged or defective tiles. Avoid damage to surrounding tiles.
- B. Remove, clear and clean old bedding as necessary to place of replacement tile.
- C. Select replacement tiles to match existing face, size, color and pattern.
  - 1. Cut replacement tiles where applicable.

- D. Fit and adhere replacement tile to maintain alignment with joints and uniform spacing using repair mortar. Face of replacement tiles shall be flush with existing surrounding tile work.
- E. Grout replacement tile to match existing. Repaired / replaced tile work shall be indistinguishable from existing.

**3.5 ADJUSTING AND CLEANING**

- A. Remove and replace tile that is damaged or that does not match adjoining tile. Provide new matching units, installed as specified and in a manner to eliminate evidence of replacement.
- B. Cleaning: On completion of placement and grouting, clean all ceramic tile surfaces so they are free of foreign matter.
  - 1. Remove grout residue from tile as soon as possible.
  - 2. Clean grout smears and haze from tile according to tile and grout manufacturer's written instructions but no sooner than 10 days after installation. Use only cleaners recommended by tile and grout manufacturers and only after determining that cleaners are safe to use by testing on samples of tile and other surfaces to be cleaned. Protect metal surfaces and plumbing fixtures from effects of cleaning. Flush surfaces with clean water before and after cleaning.

**3.6 PROTECTION**

- A. Protect installed tile work with kraft paper or other heavy covering during construction period to prevent staining, damage, and wear. If recommended by tile manufacturer, apply coat of neutral protective cleaner to completed tile walls and floors.
- B. Prohibit foot and wheel traffic from tiled floors for at least seven days after grouting is completed.
- C. Before final inspection, remove protective coverings and rinse neutral protective cleaner from tile surfaces.

**3.7 INTERIOR CERAMIC TILE INSTALLATION SCHEDULE**

- A. Interior Floor Installations, Concrete Subfloor: As indicated on drawings.
- B. Interior Wall Installations, Concrete Masonry Units: As indicated on drawings.

END OF SECTION 093013



## **SECTION 095113 - ACOUSTICAL PANEL CEILINGS**

### **PART 1 - GENERAL**

#### **1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

#### **1.2 SUMMARY**

- A. Section includes acoustical panels and exposed suspension systems for interior ceilings.

#### **1.3 ACTION SUBMITTALS**

- A. Product Data: For each type of product.

#### **1.4 INFORMATIONAL SUBMITTALS**

#### **1.5 CLOSEOUT SUBMITTALS**

- A. Maintenance Data: For finishes to include in maintenance manuals.

#### **1.6 DELIVERY, STORAGE, AND HANDLING**

- A. Deliver acoustical panels, suspension-system components, and accessories to Project site and store them in a fully enclosed, conditioned space where they will be protected against damage from moisture, humidity, temperature extremes, direct sunlight, surface contamination, and other causes.
- B. Before installing acoustical panels, permit them to reach room temperature and a stabilized moisture content.

#### **1.7 FIELD CONDITIONS**

- A. Environmental Limitations: Do not install acoustical panel ceilings until spaces are enclosed and weathertight, wet-work in spaces is complete and dry, work above ceilings is complete, and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.
  - 1. Pressurized Plenums: Operate ventilation system for not less than 48 hours before beginning acoustical panel ceiling installation.

### **PART 2 - PRODUCTS**

#### **2.1 MANUFACTURERS**

- A. Source Limitations: Obtain each type of acoustical ceiling panel and its supporting suspension system from single source from single manufacturer.

#### **2.2 ACOUSTICAL PANELS <insert drawing designation>**

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - 1. Armstrong World Industries, Inc.
  - 2. CertainTeed Corporation.
  - 3. USG Corporation.
- B. Acoustical Panel Standard: Provide manufacturer's standard panels according to ASTM E 1264 and designated by type, form, pattern, acoustical rating, and light reflectance unless otherwise indicated.
- C. Classification: Provide panels as follows:
  - 1. Basis of Design: Armstrong 'Cortega'
  - 2. Type and Form: Type III, mineral base with painted finish; Form 2, water felted.
  - 3. Pattern: C D (fissured)
- D. Color: White.
- E. Light Reflectance (LR): Not less than 0.75 0.80 .82, pursuant to ASTM E 1477.

- F. Ceiling Attenuation Class (CAC): Not less than min. 35, pursuant to ASTM E 1414 / ASTM E 413.
- G. Noise Reduction Coefficient (NRC): Not less than 0.55.
- H. Edge/Joint Detail: Square As indicated by manufacturer's designation.
- I. Thickness: 5/8 inch.
- J. Modular Size: 24 by 24 inches.

### 2.3 METAL SUSPENSION SYSTEM

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - 1. Armstrong World Industries, Inc.
  - 2. CertainTeed Corporation.
  - 3. USG Corporation.
- B. Metal Suspension-System Standard: Provide manufacturer's standard, direct-hung, metal suspension system and accessories according to ASTM C 635/C 635M and designated by type, structural classification, and finish indicated.
  - 1. High-Humidity Finish: Where indicated, provide coating tested and classified for "severe environment performance" according to ASTM C 635/C 635M.
- C. Narrow-Face, Capped, Double-Web, Steel Suspension System: Main and cross runners roll formed from cold-rolled steel sheet; prepainted, electrolytically zinc coated, or hot-dip galvanized, G30 coating designation; with prefinished 9/16-inch-wide metal caps on flanges.
  - 1. Structural Classification: Intermediate Heavy-duty system.
  - 2. End Condition of Cross Runners: Override type.
  - 3. Face Design: Flat, flush.
  - 4. Cap Material: Cold-rolled steel or aluminum.
  - 5. Cap Finish: Painted white.

### 2.4 ACCESSORIES

- A. Attachment Devices: Size for five times the design load indicated in ASTM C 635/C 635M, Table 1, "Direct Hung," unless otherwise indicated. Comply with seismic design requirements.
- B. Hanger Rods: Mild steel, zinc coated or protected with rust-inhibitive paint.
- C. Flat Hangers: Mild steel, zinc coated or protected with rust-inhibitive paint.
- D. Angle Hangers: Angles with legs not less than 7/8 inch wide; formed with 0.04-inch-thick, galvanized-steel sheet complying with ASTM A 653/A 653M, G90 coating designation; with bolted connections and 5/16-inch-diameter bolts.

### 2.5 METAL EDGE MOLDINGS AND TRIM

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - 1. Armstrong World Industries, Inc.
  - 2. CertainTeed Corporation.
  - 3. USG Corporation.
- B. Roll-Formed, Sheet-Metal Edge Moldings and Trim: Type and profile indicated or, if not indicated, manufacturer's standard moldings for edges and penetrations that comply with seismic design requirements; formed from sheet metal of same material, finish, and color as that used for exposed flanges of suspension-system runners.
  - 1. Edge moldings shall fit acoustical panel edge details and suspension systems indicated and match width and configuration of exposed runners unless otherwise indicated.
  - 2. For lay-in panels with reveal edge details, provide [stepped edge molding that forms reveal of same depth and width as that formed between edge of panel and flange at exposed suspension member] <insert description>.

3. For circular penetrations of ceiling, provide edge moldings fabricated to diameter required to fit penetration exactly.

## **2.6 ACOUSTICAL SEALANT**

- A. Acoustical Sealant: As specified in Section 079000 "Joint Sealants."

## **PART 3 - EXECUTION**

### **3.1 EXAMINATION**

- A. Examine substrates, areas, and conditions, including structural framing to which acoustical panel 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 acoustical panel ceilings.
- B. Examine acoustical panels before installation. Reject acoustical panels that are wet, moisture damaged, or mold damaged.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

### **3.2 PREPARATION**

- A. Measure each ceiling area and establish layout of acoustical panels to balance border widths at opposite edges of each ceiling. Avoid using less-than-half-width panels at borders unless otherwise indicated, and comply with layout shown on reflected ceiling plans.
- B. Layout openings for penetrations centered on the penetrating items.

### **3.3 INSTALLATION**

- A. Install acoustical panel ceilings according to ASTM C 636/C 636M and manufacturer's written instructions.
  1. Fire-Rated Assembly: Install fire-rated ceiling systems according to tested fire-rated design.
- B. Suspend ceiling hangers from building's structural members 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 produces hanger spacings that interfere with location of hangers at spacings required to support standard suspension-system members, install supplemental suspension members and hangers in form of trapezes or equivalent devices.
  4. Secure wire hangers to ceiling-suspension members and to supports above with a minimum of three tight turns. Connect hangers directly to structure or to inserts, eye screws, or other devices that are secure and appropriate for substrate and that will not deteriorate or otherwise fail due to age, corrosion, or elevated temperatures.
  5. Secure flat, angle, channel, and rod hangers to structure, including intermediate framing members, by attaching to inserts, eye screws, or other devices that are secure and appropriate for both the structure to which hangers are attached and the type of hanger involved. Install hangers in a manner that will not cause them to deteriorate or fail due to age, corrosion, or elevated temperatures.
  6. Do not support ceilings directly from permanent metal forms or floor deck. Fasten hangers to cast-in-place hanger inserts, post-installed mechanical or adhesive anchors, or power-actuated fasteners that extend through forms into concrete.
  7. When steel framing does not permit installation of hanger wires at spacing required, install carrying channels or other supplemental support for attachment of hanger wires.
  8. Do not attach hangers to steel deck tabs.
  9. Do not attach hangers to steel roof deck. Attach hangers to structural members.

10. Space hangers not more than 48 inches o.c. along each member supported directly from hangers unless otherwise indicated; provide hangers not more than 8 inches from ends of each member.
11. Size supplemental suspension members and hangers to support ceiling loads within performance limits established by referenced standards.
- C. Secure bracing wires to ceiling suspension members and to supports with a minimum of four tight turns. Suspend bracing from building's structural members as required for hangers, without attaching to permanent metal forms, steel deck, or steel deck tabs. Fasten bracing wires into concrete with cast-in-place or post-installed anchors.
- D. Install edge moldings and trim of type indicated at perimeter of acoustical ceiling area and where necessary to conceal edges of acoustical panels.
  1. Apply acoustical sealant in a continuous ribbon concealed on back of vertical legs of moldings before they are installed.
  2. Screw attach moldings to substrate at intervals not more than 16 inches o.c. and not more than 3 inches from ends. Miter corners accurately and connect securely.
  3. Do not use exposed fasteners, including pop rivets, on moldings and trim.
- E. Install suspension-system runners so they are square and securely interlocked with one another. Remove and replace dented, bent, or kinked members.
- F. Install acoustical panels with undamaged edges and fit accurately into suspension-system runners and edge moldings. Scribe and cut panels at borders and penetrations to provide precise fit.
  1. Arrange directionally patterned acoustical panels as follows:
    - a. As indicated on reflected ceiling plans.
  2. For square-edged panels, install panels with edges fully hidden from view by flanges of suspension-system runners and moldings.
  3. For reveal-edged panels on suspension-system runners, install panels with bottom of reveal in firm contact with top surface of runner flanges.
  4. For reveal-edged panels on suspension-system members with box-shaped flanges, install panels with reveal surfaces in firm contact with suspension-system surfaces and panel faces flush with bottom face of runners.
  5. Paint cut edges of panel remaining exposed after installation; match color of exposed panel surfaces using coating recommended in writing for this purpose by acoustical panel manufacturer.
  6. Install hold-down impact and clips in areas indicated; space according to panel manufacturer's written instructions unless otherwise indicated.
    - a. Hold-Down Clips: Space 24 inches o.c. on all cross runners.

### **3.4 ERECTION TOLERANCES**

- A. Suspended Ceilings: Install main and cross runners level to a tolerance of 1/8 inch in 12 feet, non-cumulative.
- B. Moldings and Trim: Install moldings and trim to substrate and level with ceiling suspension system to a tolerance of 1/8 inch in 12 feet, non-cumulative.

### **3.5 CLEANING**

- A. Clean exposed surfaces of acoustical panel ceilings, including trim, edge moldings, and suspension-system members. Comply with manufacturer's written instructions for cleaning and touchup of minor finish damage.
- B. Remove and replace ceiling components that cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.

END OF SECTION 095113

## **SECTION 096513 - RESILIENT BASE AND ACCESSORIES**

### **PART 1 - GENERAL**

#### **1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

#### **1.2 SUMMARY**

- A. Section Includes:
  - 1. Vinyl base.
  - 2. Vinyl molding accessories.

#### **1.3 ACTION SUBMITTALS**

- A. Product Data: For each type of product.
- B. Samples for Verification: For each type of product indicated and for each color, texture, and pattern required in manufacturer's standard-size Samples, but not less than 12 inches long.
- C. Product Schedule: For resilient base and accessory products.

#### **1.4 MAINTENANCE MATERIAL SUBMITTALS**

- A. Furnish extra materials, from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

#### **1.5 QUALITY ASSURANCE**

#### **1.6 DELIVERY, STORAGE, AND HANDLING**

- A. Store resilient products and installation materials in dry spaces protected from the weather, with ambient temperatures maintained within range recommended by manufacturer, but not less than 50 deg F or more than 90 deg F.

#### **1.7 FIELD CONDITIONS**

- A. Maintain ambient temperatures within range recommended by manufacturer, but not less than 65 deg F or more than 85 deg F in spaces to receive resilient products during the following periods:
  - 1. 48 hours before installation.
  - 2. During installation.
  - 3. 48 hours after installation.
- B. After installation and until Substantial Completion, maintain ambient temperatures within range recommended by manufacturer, but not less than 65 deg F or more than 75 deg F.
- C. Install resilient products after other finishing operations, including painting, have been completed.

### **PART 2 - PRODUCTS**

#### **2.1 MANUFACTURERS**

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - 1. Armstrong
  - 2. Johnsonite, Inc.
  - 3. Roppe Corp.
  - 4. Flexco

#### **2.2 VINYL BASE**

- A. Product Standard: ASTM F 1861, Type TV (vinyl, thermoplastic).
  - 1. Group: I (solid, homogeneous).
  - 2. Style and Location:
    - a. Style B, Cove: See room finish schedule on drawings for locations.

- B. Minimum Thickness: 0.125 inch.
- C. Height: 4 inches
- D. Lengths: Coils in manufacturer's standard length
- E. Outside Corners: Preformed.
- F. Inside Corners: Job formed or preformed.
- G. Colors and Patterns: As selected by Owner from Manufacturers full range.

### **2.3 VINYL MOLDING ACCESSORIES**

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - 1. Armstrong
  - 2. Johnsonite, Inc.
  - 3. Roppe Corp.
  - 4. Flexco
- B. Description: Vinyl reducer strip for resilient floor covering.
- C. Locations: As required at transitions between vinyl resilient flooring and ceramic tile.
- D. Colors and Patterns: As selected by Owner from manufacturer's full range.

### **2.4 INSTALLATION MATERIALS**

- A. Trowelable Leveling and Patching Compounds: Latex-modified, portland-cement-based or blended hydraulic-cement-based formulation provided or approved by resilient-product manufacturer for applications indicated.
- B. Adhesives: Water-resistant type recommended by resilient-product manufacturer for resilient products and substrate conditions indicated.

## **PART 3 - EXECUTION**

### **3.1 EXAMINATION**

- A. Examine substrates, with Installer present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.
  - 1. Verify that finishes of substrates comply with tolerances and other requirements specified in other Sections and that substrates are free of cracks, ridges, depressions, scale, and foreign deposits that might interfere with adhesion of resilient products.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.
  - 1. Installation of resilient products indicates acceptance of surfaces and conditions.

### **3.2 PREPARATION**

- A. Prepare substrates according to manufacturer's written instructions to ensure adhesion of resilient products.
- B. Fill cracks, holes, and depressions in substrates with trowelable leveling and patching compound; remove bumps and ridges to produce a uniform and smooth substrate.
- C. Do not install resilient products until materials are the same temperature as space where they are to be installed.
  - 1. At least 48 hours in advance of installation, move resilient products and installation materials into spaces where they will be installed.
- D. Immediately before installation, sweep and vacuum clean substrates to be covered by resilient products.

### **3.3 RESILIENT BASE INSTALLATION**

- A. Comply with manufacturer's written instructions for installing resilient base.

- B. Apply resilient base to walls, columns, pilasters, casework and cabinets in toe spaces, and other permanent fixtures in rooms and areas where base is required.
- C. Install resilient base in lengths as long as practical without gaps at seams and with tops of adjacent pieces aligned.
- D. Tightly adhere resilient base to substrate throughout length of each piece, with base in continuous contact with horizontal and vertical substrates.
- E. Do not stretch resilient base during installation.
- F. On masonry surfaces or other similar irregular substrates, fill voids along top edge of resilient base with manufacturer's recommended adhesive filler material.
- G. Preformed Corners: Install preformed corners before installing straight pieces.
- H. Field formed interior corners shall be scribed and coped to form a hairline joint at intersecting members.

**3.4 CLEANING AND PROTECTION**

- A. Comply with manufacturer's written instructions for cleaning and protecting resilient products.
- B. Protect resilient products from mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period.
- C. Cover resilient products subject to wear and foot traffic until Substantial Completion.

END OF SECTION 096513





## **SECTION 096519 - RESILIENT TILE FLOORING**

### **PART 1 - GENERAL**

#### **1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- B. Section 096513 - Resilient Base and Accessories

#### **1.2 SUMMARY**

- A. Section Includes:
  - 1. Vinyl composition floor tile.
  - 2. Resilient terrazzo floor.

#### **1.3 ACTION SUBMITTALS**

- A. Product Data: For each type of product.
- B. Samples for Verification: Full-size units of each color and pattern of floor tile required.
- C. Product Schedule: For floor tile. Use same designations indicated on Drawings.

#### **1.4 CLOSEOUT SUBMITTALS**

- A. Maintenance Data: For each type of floor tile to include in maintenance manuals.

#### **1.5 MAINTENANCE MATERIAL SUBMITTALS**

- A. Furnish extra materials, from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
  - 1. Floor Tile: Furnish one box for every 50 boxes or fraction thereof, of each type, color, and pattern of floor tile installed.

#### **1.6 QUALITY ASSURANCE**

- A. Installer Qualifications: An entity that employs installers and supervisors who are competent in techniques required by manufacturer for floor tile installation and seaming method indicated.
  - 1. Engage an installer who employs workers for this Project who are trained or certified by floor tile manufacturer for installation techniques required.
- B. Mockups: Build mockups to verify selections made under Sample submittals, to demonstrate aesthetic effects, and to set quality standards for materials and execution.
  - 1. Coordinate mockups in this Section with mockups specified in other Sections.
    - a. Size: Minimum 100 sq. ft. for each type, color, and pattern in locations indicated or in locations directed by Architect.
  - 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 DELIVERY, STORAGE, AND HANDLING**

- A. Store floor tile and installation materials in dry spaces protected from the weather, with ambient temperatures maintained within range recommended by manufacturer, but not less than 50 deg F or more than 90 deg F. Store floor tiles on flat surfaces.

#### **1.8 FIELD CONDITIONS**

- A. Maintain ambient temperatures within range recommended by manufacturer, but not less than 65 deg F or more than 70 deg F, in spaces to receive floor tile during the following periods:
  - 1. 48 hours before installation.

2. During installation.
3. 48 hours after installation.
- B. After installation and until Substantial Completion, maintain ambient temperatures within range recommended by manufacturer, but not less than 65 deg F or more than 85 deg F.
- C. Close spaces to traffic during floor tile installation.
- D. Close spaces to traffic for 48 hours after floor tile installation.
- E. Install floor tile after other finishing operations, including painting, have been completed.

## **PART 2 - PRODUCTS**

### **2.1 VINYL COMPOSITION FLOOR TILE**

- A. Manufacturers: Subject to compliance with requirements, provide the following where indicated:
  1. Armstrong World Industries, Inc.
  2. Congoleum
  3. Johnsonite
- B. Products: Basis of design: Armstrong: Standard Excelon Imperial Texture|Multicolor.
- C. Comply with ASTM F1066 – Class 2, through Pattern.
- D. Colors, and Patterns: As selected by Owner from manufacturer's full range.
- E. Thickness: 1/8"
- F. Size: 12 by 12 inches
- G. Accessories:
  1. Divider/Reducer strip at VCT-to-Terrazzo joint: Schluter steel reducer strip: type and finish as approved by Owner.

### **2.2 INSTALLATION MATERIALS**

- A. Trowelable, Leveling and Patching Compounds: Latex-modified, portland-cement-based or blended hydraulic-cement-based formulation provided or approved by floor tile manufacturer for applications indicated.
- B. Adhesives: Water-resistant type recommended by floor tile and adhesive manufacturers to suit floor tile and existing substrate conditions.
- C. Floor Polish: Provide protective, liquid floor-polish products recommended by floor tile manufacturer.

## **PART 3 - EXECUTION**

### **3.1 EXAMINATION**

- A. Examine substrates, with Installer present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.
  1. Verify that finishes of substrates comply with tolerances and other requirements specified in other Sections and that substrates are free of cracks, ridges, depressions, scale, and foreign deposits that might interfere with adhesion of floor tile.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

### **3.2 PREPARATION**

- A. Prepare substrates according to floor tile manufacturer's written instructions to ensure adhesion of resilient products.
- B. Concrete Substrates: Prepare according to ASTM F 710.
  1. Verify that substrates are dry and free of curing compounds, sealers, and hardeners.
  2. Remove substrate coatings and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, using mechanical methods recommended by floor tile manufacturer. Do not use solvents.

3. Alkalinity and Adhesion Testing: Perform tests recommended by floor tile manufacturer. Proceed with installation only after substrate alkalinity falls within range on pH scale recommended by manufacturer in writing, but not less than 5 or more than 9 pH.
4. Moisture Testing: Perform tests so that each test area does not exceed 400 sq. ft., and perform no fewer than three tests in each installation area and with test areas evenly spaced in installation areas.
  - a. Anhydrous Calcium Chloride Test: ASTM F 1869. Proceed with installation only after substrates have maximum moisture-vapor-emission rate of 3 lb of water/1000 sq. ft. in 24 hours.
  - b. Relative Humidity Test: Using in-situ probes, ASTM F 2170. Proceed with installation only after substrates have a maximum 75 percent relative humidity level measurement.
- C. Fill cracks, holes, and depressions in substrates with trowelable leveling and patching compound; remove bumps and ridges to produce a uniform and smooth substrate.
- D. Do not install floor tiles until materials are the same temperature as space where they are to be installed.
  1. At least 48 hours in advance of installation, move resilient floor tile and installation materials into spaces where they will be installed.
- E. Immediately before installation, sweep and vacuum clean substrates to be covered by resilient floor tile.

### **3.3 FLOOR TILE INSTALLATION**

- A. Comply with manufacturer's written instructions for installing floor tile.
- B. Match floor tiles for color and pattern by selecting tiles from cartons in the same sequence as manufactured and packaged, if so numbered. Discard broken, cracked, chipped, or deformed tiles.
- C. Scribe, cut, and fit floor tiles to butt neatly and tightly to vertical surfaces and permanent fixtures including built-in furniture, cabinets, pipes, outlets, and door frames.
- D. Extend floor tiles into toe spaces, door reveals, closets, and similar openings. Extend floor tiles to center of door openings.
- E. Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating on floor tiles as marked on substrates. Use chalk or other nonpermanent marking device.
- F. Install floor tiles on covers for telephone and electrical ducts, building expansion-joint covers, and similar items in installation areas. Maintain overall continuity of color and pattern between pieces of tile installed on covers and adjoining tiles. Tightly adhere tile edges to substrates that abut covers and to cover perimeters.
- G. Adhere floor tiles to substrates using a full spread of adhesive applied to substrate to produce a completed installation without open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks, and other surface imperfections.
- H. Resilient Terrazzo Accessories: Install according to manufacturer's written instructions.

### **3.4 CLEANING AND PROTECTION**

- A. Comply with manufacturer's written instructions for cleaning and protecting floor tile.
- B. Perform the following operations immediately after completing floor tile installation:
  1. Remove adhesive and other blemishes from surfaces.
  2. Sweep and vacuum surfaces thoroughly.
  3. Damp-mop surfaces to remove marks and soil.
- C. Protect floor tile from mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period.

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D. Floor Polish: Remove soil, adhesive, and blemishes from floor tile surfaces before applying liquid floor polish.

1. Apply three coat(s).

E. Cover floor tile until Substantial Completion.

END OF SECTION 096519

## **SECTION 09 6723 – RESINOUS FLOORING**

### **PART 1 - GENERAL**

#### **1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

#### **1.2 SUMMARY**

- A. This Section includes one resinous flooring system, one with epoxy body.
  - 1. Application Method: Metal, power or hand troweled.

#### **1.3 SUBMITTALS**

- A. Product Data: For each type of product indicated. Include manufacturer's technical data, application instructions, and recommendations for each resinous flooring component required.
- B. Samples for Verification: For each resinous flooring system required, 5 inches square, applied to a rigid backing.
- C. Product Schedule: Use resinous flooring designations indicated in Part 2 and room designations indicated on Drawings in product schedule.
- D. Installer Certificates: Signed by manufacturer certifying that installers comply with specified requirements.
- E. Maintenance Data: For resinous flooring to include in maintenance manuals.

#### **1.4 QUALITY ASSURANCE**

- A. No request for substitution shall be considered that would change the generic type of floor system specified (i.e. epoxy mortar based system). Equivalent materials of other manufactures may be substituted only on approval of Architect or Engineer. Request for substitution will only be considered only if submitted 10 days prior to bid date. Request will be subject to specification requirements described in this section.
- B. Installer Qualifications: Engage an experienced installer (applicator) who is experienced in applying resinous flooring systems similar in material, design, and extent to those indicated for this Project, whose work has resulted in applications with a record of successful in-service performance, and who is acceptable to resinous flooring manufacturer.
  - 1. Engage an installer who is certified in writing by resinous flooring manufacturer as qualified to apply resinous flooring systems indicated.
  - 2. Contractor shall have completed at least 10 projects of similar size and complexity.
- C. Source Limitations: Obtain primary resinous flooring materials, including primers, resins, hardening agents, grouting coats, and topcoats, through one source from a single manufacturer, with not less than ten years of successful experience in manufacturing and installing principal materials described in this section. Provide secondary materials, including patching and fill material, joint sealant, and repair materials, of type and from source recommended by manufacturer of primary materials.
- D. Manufacturer Field Technical Service Representatives: Resinous flooring manufacture shall retain the services of Field Technical Service Representatives who are trained specifically on installing the system to be used on the project.
  - 1. Field Technical Services Representatives shall be employed by the system manufacture to assist in the quality assurance and quality control process of the installation and shall be available to perform field problem solving issues with the installer.

