APPENDIX D

Gardner Spencer Smith Tench & Jarbeau
A Professional Corporation for the Practice of Architecture

# PROJECT MANUAL

# UNION COUNTY GYMNASIUM

519 INDUSTRIAL BOULEVARD
BLAIRSVILLE, GEORGIA 30512
GSSTJ PROJECT NUMBER 22102
APRIL 10, 2023

**ARCHITECT:**
GARDNER SPENCER SMITH TENCH & JARBEAU
TOWER PLACE
3340 PEACHTREE ROAD, N.E.
SUITE 1800
ATLANTA, GEORGIA 30326
404-522-8805

# SECTION 00 0110
# TABLE OF CONTENTS


| SECTION AND DESCRIPTION | | ISSUED | REVISED |
|---|---|---|---|
| **DOCUMENTS 00 - CONTRACT REQUIREMENTS** | | | |
| 00 0110 | TABLE OF CONTENTS | 04/10/23 | |
| 00 0115 | LIST OF DRAWINGS | 04/10/23 | |
| 00 5200 | AGREEMENT FORM | 04/10/23 | |
| 00 6000 | PERFORMANCE AND PAYMENT BOND | 04/10/23 | |
| 00 7200 | GENERAL CONDITIONS | 04/10/23 | |
| 00 7300 | SUPPLEMENTARY CONDITIONS | 04/10/23 | |
| 00 9111 | ADDENDUM | 04/10/23 | |
| **DIVISION 01 - GENERAL REQUIREMENTS** | | | |
| 01 0001 | ABREVIATIONS SYMBOLS AND ACRONYMS | 04/10/23 | |
| 01 1000 | SUMMARY | 04/10/23 | |
| 01 1050 | COORDINATION | 04/10/23 | |
| 01 1600 | REQUEST FOR INFORMATION | 04/10/23 | |
| 01 2000 | PRICE AND PAYMENT PROCEDURES | 04/10/23 | |
| 01 2100 | ALLOWANCES | 04/10/23 | |
| 01 2200 | UNIT PRICES | 04/10/23 | |
| 01 2300 | ALTERNATIVES | 04/10/23 | |
| 01 3000 | ADMINISTRATIVE REQUIREMENTS | 04/10/23 | |
| 01 3100 | SPECIAL INSPECTIONS | 04/10/23 | |
| 01 3150 | PROJECT MANAGEMENT AND COORDINATION | 04/10/23 | |
| 01 3200 | CONSTRUCTION PROGRESS DOCUMENTATION | 04/10/23 | |
| 01 3310 | SUBMITTAL PROCEDURES | 04/10/23 | |
| 01 3500 | SUBSTITUTIONS PROCEDURES | 04/10/23 | |
| 01 4000 | QUALITY REQUIREMENTS | 04/10/23 | |
| 01 4110 | TESTING LABORATORY SERVICES | 04/10/23 | |
| 01 5000 | TEMPORARY FACILITIES AND CONTROLS | 04/10/23 | |
| 01 6000 | PRODUCT REQUIREMENTS | 04/10/23 | |
| 01 6116 | VOLATILE ORGANIC COMPOUND (VOC) CONTENT | 04/10/23 | |
| 01 7000 | EXECUTION REQUIREMENTS | 04/10/23 | |
| 01 7310 | CUTTING AND PATCHING | 04/10/23 | |
| 01 7800 | CLOSEOUT SUBMITTALS | 04/10/23 | |
| 01 7875 | FINAL CLEANING | 04/10/23 | |
| **DIVISION 02 - EXISTING CONDITIONS** | | | |
| 02 3000 | SUBSURFACE INVESTIGATION DATA | 04/10/23 | |
| 02 4100 | DEMOLITION | 04/10/23 | |
| 02 4300 | MISCELLANEOUS WORK | 04/10/23 | |
| **DIVISION 03 - CONCRETE** | | | |

| | | |
|---|---|---|
| **03 1000** | **CONCRETE FORMING AND ACCESSORIES** | **04/10/23** |
| **03 2000** | **CONCRETE REINFORCING** | **04/10/23** |
| **03 3000** | **CAST-IN-PLACE CONCRETE** | **04/10/23** |
| **03 3513** | **CONCRETE FINISHING** | **04/10/23** |

**DIVISION 04 - MASONRY**

| | | |
|---|---|---|
| **04 0070** | **CEMENT GROUT FOR REINFORCED MASONRY** | **04/10/23** |
| **04 0090** | **MASONRY ACCESSORIES** | **04/10/23** |
| **04 0511** | **MORTAR AND MASONRY GROUT** | **04/10/23** |
| **04 4313** | **STONE MASONRY VENEER** | **04/10/23** |

**DIVISION 05 - METALS**

| | | |
|---|---|---|
| **05 5000** | **METAL FABRICATIONS** | **04/10/23** |
| **05 5600** | **CONSTRUCTION CASTINGS** | **04/10/23** |
| **05 8000** | **EXPANSION JOINT COVER ASSEMBLIES** | **04/10/23** |

**DIVISION 06 - WOOD AND PLASTICS**

| | | |
|---|---|---|
| **06 1000** | **ROUGH CARPENTRY** | **04/10/23** |
| **06 2000** | **FINISH CARPENTRY** | **04/10/23** |
| **06 4000** | **ARCHITECTURAL WOODWORK** | **04/10/23** |
| **06 4100** | **ARCHITECTURAL WOOD CASEWORK** | **04/10/23** |