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- E. Mockups: Apply mockups to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.
  - 1. Apply full-thickness mockups on 48-inch-square floor area selected by Architect.
    - a. Include 48-inch length of integral cove base.
  - 2. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.
- F. Pre-installation Conference:
  - 1. General contractor shall arrange a meeting not less than thirty days prior to starting work.
  - 2. Attendance:
    - a. General Contractor
    - b. Architect/Owner's Representative.
    - c. Manufacturer/Installer's Representative.

### **1.5 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 prevent deterioration from moisture, heat, cold, direct sunlight, or other detrimental effects. Store material per product data sheet.
- C. All materials used shall be factory pre-weighed and pre-packaged in single, easy to manage batches to eliminate on site mixing errors. No on site weighing or volumetric measurements allowed.

### **1.6 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 application.
  - 1. Maintain material and substrate temperature between 65 and 85 deg F (18 and 30 deg C) during resinous flooring application and for not less than 24 hours after application.
- B. Lighting: Provide permanent lighting or, if permanent lighting is not in place, simulate permanent lighting conditions during resinous flooring application.
- C. Close spaces to traffic during resinous flooring application and for not less than 24 hours after application, unless manufacturer recommends a longer period.
- D. Concrete substrate shall be properly cured. A vapor barrier must be present for concrete subfloors on or below grade. Otherwise, an osmotic pressure resistant grout must be installed prior to the resinous flooring
- E. 1.7 WARRANTY
- F. Manufacturer shall furnish a single, written warranty covering both material and workmanship for a period of (1) full years from date of installation, or provide a joint and several warranty signed on a single document by material manufacturer and applicator jointly and severally warranting the materials and workmanship for a period of (1) full year from date of installation. A sample warranty letter must be included with bid package or bid may be disqualified.

## **PART 2 - PRODUCTS**

### **2.1 RESINOUS FLOORING**

- A. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include,

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1. Build of Broadcast or liquid rich type systems will not be accepted, and will result in a disqualification from bid.
- B. Acceptable Manufactures,
  1. Stonhard Basis of design.
- C. Products: Subject to compliance with requirements:
  1. Stonhard, Inc.; Stonclad GS®. With top coat Stonkote GS4.
- D. System Characteristics:
  1. Color and Pattern: As selected by Owner from Choose from manufacturer's full range.
  2. Wearing Surface: Standard smooth.
  3. Integral Cove Base: TBD
  4. Overall System Thickness: nominal 1/4"
- E. System Components: Manufacturer's standard components that are compatible with each other and as follows:
  1. Primer:
    - a. Material Basis: Stonhard Standard Primer
    - b. Resin: Epoxy
    - c. Formulation Description: (2) two component, 100 percent solids.
    - d. Application Method: Squeegee and roller.
    - e. Number of Coats: (1) one.
  2. Mortar Base:
    - a. Material design basis: Stonclad GS
    - b. Resin: Epoxy.
    - c. Formulation Description: (3) three component, 100 percent solids.
    - d. Application Method: Metal Trowel.
      - 1) Thickness of Coats: nominal 1/4 inch.
      - 2) Number of Coats: One.
    - e. Aggregates: Pigmented Blended aggregate.
  3. Top Coat:
    - a. Material design basis: Stonkote GS4
    - b. Resin: Epoxy.
    - c. Formulation Description: (2) two component 100 percent solids.
    - d. Type: pigmented.
    - e. Finish: standard.
    - f. Number of Coats: one.
- F. System Physical Properties: Provide resinous flooring system with the following minimum physical property requirements when tested according to test methods indicated:
  1. Compressive Strength: 10,000 psi after 7 days per ASTM C 579.
  2. Tensile Strength: 1,750 psi per ASTM C 307.
  3. Flexural Strength: 4,000 psi per ASTM C 580.
  4. Water Absorption: < 1% per ASTM C 413.
  5. Impact Resistance: > 160 in. lbs. per ASTM D 2794.
  6. Flammability: Class 1 per ASTM E-648.
  7. Hardness: .85 to .90, Shore D per ASTM D 2240.
  8. Flexural Modulus of Elasticity:  $2.0 \times 10^6$  psi per ASTM C-580
  9. Thermal Coefficient of Linear Expansion:  $1.4 \times 10^{-5}$  in./in.°F per ASTM C-531

## 2.2 ACCESSORY MATERIALS

- A. Patching, Leveling and Fill Material: Resinous product of or approved by resinous flooring manufacturer and recommended by manufacturer for application indicated.

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- B. Joint Sealant: Type recommended or produced by resinous flooring manufacturer for type of service and joint condition indicated. Allowances should be included for Stonflex MP7 joint fill material.

### **PART 3 - EXECUTION**

#### **3.1 PREPARATION**

- A. General: Prepare and clean substrates according to resinous flooring manufacturer's written instructions for substrate indicated. Provide clean, and dry substrate for resinous flooring application.
- B. 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:
    - a. 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.
  - 2. Repair damaged and deteriorated concrete according to resinous flooring manufacturer's written recommendations.
  - 3. Verify that concrete substrates meet the following requirements.
    - a. Perform in situ probe test, ASTM F 2170. Proceed with application only after substrates do not exceed a maximum potential equilibrium relative humidity of 85 percent.
    - b. Perform anhydrous calcium chloride test, ASTM F 1869. Proceed with application only after substrates have maximum moisture-vapor-emission rate of 6lb of water/1000 sq. ft.of slab in 24 hours.
- C. Use patching and fill material to fill holes and depressions in substrates according to manufacturer's written instructions.
- D. Treat control joints and other nonmoving substrate cracks to prevent cracks from reflecting through resinous flooring according to manufacturer's written recommendations. Allowances should be included for Stonflex MP7 joint fill material, and CT5 concrete crack treatment.

#### **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.
    - a. Apply joint sealant to comply with manufacturer's written recommendations.
- B. Apply primer where required by resinous system, over prepared substrate at manufacturer's recommended spreading rate.
- C. Integral Cove Base: Stonclad GS mortar, apply cove base mix to wall surfaces before applying flooring. Apply according to manufacturer's written instructions and details including those for taping, mixing, priming, troweling, sanding, of cove base. Round internal and external corners.
  - 1. Integral Cove Base: <TBD> inches high.
- D. Apply metal trowel single mortar coat in thickness indicated for flooring system. Hand or power trowel and grout to fill voids. When cured, sand to remove trowel marks and roughness.



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- E. Apply topcoat(s) in number of coats indicated for flooring system and at spreading rates recommended in writing by manufacturer.

### 3.3 TERMINATIONS

- A. Chase edges to "lock" the flooring system into the concrete substrate along lines of termination.
- B. Penetration Treatment: Lap and seal resinous system onto the perimeter of the penetrating item by bridging over compatible elastomer at the interface to compensate for possible movement.
- C. Trenches: Continue flooring system into trenches to maintain monolithic protection. Treat cold joints to assure bridging of potential cracks.
- D. Treat floor drains by chasing the flooring system 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 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 numbers of times during resinous 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, 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 applied 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, PROTECTING, AND CURING

- 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 materials from damage and wear during construction operation. Where temporary covering is required for this purpose, comply with manufacturer's recommendations for protective materials and method of application. General Contractor is responsible for protection.
- C. Cleaning: Remove temporary covering and clean resinous flooring just prior to final inspection. Use cleaning materials and procedures recommended by resinous flooring manufacturer. General contractor responsible for cleaning prior to inspection.

END OF SECTION 096723



## **SECTION 096813 - TILE CARPETING**

### **PART 1 - GENERAL**

#### **1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

#### **1.2 SUMMARY**

- A. Section includes modular carpet tile.
- B. Related Requirements:
  - 1. Section 024119 "Selective Demolition" for removing existing floor coverings.
  - 2. Section 096513 "Resilient Base and Accessories"
  - 3. Section 096519 "Resilient Tile Flooring"] for resilient wall base and accessories installed with carpet tile.

#### **1.3 ACTION SUBMITTALS**

- A. Product Data: For each type of product.
  - 1. Include manufacturer's written data on physical characteristics, durability, and fade resistance.
  - 2. Include manufacturer's written installation recommendations for each type of substrate.
- B. Samples: For each of the following products and for each color and texture required. Label each Sample with manufacturer's name, material description, color, pattern, and designation indicated on Drawings and in schedules.
  - 1. Carpet Tile: Full-size Sample.
  - 2. Exposed Edge, Transition, and Other Accessory Stripping: 12-inch-long Samples.
- C. Samples for Initial Selection: For each type of carpet tile.
  - 1. Include Samples of exposed edge, transition, and other accessory stripping involving color or finish selection.
- D. Samples for Verification: For each of the following products and for each color and texture required. Label each Sample with manufacturer's name, material description, color, pattern, and designation indicated on Drawings and in schedules.
  - 1. Carpet Tile: Full-size Sample.
  - 2. Exposed Edge, Transition, and Other Accessory Stripping: 12-inch-long Samples.
- E. Product Schedule: For carpet tile. Use same designations indicated on Drawings.

#### **1.4 INFORMATIONAL SUBMITTALS**

- A. Qualification Data: For Installer.

#### **1.5 CLOSEOUT SUBMITTALS**

- A. Maintenance Data: For carpet tiles to include in maintenance manuals. 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.

#### **1.6 MAINTENANCE MATERIAL SUBMITTALS**

- A. Furnish extra materials, from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
  - 1. Carpet Tile: Full-size units equal to 5 percent of amount installed for each type indicated, but not less than 10 sq. yd.

**1.7 QUALITY ASSURANCE**

- A. Installer Qualifications: Company specializing in installing carpet with minimum three years documented experience.

**1.8 DELIVERY, STORAGE, AND HANDLING**

- A. Comply with CRI's "CRI Carpet Installation Standard."

**1.9 FIELD CONDITIONS**

- A. Comply with CRI's "CRI Carpet Installation Standard" for temperature, humidity, and ventilation limitations.
- B. Environmental Limitations: Do not deliver or install carpet tiles until spaces are enclosed and weathertight, wet-work in spaces is complete and dry, and ambient temperature and humidity conditions are maintained at levels planned for building occupants during the remainder of the construction period.
- C. Do not install carpet tiles over concrete slabs until slabs have cured and are sufficiently dry to bond with adhesive and concrete slabs have pH range recommended by carpet tile manufacturer.
- D. Where demountable partitions or other items are indicated for installation on top of carpet tiles, install carpet tiles before installing these items.

**1.10 WARRANTY**

- A. Special Warranty for Carpet Tiles: Manufacturer agrees to repair or replace components of carpet tile installation that fail in materials or workmanship within specified warranty period.
1. Warranty does not include deterioration or failure of carpet tile due to unusual traffic, failure of substrate, vandalism, or abuse.
  2. Failures include, but are not limited to, the following:
    - a. More than 10 percent edge raveling, snags, and runs.
    - b. Dimensional instability.
    - c. Excess static discharge.
    - d. Loss of tuft-bind strength.
    - e. Loss of face fiber.
    - f. Delamination.
  3. Warranty Period: 1 year from date of Substantial Completion.

**PART 2 - PRODUCTS**

**2.1 CARPET TILE**

- A. Acceptable Manufacturers:
1. Tandus: [www.tandus.com](http://www.tandus.com).
  2. Interface, Inc: [www.interfaceinc.com](http://www.interfaceinc.com).
  3. Lees Carpets: [www.leescarpets.com](http://www.leescarpets.com).
  4. Patcraft: [www.patcraft.com](http://www.patcraft.com)
  5. Mannington Commercial: [www.mannington.com](http://www.mannington.com)

**2.2 MATERIALS**

- A. Carpet Tile Basis of Design: Mannington 'Everywhere III' Modular 24"x24" manufactured in one color dye lot.
1. Color: As selected by Owner from manufacturer's full range for specified series.
  2. Critical Radiant Flux: Minimum of 0.22 watts/sq cm, when tested in accordance with ASTM E648 or NFPA 253.
  3. Surface Flammability Ignition: Pass ASTM D2859 (the "pill test").
  4. Max. Electrostatic Charge: 3 Kv. at 20 percent relative humidity.

### **2.3 INSTALLATION ACCESSORIES**

- A. Trowelable Leveling and Patching Compounds: Latex-modified, hydraulic-cement-based formulation provided or recommended by carpet tile manufacturer.
- B. Adhesives: Water-resistant, mildew-resistant, nonstaining, pressure-sensitive type to suit products and subfloor conditions indicated, that comply with flammability requirements for installed carpet tile, and are recommended by carpet tile manufacturer for releasable installation.
- C. Edge Strips: Vinyl products by same manufacturer as Resilient Base, Refer to Section 01 6210 Schedule of Colors for approved color.
  - 1. Product: Profile equal to "Tile and Carpet Joiner No. 150" manufactured by Burke Flooring

## **PART 3 - EXECUTION**

### **3.1 EXAMINATION**

- A. Verify that sub-floor surfaces are smooth and flat within tolerances specified for that type of work and are ready to receive carpet tile.
- B. Verify that sub-floor surfaces are dust-free and free of substances that could impair bonding of adhesive materials to sub-floor surfaces.
- C. Cementitious Sub-floor Surfaces: Verify that substrates are dry enough and ready for flooring installation by testing for moisture and pH.
  - 1. Test in accordance with ASTM F710.
  - 2. Obtain instructions if test results are not within limits recommended by flooring material manufacturer and adhesive materials manufacturer.
- D. Verify that required floor-mounted utilities are in correct location.

### **3.2 PREPARATION**

- A. General: Comply with CRI's "Carpet Installation Standards" and with carpet tile manufacturer's written installation instructions for preparing substrates indicated to receive carpet tile.
- B. Use trowelable leveling and patching compounds, according to manufacturer's written instructions, to fill cracks, holes, depressions, and protrusions in substrates. Fill or level cracks, holes and depressions 1/8 inch wide or wider, and protrusions more than 1/32 inch unless more stringent requirements are required by manufacturer's written instructions.
- C. Concrete Substrates: Remove coatings, including curing compounds, and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, without using solvents. Use mechanical methods recommended in writing by adhesive and carpet tile manufacturers.
- D. Metal Substrates: Clean grease, oil, soil and rust, and prime if recommended in writing by adhesive manufacturer. Rough sand painted metal surfaces and remove loose paint. Sand aluminum surfaces, to remove metal oxides, immediately before applying adhesive.
- E. Broom and vacuum clean substrates to be covered immediately before installing carpet tile.

### **3.3 INSTALLATION**

- A. General: Comply with CRI's "CRI Carpet Installation Standard," Section 18, "Modular Carpet" and with carpet tile manufacturer's written installation instructions.
- B. Installation Method: As recommended in writing by carpet tile manufacturer.
- C. Maintain dye-lot integrity. Do not mix dye lots in same area.
- D. Maintain pile-direction patterns indicated on Drawings.
- E. 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.

- F. Extend carpet tile into toe spaces, door reveals, closets, open-bottomed obstructions, removable flanges, alcoves, and similar openings.
- G. Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating on carpet tile as marked on subfloor. Use nonpermanent, nonstaining marking device.
- H. Install pattern parallel to walls and borders.
- I. Access Flooring: Stagger joints of carpet tiles so carpet tile grid is offset from access flooring panel grid. Do not fill seams of access flooring panels with carpet adhesive; keep seams free of adhesive.

**3.4 CLEANING AND PROTECTION**

- A. Perform the following operations immediately after installing carpet tile:
  - 1. Remove excess adhesive and other surface blemishes using cleaner recommended by carpet tile manufacturer.
  - 2. Remove yarns that protrude from carpet tile surface.
  - 3. Vacuum carpet tile using commercial machine with face-beater element.
- B. Protect installed carpet tile to comply with CRI's "Carpet Installation Standard," Section 20, "Protecting Indoor Installations."
- C. Protect carpet tile against damage from construction operations and placement of equipment and fixtures during the remainder of construction period. Use protection methods indicated or recommended in writing by carpet tile manufacturer.

END OF SECTION 096813

## **SECTION 099113 – PAINTING & FLOOR COATING**

### **PART 1 - GENERAL**

#### **1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

#### **1.2 SCOPE**

- A. Application of paint will be by Owner.
- B. The Contractor shall
  - 1. Removal materials from surfaces to be painted/coated
    - a. CMU walls in detention areas as indicated
    - b. Resident Bedroom floors as indicated
    - c. Window frames in detention areas as indicated
  - 2. Repair window frames in detention area as specified in this section.
  - 3. Prepare surfaces to be painted in detention area:
    - a. CMU walls in detention areas as indicated
    - b. Resident Bedroom floors as indicated
    - c. Window frames in detention areas as indicated
  - 4. Apply scheduled coating products to concrete floors of Resident Bedrooms

#### **1.3 SUMMARY**

- A. Section includes, but is not limited to:
- B. Exterior paints and coatings systems including; paints, stains, transparent coatings, and opaque finishes.
- C. Interior paint and coatings systems including; paint, stains transparent coatings, and opaque finishes.
- D. Specific products and painting scheduled in this Section are based, in general, on products of Sherwin Williams.
- E. Cleaning, Repairing, and Painting Steel Frames.

#### **1.4 REFERENCES**

- A. Industry Association Standards
- B. SSPC-SP 1 – Solvent Cleaning.
- C. SSPC-SP 2 – Hand Tool Cleaning.
- D. SSPC-SP 3 – Power Tool Cleaning.
- E. SSPC-SP 13 / NACE No. 6 Surface Preparation for Concrete.

#### **1.5 DEFINITIONS**

- A. Paint
- B. Means coating systems materials including primers, emulsions, epoxy, enamels, sealers, fillers, and other applied materials whether used as prime, intermediate, or finish coats.

#### **1.6 ACTION SUBMITTALS**

- A. Product Data: For each type of product. Include preparation requirements and application instructions.
  - 1. Include printout of current "MPI Approved Products List" for each product category specified, with the proposed product highlighted.
  - 2. Indicate VOC content.
- B. Samples for Verification: For each type of paint system and each color and gloss of topcoat.

1. Submit Samples on rigid backing, 8 inches square.
2. Apply coats on Samples in steps to show each coat required for system.
3. Label each coat of each Sample.
4. Label each Sample for location and application area.

- C. Product List: Cross-reference to paint system and locations of application areas. Use same designations indicated on Drawings and in schedules. Include color designations.

#### **1.7 MAINTENANCE MATERIAL SUBMITTALS**

- A. Furnish extra materials, from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
1. Paint: 5 percent, but not less than 1 gal. of each material and color applied.

#### **1.8 QUALITY ASSURANCE**

- A. Mockups: Apply mockups of each paint system indicated and each color and finish selected to verify preliminary selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.
1. Architect will select one surface to represent surfaces and conditions for application of each paint system.
    - a. Vertical and Horizontal Surfaces: Provide samples of at least 100 sq. ft..
    - b. Other Items: Architect will designate items or areas required.
  2. Final approval of color selections will be based on mockups.
    - a. If preliminary color selections are not approved, apply additional mockups of additional colors selected by Architect at no added cost to Owner.
  3. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
  4. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.
  5. Obtain each type of material from single source.

#### **1.9 DELIVERY, STORAGE, AND HANDLING**

- A. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F.
1. Maintain containers in clean condition, free of foreign materials and residue.
  2. Deliver manufacturer's unopened containers to the work site. Package shall bear the manufacturer's name, label, and the following list of information:
  3. Product name, type (description)
  4. Application and use instructions.
  5. Surface preparation.
  6. VOC Content.
  7. Environmental issues.
  8. Batch date.
  9. Color number.
  10. Store and dispose of solvent based materials, and materials used with solvent based materials, in accordance with requirements of locate authorities having jurisdiction.
  11. Store materials in an area that is within the acceptable manufacturer's temperature range.
  12. Remove rags and waste from storage areas daily.

#### **1.10 FIELD CONDITIONS**

- A. Project Environmental Requirements
- B. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not apply coatings under conditions outside manufacturer's absolute limits.



## **PART 2 - PRODUCTS**

### **2.1 MANUFACTURERS**

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - 1. Sherwin-Williams Company (The).
  - 2. Kelly-Moore Paints
  - 3. No substitutions.
- B. Products: Subject to compliance with requirements, provide product listed in schedule at the end of this section.

### **2.2 PAINT, GENERAL**

- A. Paints and Coatings – General
- B. Unless otherwise indicated, provide factory-mixed coatings. When required, mix coatings to correct consistency in accordance with manufacturer's instructions before application. Do not reduce, thin, or dilute coatings, or add materials to coatings unless such procedure is specifically described in manufacturer's product instructions.
- C. For opaque finishes, tint each coat including primer coat and intermediate coats, one-half shade lighter than succeeding coat, with final finish coat as base color.
- D. Primers
- E. Where the manufacturer offers options on primers for a particular substrate, use the primer categorized as "best" by the manufacturer.

### **2.3 COLORS**

- A. Colors: Colors for paint in various locations throughout the building shall be selected by Owner from manufacturer's full range. The Owner may select, allocate, and vary colors on different surfaces throughout the Work, subject to the following.
  - 1. Exterior work: A maximum of three (3) different colors will be used, with variations for trim, doors, miscellaneous work, and metal work.
  - 2. Interior work: A maximum of five (5) different pigmented colors will be used, with variations for trim and wall surfaces and wainscots.
  - 3. Dark tones: A maximum of three (3) dark tones will be used as accent colors for interior.

### **2.4 MISCELLANEOUS MATERIALS**

- A. Coating Application Accessories
- B. Provide all primers, sealers, cleaning agents, cleaning cloths, sanding materials, and clean-up materials required per manufacturer's specifications.

### **2.5 INTERIOR DRYWALL TEXTURING**

- A. Interior drywall texturing compounds shall be equal to U.S.G. "Multi-Purpose Texture Finish", or U.S.G. "Texture XII Drywall Surfer". Unless shown or otherwise indicated on the drawings, provide medium "Orange Peel or Spatter Finish" texture on walls or ceilings, as directed by Architect.
- B. Mix 1 Gallon of latex paint with each 50lbs. of texture.

## **PART 3 - EXECUTION**

### **3.1 EXAMINATION**

- A. Do not begin application of coatings until substrates have been properly prepared. Notify Architect of unsatisfactory conditions before proceeding.
- B. If substrate preparing is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

- C. Proceed with work only after conditions have been corrected, and approved by all parties otherwise application of coatings will be considered as an acceptance of surface conditions.

### 3.2 PREPARATION

- A. Comply with provisions of Section 01 7000 - Execution and Closeout Requirements.
- B. The surface must be dry and in sound condition. Remove oil, dust, dirt, loose rust, peeling paint or other contamination to ensure good adhesion.
- C. Remove mildew before painting by washing with a solution of 1 part liquid household bleach and 3 parts of warm water. Apply the solution and scrub the mildewed area. Allow the solution to remain on the surface for 10 minutes. Rinse thoroughly with clean water and allow the surface to dry 48 hours before painting. Wear protective glasses or goggles, waterproof gloves, and protective clothing. Quickly wash off any of the mixture that comes in contact with skin. Do not add detergents or ammonia to the bleach/water solution.
- D. No exterior painting shall be done immediately after a rain, during foggy weather, when rain is predicted, or when the temperature is below 50°F, unless products are designed specifically for these conditions.
- E. Methods:
  - 1. Concrete Masonry Units
    - a. Remove all loose mortar and foreign material. Surface must be free of laitance, concrete dust, dirt, form release agents, moisture curing membranes, loose cement, and hardeners. Concrete and mortar must be cured at least 30 days at 75°F. The pH of the surface should be between 6 and 9, unless the products to be used are designed to be used in high pH environments such as 247 Acry-Shield 100% Acrylic Masonry Primer. On tilt-up and poured-in-place concrete, commercial detergents and abrasive blasting may be necessary to prepare the surface. Fill bug holes, air pockets, and other voids with a cement patching compound.
  - 2. Concrete, SSPC-SP13 or NACE 6
    - a. This standard gives requirements for surface preparation of concrete by mechanical, chemical, or thermal methods prior to the application of bonded protective coating or lining systems. The requirements of this standard are applicable to all types of cementitious surfaces including cast-in-place concrete floors and walls, precast slabs, masonry walls, and shotcrete surfaces. An acceptable prepared concrete surface should be free of contaminants, laitance, loosely adhering concrete, and dust, and should provide a sound, uniform substrate suitable for the application of protective coating or lining systems.
  - 3. Drywall-Interior
    - a. Must be clean and dry. All nail heads must be set and spackled. Joints must be taped and covered with a joint compound. Spackled nail heads and tape joints must be sanded smooth and all dust removed prior to painting.
  - 4. Galvanized Metal
    - a. Clean per SSPC-SP1 using detergent and water or a degreasing cleaner to remove greases and oils. Apply a test area, priming as required. Allow the coating to dry at least one week before testing. If adhesion is poor, Brush Blast per SSPC-SP7 is necessary to remove these treatments.
  - 5. Steel: Structural, Plate, Doors, etc.
    - a. Clean by one or more of the surface preparations described below. All metal shall be thoroughly prepared to ensure adhesion of new paint to the prepared surface. All prepared surfaces shall be observed and approved by the Owner or Owners Representative before new paint is applied.
    - b. Solvent Cleaning, SSPC-SP1
      - 1) Solvent cleaning is a method for removing all visible oil, grease, soil, drawing and cutting compounds, and other soluble contaminants. Solvent cleaning does not remove rust or mill scale. Change rags and cleaning solution

- frequently so that deposits of oil and grease are not spread over additional areas in the cleaning process. Be sure to allow adequate ventilation.
- c. Hand Tool Cleaning, SSPC-SP2
    - 1) Hand Tool Cleaning removes all loose mill scale, loose rust and other detrimental foreign matter. It is not intended that adherent mill scale, rust, and paint be removed by this process. Before hand tool cleaning, remove visible oil, grease, soluble welding residues, and salts by the methods outlined in SSPC-SP1.
  - d. Power Tool Cleaning, SSPC-SP3
    - 1) Power Tool Cleaning removes all loose mill scale, loose rust, and other detrimental foreign matter. It is not intended that adherent mill scale, rust, and paint be removed by this process. Before power tool cleaning, remove visible oil, grease, soluble welding residues, and salts by the methods outlined in SSPC-SP1.
- F. Repair of Steel Door and Window Frames:
- 1. Repair window frames in detention area as follows:
    - a. Clean by surface preparations described below. All metal shall be thoroughly prepared to ensure adhesion of new paint to the prepared surface. All prepared surfaces shall be observed and approved by the Owner or Owners Representative before new paint is applied.
    - b. Solvent Cleaning, SSPC-SP1
      - 1) Solvent cleaning is a method for removing all visible oil, grease, soil, drawing and cutting compounds, and other soluble contaminants. Solvent cleaning does not remove rust or mill scale. Change rags and cleaning solution frequently so that deposits of oil and grease are not spread over additional areas in the cleaning process. Be sure to allow adequate ventilation.
      - 2) Mix auto-body filler such as Bondo according to manufacturer's instructions. Use material to fill scratched or dented areas.
      - 3) Sand and clean patched areas.

### 3.3 APPLICATION

- A. Comply with provisions of Section 01 7000 - Execution and Closeout Requirements.
- B. Testing: Due to the wide variety of substrates, preparation methods, application methods and environments, one should test the product in an inconspicuous spot for adhesion and compatibility prior to full-scale application.
- C. Apply all coatings and materials with manufacture specifications in mind. Mix and thin coatings according to manufacture recommendation.
- D. Do not apply to wet or damp surfaces.
  - 1. Wait at least 30 days before applying to new concrete or masonry. Or follow manufactures procedures to apply appropriate coatings prior to 30 days.
  - 2. Test new concrete for moisture content.
  - 3. Wait until wood is fully dry after rain or morning fog or dew.
- E. Apply coatings using methods recommended by manufacturer.
- F. Uniformly apply coatings without runs, drips, or sags, without brush marks, and with consistent sheen.
- G. Apply coatings at spreading rate required to achieve the manufacturers recommended dry film thickness.
- H. Regardless of number of coats specified, apply as many coats as necessary for complete hide
- I. All drywall installation areas shall be made ready for painting by first preparing the gypsum wallboard surfaces with texturing as specified. Apply in strict compliance with manufacturer's written directions. Omit texturing where wall carpet occurs, reference Finish Schedule on drawings.
- J. Miscellaneous surfaces and procedures

1. Exposed mechanical items
    - a. Finish electric panels, access doors, conduits, pipes, ducts, grilles, registers, vents, and items of similar nature to match the adjacent wall and ceiling surfaces, or as directed.
    - b. Paint visible duct surfaces behind vents, registers, and grilles Kelly-Moore 5725 DTM Acrylic Metal Primer/ Kelly-Moore Acry-Plex 550 Black or equal.
    - c. Wash metal with solvent, prime, and apply two coats of alkyd enamel.
  2. Exposed pipe and duct insulation
    - a. Apply one coat of latex paint on insulation which has been primed under other Sections; apply two coats on such surfaces when unprepared.
    - b. Match color of adjacent surfaces.
    - c. Remove band before painting, and replace after painting.
  3. Hardware: Paint prime coated hardware to match adjacent surfaces.
  4. Wet areas
    - a. In toilet rooms and contiguous areas, add an approved fungicide to paints.
  5. Exposed vents: Apply two coats of heat-resistant paint approved by the Architect.
- M. Inspection: The coated surface must be inspected and approved by the architect just prior to each coat.

### **3.4 FIELD QUALITY CONTROL**

- A. Dry Film Thickness Testing: Owner may engage the services of a qualified testing and inspecting agency to inspect and test paint for dry film thickness.
1. Contractor shall touch up and restore painted surfaces damaged by testing.
  2. If test results show that dry film thickness of applied paint does not comply with paint manufacturer's written recommendations, Contractor shall pay for testing and apply additional coats as needed to provide dry film thickness that complies with paint manufacturer's written recommendations.

### **3.5 CLEANING AND PROTECTION**

- A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.
- B. After completing paint application, clean spattered surfaces. Remove spattered paints by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.
- C. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.
- D. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

### **3.6 PAINTING SCHEDULE**

- A. Exterior Non-Ferrous Metals: Including all exterior non-ferrous metals requiring paint.
1. Primer: Pro Industrial Pro-Cryl Universal Primer, B66-310 Series
  2. 1<sup>st</sup> Coat: Pro Industrial Acrylic Semi-Gloss, B66-650 Series
  3. 2<sup>nd</sup> Coat: Pro Industrial Acrylic Semi-Gloss, B66-650 Series
- B. Exterior Ferrous Metals: Including handrails, vents, window trim, grilles, all exposed primary and secondary structural framing and other non-prefinished exterior ferrous metals.
1. Primer: Pro Industrial Pro-Cryl Universal Primer, B66-310 Series
  2. 1<sup>st</sup> Coat: Pro Industrial Acrylic Semi-Gloss, B66-650 Series
  3. 2<sup>nd</sup> Coat: Pro Industrial Acrylic Semi-Gloss, B66-650 Series
- C. Interior CMU: Including all interior concrete masonry unit walls.
1. Primer: Loxon Block Surfacers, A24W200
  2. 1<sup>st</sup> Coat: Pro Industrial Water Based Catalyzed Epoxy Eg-Shel, B73-300 Series

3. 2<sup>nd</sup> Coat: Pro Industrial Water Based Catalyzed Epoxy Eg-Shel, B73-300 Series

D. Interior Plaster Ceilings

1. Primer: ProMar 200 Zero VOC Latex Primer, B28W2600
2. 1<sup>st</sup> Coat: Pro Industrial Water Based Catalyzed Epoxy
3. 2<sup>nd</sup> Coat: Pro Industrial Water Based Catalyzed Epoxy

E. Interior Non-Ferrous Metals: Including all interior non-ferrous metals requiring paint.

1. Primer: Pro Industrial Pro-Cry Universal Primer, B66-310 Series
2. 1<sup>st</sup> Coat: Pro Industrial Multi-Surface Acrylic Eg-Shel, B66-560 Series
3. 2<sup>nd</sup> Coat: Pro Industrial Multi-Surface Acrylic Eg-Shel, B66-560 Series

F. Interior Ferrous Metals: All exposed non-prefinished ferrous metal in office area and in warehouse including all hollow metal doors, hollow metal frames, exposed steel primary and secondary framing, and other interior ferrous metals.

1. Primer: Pro Industrial Pro-Cryl Universal Primer, B66-310 Series
2. 1<sup>st</sup> Coat: Pro Industrial Pre-Catalyzed Water Based Epoxy, K46 Series
3. 2<sup>nd</sup> Coat: Pro Industrial Pre-Catalyzed Water Based Epoxy, K46 Series

G. Interior Ferrous Metals in high use areas: Including all handrails and stairs.

1. Primer: Pro Industrial Pro-Cryl Universal Primer, B66-310 Series
2. 1<sup>st</sup> Coat: Pro Industrial Water Based Catalyzed Epoxy Eg-Shel, B73-360 Series
3. 2<sup>nd</sup> Coat: Pro Industrial Water Based Catalyzed Epoxy Eg-Shel, B73-360 Series

H. Gypsum Board: Including all painted and textured gypsum board walls.

1. Primer: ProMar 200 Zero VOC Latex Primer, B28W2600
2. 1<sup>st</sup> Coat: Pro Industrial Water Based Catalyzed Epoxy
3. 2<sup>nd</sup> Coat: Pro Industrial Water Based Catalyzed Epoxy

**3.7 INDUSTRIAL COATING SCHEDULE**

A. Interior Concrete Floors of Resident Bedrooms: Including concrete sealed floors.

1. Primer: KM-1703 100% Solids, Epoxy Concrete Glaze Coating
2. 1<sup>st</sup> Coat: KM-1850 100% Solids, Epoxy Glaze Color Coat
3. 2<sup>st</sup> Coat: KM-1850 100% Solids, Epoxy Glaze Color Coat

END OF SECTION 099113



## **SECTION 092216 - NON-STRUCTURAL METAL FRAMING**

### **PART 1 - GENERAL**

#### **1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

#### **1.2 SUMMARY**

- A. Section Includes:
  - 1. Non-load-bearing steel framing systems for interior gypsum board assemblies.
  - 2. Suspension systems for interior gypsum ceilings, soffits, and grid systems.

#### **1.3 ACTION SUBMITTALS**

- A. Product Data: For each type of product.

#### **1.4 INFORMATIONAL SUBMITTALS**

- A. Evaluation Reports: For dimpled steel studs and runners, from ICC-ES.

### **PART 2 - PRODUCTS**

#### **2.1 PERFORMANCE REQUIREMENTS**

- A. Fire-Test-Response Characteristics: For fire-resistance-rated assemblies that incorporate non-load-bearing steel framing, provide materials and construction identical to those tested in assembly indicated, according to ASTM E 119 by an independent testing agency.
- B. STC-Rated Assemblies: For STC-rated assemblies, provide materials and construction identical to those tested in assembly indicated, according to ASTM E 90 and classified according to ASTM E 413 by an independent testing agency.

#### **2.2 FRAMING SYSTEMS**

- A. Framing Members, General: Comply with ASTM C 754 for conditions indicated.
  - 1. Steel Sheet Components: Comply with ASTM C 645 requirements for metal unless otherwise indicated.
  - 2. Protective Coating: ASTM A 653/A 653M, G40, hot-dip galvanized unless otherwise indicated.
- B. Studs and Runners: ASTM C 645.
  - 1. Steel Studs and Runners:
    - a. Minimum Base-Metal Thickness: As indicated on Drawings but not less than 0.018 inch.
    - b. Depth: As indicated on Drawings.
  - 2. Dimpled Steel Studs and Runners:
    - a. Minimum Base-Metal Thickness: as necessary to equal structural properties of non-dimpled counterpart members.
- C. Slip-Type Head Joints: Where indicated, provide one of the following:
  - 1. Deflection Track: Steel sheet top runner manufactured to prevent cracking of finishes applied to interior partition framing resulting from deflection of structure above; in thickness not less than indicated for studs and in width to accommodate depth of studs.
    - a. Products: Subject to compliance with requirements,:
      - 1) Dietrich Metal Framing; SLP-TRK Slotted Deflection Track.
      - 2) MBA Building Supplies; FlatSteel Deflection Track.
      - 3) Steel Network Inc. (The); VertiClip SLD Series.
      - 4) Superior Metal Trim; Superior Flex Track System (SFT).
      - 5) Telling Industries; Vertical Slip Track or Vertical Slip Track II.

- D. Firestop Tracks: Top runner manufactured to allow partition heads to expand and contract with movement of the structure while maintaining continuity of fire-resistance-rated assembly indicated; in thickness not less than indicated for studs and in width to accommodate depth of studs.
  - 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
    - a. Fire Trak Corp.; Fire Trak System.
    - b. Grace Construction Products; FlameSafe FlowTrak System.
    - c. Metal-Lite, Inc.; The System.
- E. Flat Strap and Backing Plate: Steel sheet for blocking and bracing in length and width indicated.
  - 1. Minimum Base-Metal Thickness: As necessary to support attached loads.
- F. Hat-Shaped, Rigid Furring Channels: ASTM C 645.
  - 1. Minimum Base-Metal Thickness: as necessary to support imposed loads.
  - 2. Depth: As indicated on Drawings, or where not indicated - 7/8 inch.

### **2.3 AUXILIARY MATERIALS**

- A. General: Provide auxiliary materials that comply with referenced installation standards.
  - 1. Fasteners for Metal Framing: Of type, material, size, corrosion resistance, holding power, and other properties required to fasten steel members to substrates.
- B. Isolation Strip at Exterior Walls: Provide one of the following:
  - 1. Foam Gasket: Adhesive-backed, closed-cell vinyl foam strips that allow fastener penetration without foam displacement, 1/8 inch thick, in width to suit steel stud size.

## **PART 3 - EXECUTION**

### **3.1 EXAMINATION**

- A. Examine areas and substrates, with Installer present, and including welded hollow-metal frames, cast-in anchors, and structural framing, for compliance with requirements and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

### **3.2 PREPARATION**

- A. Suspended Assemblies: Coordinate installation of suspension systems with installation of overhead structure to ensure that inserts and other provisions for anchorages to building structure have been installed to receive hangers at spacing required to support the Work and that hangers will develop their full strength.
  - 1. Furnish concrete inserts and other devices indicated to other trades for installation in advance of time needed for coordination and construction.
- B. Coordination with Sprayed Fire-Resistive Materials:
  - 1. Before sprayed fire-resistive materials are applied, attach offset anchor plates or ceiling runners (tracks) to surfaces indicated to receive sprayed fire-resistive materials. Where offset anchor plates are required, provide continuous plates fastened to building structure not more than 24 inches o.c.
  - 2. After sprayed fire-resistive materials are applied, remove them only to extent necessary for installation of non-load-bearing steel framing. Do not reduce thickness of fire-resistive materials below that required for fire-resistance ratings indicated. Protect adjacent fire-resistive materials from damage.

### **3.3 INSTALLATION, GENERAL**

- A. Installation Standard: ASTM C 754.
  - 1. Gypsum Plaster Assemblies: Also comply with requirements in ASTM C 841 that apply to framing installation.



2. Portland Cement Plaster Assemblies: Also comply with requirements in ASTM C 1063 that apply to framing installation.
  3. Gypsum Veneer Plaster Assemblies: Also comply with requirements in ASTM C 844 that apply to framing installation.
  4. Gypsum Board Assemblies: Also comply with requirements in ASTM C 840 that apply to framing installation.
- B. Install supplementary framing, and blocking to support fixtures, equipment services, heavy trim, grab bars, toilet accessories, furnishings, or similar construction.
- C. Install bracing at terminations in assemblies.
- D. Do not bridge building control and expansion joints with non-load-bearing steel framing members. Frame both sides of joints independently.

### 3.4 INSTALLING FRAMED ASSEMBLIES

- A. Install framing system components according to spacings indicated, but not greater than spacings required by referenced installation standards for assembly types.
1. Single-Layer Application: 16 inches o.c. unless otherwise indicated.
  2. Tile Backing Panels: 16 inches o.c. unless otherwise indicated.
- B. Where studs are installed directly against exterior masonry walls or dissimilar metals at exterior walls, install isolation strip between studs and exterior wall.
- C. Install studs so flanges within framing system point in same direction.
- D. Install tracks (runners) at floors and overhead supports. Extend framing full height to structural supports or substrates above suspended ceilings except where partitions are indicated to terminate at suspended ceilings. Continue framing around ducts penetrating partitions above ceiling.
1. Slip-Type Head Joints: Where framing extends to overhead structural supports, install to produce joints at tops of framing systems that prevent axial loading of finished assemblies.
  2. Door Openings: Screw vertical studs at jambs to jamb anchor clips on door frames; install runner track section (for cripple studs) at head and secure to jamb studs.
    - a. Install two studs at each jamb unless otherwise indicated.
  3. Fire-Resistance-Rated Partitions: Install framing to comply with fire-resistance-rated assembly indicated and support closures and to make partitions continuous from floor to underside of solid structure.
    - a. Firestop Track: Where indicated, install to maintain continuity of fire-resistance-rated assembly indicated.
  4. Sound-Rated Partitions: Install framing to comply with sound-rated assembly indicated.
  5. Curved Partitions:
    - a. Bend track to uniform curve and locate straight lengths so they are tangent to arcs.
    - b. Begin and end each arc with a stud, and space intermediate studs equally along arcs. On straight lengths of no fewer than two studs at ends of arcs, place studs 6 inches o.c.
- E. Direct Furring:
  1. Screw to wood framing.
  2. Attach to concrete or masonry with stub nails, screws designed for masonry attachment, or powder-driven fasteners spaced 24 inches o.c.
- F. Installation Tolerance: Install each framing member so fastening surfaces vary not more than 1/8 inch from the plane formed by faces of adjacent framing.
- G. Provide all blocking required by other trades and as indicated to support facing materials, fixtures, accessories, specialty items, cabinets and trim.

END OF SECTION 092216

## **SECTION 101423.16 - ROOM-IDENTIFICATION PANEL SIGNAGE**

### **PART 1 - GENERAL**

#### **1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

#### **1.2 SUMMARY**

- A. Section includes room-identification signs that are directly attached to the building.

#### **1.3 DEFINITIONS**

- A. Accessible: In accordance with the accessibility standard.

#### **1.4 COORDINATION**

- A. Furnish templates for placement of sign-anchorage devices embedded in permanent construction by other installers.

#### **1.5 ACTION SUBMITTALS**

- A. Product Data: For each type of product.
- B. Samples for Selection For each type of sign assembly showing all components and with the required finish(es), in manufacturer's standard size unless otherwise indicated and as follows:
  - 1. Room-Identification Signs: Full-size Sample.
  - 2. Variable Component Materials: Full-size Sample of each base material, character (letter, number, and graphic element) in each exposed color and finish.
  - 3. Exposed Accessories: Full-size Sample of each accessory type.
  - 4. Full range of manufacturer's available colors.
- C. Product Schedule: For room-identification signs. Use same designations indicated on Drawings or specified. Actual (final) room names and numbers will be coordinated with Owner prior to fabrication of signs.

#### **1.6 INFORMATIONAL SUBMITTALS**

- A. Qualification Data: For Manufacturer.
- B. Sample Warranty: For special warranty.

#### **1.7 CLOSEOUT SUBMITTALS**

- A. Maintenance Data: For signs to include in maintenance manuals.

#### **1.8 MAINTENANCE MATERIAL SUBMITTALS**

- A. Furnish extra materials, from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
  - 1. Variable Component Materials: 12 replaceable text inserts and interchangeable characters (letters, numbers, and graphic elements) of each type.
  - 2. Tools: One set(s) of specialty tools for assembling signs and replacing variable sign components.

#### **1.9 QUALITY ASSURANCE**

- A. Installer Qualifications: Manufacturer of products.

#### **1.10 FIELD CONDITIONS**

- A. Field Measurements: Verify locations of anchorage devices and electrical service embedded in permanent construction by other installers by field measurements before fabrication and indicate measurements on Shop Drawings.

#### **1.11 WARRANTY**

- A. Special Warranty: Manufacturer agrees to repair or replace components of signs that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:
  - a. Deterioration of finishes beyond normal weathering.
  - b. Deterioration of embedded graphic image.
  - c. Separation or delamination of sheet materials and components.
2. Warranty Period: 1 years from date of Substantial Completion.

## **PART 2 - PRODUCTS**

### **2.1 PERFORMANCE REQUIREMENTS**

- A. Accessibility Standard: Comply with applicable provisions in the USDOJ's "2010 ADA Standards for Accessible Design" the ABA standards of the Federal agency having jurisdiction and ICC A117.1.

### **2.2 ROOM-IDENTIFICATION SIGNS**

- A. Room-Identification Sign: Sign with smooth, uniform surfaces; with message and characters having uniform faces, sharp corners, and precisely formed lines and profiles; and as follows:
  1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. ASI Sign Systems, Inc.
    - b. Bayku Graphic Sstems Inc.
    - c. Best Sign Systems, Inc.
    - d. Fast Signs.
    - e. Kroy Sign Systems.
    - f. Mohawk Sign Systems.
  2. Basis of Design: Mohawk Sign Systems: M1000 ADA System, 6"x6" and 6"x8" units, one color text on second color background.
  3. Laminated-Sheet Sign: Sandblasted polymer face sheet with raised graphics laminated to phenolic backing sheet to produce composite sheet.
    - a. Composite-Sheet Thickness: 0.25 inch.
    - b. Surface-Applied Graphics: Applied vinyl film.
    - c. Color(s): Match Architect's sample.
  4. Sign-Panel Perimeter: Finish edges smooth.
    - a. Edge Condition: Square cut.
    - b. Corner Condition in Elevation: Radiused
  5. Mounting: Manufacturer's standard method for substrates indicated with concealed anchors.
  6. Text and Typeface: Finish raised characters to contrast with background color, and finish Braille to contrast with background color.

### **2.3 SIGN MATERIALS**

- A. Acrylic Sheet: ASTM D 4802, category as standard with manufacturer for each sign, Type UVF (UV filtering).
- B. Vinyl Film: UV-resistant vinyl film with pressure-sensitive, permanent adhesive; die cut to form characters or images as indicated on Drawings.
- C. Paints and Coatings for Sheet Materials: Inks, dyes, and paints that are recommended by manufacturer for optimum adherence to surface and are UV and water resistant for colors and exposure indicated.

### **2.4 ACCESSORIES**

- A. Fasteners and Anchors: Manufacturer's standard as required for secure anchorage of signs, noncorrosive and compatible with each material joined, and complying with the following:
  1. Use concealed fasteners and anchors unless indicated to be exposed.

### **2.5 FABRICATION**

- A. General: Provide manufacturer's standard sign assemblies according to requirements indicated.

1. Preassemble signs and assemblies in the shop to greatest extent possible. Disassemble signs and assemblies only as necessary for shipping and handling limitations. Clearly mark units for reassembly and installation; apply markings in locations concealed from view after final assembly.
2. Mill joints to a tight, hairline fit. Form assemblies and joints exposed to weather to resist water penetration and retention.
3. Conceal connections if possible; otherwise, locate connections where they are inconspicuous.
4. Provide rabbets, lugs, and tabs necessary to assemble components and to attach to existing work. Drill and tap for required fasteners. Use concealed fasteners where possible; use exposed fasteners that match sign finish.

## **2.6 GENERAL FINISH REQUIREMENTS**

- A. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- B. 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.

## **PART 3 - EXECUTION**

### **3.1 INSTALLATION**

- A. General: Install signs using mounting methods indicated and according to manufacturer's written instructions.
  1. Install signs level, plumb, true to line, and at locations and heights indicated, with sign surfaces free of distortion and other defects in appearance.
  2. Install signs so they do not protrude or obstruct according to the accessibility standard.
  3. Before installation, verify that sign surfaces are clean and free of materials or debris that would impair installation.
- B. Accessibility: Install signs in locations on walls as indicated on Drawings.
- C. Mounting Methods:
  1. Concealed Studs: Using a template, drill holes in substrate aligning with studs on back of sign. Remove loose debris from hole and substrate surface.
    - a. Masonry Substrates: Fill holes with adhesive. Leave recess space in hole for displaced adhesive. Place sign in position and push until flush to surface, embedding studs in holes. Temporarily support sign in position until adhesive fully sets.
    - b. Thin or Hollow Surfaces: Place sign in position and flush to surface, install washers and nuts on studs projecting through opposite side of surface, and tighten.
  2. Through Fasteners: Drill holes in substrate using predrilled holes in sign as template. Countersink holes in sign if required. Place sign in position and flush to surface. Install through fasteners and tighten.
  3. Adhesive: Clean bond-breaking materials from substrate surface and remove loose debris. Apply linear beads or spots of adhesive symmetrically to back of sign and of suitable quantity to support weight of sign after cure without slippage. Keep adhesive away from edges to prevent adhesive extrusion as sign is applied and to prevent visibility of cured adhesive at sign edges. Place sign in position and push to engage adhesive. Temporarily support sign in position until adhesive fully sets.
  4. Two-Face Tape: Clean bond-breaking materials from substrate surface and remove loose debris. Apply tape strips symmetrically to back of sign and of suitable quantity to support weight of sign without slippage. Keep strips away from edges to prevent visibility at sign edges. Place sign in position and push to engage tape adhesive.

**3.2 ADJUSTING AND CLEANING**

- A. Remove and replace damaged or deformed signs and signs that do not comply with specified requirements. Replace signs with damaged or deteriorated finishes or components that cannot be successfully repaired by finish touchup or similar minor repair procedures.
- B. Remove temporary protective coverings and strippable films as signs are installed.
- C. On completion of installation, clean exposed surfaces of signs according to manufacturer's written instructions and touch up minor nicks and abrasions in finish. Maintain signs in a clean condition during construction and protect from damage until acceptance by Owner.

**3.3 SCHEDULE**

- A. Provide the following signs:
  - 1. Toilet Room identification for Unisex Restroom 42 (Verify size, color and actual room number with Owner.
  - 2. Store Room identification for storage 44 (Verify size, color and actual room number with Owner.

END OF SECTION 101423.16



## **SECTION 102800 - TOILET, BATH, AND LAUNDRY ACCESSORIES**

### **PART 1 - GENERAL**

#### **1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

#### **1.2 SUMMARY**

- A. Section Includes:
  - 1. Public-use washroom accessories.
  - 2. Underlavatory guards.
  - 3. Custodial accessories.
- B. Related Requirements:
  - 1. Section 093000 "Ceramic Tiling" for ceramic toilet and bath accessories.
  - 2. Section 102813.63 "Detention Toilet Accessories" for Detention side toilet and bath accessories.

#### **1.3 COORDINATION**

- A. Coordinate accessory locations with other work to prevent interference with clearances required for access by people with disabilities, and for proper installation, adjustment, operation, cleaning, and servicing of accessories.
- B. Deliver inserts and anchoring devices set into concrete or masonry as required to prevent delaying the Work.

#### **1.4 ACTION SUBMITTALS**

- A. Product Data: For each type of product.
  - 1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.
  - 2. Include anchoring and mounting requirements, including requirements for cutouts in other work and substrate preparation.
  - 3. Include electrical characteristics.

#### **1.5 WARRANTY**

- A. Manufacturer's Special Warranty for Mirrors: Manufacturer agrees to repair or replace mirrors that fail in materials or workmanship within specified warranty period.
  - 1. Failures include, but are not limited to, visible silver spoilage defects.
  - 2. Warranty Period: 15 years from date of Substantial Completion.

### **PART 2 - PRODUCTS**

#### **2.1 PERFORMANCE REQUIREMENTS**

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

#### **2.2 PUBLIC-USE WASHROOM ACCESSORIES**

- A. Source Limitations: Obtain public-use washroom accessories from single source from single manufacturer.

#### **2.3 MANUFACTURERS:**

- A. Manufacturers: Subject to compliance with requirements, provide products by the follow:
  - 1. Bobrick Washroom Equipment, Inc.
- B. Provide the following as indicated on drawings:
  - 1. Toilet Tissue (Roll) Dispenser.
    - a. Basis-of-Design Product: Bobrick B-4288

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Building Renovations  
310 Turk Street  
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2. Paper Towel (Roll) Dispenser.
  - a. Basis-of-Design Product: Bobrick B72860
3. Waste Receptacle.
  - a. Basis-of-Design Product: Bobrick B-3644
4. Grab Bar.
  - a. Basis-of-Design Product: Bobrick B6806
5. Mirror Unit.
  - a. Basis-of-Design Product: Bobrick B165
6. Coat Hook.
  - a. Basis-of-Design Product: Bobrick B-212

### **PART 3 - EXECUTION**

#### **3.1 INSTALLATION**

- A. Install accessories according to manufacturers' written instructions, using fasteners appropriate to substrate indicated and recommended by unit manufacturer. Install units level, plumb, and firmly anchored in locations and at heights indicated.
- B. Grab Bars: Install to withstand a downward load of at least 250 lbf, when tested according to ASTM F 446.

#### **3.2 ADJUSTING AND CLEANING**

- A. Adjust accessories for unencumbered, smooth operation. Replace damaged or defective items.
- B. Remove temporary labels and protective coatings.
- C. Clean and polish exposed surfaces according to manufacturer's written instructions.

END OF SECTION 102800



## **SECTION 102813.63 - DETENTION TOILET ACCESSORIES**

### **PART 1 - GENERAL**

#### **1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

#### **1.2 SUMMARY**

- A. Section Includes:
  - 1. Miscellaneous toilet accessories.
  - 2. Accessible Grab bars.
  - 3. Accessible Shower seats.
- B. Related Requirements:
  - 1. Section 013513.16 "Special Project Procedures for Detention Facilities" for general requirements for detention work.
  - 2. Section 102800 "Toilet, Bath, and Laundry Accessories" for nondetention toilet accessories.

#### **1.3 COORDINATION**

- A. Coordinate installation of anchorages for detention toilet accessories. 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 adjoining construction. Deliver such items to Project site in time for installation.
- B. Coordinate size and location of recesses in wall construction to receive recessed detention toilet accessories.

#### **1.4 ACTION SUBMITTALS**

- A. Product Data: For each type of product.
  - 1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.

#### **1.5 WARRANTY**

- A. Special Warranty: Manufacturer agrees to repair or replace detention toilet accessories that fail in materials or workmanship within specified warranty period.
  - 1. Failures include, but are not limited to, the following:
    - a. Structural failures including deflection exceeding 1/4 inch.
    - b. Faulty operation of hardware.
    - c. Deterioration of metals, metal finishes, and other materials.
  - 2. Warranty Period: Two years from date of Substantial Completion.

### **PART 2 - PRODUCTS**

#### **2.1 DETENTION TOILET ACCESSORIES - MANUFACTURERS**

- A. Subject to compliance with requirements indicated herein, provide products of one of the listed manufacturers.
  - 1. A&J Washroom Accessories Inc
  - 2. Bradley Corporation
  - 3. GAMCO, Division of Bobrick Washroom Equipment

## 2.2 MISCELLANEOUS DETENTION TOILET ACCESSORIES

- A. Recessed, Detention Soap Dish: Minimum inside dimensions of 5-3/4 inches wide by 4-1/2 inches high by 2-1/2 inches deep with 3/4-inch lip around entire face; formed from 0.050-inch thick, stainless-steel sheet. Secure to wall with rear-mounting steel strap and adjustment bolts.
- B. Materials:
  - 1. Stainless-Steel Sheet, Strip, Plate, and Flat Bars: ASTM A 666 or ASTM A 240/A 240M, austenitic stainless steel, Type 304.
- C. Stainless-Steel Finish:
  - 1. Surface Preparation: Remove tool and die marks and stretch lines, or blend into finish.
  - 2. Polished Finish: Grind and polish surfaces to produce uniform finish, free of cross scratches.
    - a. Run grain of directional finishes with long dimension of each piece.
    - b. When polishing is completed, passivate and rinse surfaces. Remove embedded foreign matter and leave surfaces chemically clean.
    - c. Directional Satin Finish: No. 4.

## 2.3 DETENTION GRAB BARS

- A. Grab Bars: 1-1/2 inches in diameter; formed from 0.038-inch-thick, stainless-steel tubing, with 3-inch-diameter flanges formed from 0.125-inch-thick, stainless steel. Closure plates formed from 0.125-inch-thick, stainless steel. All-welded construction.
  - 1. Length: As indicated on Drawings.
  - 2. Mounting: Front mounting with security fasteners.
- B. Materials:
  - 1. Stainless-Steel Sheet, Strip, Plate, and Flat Bars: ASTM A 666 or ASTM A 240/A 240M, austenitic stainless steel, Type 304.
  - 2. Stainless-Steel Tubing: ASTM A 1016 /A 1016M-08, austenitic stainless steel, Type 304, seamless.
- C. Stainless-Steel Finish:
  - 1. Surface Preparation: Remove tool and die marks and stretch lines, or blend into finish.
  - 2. Polished Finish: Grind and polish surfaces to produce uniform finish, free of cross scratches.
    - a. Run grain of directional finishes with long dimension of each piece.
    - b. When polishing is completed, passivate and rinse surfaces. Remove embedded foreign matter and leave surfaces chemically clean.
    - c. Directional Satin Finish: No. 4.

## 2.4 DETENTION SHOWER SEATS

- A. Shower Seats: Recessed, retractable shower seat with recessed handle. Approximately 16-inch by 16-inch overall size formed from 0.062-inch-thick, stainless-steel sheet. Seat pivots on solid 0.375-inch-diameter stainless-steel rod and self-latches when closed. Minimum 300-lb.loading capacity.
- B. Materials:
  - 1. Stainless-Steel Sheet, Strip, Plate, and Flat Bars: ASTM A 666 or ASTM A 240/A 240M, austenitic stainless steel, Type 304.
- C. Stainless-Steel Finish:
  - 1. Surface Preparation: Remove tool and die marks and stretch lines, or blend into finish.
  - 2. Polished Finish: Grind and polish surfaces to produce uniform finish, free of cross scratches.
    - a. Run grain of directional finishes with long dimension of each piece.
    - b. When polishing is completed, passivate and rinse surfaces. Remove embedded foreign matter and leave surfaces chemically clean.
    - c. Directional Satin Finish: No. 4.

## 2.5 FABRICATION

- A. Coordinate dimensions and attachment methods of detention toilet accessories with those of adjoining construction to produce integrated assemblies with closely fitting joints and with edges and surfaces aligned unless otherwise indicated.
- B. Shear and punch metals cleanly and accurately. Remove burrs.
- C. Form edges and corners to be free of sharp edges and rough areas. Fold back exposed edges of unsupported sheet metal to form a 1/2-inch-wide hem on the concealed side, or ease edges to a radius of approximately 1/32 inch and support with concealed stiffeners.
- D. Form metal in maximum lengths to minimize joints. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing work.
- E. Weld corners and seams continuously to comply with referenced AWS standard and the following:
  - 1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
  - 2. Obtain fusion without undercut or overlap.
  - 3. Remove welding flux immediately.
  - 4. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.
  - 5. Weld before finishing components to greatest extent possible. Remove weld spatter and welding oxides from exposed surfaces by descaling or grinding.
- F. Provide for anchorage of type indicated; coordinate with supporting structure. Fabricate and space anchoring devices to secure detention toilet accessories rigidly in place and to support expected loads. Build in straps, plates, and brackets as needed to support and anchor fabricated items to adjoining construction. Reinforce formed-metal units as needed to attach and support other construction.
- G. Cut, reinforce, drill, and tap detention toilet accessories to receive hardware, security fasteners, and similar items.
- H. Form exposed work true to line and level with accurate angles and surfaces. Grind off and ease edges unless otherwise indicated.
- I. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners where possible. Use exposed security fasteners of type indicated or, if not indicated, flat-head (countersunk) security fasteners. Locate joints where least conspicuous.

## 2.6 SECURITY FASTENERS

- A. Operable only by tools produced by fastener manufacturer or other licensed fabricator for use on specific type of fastener. Drive-system type, head style, material, and protective coating as required for assembly, installation, and strength, and as follows:
  - 1. Drive-System Type: [Pinned Torx-Plus][Pinned Torx]<Insert system>.
  - 2. Fastener Strength: 120,000 psi.
  - 3. Socket Button Head Fasteners:
    - a. Heat-treated alloy steel, ASTM F 835.
    - b. Stainless steel, ASTM F 879, Group 1 CW.
  - 4. Socket Flat Countersunk Head Fasteners:
    - a. Heat-treated alloy steel, ASTM F 835.
    - b. Stainless steel, ASTM F 879, Group 1 CW.
  - 5. Socket Head Cap Fasteners:
    - a. Heat-treated alloy steel, ASTM A 574.
    - b. Stainless steel, ASTM F 837, Group 1 CW.
  - 6. Protective Coatings for Heat-Treated Alloy Steel:
    - a. Zinc and clear trivalent chromium where indicated.

- b. Zinc phosphate with oil, ASTM F 1137, Grade I, or black oxide unless otherwise indicated.

## **2.7 SECURITY SEALANTS - MANUFACTURERS**

- A. Subject to compliance with requirements indicated herein, provide products of one of the listed manufacturers.
  1. BASF Construction Chemicals, LLC
  2. Euclid Chemical Company
  3. Pecora Corporation
- B. Epoxy Security Sealants: Manufacturer's standard, nonsag, tamper-resistant sealant for joints with no movement.

## **PART 3 - EXECUTION**

### **3.1 EXAMINATION**

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of detention toilet accessories.
  1. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance of detention toilet accessories.
- B. Verify locations of detention toilet accessories.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

### **3.2 INSTALLATION**

- A. Fastening to In-Place Construction: Provide anchorage devices and fasteners where necessary for securing detention toilet accessories to in-place construction. Include threaded fasteners for concrete and masonry inserts, security fasteners, and other connectors.
- B. Provide temporary bracing or anchors in formwork for items that are to be built into concrete or masonry or similar construction.
- C. Apply epoxy security sealant around perimeter in a continuous ribbon on back of detention toilet accessories before installation.
- D. Security Fasteners: Install detention toilet accessories using security fasteners with head style appropriate for installation requirements, strength, and finish of adjacent materials.

### **3.3 ADJUSTING AND CLEANING**

- A. Remove temporary labels and protective coatings.
- B. Touchup Painting: Immediately after erection, clean bolted connections and abraded areas of shop paint, and paint exposed areas with same material as used for shop painting to comply with SSPC-PA 1 for touching up shop-painted surfaces.
- C. Touchup Painting: Cleaning and touchup painting of bolted connections and abraded areas of shop paint are specified in Section 099123 "Interior Painting."

END OF SECTION 102813.63

## SECTION 220500 - COMMON WORK RESULTS FOR PLUMBING

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

#### 1.2 SUMMARY

- A. This Section includes the following:
  - 1. Piping materials and installation instructions common to most piping systems.
  - 2. Transition fittings.
  - 3. Dielectric fittings.
  - 4. Mechanical sleeve seals.
  - 5. Sleeves.
  - 6. Escutcheons.
  - 7. Grout.
  - 8. Plumbing demolition.
  - 9. Equipment installation requirements common to equipment sections.
  - 10. Painting and finishing.
  - 11. Concrete bases.
  - 12. Supports and anchorages.

#### 1.3 DEFINITIONS

- A. Finished Spaces: Spaces other than mechanical and electrical equipment rooms, furred spaces, pipe chases, unheated spaces immediately below roof, spaces above ceilings, unexcavated spaces, crawlspaces, and tunnels.
- B. Exposed, Interior Installations: Exposed to view indoors. Examples include finished occupied spaces and mechanical equipment rooms.
- C. Exposed, Exterior Installations: Exposed to view outdoors or subject to outdoor ambient temperatures and weather conditions. Examples include rooftop locations.
- D. Concealed, Interior Installations: Concealed from view and protected from physical contact by building occupants. Examples include above ceilings and in chases.
- E. Concealed, Exterior Installations: Concealed from view and protected from weather conditions and physical contact by building occupants but subject to outdoor ambient temperatures. Examples include installations within unheated shelters.
- F. The following are industry abbreviations for plastic materials:

1. ABS: Acrylonitrile-butadiene-styrene plastic.
2. CPVC: Chlorinated polyvinyl chloride plastic.
3. PE: Polyethylene plastic.
4. PVC: Polyvinyl chloride plastic.

G. The following are industry abbreviations for rubber materials:

1. EPDM: Ethylene-propylene-diene terpolymer rubber.
2. NBR: Acrylonitrile-butadiene rubber.

#### 1.4 SUBMITTALS

A. Product Data: For the following:

1. Transition fittings.
2. Dielectric fittings.
3. Mechanical sleeve seals.
4. Escutcheons.

B. Welding certificates.

#### 1.5 QUALITY ASSURANCE

A. Steel Support Welding: Qualify processes and operators according to AWS D1.1, "Structural Welding Code--Steel."

B. Steel Pipe Welding: Qualify processes and operators according to ASME Boiler and Pressure Vessel Code: Section IX, "Welding and Brazing Qualifications."

1. Comply with provisions in ASME B31 Series, "Code for Pressure Piping."
2. Certify that each welder has passed AWS qualification tests for welding processes involved and that certification is current.

C. Electrical Characteristics for Plumbing Equipment: Equipment of higher electrical characteristics may be furnished provided such proposed equipment is approved in writing and connecting electrical services, circuit breakers, and conduit sizes are appropriately modified. If minimum energy ratings or efficiencies are specified, equipment shall comply with requirements.

#### 1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver pipes and tubes with factory-applied end caps. Maintain end caps through shipping, storage, and handling to prevent pipe end damage and to prevent entrance of dirt, debris, and moisture.

B. Store plastic pipes protected from direct sunlight. Support to prevent sagging and bending.

## 1.7 COORDINATION

- A. Arrange for pipe spaces, chases, slots, and openings in building structure during progress of construction, to allow for plumbing installations.
- B. Coordinate installation of required supporting devices and set sleeves in poured-in-place concrete and other structural components as they are constructed.
- C. Coordinate requirements for access panels and doors for plumbing items requiring access that are concealed behind finished surfaces. Access panels and doors are specified in Division 08 Section "Access Doors and Frames."

## PART 2 - PRODUCTS

- A. A.Roof Curbs: Galvanized-steel sheet; with mitered and welded corners; 1-1/2-inch- thick, rigid fiberglass insulation adhered to inside walls; and 1-1/2-inch wood nailer. Size as required to fit roof opening and ventilator base.Flange Bolts and Nuts: ASME B18.2.1, carbon steel, unless otherwise indicated.
- B. Plastic, Pipe-Flange Gasket, Bolts, and Nuts: Type and material recommended by piping system manufacturer, unless otherwise indicated.
- C. Solder Filler Metals: ASTM B 32, lead-free alloys. Include water-flushable flux according to ASTM B 813.
- D. Brazing Filler Metals: AWS A5.8, BCuP Series, copper-phosphorus alloys for general-duty brazing, unless otherwise indicated; and AWS A5.8, BAg1, silver alloy for refrigerant piping, unless otherwise indicated.
- E. Welding Filler Metals: Comply with AWS D10.12 for welding materials appropriate for wall thickness and chemical analysis of steel pipe being welded.
- F. Solvent Cements for Joining Plastic Piping:
  - 1. ABS Piping: ASTM D 2235.
  - 2. CPVC Piping: ASTM F 493.
  - 3. PVC Piping: ASTM D 2564. Include primer according to ASTM F 656.
  - 4. PVC to ABS Piping Transition: ASTM D 3138.
- G. Fiberglass Pipe Adhesive: As furnished or recommended by pipe manufacturer.

## 2.2 TRANSITION FITTINGS

- A. AWWA Transition Couplings: Same size as, and with pressure rating at least equal to and with ends compatible with, piping to be joined.
  - 1. Manufacturers:
    - a. Cascade Waterworks Mfg. Co.
    - b. Dresser Industries, Inc.; DMD Div.

- c. Ford Meter Box Company, Incorporated (The); Pipe Products Div.
    - d. JCM Industries.
    - e. Smith-Blair, Inc.
    - f. Viking Johnson.
  - 2. Underground Piping NPS 1-1/2 and Smaller: Manufactured fitting or coupling.
  - 3. Underground Piping NPS 2 and Larger: AWWA C219, metal sleeve-type coupling.
  - 4. Aboveground Pressure Piping: Pipe fitting.
- B. Plastic-to-Metal Transition Fittings: CPVC and PVC one-piece fitting with manufacturer's Schedule 80 equivalent dimensions; one end with threaded brass insert, and one solvent-cement-joint end.
- 1. Manufacturers:
    - a. Eslon Thermoplastics.
- C. Plastic-to-Metal Transition Adaptors: One-piece fitting with manufacturer's SDR 11 equivalent dimensions; one end with threaded brass insert, and one solvent-cement-joint end.
- 1. Manufacturers:
    - a. Thompson Plastics, Inc. or equal
- D. Plastic-to-Metal Transition Unions: MSS SP-107, CPVC and PVC four-part union. Include brass end, solvent-cement-joint end, rubber O-ring, and union nut.
- 1. Manufacturers:
    - a. NIBCO INC. or equal
- E. Flexible Transition Couplings for Underground Nonpressure Drainage Piping: ASTM C 1173 with elastomeric sleeve, ends same size as piping to be joined, and corrosion-resistant metal band on each end.
- 1. Manufacturers:
    - a. Cascade Waterworks Mfg. Co.
    - b. Fernco, Inc.
    - c. Mission Rubber Company.
    - d. Plastic Oddities, Inc.

## 2.3 DIELECTRIC FITTINGS

- A. Description: Combination fitting of copper alloy and ferrous materials with threaded, solder-joint, plain, or weld-neck end connections that match piping system materials.
- B. Insulating Material: Suitable for system fluid, pressure, and temperature.
- C. Dielectric Unions: Factory-fabricated, union assembly, for 250-psig minimum working pressure at 180 deg F.



1. Manufacturers:
  - a. Capitol Manufacturing Co.
  - b. Central Plastics Company.
  - c. Eclipse, Inc.
  - d. Epcos Sales, Inc.
  - e. Hart Industries, International, Inc.
  - f. Watts Industries, Inc.; Water Products Div.
  - g. Zurn Industries, Inc.; Wilkins Div.
  
- D. Dielectric Flanges: Factory-fabricated, companion-flange assembly, for 150- or 300-psig minimum working pressure as required to suit system pressures.
  1. Manufacturers:
    - a. Capitol Manufacturing Co.
    - b. Central Plastics Company.
    - c. Epcos Sales, Inc.
    - d. Watts Industries, Inc.; Water Products Div.
  
- E. Dielectric-Flange Kits: Companion-flange assembly for field assembly. Include flanges, full-face- or ring-type neoprene or phenolic gasket, phenolic or polyethylene bolt sleeves, phenolic washers, and steel backing washers.
  1. Manufacturers:
    - a. Advance Products & Systems, Inc.
    - b. Calpico, Inc.
    - c. Central Plastics Company.
    - d. Pipeline Seal and Insulator, Inc.
  2. Separate companion flanges and steel bolts and nuts shall have 150- or 300-psig minimum working pressure where required to suit system pressures.
  
- F. Dielectric Couplings: Galvanized-steel coupling with inert and noncorrosive, thermoplastic lining; threaded ends; and 300-psig minimum working pressure at 225 deg F.
  1. Manufacturers:
    - a. Calpico, Inc.
    - b. Lochinvar Corp.
  
- G. Dielectric Nipples: Electroplated steel nipple with inert and noncorrosive, thermoplastic lining; plain, threaded, or grooved ends; and 300-psig minimum working pressure at 225 deg F.
  1. Manufacturers:
    - a. Perfection Corp.
    - b. Precision Plumbing Products, Inc.
    - c. Sioux Chief Manufacturing Co., Inc.
    - d. Victaulic Co. of America.

## 2.4 MECHANICAL SLEEVE SEALS

- A. Description: Modular sealing element unit, designed for field assembly, to fill annular space between pipe and sleeve.
  - 1. Manufacturers:
    - a. Advance Products & Systems, Inc.
    - b. Calpico, Inc.
    - c. Metraflex Co.
    - d. Pipeline Seal and Insulator, Inc.
  - 2. Sealing Elements: EPDM or NBR interlocking links shaped to fit surface of pipe. Include type and number required for pipe material and size of pipe.
  - 3. Pressure Plates: Plastic, Carbon steel, or Stainless steel. Include two for each sealing element.
  - 4. Connecting Bolts and Nuts: Stainless steel of length required to secure pressure plates to sealing elements. Include one for each sealing element.

## 2.5 SLEEVES

- A. Galvanized-Steel Sheet: 0.0239-inch minimum thickness; round tube closed with welded longitudinal joint.
- B. Steel Pipe: ASTM A 53, Type E, Grade B, Schedule 40, galvanized, plain ends.
- C. Cast Iron: Cast or fabricated "wall pipe" equivalent to ductile-iron pressure pipe, with plain ends and integral waterstop, unless otherwise indicated.
- D. Stack Sleeve Fittings: Manufactured, cast-iron sleeve with integral clamping flange. Include clamping ring and bolts and nuts for membrane flashing.
  - 1. Underdeck Clamp: Clamping ring with set screws.
- E. Molded PVC: Permanent, with nailing flange for attaching to wooden forms.
- F. PVC Pipe: ASTM D 1785, Schedule 40.
- G. Molded PE: Reusable, PE, tapered-cup shaped, and smooth-outer surface with nailing flange for attaching to wooden forms.

## 2.6 ESCUTCHEONS

- A. Description: Manufactured wall and ceiling escutcheons and floor plates, with an ID to closely fit around pipe, tube, and insulation of insulated piping and an OD that completely covers opening.
- B. One-Piece, Deep-Pattern Type: Deep-drawn, box-shaped brass with polished chrome-plated finish.

- C. One-Piece, Cast-Brass Type: With set screw.
  - 1. Finish: Polished chrome-plated and rough brass.
- D. Split-Casting, Cast-Brass Type: With concealed hinge and set screw.
  - 1. Finish: Polished chrome-plated and rough brass.
- E. One-Piece, Stamped-Steel Type: With set screw or spring and chrome-plated finish.
- F. Split-Plate, Stamped-Steel Type: With concealed or exposed-rivet hinge, set screw or spring clips, and chrome-plated finish.
- G. One-Piece, Floor-Plate Type: Cast-iron floor plate.
- H. Split-Casting, Floor-Plate Type: Cast brass with concealed hinge and set screw.

## 2.7 GROUT

- A. Description: ASTM C 1107, Grade B, nonshrink and nonmetallic, dry hydraulic-cement grout.
  - 1. Characteristics: Post-hardening, volume-adjusting, nonstaining, noncorrosive, nongaseous, and recommended for interior and exterior applications.
  - 2. Design Mix: 5000-psi, 28-day compressive strength.
  - 3. Packaging: Premixed and factory packaged.

## PART 3 - EXECUTION

### 3.1 PLUMBING DEMOLITION

- A. Refer to Division 01 Section "Cutting and Patching" and Division 02 Section "Selective Structure Demolition" for general demolition requirements and procedures.
- B. Disconnect, demolish, and remove plumbing systems, equipment, and components indicated to be removed.
  - 1. Piping to Be Removed: Remove portion of piping indicated to be removed and cap or plug remaining piping with same or compatible piping material.
  - 2. Piping to Be Abandoned in Place: Drain piping and cap or plug piping with same or compatible piping material.
  - 3. Equipment to Be Removed: Disconnect and cap services and remove equipment.
  - 4. Equipment to Be Removed and Reinstalled: Disconnect and cap services and remove, clean, and store equipment; when appropriate, reinstall, reconnect, and make equipment operational.
  - 5. Equipment to Be Removed and Salvaged: Disconnect and cap services and remove equipment and deliver to Owner.
- C. If pipe, insulation, or equipment to remain is damaged in appearance or is unserviceable, remove damaged or unserviceable portions and replace with new products of equal capacity and quality.

### 3.2 PIPING SYSTEMS - COMMON REQUIREMENTS

- A. Install piping according to the following requirements and Division 22 Sections specifying piping systems.
- B. Drawing plans, schematics, and diagrams indicate general location and arrangement of piping systems. Indicated locations and arrangements were used to size pipe and calculate friction loss, expansion, pump sizing, and other design considerations. Install piping as indicated unless deviations to layout are approved on Coordination Drawings.
- C. Install piping in concealed locations, unless otherwise indicated and except in equipment rooms and service areas.
- D. Install piping indicated to be exposed and piping in equipment rooms and service areas at right angles or parallel to building walls. Diagonal runs are prohibited unless specifically indicated otherwise.
- E. Install piping above accessible ceilings to allow sufficient space for ceiling panel removal.
- F. Install piping to permit valve servicing.
- G. Install piping at indicated slopes.
- H. Install piping free of sags and bends.
- I. Install fittings for changes in direction and branch connections.
- J. Install piping to allow application of insulation.
- K. Select system components with pressure rating equal to or greater than system operating pressure.
- L. Install escutcheons for penetrations of walls, ceilings, and floors according to the following:
  - 1. New Piping:
    - a. Piping with Fitting or Sleeve Protruding from Wall: One-piece, deep-pattern type.
    - b. Chrome-Plated Piping: One-piece, cast-brass type with polished chrome-plated finish.
    - c. Insulated Piping: One-piece, stamped-steel type with spring clips.
    - d. Bare Piping at Wall and Floor Penetrations in Finished Spaces: One-piece, cast-brass type with polished chrome-plated finish.
    - e. Bare Piping at Wall and Floor Penetrations in Finished Spaces: One-piece, stamped-steel type.
    - f. Bare Piping at Ceiling Penetrations in Finished Spaces: One-piece or split-casting, cast-brass type with polished chrome-plated finish.
    - g. Bare Piping at Ceiling Penetrations in Finished Spaces: One-piece, stamped-steel type or split-plate, stamped-steel type with concealed hinge and set screw.
    - h. Bare Piping in Unfinished Service Spaces: One-piece, cast-brass type with polished chrome-plated or rough-brass finish.
    - i. Bare Piping in Unfinished Service Spaces: One-piece, stamped-steel type with concealed or exposed-rivet hinge and set screw or spring clips.

- j. Bare Piping in Equipment Rooms: One-piece, cast-brass type.
  - k. Bare Piping in Equipment Rooms: One-piece, stamped-steel type with set screw or spring clips.
  - l. Bare Piping at Floor Penetrations in Equipment Rooms: One-piece, floor-plate type.
2. Existing Piping: Use the following:
- a. Chrome-Plated Piping: Split-casting, cast-brass type with chrome-plated finish.
  - b. Insulated Piping: Split-plate, stamped-steel type with concealed or exposed-riquet hinge and spring clips.
  - c. Bare Piping at Wall and Floor Penetrations in Finished Spaces: Split-casting, cast-brass type with chrome-plated finish.
  - d. Bare Piping at Wall and Floor Penetrations in Finished Spaces: Split-plate, stamped-steel type with concealed hinge and spring clips.
  - e. Bare Piping at Ceiling Penetrations in Finished Spaces: Split-casting, cast-brass type with chrome-plated finish.
  - f. Bare Piping at Ceiling Penetrations in Finished Spaces: Split-plate, stamped-steel type with concealed hinge and set screw.
  - g. Bare Piping in Unfinished Service Spaces: Split-casting, cast-brass type with polished chrome-plated or rough-brass finish.
  - h. Bare Piping in Unfinished Service Spaces: Split-plate, stamped-steel type with concealed or exposed-riquet hinge and set screw or spring clips.
  - i. Bare Piping in Equipment Rooms: Split-casting, cast-brass type.
  - j. Bare Piping in Equipment Rooms: Split-plate, stamped-steel type with set screw or spring clips.
  - k. Bare Piping at Floor Penetrations in Equipment Rooms: Split-casting, floor-plate type.
- M. Sleeves are not required for core-drilled holes.
- N. Permanent sleeves are not required for holes formed by removable PE sleeves.
- O. Install sleeves for pipes passing through concrete and masonry walls and concrete floor and roof slabs.
- P. Install sleeves for pipes passing through concrete and masonry walls, gypsum-board partitions, and concrete floor and roof slabs.
- 1. Cut sleeves to length for mounting flush with both surfaces.
    - a. Exception: Extend sleeves installed in floors of mechanical equipment areas or other wet areas 2 inches above finished floor level. Extend cast-iron sleeve fittings below floor slab as required to secure clamping ring if ring is specified.
  - 2. Install sleeves in new walls and slabs as new walls and slabs are constructed.
  - 3. Install sleeves that are large enough to provide 1/4-inch annular clear space between sleeve and pipe or pipe insulation. Use the following sleeve materials:
    - a. PVC or Steel Pipe Sleeves: For pipes smaller than NPS 6.
    - b. Steel Sheet Sleeves: For pipes NPS 6 and larger, penetrating gypsum-board partitions.

- c. Stack Sleeve Fittings: For pipes penetrating floors with membrane waterproofing. Secure flashing between clamping flanges. Install section of cast-iron soil pipe to extend sleeve to 2 inches above finished floor level. Refer to Division 07 Section "Sheet Metal Flashing and Trim" for flashing.

- 1) Seal space outside of sleeve fittings with grout.

- 4. Except for underground wall penetrations, seal annular space between sleeve and pipe or pipe insulation, using joint sealants appropriate for size, depth, and location of joint. Refer to Division 07 Section "Joint Sealants" for materials and installation.

Q. Aboveground, Exterior-Wall Pipe Penetrations: Seal penetrations using sleeves and mechanical sleeve seals. Select sleeve size to allow for 1-inch annular clear space between pipe and sleeve for installing mechanical sleeve seals.

- 1. Install steel pipe for sleeves smaller than 6 inches in diameter.
- 2. Install cast-iron "wall pipes" for sleeves 6 inches and larger in diameter.
- 3. Mechanical Sleeve Seal Installation: Select type and number of sealing elements required for pipe material and size. Position pipe in center of sleeve. Assemble mechanical sleeve seals and install in annular space between pipe and sleeve. Tighten bolts against pressure plates that cause sealing elements to expand and make watertight seal.

R. Underground, Exterior-Wall Pipe Penetrations: Install cast-iron "wall pipes" for sleeves. Seal pipe penetrations using mechanical sleeve seals. Select sleeve size to allow for 1-inch annular clear space between pipe and sleeve for installing mechanical sleeve seals.

- 1. Mechanical Sleeve Seal Installation: Select type and number of sealing elements required for pipe material and size. Position pipe in center of sleeve. Assemble mechanical sleeve seals and install in annular space between pipe and sleeve. Tighten bolts against pressure plates that cause sealing elements to expand and make watertight seal.

S. Fire-Barrier Penetrations: Maintain indicated fire rating of walls, partitions, ceilings, and floors at pipe penetrations. Seal pipe penetrations with firestop materials. Refer to Division 07 Section "Penetration Firestopping" for materials.

T. Verify final equipment locations for roughing-in.

U. Refer to equipment specifications in other Sections of these Specifications for roughing-in requirements.

### 3.3 PIPING JOINT CONSTRUCTION

A. Join pipe and fittings according to the following requirements and Division 22 Sections specifying piping systems.

B. Ream ends of pipes and tubes and remove burrs. Bevel plain ends of steel pipe.

C. Remove scale, slag, dirt, and debris from inside and outside of pipe and fittings before assembly.

- D. Soldered Joints: Apply ASTM B 813, water-flushable flux, unless otherwise indicated, to tube end. Construct joints according to ASTM B 828 or CDA's "Copper Tube Handbook," using lead-free solder alloy complying with ASTM B 32.
- E. Brazed Joints: Construct joints according to AWS's "Brazing Handbook," "Pipe and Tube" Chapter, using copper-phosphorus brazing filler metal complying with AWS A5.8.
- F. Threaded Joints: Thread pipe with tapered pipe threads according to ASME B1.20.1. Cut threads full and clean using sharp dies. Ream threaded pipe ends to remove burrs and restore full ID. Join pipe fittings and valves as follows:
  - 1. Apply appropriate tape or thread compound to external pipe threads unless dry seal threading is specified.
  - 2. Damaged Threads: Do not use pipe or pipe fittings with threads that are corroded or damaged. Do not use pipe sections that have cracked or open welds.
- G. Welded Joints: Construct joints according to AWS D10.12, using qualified processes and welding operators according to Part 1 "Quality Assurance" Article.
- H. Flanged Joints: Select appropriate gasket material, size, type, and thickness for service application. Install gasket concentrically positioned. Use suitable lubricants on bolt threads.
- I. Plastic Piping Solvent-Cement Joints: Clean and dry joining surfaces. Join pipe and fittings according to the following:
  - 1. Comply with ASTM F 402 for safe-handling practice of cleaners, primers, and solvent cements.
  - 2. ABS Piping: Join according to ASTM D 2235 and ASTM D 2661 Appendixes.
  - 3. CPVC Piping: Join according to ASTM D 2846/D 2846M Appendix.
  - 4. PVC Pressure Piping: Join schedule number ASTM D 1785, PVC pipe and PVC socket fittings according to ASTM D 2672. Join other-than-schedule-number PVC pipe and socket fittings according to ASTM D 2855.
  - 5. PVC Nonpressure Piping: Join according to ASTM D 2855.
  - 6. PVC to ABS Nonpressure Transition Fittings: Join according to ASTM D 3138 Appendix.
- J. Plastic Pressure Piping Gasketed Joints: Join according to ASTM D 3139.
- K. Plastic Nonpressure Piping Gasketed Joints: Join according to ASTM D 3212.
- L. PE Piping Heat-Fusion Joints: Clean and dry joining surfaces by wiping with clean cloth or paper towels. Join according to ASTM D 2657.
  - 1. Plain-End Pipe and Fittings: Use butt fusion.
  - 2. Plain-End Pipe and Socket Fittings: Use socket fusion.
- M. Fiberglass Bonded Joints: Prepare pipe ends and fittings, apply adhesive, and join according to pipe manufacturer's written instructions.

### 3.4 PIPING CONNECTIONS

- A. Make connections according to the following, unless otherwise indicated:
  - 1. Install unions, in piping NPS 2 and smaller, adjacent to each valve and at final connection to each piece of equipment.
  - 2. Install flanges, in piping NPS 2-1/2 and larger, adjacent to flanged valves and at final connection to each piece of equipment.
  - 3. Dry Piping Systems: Install dielectric unions and flanges to connect piping materials of dissimilar metals.
  - 4. Wet Piping Systems: Install dielectric coupling and nipple fittings to connect piping materials of dissimilar metals.

### 3.5 EQUIPMENT INSTALLATION - COMMON REQUIREMENTS

- A. Install equipment to allow maximum possible headroom unless specific mounting heights are not indicated.
- B. Install equipment level and plumb, parallel and perpendicular to other building systems and components in exposed interior spaces, unless otherwise indicated.
- C. Install plumbing equipment to facilitate service, maintenance, and repair or replacement of components. Connect equipment for ease of disconnecting, with minimum interference to other installations. Extend grease fittings to accessible locations.
- D. Install equipment to allow right of way for piping installed at required slope.

### 3.6 PAINTING

- A. Painting of plumbing systems, equipment, and components is specified in Division 09 Sections "Interior Painting" and "Exterior Painting."
- B. Damage and Touchup: Repair marred and damaged factory-painted finishes with materials and procedures to match original factory finish.

### 3.7 CONCRETE BASES

- A. Concrete Bases: Anchor equipment to concrete base according to equipment manufacturer's written instructions and according to seismic codes at Project.
  - 1. Construct concrete bases of dimensions indicated, but not less than 4 inches larger in both directions than supported unit.
  - 2. Install dowel rods to connect concrete base to concrete floor. Unless otherwise indicated, install dowel rods on 18-inch centers around the full perimeter of the base.
  - 3. Install epoxy-coated anchor bolts for supported equipment that extend through concrete base, and anchor into structural concrete floor.
  - 4. Place and secure anchorage devices. Use supported equipment manufacturer's setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.



5. Install anchor bolts to elevations required for proper attachment to supported equipment.
6. Install anchor bolts according to anchor-bolt manufacturer's written instructions.
7. Use 3000-psi, 28-day compressive-strength concrete and reinforcement as specified in Division 03 Section "Cast-in-Place Concrete".

### 3.8 ERECTION OF METAL SUPPORTS AND ANCHORAGES

- A. Refer to Division 05 Section "Metal Fabrications" for structural steel.
- B. Cut, fit, and place miscellaneous metal supports accurately in location, alignment, and elevation to support and anchor plumbing materials and equipment.
- C. Field Welding: Comply with AWS D1.1.

### 3.9 ERECTION OF WOOD SUPPORTS AND ANCHORAGES

- A. Cut, fit, and place wood grounds, nailers, blocking, and anchorages to support, and anchor plumbing materials and equipment.
- B. Select fastener sizes that will not penetrate members if opposite side will be exposed to view or will receive finish materials. Tighten connections between members. Install fasteners without splitting wood members.
- C. Attach to substrates as required to support applied loads.

### 3.10 GROUTING

- A. Mix and install grout for plumbing equipment base bearing surfaces, pump and other equipment base plates, and anchors.
- B. Clean surfaces that will come into contact with grout.
- C. Provide forms as required for placement of grout.
- D. Avoid air entrapment during placement of grout.
- E. Place grout, completely filling equipment bases.
- F. Place grout on concrete bases and provide smooth bearing surface for equipment.
- G. Place grout around anchors.
- H. Cure placed grout.

END OF SECTION 220500



## SECTION 230500 - COMMON WORK RESULTS FOR HVAC

## PART 1 - GENERAL

## 1.1 SUMMARY

## A. This Section includes the following:

1. Piping materials and installation instructions common to most piping systems.
2. Dielectric fittings.
3. Mechanical sleeve seals.
4. Sleeves.
5. Escutcheons.
6. Grout.
7. HVAC demolition.
8. Equipment installation requirements common to equipment sections.
9. Concrete bases.
10. Supports and anchorages.

## 1.2 DEFINITIONS

- A. Finished Spaces: Spaces other than mechanical and electrical equipment rooms, furred spaces, pipe and duct chases, unheated spaces immediately below roof, spaces above ceilings, unexcavated spaces, crawlspaces, and tunnels.
- B. Exposed, Interior Installations: Exposed to view indoors. Examples include finished occupied spaces and mechanical equipment rooms.
- C. Exposed, Exterior Installations: Exposed to view outdoors or subject to outdoor ambient temperatures and weather conditions. Examples include rooftop locations.
- D. Concealed, Interior Installations: Concealed from view and protected from physical contact by building occupants. Examples include above ceilings and chases.
- E. Concealed, Exterior Installations: Concealed from view and protected from weather conditions and physical contact by building occupants but subject to outdoor ambient temperatures. Examples include installations within unheated shelters.

## 1.3 SUBMITTALS

- A. Welding certificates.

## 1.4 QUALITY ASSURANCE

- A. Steel Support Welding: Qualify processes and operators according to AWS D1.1, "Structural Welding Code--Steel."

- B. Steel Pipe Welding: Qualify processes and operators according to ASME Boiler and Pressure Vessel Code: Section IX, "Welding and Brazing Qualifications."
  - 1. Comply with provisions in ASME B31 Series, "Code for Pressure Piping."
  - 2. Certify that each welder has passed AWS qualification tests for welding processes involved and that certification is current.
- C. Electrical Characteristics for HVAC Equipment: Equipment of higher electrical characteristics may be furnished provided such proposed equipment is approved in writing and connecting electrical services, circuit breakers, and conduit sizes are appropriately modified. If minimum energy ratings or efficiencies are specified, equipment shall comply with requirements.

## PART 2 - PRODUCTS

### 2.1 PIPE, TUBE, AND FITTINGS

- A. Refer to individual Division 23 piping Sections for pipe, tube, and fitting materials and joining methods.
- B. Pipe Threads: ASME B1.20.1 for factory-threaded pipe and pipe fittings.

### 2.2 JOINING MATERIALS

- A. Refer to individual Division 23 piping Sections for special joining materials not listed below.
- B. Pipe-Flange Gasket Materials: ASME B16.21, nonmetallic, flat, asbestos-free, 1/8-inch maximum thickness unless thickness or specific material is indicated.
- C. Plastic, Pipe-Flange Gasket, Bolts, and Nuts: Type and material recommended by piping system manufacturer, unless otherwise indicated.
- D. Solder Filler Metals: ASTM B 32, lead-free alloys. Include water-flushable flux according to ASTM B 813.
- E. Brazing Filler Metals: AWS A5.8, BCuP Series or BAg1, unless otherwise indicated.
- F. Welding Filler Metals: Comply with AWS D10.12.
- G. Solvent Cements for Joining Plastic Piping:
  - 1. CPVC Piping: ASTM F 493.
  - 2. PVC Piping: ASTM D 2564. Include primer according to ASTM F 656.

### 2.3 DIELECTRIC FITTINGS

- A. Description: Combination fitting of copper alloy and ferrous materials with threaded, solder-joint, plain, or weld-neck end connections that match piping system materials.

- B. Insulating Material: Suitable for system fluid, pressure, and temperature.
- C. Dielectric Unions: Factory-fabricated, union assembly, for 250-psig minimum working pressure at 180 deg F
- D. Dielectric Flanges: Factory-fabricated, companion-flange assembly, for 150- or 300-psig minimum working pressure as required to suit system pressures.
- E. Dielectric Couplings: Galvanized-steel coupling with inert and noncorrosive, thermoplastic lining; threaded ends; and 300-psig minimum working pressure at 225 deg F
- F. Dielectric Nipples: Electroplated steel nipple with inert and noncorrosive, thermoplastic lining; plain, threaded, or grooved ends; and 300-psig minimum working pressure at 225 deg F

#### 2.4 MECHANICAL SLEEVE SEALS

- A. Description: Modular sealing element unit, designed for field assembly, to fill annular space between pipe and sleeve.
- B. Sealing Elements: EPDM interlocking links shaped to fit surface of pipe. Include type and number required for pipe material and size of pipe.
- C. Pressure Plates: Stainless steel. Include two for each sealing element.
- D. Connecting Bolts and Nuts: Stainless steel of length required to secure pressure plates to sealing elements. Include one for each sealing element.

#### 2.5 SLEEVES

- A. Galvanized-Steel Sheet: 0.0239-inch minimum thickness; round tube closed with welded longitudinal joint.
- B. Steel Pipe: ASTM A 53, Type E, Grade B, Schedule 40, galvanized, plain ends.
- C. Cast Iron: Cast or fabricated "wall pipe" equivalent to ductile-iron pressure pipe, with plain ends and integral waterstop, unless otherwise indicated.
- D. Stack Sleeve Fittings: Manufactured, cast-iron sleeve with integral clamping flange. Include clamping ring and bolts and nuts for membrane flashing.
  - 1. Underdeck Clamp: Clamping ring with set screws.
- E. Molded PVC: Permanent, with nailing flange for attaching to wooden forms.
- F. PVC Pipe: ASTM D 1785, Schedule 40.
- G. Molded PE: Reusable, PE, tapered-cup shaped, and smooth-outer surface with nailing flange for attaching to wooden forms.

## 2.6 ESCUTCHEONS

- A. Description: Manufactured wall and ceiling escutcheons and floor plates, with an ID to closely fit around pipe, tube, and insulation of insulated piping and an OD that completely covers opening.
- B. One-Piece, Deep-Pattern Type: Deep-drawn, box-shaped brass with polished chrome-plated finish.
- C. One-Piece, Cast-Brass Type: With set screw.
  - 1. Finish: Polished chrome
- D. Split-Casting, Cast-Brass Type: With concealed hinge and set screw.
  - 1. Finish: Polished chrome

## 2.7 GROUT

- A. Description: ASTM C 1107, Grade B, nonshrink and nonmetallic, dry hydraulic-cement grout.
  - 1. Characteristics: Post-hardening, volume-adjusting, nonstaining, noncorrosive, nongaseous, and recommended for interior and exterior applications.
  - 2. Design Mix: 5000-psi, 28-day compressive strength.
  - 3. Packaging: Premixed and factory packaged.

## PART 3 - EXECUTION

### 3.1 HVAC DEMOLITION

- A. Refer to Division 01 Section "Cutting and Patching" and Division 02 Section "Selective Structure Demolition" for general demolition requirements and procedures.
- B. Disconnect, demolish, and remove HVAC systems, equipment, and components indicated to be removed.
  - 1. Piping to Be Removed: Remove portion of piping indicated to be removed and cap or plug remaining piping with same or compatible piping material.
  - 2. Piping to Be Abandoned in Place: Drain piping and cap or plug piping with same or compatible piping material.
  - 3. Ducts to Be Removed: Remove portion of ducts indicated to be removed and plug remaining ducts with same or compatible ductwork material.
  - 4. Ducts to Be Abandoned in Place: Cap or plug ducts with same or compatible ductwork material.
  - 5. Equipment to Be Removed: Disconnect and cap services and remove equipment.
  - 6. Equipment to Be Removed and Reinstalled: Disconnect and cap services and remove, clean, and store equipment; when appropriate, reinstall, reconnect, and make equipment operational.

7. Equipment to Be Removed and Salvaged: Disconnect and cap services and remove equipment and deliver to Owner.
- C. If pipe, insulation, or equipment to remain is damaged in appearance or is unserviceable, remove damaged or unserviceable portions and replace with new products of equal capacity and quality.

### 3.2 PIPING SYSTEMS - COMMON REQUIREMENTS

- A. Install piping according to the following requirements and Division 23 Sections specifying piping systems.
- B. Drawing plans, schematics, and diagrams indicate general location and arrangement of piping systems. Indicated locations and arrangements were used to size pipe and calculate friction loss, expansion, pump sizing, and other design considerations. Install piping as indicated unless deviations to layout are approved on Coordination Drawings.
- C. Install piping in concealed locations, unless otherwise indicated and except in equipment rooms and service areas.
- D. Install piping indicated to be exposed and piping in equipment rooms and service areas at right angles or parallel to building walls. Diagonal runs are prohibited unless specifically indicated otherwise.
- E. Install piping above accessible ceilings to allow sufficient space for ceiling panel removal.
- F. Install piping to permit valve servicing.
- G. Install piping at indicated slopes.
- H. Install piping free of sags and bends.
- I. Install fittings for changes in direction and branch connections.
- J. Install piping to allow application of insulation.
- K. Select system components with pressure rating equal to or greater than system operating pressure.
- L. Install escutcheons for penetrations of walls, ceilings, and floors.
- M. Install sleeves for pipes passing through concrete and masonry walls, gypsum-board partitions, and concrete floor and roof slabs.
- N. Aboveground, Exterior-Wall Pipe Penetrations: Seal penetrations using sleeves and mechanical sleeve seals. Select sleeve size to allow for 1-inch annular clear space between pipe and sleeve for installing mechanical sleeve seals.
  1. Install steel pipe for sleeves smaller than 6 inches in diameter.
  2. Install cast-iron "wall pipes" for sleeves 6 inches and larger in diameter.
  3. Mechanical Sleeve Seal Installation: Select type and number of sealing elements required for pipe material and size. Position pipe in center of sleeve. Assemble mechanical sleeve

seals and install in annular space between pipe and sleeve. Tighten bolts against pressure plates that cause sealing elements to expand and make watertight seal.

- O. Underground, Exterior-Wall Pipe Penetrations: Install cast-iron "wall pipes" for sleeves. Seal pipe penetrations using mechanical sleeve seals. Select sleeve size to allow for 1-inch annular clear space between pipe and sleeve for installing mechanical sleeve seals.
  - 1. Mechanical Sleeve Seal Installation: Select type and number of sealing elements required for pipe material and size. Position pipe in center of sleeve. Assemble mechanical sleeve seals and install in annular space between pipe and sleeve. Tighten bolts against pressure plates that cause sealing elements to expand and make watertight seal.
- P. Fire-Barrier Penetrations: Maintain indicated fire rating of walls, partitions, ceilings, and floors at pipe penetrations. Seal pipe penetrations with firestop materials. Refer to Division 07 Section "Penetration Firestopping" for materials.
- Q. Verify final equipment locations for roughing-in.
- R. Refer to equipment specifications in other Sections of these Specifications for roughing-in requirements.

### 3.3 PIPING JOINT CONSTRUCTION

- A. Join pipe and fittings according to the following requirements and Division 23 Sections specifying piping systems.
- B. Ream ends of pipes and tubes and remove burrs. Bevel plain ends of steel pipe.
- C. Remove scale, slag, dirt, and debris from inside and outside of pipe and fittings before assembly.
- D. Soldered Joints: Apply ASTM B 813, water-flushable flux, unless otherwise indicated, to tube end. Construct joints according to ASTM B 828 or CDA's "Copper Tube Handbook," using lead-free solder alloy complying with ASTM B 32.
- E. Brazed Joints: Construct joints according to AWS's "Brazing Handbook," "Pipe and Tube" Chapter, using copper-phosphorus brazing filler metal complying with AWS A5.8.
- F. Threaded Joints: Thread pipe with tapered pipe threads according to ASME B1.20.1. Cut threads full and clean using sharp dies. Ream threaded pipe ends to remove burrs and restore full ID. Join pipe fittings and valves as follows:
  - 1. Apply appropriate tape or thread compound to external pipe threads unless dry seal threading is specified.
  - 2. Damaged Threads: Do not use pipe or pipe fittings with threads that are corroded or damaged. Do not use pipe sections that have cracked or open welds.
- G. Welded Joints: Construct joints according to AWS D10.12, using qualified processes and welding operators according to Part 1 "Quality Assurance" Article.
- H. Flanged Joints: Select appropriate gasket material, size, type, and thickness for service application. Install gasket concentrically positioned. Use suitable lubricants on bolt threads.



- I. Plastic Piping Solvent-Cement Joints: Clean and dry joining surfaces. Join pipe and fittings according to the following:
  - 1. Comply with ASTM F 402, for safe-handling practice of cleaners, primers, and solvent cements.
  - 2. CPVC Piping: Join according to ASTM D 2846/D 2846M Appendix.
  - 3. PVC Pressure Piping: Join schedule number ASTM D 1785, PVC pipe and PVC socket fittings according to ASTM D 2672. Join other-than-schedule-number PVC pipe and socket fittings according to ASTM D 2855.
  - 4. PVC Nonpressure Piping: Join according to ASTM D 2855.
- J. Plastic Pressure Piping Gasketed Joints: Join according to ASTM D 3139.
- K. Plastic Nonpressure Piping Gasketed Joints: Join according to ASTM D 3212.
- L. PE Piping Heat-Fusion Joints: Clean and dry joining surfaces by wiping with clean cloth or paper towels. Join according to ASTM D 2657.
  - 1. Plain-End Pipe and Fittings: Use butt fusion.
  - 2. Plain-End Pipe and Socket Fittings: Use socket fusion.
- M. Fiberglass Bonded Joints: Prepare pipe ends and fittings, apply adhesive, and join according to pipe manufacturer's written instructions.

### 3.4 PIPING CONNECTIONS

- A. Make connections according to the following, unless otherwise indicated:
  - 1. Install unions, in piping NPS 2 and smaller, adjacent to each valve and at final connection to each piece of equipment.
  - 2. Install flanges, in piping NPS 2-1/2 and larger, adjacent to flanged valves and at final connection to each piece of equipment.
  - 3. Dry Piping Systems: Install dielectric unions and flanges to connect piping materials of dissimilar metals.
  - 4. Wet Piping Systems: Install dielectric coupling and nipple fittings to connect piping materials of dissimilar metals.

### 3.5 EQUIPMENT INSTALLATION - COMMON REQUIREMENTS

- A. Install equipment to allow maximum possible headroom unless specific mounting heights are not indicated.
- B. Install equipment level and plumb, parallel and perpendicular to other building systems and components in exposed interior spaces, unless otherwise indicated.
- C. Install HVAC equipment to facilitate service, maintenance, and repair or replacement of components. Connect equipment for ease of disconnecting, with minimum interference to other installations. Extend grease fittings to accessible locations.
- D. Install equipment to allow right of way for piping installed at required slope.

### 3.6 CONCRETE BASES

- A. Concrete Bases: Anchor equipment to concrete base according to equipment manufacturer's written instructions and according to seismic codes at Project.
  - 1. Construct concrete bases of dimensions indicated, but not less than 4 inches larger in both directions than supported unit.
  - 2. Install dowel rods to connect concrete base to concrete floor. Unless otherwise indicated, install dowel rods on 18-inch centers around the full perimeter of the base.
  - 3. Install epoxy-coated anchor bolts for supported equipment that extend through concrete base, and anchor into structural concrete floor.
  - 4. Place and secure anchorage devices. Use supported equipment manufacturer's setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
  - 5. Install anchor bolts to elevations required for proper attachment to supported equipment.
  - 6. Install anchor bolts according to anchor-bolt manufacturer's written instructions.
  - 7. Use 3000-psi, 28-day compressive-strength concrete and reinforcement as specified in Division 03 Section "Cast-in-Place"

### 3.7 ERECTION OF METAL SUPPORTS AND ANCHORAGES

- A. Refer to Division 05 Section "Metal Fabrications" for structural steel.
- B. Cut, fit, and place miscellaneous metal supports accurately in location, alignment, and elevation to support and anchor HVAC materials and equipment.
- C. Field Welding: Comply with AWS D1.1.

### 3.8 ERECTION OF WOOD SUPPORTS AND ANCHORAGES

- A. Cut, fit, and place wood grounds, nailers, blocking, and anchorages to support, and anchor HVAC materials and equipment.
- B. Select fastener sizes that will not penetrate members if opposite side will be exposed to view or will receive finish materials. Tighten connections between members. Install fasteners without splitting wood members.
- C. Attach to substrates as required to support applied loads.

### 3.9 GROUTING

- A. Mix and install grout for HVAC equipment base bearing surfaces, pump and other equipment base plates, and anchors.
- B. Clean surfaces that will come into contact with grout.
- C. Provide forms as required for placement of grout.
- D. Avoid air entrapment during placement of grout.

- E. Place grout, completely filling equipment bases.
- F. Place grout on concrete bases and provide smooth bearing surface for equipment.
- G. Place grout around anchors.
- H. Cure placed grout.

END OF SECTION 230500



## SECTION 230593 - TESTING, ADJUSTING, AND BALANCING FOR HVAC

## PART 1 - GENERAL

## 1.1 SUMMARY

- A. Section Includes:
  - 1. Balancing Air Systems:
    - a. Constant-volume air systems.

## 1.2 DEFINITIONS

- A. AABC: Associated Air Balance Council.
- B. NEBB: National Environmental Balancing Bureau.
- C. TAB: Testing, adjusting, and balancing.
- D. TABB: Testing, Adjusting, and Balancing Bureau.
- E. TAB Specialist: An entity engaged to perform TAB Work.

## 1.3 SUBMITTALS

- A. Strategies and Procedures Plan: Within 30 days of Contractor's Notice to Proceed, submit TAB strategies and step-by-step procedures as specified in "Preparation" Article.
- B. Certified TAB reports.

## 1.4 QUALITY ASSURANCE

- A. TAB Contractor Qualifications: Engage a TAB entity certified by NEBB.
  - 1. TAB Field Supervisor: Employee of the TAB contractor and certified by NEBB.
  - 2. TAB Technician: Employee of the TAB contractor and who is certified by NEBB as a TAB technician.
- B. Certify TAB field data reports and perform the following:
  - 1. Review field data reports to validate accuracy of data and to prepare certified TAB reports.
  - 2. Certify that the TAB team complied with the approved TAB plan and the procedures specified and referenced in this Specification.
- C. TAB Report Forms: Use standard TAB contractor's forms approved by Engineer.

- D. Instrumentation Type, Quantity, Accuracy, and Calibration: As described in ASHRAE 111, Section 5, "Instrumentation."

## PART 2 - PRODUCTS (Not Applicable)

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine the Contract Documents to become familiar with Project requirements and to discover conditions in systems' designs that may preclude proper TAB of systems and equipment.
- B. Examine systems for installed balancing devices, such as test ports, gage cocks, thermometer wells, flow-control devices, balancing valves and fittings, and manual volume dampers. Verify that locations of these balancing devices are accessible.
- C. Examine the existing mechanical plans for HVAC systems and equipment.
- D. Examine design data including HVAC system descriptions, statements of design assumptions for environmental conditions and systems' output, and statements of philosophies and assumptions about HVAC system and equipment controls.
- E. Examine ceiling plenums and underfloor air plenums used for supply, return, or relief air to verify that they meet the leakage class of connected ducts
- F. Examine equipment performance data including fan and pump curves.
  - 1. Relate performance data to Project conditions and requirements, including system effects that can create undesired or unpredicted conditions that cause reduced capacities in all or part of a system.
  - 2. Calculate system-effect factors to reduce performance ratings of HVAC equipment when installed under conditions different from the conditions used to rate equipment performance. To calculate system effects for air systems, use tables and charts found in AMCA 201, "Fans and Systems," or in SMACNA's "HVAC Systems - Duct Design." Compare results with the design data and installed conditions.
- G. Examine system and equipment installations and verify that field quality-control testing, cleaning, and adjusting specified in individual Sections have been performed.
- H. Examine HVAC equipment and filters and verify that bearings are greased, belts are aligned and tight, and equipment with functioning controls is ready for operation.
- I. Examine heat-transfer coils for correct piping connections and for clean and straight fins.
- J. Examine operating safety interlocks and controls on HVAC equipment.
- K. Report deficiencies discovered before and during performance of TAB procedures. Observe and record system reactions to changes in conditions. Record default set points if different from indicated values.

### 3.2 PREPARATION

- A. Prepare a TAB plan that includes strategies and step-by-step procedures.
- B. Complete system-readiness checks and prepare reports. Verify the following:
  - 1. Permanent electrical-power wiring is complete.
  - 2. Automatic temperature-control systems are operational.
  - 3. Equipment and duct access doors are securely closed.
  - 4. Balance, smoke, and fire dampers are open.
  - 5. Ceilings are installed in critical areas where air-pattern adjustments are required and access to balancing devices is provided.
  - 6. Windows and doors can be closed so indicated conditions for system operations can be met.

### 3.3 GENERAL PROCEDURES FOR TESTING AND BALANCING

- A. Perform testing and balancing procedures on each system according to the procedures contained in NEBB's "Procedural Standards for Testing, Adjusting, and Balancing of Environmental Systems" and in this Section.
  - 1. Comply with requirements in ASHRAE 62.1-2004, Section 7.2.2, "Air Balancing."
- B. Cut insulation, ducts, pipes, and equipment cabinets for installation of test probes to the minimum extent necessary for TAB procedures.
  - 1. After testing and balancing, patch probe holes in ducts with same material and thickness as used to construct ducts.
  - 2. Install and join new insulation that matches removed materials. Restore insulation, coverings, vapor barrier, and finish according to Division 23 Section "HVAC Insulation."
- C. Mark equipment and balancing devices, including damper-control positions, valve position indicators, fan-speed-control levers, and similar controls and devices, with paint or other suitable, permanent identification material to show final settings.
- D. Take and report testing and balancing measurements in inch-pound (IP) units.

### 3.4 GENERAL PROCEDURES FOR BALANCING AIR SYSTEMS

- A. Prepare test reports for both fans and outlets. Obtain manufacturer's outlet factors and recommended testing procedures. Crosscheck the summation of required outlet volumes with required fan volumes.
- B. Prepare schematic diagrams of systems' "as-built" duct layouts.
- C. Determine the best locations in main and branch ducts for accurate duct-airflow measurements.
- D. Check airflow patterns from the outdoor-air louvers and dampers and the return- and exhaust-air dampers through the supply-fan discharge and mixing dampers.

- E. Locate start-stop and disconnect switches, electrical interlocks, and motor starters.
- F. Verify that motor starters are equipped with properly sized thermal protection.
- G. Check dampers for proper position to achieve desired airflow path.
- H. Check for airflow blockages.
- I. Check condensate drains for proper connections and functioning.
- J. Check for proper sealing of air-handling-unit components.
- K. Verify that air duct system is sealed as per SMACNA Seal Class B

### 3.5 PROCEDURES FOR TESTING, ADJUSTING, AND BALANCING EXISTING SYSTEMS

- A. Perform a preconstruction inspection of existing equipment that is to remain and be reused.
  - 1. Measure and record the operating speed, airflow, and static pressure of each fan.
  - 2. Measure motor voltage and amperage. Compare the values to motor nameplate information.
  - 3. Check the refrigerant charge.
  - 4. Check the condition of filters.
  - 5. Check the condition of coils.
  - 6. Check the operation of the drain pan and condensate-drain trap.
  - 7. Check bearings and other lubricated parts for proper lubrication.
  - 8. Report on the operating condition of the equipment and the results of the measurements taken. Report deficiencies.
- B. Before performing testing and balancing of existing systems, inspect existing equipment that is to remain and be reused to verify that existing equipment has been cleaned and refurbished. Verify the following:
  - 1. New filters are installed.
  - 2. Coils are clean and fins combed.
  - 3. Drain pans are clean.
  - 4. Fans are clean.
  - 5. Bearings and other parts are properly lubricated.
  - 6. Deficiencies noted in the preconstruction report are corrected.
- C. Perform testing and balancing of existing systems to the extent that existing systems are affected by the renovation work.
  - 1. Compare the indicated airflow of the existing mechanical plans to the measured fan airflows, and determine the new fan speed and the face velocity of filters and coils.
  - 2. Verify that the indicated airflows of the existing mechanical plans result in filter and coil face velocities and fan speeds that are within the acceptable limits defined by equipment manufacturer.



3. If calculations increase or decrease the air flow rates and water flow rates by more than 5 percent, make equipment adjustments to achieve the calculated rates. If increase or decrease is 5 percent or less, equipment adjustments are not required.
4. Balance each air outlet.

### 3.6 TOLERANCES

- A. Set HVAC system's air flow rates and water flow rates within the following tolerances:
1. Supply, Return, and Exhaust Fans and Equipment with Fans: Plus or minus 10 percent.
  2. Air Outlets and Inlets: Plus or minus 10 percent.
  3. Heating-Water Flow Rate: Plus or minus 10 percent
  4. Cooling-Water Flow Rate: Plus or minus 10 percent

### 3.7 REPORTING

- A. Initial Construction-Phase Report: Based on examination of the Contract Documents as specified in "Examination" Article, prepare a report on the adequacy of design for systems' balancing devices. Recommend changes and additions to systems' balancing devices to facilitate proper performance measuring and balancing. Recommend changes and additions to HVAC systems and general construction to allow access for performance measuring and balancing devices.
- B. Status Reports: Prepare monthly progress reports to describe completed procedures, procedures in progress, and scheduled procedures. Include a list of deficiencies and problems found in systems being tested and balanced. Prepare a separate report for each system and each building floor for systems serving multiple floors.

### 3.8 FINAL REPORT

- A. General: Prepare a certified written report; tabulate and divide the report into separate sections for tested systems and balanced systems.
1. Include a certification sheet at the front of the report's binder, signed and sealed by the certified testing and balancing engineer.
  2. Include a list of instruments used for procedures, along with proof of calibration.
- B. Final Report Contents: In addition to certified field-report data, include the following:
1. Fan curves.
  2. Manufacturers' test data.
  3. Field test reports prepared by system and equipment installers.
  4. Other information relative to equipment performance; do not include Shop Drawings and product data.
- C. General Report Data: In addition to form titles and entries, include the following data:
1. Title page.
  2. Name and address of the TAB contractor.
  3. Project name.

4. Project location.
  5. Architect's name and address.
  6. Engineer's name and address.
  7. Contractor's name and address.
  8. Report date.
  9. Signature of TAB supervisor who certifies the report.
  10. Table of Contents with the total number of pages defined for each section of the report. Number each page in the report.
  11. Summary of contents including the following:
    - a. Indicated versus final performance.
    - b. Notable characteristics of systems.
    - c. Description of system operation sequence if it varies from the Contract Documents.
  12. Nomenclature sheets for each item of equipment.
  13. Data for terminal units, including manufacturer's name, type, size, and fittings.
  14. Notes to explain why certain final data in the body of reports vary from indicated values.
  15. Test conditions for fans and pump performance forms including the following:
    - a. Settings for outdoor-, return-, and exhaust-air dampers.
    - b. Conditions of filters.
    - c. Cooling coil, wet- and dry-bulb conditions.
    - d. Fan drive settings including settings and percentage of maximum pitch diameter..
    - e. Settings for supply-air, static-pressure controller.
    - f. Other system operating conditions that affect performance.
- D. System Diagrams: Include schematic layouts of air and hydronic distribution systems. Present each system with single-line diagram and include the following:
1. Quantities of outdoor, supply, return, and exhaust airflows.
  2. Water and steam flow rates.
  3. Duct, outlet, and inlet sizes.
  4. Pipe and valve sizes and locations.
  5. Terminal units.
  6. Balancing stations.
  7. Position of balancing devices.

### 3.9 ADDITIONAL TESTS

- A. Within 90 days of completing TAB, perform additional TAB to verify that balanced conditions are being maintained throughout and to correct unusual conditions.
- B. Seasonal Periods: If initial TAB procedures were not performed during near-peak summer and winter conditions, perform additional TAB during near-peak summer and winter conditions.

END OF SECTION 230593

## **SECTION 283100 – FIRE ALARM SYSTEM**

### **PART 1 - GENERAL**

#### **1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- B. The Fire Alarm System Installation Contractor (herein referred to as the Contractor) shall furnish all labor, equipment, and materials, and perform all operations in connection with the installation of a new addressable analog fire alarm system.
- C. At the time of bid, all exceptions taken to these Specifications, variances from these Specifications and all substitutions of equipment specified shall be listed in writing and forwarded to Owner (hereafter, referred to as the Owner). Any such exceptions, variances, or substitutions, which were not listed at the time of bid and are identified in the submittal, shall be grounds for immediate disapproval without comment.
- D. Any equipment proposed as equal to that specified herein shall conform to the standards herein, and the manufacturer shall supply proof of having produced similar equipment, now giving satisfactory service. In addition, the Contractor shall obtain the approval of the Owner in writing ten (10) working days prior to bidding equipment other than that which is specified. The manufacturer's name, model numbers, and number of copies of all equipment drawings and engineering data sheets necessary for a complete review shall be submitted for approval, in accordance with this specification. Included in the submittal shall be a written statement indicating compliance with the features, functions, and performance of the specified equipment and the applicable codes.

#### **1.2 QUALITY ASSURANCE**

- A. This specification identifies the essential functional requirements of the automatic fire alarm system for installation. The manufacturer's equipment (hardware and software) and system configuration shall comply with or exceed the functional intent of this specification.
- B. Each component of the fire alarm system shall be listed as a product of a single fire alarm system manufacturer under the appropriate category for the intended use by Underwriters Laboratories, Inc. (UL). All control equipment shall be listed under UL category UOJZ Control Units System as a single unit. Partial listings, or multiple listings for various major sections of the control equipment, shall not be acceptable.
- C. Electrical components, devices, and accessories shall be Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to the authorities having jurisdiction.
- D. All control equipment shall have transient protection devices that comply with the requirements outlined in UL 864, *Standard for Control Units for Fire-Protective Signaling Systems*.
- E. All materials and equipment (control equipment, initiating devices, notification appliances, etc.) shall be new and unused.

- F. All equipment supplied shall be first quality and the manufacturer's best type and latest model capable of complying with all requirements of this specification and shall have been in continuous production and in continuous service in commercial applications for at least one year. Obsolete equipment shall not be used.
- G. Any case of error, omission, discrepancy or lack of clarity shall be promptly identified to the Owner.

### 1.3 SCOPE OF WORK

- A. The project includes the design, fabrication and installation of a complete, ready and operational 24 VDC closed-circuit, electrically supervised, addressable, analog, automatic fire alarm system to serve both the Probation and Detention areas of the Gregg County Juvenile Center.
  - 1. In accordance with NFPA 101 CHAPTER 23 Existing Detention and Correctional Occupancies, system serving detention occupancy shall be provided in accordance with NFPA 101 Section 9.6 except as modified by 23.3.4.2 through 23.3.4.4.4. The following include, but are not limited to, features unique to Detention occupancy, many of which must be coordinated with Owner. The Contractor shall coordinate and include in the system:
    - a. Location and securement of manual fire alarm boxes.
    - b. Notification
    - c. Emergency forces notification
    - d. Location, arrangement and equivalent performance of smoke detectors
  - 2. Detection and notification devices within the detention occupancy shall be detention grade and secure against attach, interference or tampering from Residents. Contractor shall fully coordinate types, location and arrangement of detection and notification devices with Owner.
- B. The work described in this specification shall consist of all labor, materials, services, software, programming, tools, transportation, and temporary construction necessary to design, fabricate, install, program and test the operational fire alarm system.
- C. The scope of work includes the installation of all initiating devices, notification appliances and system control interfaces, etc. inside the building, required by Code and identified in this specification.
- D. The scope of work also includes training Owner personnel on the operation of the system, required maintenance tasks and frequencies, and the locations of all equipment necessary to maintain and operate the fire alarm system.

### 1.4 CONTRACTOR'S RESPONSIBILITIES

- A. The Contractor's responsibilities are as follows:
  - 1. The installation of a complete, ready and operational 24 VDC closed-circuit, electrically supervised, addressable, analog, automatic fire alarm system generally described in the Scope of Work. The system installation shall include, but not be limited to:
    - a. Installation of a head-end fire alarm control unit (FACU).
    - b. Installation of Liquid Crystal Display (LCD) remote alarm annunciators, as directed by Owner.
    - c. Installation of a manual fire alarm stations in locations required and as coordinated with Owner.

- d. Installation of new photoelectric, addressable analog automatic smoke detectors (in those environments suitable for proper smoke detector operation), at locations required and as coordinated with Owner.
  - e. Installation of new fixed temperature heat detectors as required and as coordinated with Owner.
  - f. Installation of audible and visible notification appliances at locations required and as coordinated with Owner.
  - g. Installation of addressable monitor modules and addressable control relay modules, as described in this specification and as coordinated with Owner.
  - h. Installation and connection of the required equipment necessary to interconnect the fire alarm system with other building systems as indicated in this specification, and as required, and as coordinated with Owner.
  - i. Installation and connection of the required equipment necessary to send signals to the off-site monitoring company.
  - j. Installation of metal raceway, wire, fittings, and all other accessories required to provide a complete and operable fire alarm and emergency voice communication system.
2. The installation and wiring of all devices in accordance with the latest published revision of the manufacturer's installation instructions to achieve the system operation and function as specified herein.
  3. The development of working drawings for the fire alarm system installation in accordance with the applicable codes, cited in this specification. The Contractor shall submit the working drawings for:
    - a. Review and approval by the Owner, (Note: Drawings shall not be submitted to the authority having jurisdiction until approved in writing by the Owner.)
    - b. Submission to the authority having jurisdiction for review, permit issuance and approval for installation.
    - c. Field installation of the fire alarm system, after the Owner and the authorities having jurisdiction have reviewed and approved the drawings and submittals, and the permit for the installation of the fire alarm and emergency voice communication system has been issued.
  4. The preparation of a minimum of six complete submittal packages identifying the quantities and technical information for all fire alarm and emergency voice communication system equipment to be provided. Complete manufacturer's technical specifications shall be provided for all substitute components to those identified in these specifications. Substitutions must be approved in writing by the Owner prior to installation or purchase.
  5. The Contractor is responsible to pay all permit fees required for the installation of the fire alarm system and to obtain the permit from the authority having jurisdiction.
  6. Coordinating the installation of the fire alarm and emergency voice communication system and testing of associated equipment and circuits with all related trades, contractors, equipment maintenance and testing representatives, the Owner and the authorities having jurisdiction. Where applicable, work and/or equipment provided in other sections and related to the fire alarm system shall include, but not be limited to:
    - a. HVAC Fan control circuits and smoke dampers. The Contractor shall be responsible for all wiring up to and including connection to terminal block adjacent to each fan control and damper circuit. The Contractor shall field verify the number and location of all fan control circuits and all smoke dampers. The Contractor shall provide the terminal block and its red enclosure and shall coordinate the interconnection of the systems. The Contractor shall ensure correct operation of these interconnections during an alarm condition.

- b. High Volume Low Speed Fans. The Contractor shall be responsible for all wiring up to and including connection to terminal block adjacent to each fan control circuit. The Contractor shall field verify the number and location of all fan control circuits. The Contractor shall provide the terminal block and its red enclosure and shall coordinate the interconnection of the systems. The Contractor shall ensure correct operation of these interconnections during an alarm condition
  - c. Magnetic door hold-open devices and circuits. Magnetic door hold-open devices and circuits shall be provided such that upon alarm or loss of power, magnetic door hold-open devices shall release, allowing the held open door to automatically close. The Contractor shall be responsible to field verify the number and location of all magnetic door hold-open circuits and for wiring up to and including connection to these circuits. The Contractor shall ensure correct operation of these interconnections during an alarm condition.
7. Providing all required documentation (As-built drawings, training materials, Operating and Maintenance (O&M) manuals, Test Plan, warranty, etc.), as specified in this specification.
  8. Coordinating the Demonstration Test and the Acceptance Test of the fire alarm system with the Owner and the authorities having jurisdiction.

#### **1.5 QUALIFICATION OF BIDDERS**

- A. All contractors connected with the captioned project shall provide proof of competence of both their company, designer and lead designer that will be assigned to this project. The Contractor shall have been in the business of installing fire detection, alarm, and control systems for at least five (5) years, acceptable to the Owner. Once assigned, the Contractor's personnel shall not be changed without the approval of the Owner.
- B. The Contractor shall be licensed in the State of Texas and experienced in the installation of fire alarm systems.
- C. The Contractor shall have on-staff a professional engineer (or minimum NICET Level III certified technician) who is legally qualified to practice in State of Texas and is experienced in providing fire protection engineering services. The professional engineer (or minimum NICET Level III certified technician) shall perform and be responsible for the design of the fire alarm system.
- D. Each proposed bid shall be professionally presented, be bound and shall include a title page and index.
- E. As a minimum, all bidding contractors shall include the following in the fire alarm system bid:
  1. The names and qualifications of the Contractor's and the equipment supplier's lead installer, project manager and project engineer who shall be in responsible charge during the entire project installation. Contractor's and supplier's qualifications shall include years in business, service policies, warranty definitions and prior experience with installations that include the type of equipment that is to be supplied.
  2. A list of at least three (3) similar installations in detention facilities with addresses of properties, contact names and types of system equipment installed.
  3. The price for the systems as specified, the prices for required and recommended alternatives for equipment, service work not included in the warranty and prices for a service contract. The prices for engineering, fabrication and on-site installation of each system shall include all subcontractor and manufacturer's on-site representative labor costs. The Contractor shall list all deviations and/or exceptions to these specifications as proposed alternatives.

4. Completed pricing shall be accompanied by equipment manufacturer's product data sheets for the major components of the proposed system (fire alarm control unit, initiating devices, and notification appliances).
5. Nonconformance to the Qualification of Bidders requirements outlined in this specification shall be cause for immediate dismissal of the Bid Documents without comment.
6. The award of the contract shall be based on the submitted information and all considerations in the best interests of the Owner. Once the contract is awarded, no requested changes for equipment, suppliers or subcontractors shall be accepted unless justification is made in writing. Once assigned, the Contractor's lead installer and technicians shall not be changed without the approval of the Owner. Upon written request from the Contractor, the Owner may authorize changes, but at their sole choice and discretion. The Contractor shall be at risk for any attempt to substitute the equipment suppliers or subcontractors accepted. All cost for removal, relocation, or replacement of a substituted item shall be at the risk of the Contractor.

#### **1.6 CODES AND STANDARDS**

- A. NFPA 70, National Electrical Code, Articles 250,300,725,760, and 800.
- B. NFPA 72, National Fire Alarm Code.
- C. NFPA 90A, Installation of Air Conditioning and Ventilation Systems.
- D. NFPA 101, Code for Safety to Life from Fire in Buildings and Structures.
- E. ANSI 117.1 American National Standard for Accessible and Useable Buildings and Facilities
- ASME A17.1 Safety Code for Elevators and Escalators
- F. Americans with Disabilities Act.
- G. Texas Accessibility Standards (TAS) Article 9102.
- H. Texas Insurance Code Article 5.43~2 Fire Detection and Alarm Devices and the Fire Alarm Rules,  
International Building Codes (IBC). I.  
Local and State Building Codes.
- J. All requirements of the local Authority Having Jurisdiction (AHJ).

#### **1.7 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary, apply to this Section.
- B. Drawings supplied with this specification shall be used by the Contractor as a reference for the requirement and location of system components. It shall be the responsibility of the Contractor to visit the site, observe the existing conditions, and confirm the required quantities of devices and specific options for locations of the same.
- C. Documents, including shop drawings, battery standby and voltage drop calculations, and material specifications prepared according to NFPA 72 shall be required for obtaining approval by the Owner and the authorities having jurisdiction.
- D. The requirement of building permits and authorization to proceed shall become part of this specification. The building permits and authorization to proceed shall be obtained and paid for by the Contractor, where applicable.
- E. Prior to commencement and after completion of work, the Contractor shall provide written notification to the authorities having jurisdiction.
- F. The Contractor shall notify the Owner, in writing, when the system is ready for the Demonstration Test and the Acceptance Test. Notification shall be a minimum of one (1) week in advance of the

planned tests. The system shall be considered ready for the Demonstration Test, only after all preliminary tests have been made by the Contractor, and all deficiencies have been found and corrected. In addition, two (2) copies of the Contractor's Test Documentation shall be submitted to the Owner before Owner shall agree to the scheduling of the Demonstration Test.

### 1.8 ORDER OF PRECEDENCE

- A. Should conflicts arise out of discrepancies between documents referenced in this specification, the most stringent requirement shall apply; however, should a level of stringency be indeterminable, the discrepancies shall be resolved as follows:
1. State and local codes shall take precedence over this specification.
  2. The National Fire Protection Association Standards shall take precedence over this specification.
  3. This specification shall take precedence over the drawings.

### 1.9 SUBMITTALS

- A. Submittal procedures: See Section 01 3300.
- B. Quality Assurance Submittals:
1. Letter from the fire alarm control panel manufacturer stating that the contractor is a factory trained for the proposed system and Factory Authorized Distributor for the area where the project is located for a period of at least 5 years.
  2. Current copy of the contractors Fire Alarm Certificate of Registration for sales, service, and installation of fire alarm and fire detection systems issued by the State Fire Marshal.
  3. Copy of the commercial (non-residential) Fire Alarm System Planning Superintendent's License responsible for the design of the system submitted.
  4. Copy of the Fire Alarm Technician's License who will supervise this installation.
  5. Calculations for indicating device circuit current drop and battery backup calculations for each unit. **C. Product Data:**
    1. Drawing locating all components of the fire alarm system and indicating circuit routing, cable type, and gauge. The licensed Fire Alarm System Planning Superintendent responsible for the design of the system submitted shall sign this drawing.
    2. Print of the Fire Alarm Plan which shall be mounted adjacent to panel.
    3. Equipment list and data sheets on all fire alarm panel and system devices, riser diagrams, special boxes, cable, modules, and other material as requested by the Architect including:
      - a. Manufacturer
      - b. Model Number
      - c. Indication all options and accessories
      - d. Catalog data sheets with photograph
    4. Submit complete submittal package within 30 calendar days after award of this work for approval. Equipment is not to be ordered without approval.

### 1.10 SCHEDULING

- A. The Contractor shall provide a schedule to the Owner indicating the installation sequence and time frame prior to beginning work. The Contractor shall provide weekly updates to the Owner. It is the Contractor's responsibility to have all wiring, circuit testing and device installation completed



in time for the equipment supplier to make all final connections and conduct all tests as outlined in these specifications.

1. Refer to Section 01 1000 Summary for project scheduling requirements. Coordinate Alarm System work to comply with project schedule. This may necessitate phased work, multiple testing events and other measures to accomplish project requirements, all of which shall be included in the base bid.
- B. The Contractor shall be responsible for coordinating the Demonstration Test for the fire alarm and emergency voice communication system with the Owner.
- C. The Contractor shall be responsible for coordinating the Acceptance Test for the fire alarm and emergency voice communication system with the Owner and the authorities having jurisdiction.

#### **1.11 SPARE PARTS**

- A. The Contractor shall furnish an additional 5% of all types of devices installed in the building as spares. Minimum of 1 spare shall be provided for each type of appliance.
- B. The manufacturer shall provide a suggested spare parts list with firm unit prices maintained for the duration of the manufacturer's warranty period as specified herein, for items such as power supplies, central processor units, fault isolator modules, monitor addressable modules, addressable control relay output modules and other modules that may be long lead replacement items. Firm costs for programming changes shall also be submitted with the bids.
- C. All spare parts shall be neatly and protectively packed in one or more cartons. The quantity, manufacturer, and model of each unit in the carton shall be identified on the outside of the carton. In addition, the name, address, and telephone number of the Contractor and of the manufacturer's local representative, plus the date of delivery, shall be neatly identified on the cover of each carton.
- D. Per unit costs for additional devices and appliances shall be supplied to the Owner and shall be firm prices maintained for one year beyond the duration of the manufacturer's warranty period as specified herein.

#### **1.12 AS-BUILT DRAWINGS**

- A. During the course of the project, the Contractor shall develop electronic versions of the as-built drawings in AutoCAD format. The Contractor shall be required to show the following on these floor plans for as-built drawings:
1. The exact locations and installation details of all equipment installed including the FACU, annunciators, all initiating devices, monitor modules, control modules and fault isolator modules with the address of each addressed device and all notification appliances.
  2. The installed wiring and color-coding and wire tag notifications for the exact locations of all installed junction boxes and terminal cabinets.
  3. Specific point-to-point interconnections between all equipment and internal wiring of the equipment. Typical point-to-point wiring diagrams are not acceptable.
- B. The Contractor shall show the equipment and addresses associated with each device, as listed in this specification, on a separate layer and provide copies of only this layer shown on the floor plans as part of the set of as-built drawings.
- C. During the fire alarm system installation, the draft as-built drawing shall be updated every 24 hours. The on-site as-built drawings shall be available for inspection and review on request by the Owner.

- D. Upon completion of the installation of the system and a minimum of one (1) week prior to the Demonstration Test, the Contractor shall deliver two (2) complete sets of reproducible, full-size, appropriately scaled, as-built drawings to the Owner.
- E. The as-built drawings shall be in a final form for submission for final approvals. Once the asbuilt drawings are approved, the Contractor shall submit six copies and the updated AutoCAD format disk to the Owner for distribution.

**1.13 TEST PLAN**

- A. Upon completion of the installation of the system and a minimum of one (1) week prior to the Demonstration Test, the Contractor shall deliver two (2) complete sets of the Test Plan, which shall describe how the system shall be tested. This shall include a step-by-step description of all tests and shall indicate type and location of test apparatus to be employed. All tests shall be conducted in the presence of the Owner and shall not be conducted until the “Test Plan” is approved.

**1.14 OPERATING AND MAINTENANCE MANUAL**

- A. The Contractor shall provide three complete indexed bound sets of the Operating and Maintenance (O&M) manual, as outlined in NFPA 72, a minimum of one week prior to the Demonstration Test of the system. These O&M manuals shall include the following:
  - 1. The final Equipment List identifying the quantities and types of equipment listed by manufacturer's part number.
  - 2. A detailed narrative description of the system inputs, evacuation signaling, ancillary functions, annunciation, intended sequence of operations, expansion capability, application considerations, and limitations.
  - 3. An equipment datasheet (or specification sheet) on every piece of fire alarm and emergency voice communication system equipment installed.
  - 4. Operator instructions for basic system operations, including alarm acknowledgement, system reset, interpretation of system output, operation of manual evacuation signaling and ancillary function controls, and changing of printer paper.
  - 5. Standby power calculations and voltage drop calculations that coincide with the equipment that has been installed in the building.
  - 6. A point ID list referencing the signaling line circuit loops and the devices on those loops.
  - 7. A sensitivity report for all smoke detectors at the time of acceptance.
  - 8. The results of the testing of all wiring free from faults, as specified in this specification.
  - 9. A detailed description of routine maintenance and testing as required and recommended and as would be provided under a maintenance contract, including testing and maintenance instructions for each type of device installed.
    - a. This information shall include manuals that outline inspection, testing and cleaning procedures for all detectors and control equipment, as well as any other special maintenance procedures for any other pieces of fire alarm and emergency voice communication system equipment installed in the building.
  - 10. Detailed troubleshooting instructions for each trouble condition generated from the monitored field wiring, including opens, grounds, and loop failures.
    - a. These instructions shall include a list of all trouble signals annunciated by the system, a description of the condition(s) that causes such trouble signals, and step-by-step instructions describing how to isolate such problems and correct them (or how to call for service, as appropriate).
  - 11. A service directory, including a list of names and telephone numbers of those who provide service for the system.

**1.15 WARRANTY**

- A. The Contractor shall guarantee all new equipment installed and new raceways, new wiring and connections to existing wiring from defects in workmanship and inherent mechanical and electrical defects for a period of two (2) years from the date of substantial completion of the project and acceptance by the Owner.
- B. The Manufacturer or the authorized representative shall guarantee all new system equipment for a period of two (2) years from the date of substantial completion of the project and acceptance by the Owner.
- C. Upon completion of the installation of the fire alarm system equipment, the Contractor shall provide the Owner with a signed written statement indicating that the fire alarm system was installed in accordance with all applicable codes, standards, and manufacturer's instruction and recommendations
- D. The warranty period shall begin on the date of substantial completion of the project and acceptance in writing by the Owner.

**PART 2 - PRODUCTS**

**2.1 QUALIFICATION OF MANUFACTURERS**

- A. Acceptable manufacturers of the electronic fire alarm and emergency voice communication system control equipment include:
  - 1. Edwards EST
  - 2. Notifier by Honeywell
  - 3. Siemens
  - 4. Tyco
  - 5. Firetrol
  - 6. Others as approved by Owner
- B. Distributors of acceptable manufacturer's equipment shall provide documentation indicating that they are authorized by the manufacturer to distribute and service the equipment and that the manufacturer has stated that they have satisfactorily completed all training courses offered by the manufacturer in relation to the equipment provided.
- C. The manufacturer or authorized distributor shall confirm in writing that, within reasonable distance of the job site, there is an established agency which stocks a full complement of parts and offers service during normal working hours on all equipment to be furnished and that the agency shall supply parts without delay and at reasonable cost.
- D. The manufacturer or authorized distributor shall confirm in writing that they will provide on-site emergency repair service within four (4) hours of notification of the requirement for such service. This service shall be provided on a 24-hour per day, seven (7) days per week basis.

**2.2 FUNCTIONAL DESCRIPTION OF THE SYSTEM**

- A. The system shall include new control equipment, suitable for detention facilities, which is UL Listed or FM approved to operate with the submitted manual fire alarm boxes, heat detectors and smoke detectors, and shall transmit an alarm to the to the off-site Monitoring Center, alert building occupants using audible and visible notification appliances, supervise each system for conditions which would impair proper system operation, annunciate such abnormal conditions, and where

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applicable, control related equipment as indicated on contract documents such as air handling units.

B. Alarm Condition

1. The system operation shall be such that the alarm operation of any alarm initiating device shall not prevent the subsequent alarm operation of any other initiating device due to wiring or power limitations.

2. The system alarm operation, subsequent to the alarm activation of any manual fire alarm box, any system-type automatic detection device (smoke detector or heat detector), or sprinkler waterflow switch shall automatically perform the functions contained in this section and operate as follows:
  - a. All audible (horn) and visible (strobe) notification appliances throughout the building shall initiate the alarm evacuation sequence. All visible notification appliances shall flash in synchronization.
3. FACU Indication
  - a. Alarm conditions shall be immediately displayed on the control unit alphanumeric display and on all remote alarm annunciators, indicating all information associated with the fire alarm condition including type of device, its location and the time and date of activation. The red “ALARM” LED shall flash on the control unit until the alarm has been acknowledged. Once acknowledged, this same LED shall latch on. A subsequent alarm received from another initiating device after acknowledgment shall flash the alarm LED on the control unit and the display shall show the new alarm information.
  - b. During an alarm condition, a pulsing alarm tone shall sound within the control unit until the alarm is acknowledged.
  - c. If the audible alarm signals are silenced for any reason, they shall automatically resound if another initiating device is actuated.
  - d. When the alarm signals are silenced by pressing the “ACKNOWLEDGE” pushbutton on the control module, the control unit LED’s shall continue to flash until the alarm is reset at the control unit.
  - e. The alarm sequence shall be recorded with the time and date of all occurrences in the fire alarm system History Log.
4. Auxiliary Functions
  - a. Where applicable, all auxiliary functions shall be connected to and operated by the control unit.
  - b. HVAC Fan Units
    - 1) The operation of duct smoke detectors shall cause the appropriate fan control relays to activate the shut down of the associated fan(s). Every airhandling unit in the building will not be shut down; only the air-handling unit serving the area where the duct smoke detector is actuated shall be shut down.
  - c. Smoke Damper Controls
    - 1) Where smoke dampers are present in the building, their closure shall be initiated by the fire alarm system. Upon activation of duct smoke detectors, the FACU shall cause the appropriate smoke damper control relays to activate causing the associated damper(s) to close. An override switch control shall be installed in the FACU to allow the fire department to return the smoke dampers to their normal condition. Every damper in the building shall not be closed; only the dampers serving the area where the duct smoke detector is actuated shall be closed.
  - d. Magnetically Held-Open Doors
    - 1) Upon receipt of an alarm from any initiating device or loss of power, magnetic door hold-open devices (field verify existence and location) shall release, allowing the held open door to automatically close.

C. Supervisory Condition

1. The control unit shall have a “SYSTEM SUPERVISORY” LED and a supervisory signal “ACKNOWLEDGE” switch.
2. When a supervisory condition is detected, the following functions shall immediately occur:
  - a. The “SYSTEM SUPERVISORY” LED shall flash.

- b. A pulsing alarm tone in the control unit shall sound.
  - c. The display shall indicate all information associated with the supervisory condition, including device, its location within the protected premises, and the time and date of that activation.
  - d. If more supervisory signals are in the system, the operator shall be able to scroll the display to view new signals.
  - e. All system output programs assigned via control-by-event equations to be activated by the particular point in trouble shall be executed, and the associated system outputs (Supervisory Notification Appliances and/or relays) shall be activated.
3. Unacknowledged alarm messages shall have priority over supervisory messages, and if an Alarm occurs during a supervisory sequence, the Alarm condition shall have display priority.
  4. Activating the supervisory “ACKNOWLEDGE” switch shall silence the audible signal while maintaining an LED on, indicating the supervisory condition is still in the off-normal state.
  5. Restoring the valve or supervisory contact to the normal position shall cause the supervisory service audible signal to pulse thus indicating restoration to normal position. Activating the “ACKNOWLEDGE” switch shall silence the audible signal and restore the system to normal.
  6. The activation of the duct smoke detectors installed in HVAC ductwork shall shutdown the appropriate fan control unit and produce a supervisory condition at the FACU. D. Trouble Condition
1. When a trouble condition is detected, the following functions shall immediately occur:
    - a. An amber “SYSTEM TROUBLE” LED shall light, and the system audible signal shall steadily sound when any trouble is detected in the system. Failure of normal power opens or short circuits on the signaling line circuits or the notification appliance circuits, disarrangements in system wiring, failure of the microprocessor or any identification module, or system ground faults shall activate this trouble circuit.
    - b. A trouble signal may be acknowledged by actuating the “ACKNOWLEDGE” switch. This shall silence the control unit trouble buzzer. If additional trouble conditions occur, the trouble circuitry shall resound.
    - c. During an “alarm” condition, all “trouble” signals shall be suppressed with the exception of lighting the amber “COMMON TROUBLE” LED steadily.
    - d. The display shall indicate all information associated with the trouble condition, including type of trouble point, its location within the protected premises, and the time and date of that activation.
    - e. All system output programs assigned via control-by-event equations to be activated by the particular point in trouble shall be executed, and the associated System Outputs (Trouble Notification Appliances and/or relays) shall be activated.
  2. Unacknowledged alarm messages shall have priority over trouble messages, and if such an Alarm occurs during a Trouble sequence, the Alarm condition shall have display priority.
- E. System Supervision
1. All wiring extending from the FACU enclosure to fire alarm and emergency voice communication system components shall be supervised for opens, shorts and grounds. Systems containing unsupervised wiring of any type shall not be acceptable.
  2. The occurrence of any fault shall activate the system trouble circuitry but shall not interfere with the proper operation of any circuit that does not have a fault condition.

3. Incoming 120 VAC line power shall be supervised so that any power failure shall be audibly and visually indicated at the control unit and at the off-site Monitoring Center.
4. Batteries shall be supervised so that a low battery condition or disconnection of the battery shall be audibly and visually indicated at the control unit and at the off-site Monitoring Center.
5. Interconnected Fire Safety Systems shall be monitored for alarm and trouble conditions. The supervisory signal shall activate any time the monitored system indicates an offnormal condition.

F. System Reset

1. A "SYSTEM RESET" button shall be used to return the system to its normal state after an alarm condition has been remedied. Printed messages shall provide operator assurance of the sequential steps (i.e.: "IN PROGRESS", "RESET COMPLETED") as they occur, should all alarm conditions be cleared.
2. Should an alarm condition continue to exist, the system shall remain in an abnormal state. System control relays shall not reset. The control unit "ALARM" LED shall remain on. These points shall not require acknowledgment if they were previously acknowledged.

### 2.3 MINIMUM COMPONENTS

A. The automatic fire alarm system shall consist of, but not be limited to:

1. Addressable fire alarm control unit (FACU), containing a Central Processing Unit (CPU) power supply, amplifiers, LED indicators, control switches and relays.
2. Input Devices (waterflow switches, tamper switches, tank water level supervisory switches and fire pump supervisory switches).
3. Addressable, analog photoelectric smoke detectors, with standard bases.
4. Addressable spot-type heat detectors.
5. Addressable manual fire alarm boxes
6. Addressable monitor modules and control relay output modules.
7. Fault Isolator Modules.
8. Annunciation at the FACU and remote LCD annunciators.
9. A permanent record of the alarm signal, time, and date.
10. Audible and visible notification appliances.
11. Battery backup supervision.
12. Automatic supervision of alarm initiating circuits and notification appliance circuits.
13. Transmission of signals to the off-site Monitoring Center.
14. Interconnections with other building systems including, but not limited to, air handling systems.
15. Detention-grade, tamper-proof device covers and guards for devices not inherently secure against attack, interference and tamper by Residents.

B. The fire alarm system shall be installed in accordance with the requirements of the applicable codes.

1. Fire alarm systems shall be independent, stand-alone systems that are not an integral part of a security, an energy monitoring and control system (EMCS), or other systems. Fire alarm systems shall be permitted to be monitored by security systems or EMCS systems, but in no way rely on any components of such systems for operation.

### 2.4 FIRE ALARM CONTROL UNIT (FACU)

A. The FACU shall provide power, English display status, supervision, control, and programming capability for the fire alarm system.

- B. The control unit shall be located as specified by the Owner and coordinated with the Fire Marshall.
- C. The control unit shall store a record of alarm and trouble events in a nonvolatile history file. This file shall contain, at least, the most recent 500 events, with time and date of each event. It shall be possible to select the number of events to be viewed in the history file so that the entire file does not have to be downloaded. The history file shall remain intact in the event of a loss of AC and battery power.
- D. The control unit shall be modular in construction and receive supervised plug-in component boards to provide system functions as hereinafter specified and/or to accommodate future system expansions.
- E. The control unit shall be capable of being expanded in the future to support a minimum of 1000 addressable points (inputs or outputs). The control unit shall be capable of being expanded and field reprogrammed at any time up to the predetermined maximum capacity of the system, without the requirement to return the operating system to the factory for program changes. All field programming shall be done by an authorized manufacturer's representative.
- F. The control unit shall support a minimum of four (4) signaling line circuits. Each signaling line circuit shall support a minimum of 100 addressable input devices or addressable monitor modules and a minimum of 10 output devices. All addressable input and output devices shall be capable of being intermixed on the same signaling line circuit.
- G. The control unit shall accommodate all addressable input devices in alarm simultaneously and shall be capable of operating all output relays while all inputs are in alarm.
- H. A minimum of two (2) signaling line circuits shall be used, with devices equally distributed on each circuit. Each signaling line circuit shall be loaded to no more than 75% of its manufacturer specified capacity. Additional SLCs shall be furnished and installed as necessary to comply with this requirement.
- I. The control unit shall supply power and communication protocol signals to the addressable input devices over two pairs of wires per signaling line circuit from the control unit. Signaling line circuits shall be field programmable for Class A operation.
- J. The control units shall support a minimum of two (2) notification appliance circuits per floor to provide an evenly distributed number of notification appliances per floor and circuit. Each circuit's power load shall not exceed 75% of the individual circuit power available from the FACU. Each installed circuit shall be Class A circuits. Additional NACs shall be furnished and installed as necessary to comply with this requirement.
- K. The control unit shall contain all the necessary equipment to support a minimum of two (2) notification appliance circuits. Each area shall be served by a minimum of one Class B (Style Y) circuit.
- L. Power for all notification appliances shall come from integral power supplies in the control unit. Remote power supplies, if needed, shall be of the same manufacturer as the FACU. The location of all remote-control equipment, such as remote power supplies (extenders) shall be approved prior to installation by the Owner. All locations containing remote control equipment (such as a power supply extender) shall be protected with a smoke detector, in accordance with NFPA 72.
- M. The control unit and system wiring requirements shall be specified by the equipment supplier in their bid to the Contractor.



- N. At a minimum, the FACU shall contain the following:
1. Display. A minimum 80 character, highly readable, display. Upon input activation, the display shall provide the following indication:
    - a. A device address display.
    - b. A field programmed English label indicating the location of the device. Custom label verbiage shall be submitted to the Owner and the authorities having jurisdiction, for approval prior to system programming.
    - c. An English description of the type of device activated, such as smoke detector, manual fire alarm box, water flow switch, etc.
    - d. The status of the input: alarm, supervisory or trouble.
    - e. Multiple alarm conditions shall be sequentially displayed automatically at not more than a five (5) second interval until manually acknowledged by priority.
  2. Annunciation. Annunciation shall be an integral part of the control system and shall indicate alarm, supervisory and trouble conditions and the corresponding address. The following initiating devices shall be annunciated individually:
    - a. Smoke detectors;
    - b. Heat detectors;
    - c. Sprinkler waterflow devices;
    - d. Manual fire alarm boxes; and
    - e. Other approved types of automatic fire detection devices or suppression systems.
  3. Battery voltage and ammeter readouts shall be available from the LCD display.
  4. Once acknowledged, individual alarms shall be viewed by operating a "next-alarm" switch.
  5. Communication Ports. Two supervised RS232C communication ports shall be provided to support a printer or MODEM. Each RS232C port output shall be programmable for printer or display output and shall be programmable to provide access to the control unit's EEPROM operating system to perform the following functions:
    - a. Local or remote system programming. The Contractor shall provide diagnostic software and modem to allow remote connection to the control unit for maintenance and troubleshooting. The Contractor shall install the modular connections to the RJ11 telephone jacks as provided and located by the Owner. The telephone wiring connections shall be accomplished by the Owner.
    - b. Listing and indicating status of all field devices.
    - c. Capability of performing alarm tests on any or all addressable smoke detectors and contact input devices.
    - d. Monitoring of the system from remote locations via printer, terminal, or computer.
  6. The control unit shall be provided with a "silent" walk test feature. This feature shall allow for testing of the fire alarm and emergency voice communication system without activating the notification appliances.
  7. Clock. A 24-hour clock shall be provided to continually provide the time of day and day of the week information. During normal standby conditions, the control unit shall display time and date.
  8. Any operation of an alarm silence, supervisory silence, trouble silence, acknowledge, lamp test, relay switches, or system reset switch shall cause a display indication of operation with time and date. These operations shall also be recorded in the system's history file.
- O. The functional operation of the control unit shall be established by programmable software.
1. The operating program shall be contained in nonvolatile EEPROM memory and shall be configurable in any of the following ways:
    - a. At the factory;

- b. At the job site via modem; or
  - c. At the job site via standard terminal or standard laptop computer. Laptop computers shall utilize standard communications software, such as Procom or Crosstalk. Systems which require the manufacturer's proprietary software for programming and communication shall not be acceptable.
- P. Access and control of the operating program shall be restricted to proper personnel designated by the Owner.
- 1. The control unit shall have a minimum of three (3) security levels, and they shall be designated: "EMPLOYEE", "MAINTENANCE", and "MANUFACTURER." Each level shall have individual passwords. Illegal access attempts shall be rejected by the system and shall be displayed and recorded in the history file with time and date.
  - 2. The "EMPLOYEE" security level shall be the lowest security level and shall only allow access to the system status levels and lists and shall not impair system operation.
  - 3. The "MANUFACTURER" and "MAINTENANCE" security levels shall allow access to the operating system.
  - 4. Accessing a programming function that disables normal system operation shall initiate a trouble sequence.
- Q. Failure of the CPU(s) in the control unit module shall light the CPU Error LED and sound the control unit trouble buzzer. Alarms received while the control unit is in this state shall bypass the software and sound the general alarm signals and light the alarm LED.
- R. The control unit shall be capable of locating input circuit openings by the associated address and initiate the proper display and trouble sequence.
- S. The system response to alarms shall be in accordance with NFPA 72.
- T. The control unit shall contain an integral standby battery to provide continuous power in the event of AC power failure.
- 1. The batteries shall be capable of providing 24 hours of backup power for the system and enough remaining power to operate all notification appliances for 15 minutes at the end of the 24-hour period.
  - 2. The calculations for battery standby shall include a "safety factor" (reserve power estimate) of a minimum 20%.
  - 3. Transfer from AC to battery power shall be instantaneous when AC voltage drops below 85 percent input. Transfer to battery standby shall be indicated by display and recorded in the history file with time and date. The indication shall be "AC OFF".
  - 4. Loss of building power for the system shall automatically and immediately cause transfer of the system to battery power and cause all audible trouble signals to sound. Upon return of building power, the system shall automatically retransfer thereto, and the batteries shall automatically recharge.
  - 5. During battery operation, the control unit shall process all inputs. However, the display shall provide five (5) seconds of indication for each new input condition, then turn off to conserve battery power.
  - 6. The control unit shall have a dual rate battery charger that shall maintain the batteries in a fully charged condition and shall provide recharge of the batteries to full capacity in forty-eight (48) hours.
- U. The control unit shall provide a nonprogrammable DPDT common alarm relay and common trouble relay both with contacts rated 2 AMP at 24 VDC.

- V. Output Function Modules. The control unit shall utilize output function modules to control output functions. The modules shall plug into the control unit motherboard. The functions and presence of each module shall be supervised, and “MAINTENANCE” and “MANUFACTURER” password shall enable the user to request a list that locates the module by panel and slot within system. All modules shall be individually programmable by circuit as hereinafter specified.
  - 1. Addressable control relays shall be provided for each of the following auxiliary functions:
    - a. HVAC shutdown.
    - b. High Volume Low Speed Fan shutdown.
    - c. Smoke damper control.
    - d. Release of magnetically held-open doors.
- W. The Contractor shall field verify the number and location of all auxiliary function control circuits. Additional addressable control relays shall be furnished and installed, as necessary, to comply with this requirement.

## 2.5 SYSTEM FIELD DEVICES - GENERAL

- A. Connection of initiating devices and notification appliances to appropriate signaling line circuits and notification appliance circuits from each floor shall be as indicated on the installation drawing from the equipment supplier.
- B. **Notification appliances and initiating and other devices in detention areas which are exposed to, Residents shall be detention-grade, tamper-proof devices inherently secure against attack, interference and tamper or shall be equipped with guards or covers designed and installed to make them so. Keys and keying for lockable devices or guards and covers shall be coordinated with the Owner.**

1. **Notification appliances, devices, guards, covers, keys and other components used in the detention areas of the building SHALL BE APPROVED BY THE OWNER.** C. Addressable devices shall operate under the following ranges of environmental conditions:

- 1. Ambient Temperature: 32-100 degrees Fahrenheit.
  - 2. Relative humidity: 0-93 percent, non-condensing.
  - 3. Air velocity: 300 feet per minute.
- D. Each addressable device shall include a means to assign a unique address code to the device in the field. This address code shall serve as the means by which the system program recognizes the device.
  - E. The address of each addressable device shall be clearly and permanently indicated in the base of each detector or on the face of monitor modules, control relay output modules and manual fire alarm boxes.
  - F. Failure of any single device shall not hinder the operation of any other devices connected to the signaling line circuit.
  - G. Failure of the control unit to properly communicate with any addressable device shall initiate the proper trouble sequence. While in this trouble condition, the control unit shall cause actual alarm input from devices to override trouble alarm.

## 2.6 AUTOMATIC DETECTORS – GENERAL

- A. All automatic smoke detectors shall be of the addressable, analog photoelectric type and shall be interchangeably mounted into a common twist-lock base.
- B. The control unit shall recognize changes of detector type in each location and provide proper indication that reprogramming for the affected address is required.
- C. Every automatic detector shall be so located as to be readily visible from the floor. Detector bases shall have Brady, or Owner approved equal, adhesive markers attached to them indicating the address of the detector. Markers shall be installed, by the Contractor, on the inside of the base and lettering shall be a minimum of 12 point.
- D. In general, automatic detectors shall be mounted on the structural ceiling, finished ceiling or finished wall and not on the bottom or side of any type of construction or structure which extends down from the ceiling. The mounting location of every device shall be approved by the Owner.
- E. Automatic detectors shall be located near points where air currents normally intersect. Detectors shall not be located in the direct path of the draft from an HVAC air supply grille, a door, window, or hallway. Detectors shall be installed a minimum of three (3) feet from an HVAC air supply diffuser, in accordance with NFPA 72.
- F. All automatic detectors shall be installed at all locations and in conformance with all codes and Regulations and these specifications. The detectors shall be installed to accommodate construction. The mounting location of every device shall be approved by the Owner.

## 2.7 ADDRESSABLE PHOTOELECTRIC SMOKE DETECTORS

- A. Addressable analog photoelectric smoke detectors shall be installed in accordance with this specification and Code requirements. Unless otherwise required, these common area detectors shall be spaced at thirty (30) foot centers and spaced in accordance with NFPA 72 and the manufacturer's installation instructions. Smoke detectors shall only be installed in those environments suitable for proper smoke detector operation.
- B. Photoelectric smoke detectors shall have a general alarm setting in all common spaces of 3.0% - 4.0% per foot obscuration.
- C. The detectors shall provide a combination alarm/power LED. The LED shall flash under normal conditions, indicating that the detector is operational and in regular communication with the control unit. The LED shall be placed into steady illumination under an alarm condition. An output connection shall also be provided in the base to connect an external remote alarm LED. The mounting location of every device shall be approved by the Owner.

## 2.8 DETECTOR BASES

- A. Automatic detectors shall utilize a common, plug-in, twist-lock, tamper-resistant type base that accommodates photoelectric and thermal detectors. Detectors shall be interchangeable to simplify field conversion.
- B. Removal of the detector from the base shall cause a trouble indication at the FACU. Removal of the detector shall not disrupt the alarm circuit wiring or prevent the receipt of alarms from other devices operating in the circuit.

- C. Insertion of an incorrect detector type into the base shall cause a "Wrong Device" trouble condition at the FACU until the proper type of detector is installed, or the system is reprogrammed. The system program shall recognize the insertion of a wrong device and shall automatically default to the setpoint values corresponding to the inserted device and shall monitor alarm and trouble conditions according to the default parameters.
- D. Provide bases constructed of white, high impact polycarbonate designed for mounting on a standard 3-1/2 inch or 4-inch octagonal or 4 inch square outlet box. Provide screw terminal connections for No. 14 AWG wire.

## **2.9 ADDRESSABLE PHOTOELECTRIC DUCT SMOKE DETECTORS**

- A. Duct smoke detectors shall be installed only in environments appropriate for proper smoke detection and in accordance with manufacturer's installation instructions. Duct smoke detectors shall be rated for an air velocity range of a minimum of 300 ft/min to a maximum of 4000 ft/min.
- B. Duct smoke detectors shall be photoelectric, addressable analog type, with sampling tube of design and dimensions as recommended by the manufacturer for the specific duct size and installation conditions where applied. Duct smoke detector shall include a "Form C" relay contact (rated for minimum 1A @ 24VDC) as required for HVAC fan shutdown and/or smoke damper closure. This auxiliary relay output shall be fully programmable.
- C. For maintenance purposes, it shall be possible to clean the duct housing sampling tubes by accessing them through the duct housing front cover.
- D. Duct smoke detector shall have a Remote Test Station with an alarm LED and Test switch.
- E. Every duct smoke detector shall have Brady, or Owner approved equal, adhesive markers attached to them indicating the address of the detector. The Contractor shall install markers on the outside of the duct smoke detector housing and lettering shall be a minimum of 12 point.

## **2.10 SPOT-TYPE HEAT DETECTORS**

- A. Addressable heat detectors shall be installed in environments appropriate for proper detection in accordance with NFPA 72 and the manufacturer's installation instructions.
- B. Addressable heat detectors
  - 1. Addressable heat detectors shall be fixed temperature. Fixed temperature detection feature shall be programmable to operate at either 135 °F or 155 °F.
  - 2. Heat detection element shall be epoxy encapsulated electronic design. It shall be thermistor-based, self-restoring and shall not be affected by thermal lag.
  - 3. The detectors shall provide a combination alarm/power LED. The LED shall flash under normal conditions, indicating that the detector is operational and in regular communication with the control unit. The LED shall be placed into steady illumination under an alarm condition. An output connection shall also be provided in the base to connect an external remote alarm LED. The mounting location of every device shall be approved by the Owner.
  - 4. Every addressable heat detector shall have Brady, or Owner approved equal, adhesive markers attached to them indicating the address of the detector. The Contractor shall install markers on the outside of the heat detector base and lettering shall be a minimum of 12 point.

**2.11 ADDRESSABLE MANUAL FIRE ALARM BOXES**

- A. Manual fire alarm boxes shall be installed where required by code and as coordinated with Owner and Fire Marshall.
- B. Manual fire alarm boxes shall be of the non-coded, single-action type, surface or semi-flush mounted, as selected by the Owner, with integral contact monitor module to provide addressable operation.
- C. Faceplates shall be red with raised white identification lettering.
- D. Stations shall mechanically latch after operation, with a key operated reset feature, keyed the same as FACU.
- E. Manual fire alarm boxes shall be mounted at a maximum height of 48 inches measured to the activating handle, above the finished floor, in accordance with NFPA 72 and the ADA.
- F. Every manual fire alarm box shall have an engraved nameplate permanently installed on its face or Brady, or Owner approved equal, adhesive markers attached to them indicating the address of the station. The Contractor shall install markers on the outside of the manual fire alarm box and lettering shall be a minimum of 12 point.

**2.12 ADDRESSABLE MONITOR MODULES**

- A. Furnish and install addressable monitor modules to supervise and monitor the status of each non-addressable device, such as sprinkler waterflow alarm switch and valve supervisory switch contacts, water tank supervision contacts and fire pump supervision contacts.
- B. Each addressable monitor module shall be able to support any number of normally open (N/O) devices. Wiring to the device(s) being monitored shall be Class A supervised. Module status (normal, alarm, supervisory, trouble) shall be transmitted to the FACU.
- C. Addressable monitor modules shall include a mounting plate for installation in a junction box or shall be mounted in a locked cabinet or approved box, as shown on the manufacturer's recommended specifications.
- D. The addressable monitor modules shall provide address-setting means.
- E. Each addressable monitor module shall be provided with a switch to provide a means of disconnecting the initiating circuit to allow work to be performed on the initiating circuit without causing an alarm.
- F. An LED shall be provided which shall flash under normal conditions, indicating that the monitor module is operational and in regular communication with the control unit.
- G. Every addressable monitor module shall have Brady, or Owner approved equal, adhesive markers attached to them indicating the address of the module. The Contractor shall install markers on the outside of the module cover plate and lettering shall be a minimum of 12 point.

**2.13 ADDRESSABLE CONTROL RELAY OUTPUT MODULES**

- A. Provide addressable control relay output modules to permit hardwired control capability from the signaling line circuit. Relay contacts shall be DPDT, rated 2 amperes at 24 VDC.
- B. Furnish and install addressable control relay output modules for the functions as specified in this specification.
- C. Each relay shall operate according to the control program resident in the FACU. Relays shall be supervised for trouble conditions (open, short, device missing/failed) at the FACU.
- D. Relay output modules shall include a mounting plate for installation in a junction box.
- E. The relay output module shall provide address-setting means and shall also store an internal identifying code which the control unit shall use to identify the type of device.
- F. An LED shall be provided which shall flash under normal conditions, indicating that the Relay Output Module is operational and is in regular communication with the control unit. G. Provide transient suppressors for inductive loads.
- H. Every addressable relay output module shall have Brady, or Owner approved equal, adhesive markers attached to them indicating the address of the module. The Contractor shall install markers on the outside of the module cover plate and lettering shall be a minimum of 12 point.

**2.14 FAULT ISOLATOR MODULES**

- A. At a minimum, a fault isolation module shall be provided at each location where the signaling line circuit traverses a floor level.
- B. Fault isolator modules shall provide short circuit isolation for signaling line circuit wiring. Fault isolator modules shall be listed to UL 864, *Standard for Control Units for Fire-Protective Signaling Systems*.
- C. The isolator module shall mount directly to a minimum 2-1/8 inch deep, standard 4-inch square electrical box, without the use of special adapters or trim rings.
- D. Power and communications shall be supplied by the signaling line circuit.
- E. Fault isolator modules shall report faults to the host FACU.
- F. After the wiring fault is repaired, the fault isolator modules shall test the lines and automatically restore the connection.
- G. Every addressable fault isolator module shall have Brady, or Owner approved equal, adhesive markers attached to them indicating the address of the module. The Contractor shall install markers on the outside of the module cover plate and lettering shall be a minimum of 12 point.

**2.15 AUDIBLE AND VISIBLE NOTIFICATION APPLIANCES**

- A. General

1. All notification appliances shall be rated at 24 VDC and shall be powered by supervised notification appliance circuits originating from the FACU or remote power extenders listed for this purpose.
2. The notification appliances shall be installed in accordance with the required audibility levels and the required illumination levels as described in NFPA 72.
3. All notification appliances shall be installed in environmental conditions in accordance with their listing and manufacturer's specifications and installation instructions. Where required, notification appliances that are to be installed in outdoor areas or in areas with harsh environmental conditions shall be tested and listed for outdoor use or for weatherproof applications.
4. Where required by Code and by the Fire Department, a weatherproof notification appliance (tested and listed for outdoor use), shall be installed on the exterior of the building.

B. Notification appliance circuits

1. Notification appliance circuits shall not be installed in the same raceway with signaling line circuits unless approved in writing by the fire alarm and emergency voice communication system supplier.
2. Notification appliance circuits and control equipment shall be arranged and installed so that loss of any one (1) notification appliance circuit shall not cause the loss of any other notification appliance circuit in the systems.

C. Audible (horn) notification appliances

1. Fire alarm audible notification appliances shall be listed in accordance with UL.
2. Horn notification appliances and/or combination horn/strobe notification appliances shall be multi-level units and shall be installed as required by Code.
3. Horn notification appliances shall be powered such that it has a minimum sound pressure level of 15 dBA above ambient sound levels. In no case shall horn notification appliances produce a sound output on alarm more than 110 dBA.
4. Horn notification appliances shall have a minimum sound pressure level of 85 dBA @ 24VDC.
5. Weatherproof (exterior rated) audible notification appliances shall be installed where an ambient temperature of 32 °F and 100 °F is not maintained or humidity conditions exceed the listing.

D. Visible (strobe) notification appliances

1. All strobes shall conform to the requirements of NFPA 72 and the ADA and shall be listed to UL 1971, *Standard for Signaling Devices for the Hearing Impaired*.
2. All visible notification appliance circuits shall be synchronized and have a rated light output as required by Code for application.

**2.16 LCD REMOTE ALARM ANNUNCIATOR**

- A. An 80-character alphanumeric LCD display shall be provided on the remote annunciator to mimic the alphanumeric display on the control unit. Remote alarm annunciators shall operate as specified in this specification.
- B. The LCD shall display the following information relative to the abnormal condition of a point in the system:
  1. A field programmed custom label indicating the location of the device.
  2. Type of device (e.g., smoke, fire alarm box, waterflow).
  3. Point Status (e.g., alarm, supervisory, trouble).



- C. Operator keys shall be keyswitch enabled (keyed the same as the FACU) to prevent unauthorized use. The key shall only be removable in the disabled position. Unless stated otherwise in other sections of this specification, Acknowledge, Silence and Reset operation shall be the same as the FACU.
- D. The LCD annunciator capture “Enable” keyswitch and the FACU cabinet shall be “keyed” alike.

## **2.17 MAGNETIC DOOR HOLD-OPEN DEVICES**

- A. Magnetic door hold-open devices shall be listed to UL 228, *Standard for Door Closers-Holders, With or Without Integral Smoke Detectors*. Units are equipped for wall or floor mounting as necessary for location and are complete with matching door plate. The unit shall operate from a 120VAC source and develops a minimum of 25 lbs. holding force. B. The material and finish shall match the door hardware.

## **2.18 TRANSMISSION OF SIGNALS**

- A. All alarm signals shall be transmitted to the off-site Monitoring Center, as designated by the Owner. The Contractor shall furnish and install all the necessary equipment, including a Digital Alarm Communicator Transmitter (DACT) and make the connections from the FACU to the transmission lines that will transmit the signal information to the off-site Monitoring Center.
- B. All supervisory and trouble signals shall be transmitted to the off-site Monitoring Center, as designated by the Owner. The Contractor shall furnish and install all the necessary equipment, including a Digital Alarm Communicator Transmitter (DACT) and make the connections from the FACU to the transmission lines that will transmit the signal information to the off-site Monitoring Center.

## **PART 3 - EXECUTION**

### **3.1 INSTALLATION**

- A. Installation, workmanship, fabrication, assembly, erection, examination, inspection and testing shall be in accordance with NFPA 72, except as modified herein.
- B. The Contractor shall provide and install all required equipment, labels and accessories necessary for the proper operation of the system.
- C. All work shall be performed in accordance with the best and the most modern practices of the trade. The entire system shall be installed in a neat and workmanlike manner, in accordance with the standard instructions and recommendations of the manufacturer and in accordance with the approved manufacturer's wiring diagrams unless otherwise specifically permitted by the Owner.
  - 1. Coordinate with other trades as necessary to install raceways, conductors and other components not suitable for exposure to Residents of a Detention occupancy; above the stucco ceiling and inside CMU chase walls of the existing building.
  - 2. It is the Alarm contractor's responsibility to install the Fire Alarm System in a manner suitable to a detention and Correctional Facility.
- D. The system shall be installed under the supervision of a qualified, trained, NICET (minimum Level III) Certified manufacturer's representative. The technical representative is expected to be on site with the Contractor during the installation of wiring and during the entire time of final connections and testing of the fire alarm and emergency voice communication system. The system shall be demonstrated to perform all of the functions as specified.

- E. The supervisory work of the qualified manufacturer's technical representative shall include, but not necessarily be limited to, checking all the system wiring connections; advising the Contractor regarding technical details of the installation; and the adjustment and testing of all components of the system in order to ensure a complete and satisfactorily operable system. The manufacturer's technical representative shall be on site, as required by the Owner, during the entire installation and connection of the new control equipment. The technical representative shall monitor all wiring changes and assist the Contractor to ensure a smooth transition to the new control equipment. The cost of the technical representative shall be paid by the Contractor and shall be included in the bid price. The minimum amount of man-hours for this technical representative to be carried is 40 hours. The Contractor shall identify the amount of manufacturer's technical representative's man-hours that shall be provided and the per-hour cost (including the cost for possible overtime hours) for the technical representative's time.
- F. The manufacturer's technical representative shall also be required to instruct designated building and management personnel in the general operation of the system and to give the designated personnel an overview of the system functions when the system is in normal, supervisory mode, alarm mode, and trouble mode, as specified in this specification.

### **3.2 WIRING**

- A. All wiring shall comply with this section.
- B. The entire wiring and raceway system for the fire alarm and emergency voice communication system shall be in full accordance with NFPA 70, *National Electrical Code*.
- C. The Contractor shall furnish all metal raceway, wiring, outlet boxes, junction boxes, cabinets, labels and similar devices necessary for the complete installation of the fire alarm and emergency voice communication system. All wiring shall be of the type as specified herein and recommended by the manufacturer and shall be installed in metal raceway throughout.
- D. All wiring, conductors and raceways shall be concealed within the construction to the extent possible. Where concealed wiring and or raceways is not possible, the Contractor shall consult with the Owner for the location of the installation.
  - 1. Exposed wiring or raceways are not permitted in Detention areas.
- E. Terminal cabinets with hinged, lockable red covers, supplied by Space Age Electronics or approved equal shall be provided at all junction points. All conductor splices shall be made on screw-type terminal blocks – wire nuts, butt, crimp or screw type connectors shall not be used. All terminals within a terminal cabinet shall be properly and permanently labeled. All junction box covers shall be painted red.
- F. Raceways containing conductors identified as "Fire Alarm and Emergency Voice Communication System" conductors shall not contain any other conductors, and no AC carrying conductors shall be allowed in the same raceway with the fire alarm conductors.
- G. The conductors for the notification appliance circuits shall not be installed in the same raceway as the conductors for signaling line circuits unless written certification from the manufacturer is supplied to the Owner indicating that the inclusion of these circuits in the same raceway is acceptable and that no additional consideration is needed for these circuits.
- H. All wiring shall test free from grounds and short circuit faults. To ensure all wiring meets this requirement, the wiring shall be tested by the Contractor. The testing results shall be recorded,

signed by the Contractor and forwarded to the supplier and the Owner. No connections to the FACU shall be made until the system wiring has been accepted by the equipment supplier.

- I. All wiring for the initiating devices, notification appliances and remote 80-character LCD display shall be solid or stranded copper and shall comply with the appropriate sections of the *National Electrical Code*. All system wiring size shall be as determined suitable by the manufacturer and in compliance with the *National Electrical Code*, yet they shall not be any smaller than as specified herein.
- J. The following minimum sizes of conductors shall be used for all new wiring:
  - 1. Power Supply Conductors (Primary and Secondary): No. 12 AWG
  - 2. Signaling Line Circuit Conductors: No. 18 AWG
  - 3. LCD Remote Alarm Annunciators: No. 18 AWG
  - 4. Notification Appliance Circuits: No. 14 AWG
- K. Color coding of conductors shall be approved by the Owner and the authorities having jurisdiction.
- L. Exposed raceways shall be run parallel and perpendicular to the walls and ceilings. Wherever practical, exposed raceways shall be run on the ceiling as close as possible to a wall or as high as possible on a wall. Where exposed raceways shall cross under a structural beam or rib, they shall be run down on one side of the beam or rib, across its bottom, and up to the ceiling on the other side of the beam or rib. No spanning from beam to beam or rib to rib shall be permitted. The use of a raceway body on one side of a beam or rib shall be permitted provided it shall be readily accessible. Where metal raceway is installed exposed, it shall be painted to match the walls and/or ceilings on which it is installed, as instructed by the Owner. The method and location of all exposed raceways shall be approved by the Owner prior to start of any installation work.
- M. Fault isolator modules shall be furnished as required and shall be mounted as directed by the manufacturer. The field location of the fault circuit isolators shall be labeled so that the devices may be easily located, and that location shall be noted on the point-to-point and as-built drawings.
- N. The power employed to operate the fire alarm and emergency voice communication system shall have a high degree of reliability and capacity for the intended service. Connections to this power service shall be made on a dedicated branch circuit(s). The circuit shall be mechanically protected.
- O. The electrical supply to the FACU shall be equipped with a dedicated fused disconnect with a handle that can be locked in the **“power on”** position. This disconnect is to be provided at the connection to the normal power supply serving the FACU. Circuit disconnecting means shall have a red marking, shall be accessible to authorized personnel, and shall be identified as **“FIRE ALARM CIRCUIT CONTROL.”** The location of the circuit disconnecting means shall be permanently identified on a nameplate installed on the inside of the FACU.
- P. All wiring within the control unit shall be neatly served in the panel gutters and be secured by means of Thomas & Betts "Ty-Raps" or by other approved means.
- Q. Where penetrations of floor slabs, fire-resistance rated walls and/or smoke barrier walls are made, the wiring shall be sleeved in metal raceway and the penetrations shall be fire-stopped with approved or UL Listed through-penetration firestop assembly material acceptable to the Owner and the authorities having jurisdiction.

### 3.3 DEMONSTRATION TESTS

- A. Upon completion of the installation of the fire alarm system, the Contractor shall provide a minimum of one week's notice to the Owner that the fire alarm and emergency voice communication system has been satisfactorily tested by the Contractor and the manufacturer's representative and is ready for the Demonstration Test.
- B. At the time of notification, the Contractor shall submit one copy of the approved as-built drawings and the approved Test Plan. The tests shall demonstrate that the operating and installation requirements of this specification have been met.
- C. At the Demonstration Test, the manufacturer's technical representative shall deliver to the Owner an Inspection and Test Report, which shall be completed in conjunction with the Demonstration Test and shall indicate the following:
  - 1. Building information, including name, address, and city.
  - 2. The Contractor's name, address, city and telephone number.
  - 3. The control unit configuration, serial number, access passwords, extent of battery backup, locations of remote annunciators, a description of remote functions, and type of fire department connection.
  - 4. The total quantity of notification appliances, initiating devices, addressable modules, etc.
  - 5. The quantity of alarm signal units, fire alarm boxes, and each type of detector in each area. In addition, the connection position of each device shall be indicated, and, further, indicate the test result of each device and any subsequent action taken.
  - 6. Pertinent comments regarding the installation, operation, testing, inspecting, or other aspects of the system.
  - 7. The manufacturer's technical representative shall print his/her name and affiliation and sign and date the document.
- D. The tests shall demonstrate that the entire control system functions as intended. All circuits and devices shall be tested, including equipment shutdown, alarm signaling devices, horns, strobes and auxiliary functions (including AHU shutdown). In addition, supervision of each circuit shall be tested.
- E. At a minimum, the Contractor shall perform the following:
  - 1. Operate every building fire alarm device to ensure proper operation, correct annunciation at each remote annunciator and at the control unit and proper operation of all alarms and auxiliary functions. Where applying heat would destroy any detector, they may be manually operated.
  - 2. The signaling line circuits and the notification appliance circuits shall be opened in at least two locations per floor to check for the presence of correct supervisory circuitry.
  - 3. One-half of all tests shall be performed on battery standby power.
- F. Upon satisfactory completion of the Demonstration Test, the Contractor shall leave the system operating for a minimum of one week prior to the Acceptance Test.
- G. If unsatisfactory results occur during or after the Demonstration Test, the Contractor shall be responsible for any and all additional charges incurred by the Owner with respect to corrective action including but not limited to test monitoring and engineering services during the time it takes to obtain Final Acceptance by the Owner. Final Acceptance by the Owner means that the fire alarm and emergency voice communication system is completely operational and in conformance with this specification and applicable codes and standards, all documentation has been submitted

as required by these specifications, and all training as required by these specifications has been completed to the satisfaction of the Owner.

- H. When the testing has been completed to the satisfaction of the Contractor's lead installer and the representative of the manufacturer, a notarized letter co-signed by each, attesting to the satisfactory completions of said testing, shall be forwarded to the Owner.

### 3.4 ACCEPTANCE TESTS

- A. Before the installation shall be considered completed and acceptable by the awarding authority, the Final Acceptance Test shall be performed. This test shall be coordinated and performed by the Contractor's lead installer, in the presence of a representative of the manufacturer, the Owner, and the authorities having jurisdiction. In order to assure attendance of the necessary representatives, prior to the final test, each representative scheduled to witness the test, shall be provided reasonable notification of the test date by the Contractor (at least forty-eight (48) hours). The test shall not be conducted until all parties agree on the scheduled test date.
- B. The Contractor shall provide all the necessary personnel and equipment to conduct the tests.
- C. At a minimum, the Contractor shall perform the following:
  - 1. Operate every building fire alarm device to ensure proper operation, correct annunciation at each remote annunciator and at the control unit, and proper operation of all alarm detection and control devices, speakers, strobes and auxiliary functions. Where applying heat would destroy any detector, they may be manually operated.
  - 2. The signaling line circuits and the notification appliance circuits shall be opened in at least two locations per floor to check for the presence of correct supervisory circuitry.
  - 3. One-half of all tests shall be performed on battery standby power.
- D. If the Final Acceptance Test fails, the Contractor shall **prepay** all costs incurred to the Owner for any and all reacceptance testing. These costs shall be above and beyond any costs incurred by the authorities having jurisdiction for reacceptance testing.
- E. Upon satisfactory completion of the tests, the Contractor shall leave the fire alarm and emergency voice communication system in proper working order and without additional expense to the Owner, shall replace any defective materials or equipment provided by the Contractor under this Contract within one year from the date of final acceptance by the awarding authority.

### 3.5 TRAINING REQUIREMENTS

- A. Personnel: Prior to final acceptance of the fire alarm and emergency voice communication system, the Contractor and supplier shall provide operation training to the Owner's designated personnel. Two training sessions shall be provided. Each training session shall be a minimum of 1 hour and shall be conducted on shift or at a time acceptable to the Owner. Each session shall include an overview of the system and the devices connected to it, emergency procedures (including alarm, trouble and supervisory condition procedures), control unit operation, and safety requirements. Each session shall include a complete demonstration of the system. Dates and times of each training period shall be coordinated through the Owner, not less than two weeks prior to the training session.
- B. Maintenance Technicians: The Contractor shall arrange for manufacturer training representatives to provide the necessary factory training for operation and troubleshooting of the installed equipment to the Owner's Property Manager and/or Facilities Manager. This training shall include providing the Manager with all access codes and written certification that he is authorized to

operate and troubleshoot the equipment supplied by the manufacturer. If this training shall be conducted off-site, all additional costs (transportation, lodging, meals, etc.) associated with the off-site training shall be included in the bid for four (4) maintenance personnel to travel to the off-site training location.

C. Cleaning and Adjusting

1. Remove paint splatters and other spots, dirt, and debris. Touch up scratches and marred finish to match original finish. Clean unit(s) internally using methods and materials recommended by manufacturer.

**END OF SECTION 283100**