**DIVISION 07 - THERMAL AND MOISTURE PROTECTION**

| | | |
|---|---|---|
| **07 2100** | **THERMAL INSULATION** | **04/10/23** |
| **07 2500** | **VAPOR RETARDERS** | **04/10/23** |
| **07 2720** | **FLUID-APPLIED MEMBRANE AIR & VAPOR BARRIERS** | **04/10/23** |
| **07 4120** | **PREFORMED METAL ROOFING SYSTEM** | **04/10/23** |
| **07 4213** | **METAL WALL PANELS** | **04/10/23** |
| **07 6200** | **SHEET METAL FLASHING AND TRIM** | **04/10/23** |
| **07 6500** | **FLEXIBLE FLASHING** | **04/10/23** |
| **07 7160** | **ROOF EXPANSION ASSEMBLIES** | **04/10/23** |
| **07 8400** | **FIRESTOPPING** | **04/10/23** |
| **07 8420** | **FIRE RESISTIVE JOINT SYSTEMS** | **04/10/23** |
| **07 9005** | **JOINT SEALERS** | **04/10/23** |

**DIVISION 08 - OPENINGS**

| | | |
|---|---|---|
| **08 1113** | **HOLLOW METAL DOORS AND FRAMES** | **04/10/23** |
| **08 1416** | **FLUSH WOOD DOORS** | **04/10/23** |
| **08 3100** | **ACCESS DOORS AND PANELS** | **04/10/23** |
| **08 4313** | **ALUMINUM-FRAMED STOREFRONTS** | **04/10/23** |

**08 7100 * DOOR HARDWARE 04/10/23**
**08 8000 GLAZING 04/10/23**

**DIVISION 09 - FINISHES**

**09 2116 GYPSUM BOARD ASSEMBLIES 04/10/23**
**09 5100 ACOUSTICAL CEILINGS 04/10/23**
**09 6566 RESILIENT ATHLETIC FLOORING 04/10/23**
**09 9000 PAITING AND COATING 04/10/23**

**DIVISION 10 - SPECIALTIES**

**10 1200 TROPHY AND DISPLAY CASES 04/10/23**
**10 1440 BUILDING SIGNAGE 04/10/23**
**10 2175 PHENOLIC CORE PARTITIONS 04/10/23**
**10 2810 TOILET ACCESSORIES 04/10/23**
**10 4400 FIRE EXTINGUISHERS CABINETS AND ACCESSORIES 04/10/23**
**10 7530 PREFABRICATED CANOPIES 04/10/23**

**DIVISION 11 - EQUIPMENT**

**11 3013 RESIDENTIAL APPLIANCES 04/10/23**

**DIVISION 12 - FURNISHINGS**

**12 4813 ENTRANCE FLOOR MATS AND FRAMES 04/10/23**
**12 6613 TELESCOPING BLEACHERS 04/10/23**

**DIVISION 13 - SPECIAL CONSTRUCTION**

**13 0000 NOT USED 04/10/23**

**DIVISION 14 - CONVEYING EQUIPMENT**

**14 0000 NOT USED 04/10/23**

**DIVISION 21 - FIRE SUPPRESSION**

**21 0001 ARCHITECTURAL CRITERIA FOR DIV 21 SYSTEMS 04/10/23**

**DIVISION 22 - PLUMBING**

**22 0000 ARCHITECTURAL CRITERIA FOR DIV 22 SYSTEMS 04/10/23**

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

**23 0000 ARCHITECTURAL CRITERIA FOR DIV 23 SYSTEMS 04/10/23**

**DIVISION 25 - INTEGRATED AUTOMATION**

**25 0000 NOT USED 04/10/23**

**DIVISION 26 - ELECTRICAL**

**26 0000 ARCHITECTURAL CRITERIA FOR DIV 26 SYSTEMS 04/10/23**

**DIVISION 27 - COMMUNICATIONS**

**27 0000 NOT USED 04/10/23**

**DIVISION 28 - ELECTRONIC SAFETY AND SECURITY**

**28 0000 NOT USED 04/10/23**

**DIVISION 31 - EARTHWORK**

**31 3116 TERMITE CONTROL 04/10/23**

**DIVISION 32 - EXTERIOR IMPROVEMENTS**

**32 9705 SITE CLEANUP AND FINISH 04/10/23**

**DIVISION 33 - UTILITIES**

**33 0000 NOT USED 04/10/23**

**DIVISION 34 - TRANSPORTATION**

**34 0000 NOT USED 04/10/23**

**DIVISION 35 - WATERWAY AND MARINE CONSTRUCTION**

**35 0000 NOT USED 04/10/23**

**DIVISION 40 - PROCESS INTEGRATION**

**40 0000 NOT USED 04/10/23**

**DIVISION 41 - MATERIAL PROCESSING & HANDLING EQUIPMENT**

**41 0000 NOT USED 04/10/23**

**DIVISION 42 - PROCESS HEATING, COOLING & DRYING EQUIPMENT**

**42 0000 NOT USED 04/10/23**

**DIVISION 43 - PROCESS GAS & LIQUID HANDLING & STORAGE EQUIP**

**43 0000 NOT USED 04/10/23**

**DIVISION 44 - POLLUTION CONTROL EQUIPMENT**

**44 0000 NOT USED 04/10/23**

**DIVISION 45 - INDUSTRY-SPECIFIC MANUFACTURING EQUIPMENT**

**45 0000 NOT USED 04/10/23**

**DIVISION 46 - WATER AND WASTE WATER EQUIPMENT**

**46 0000 NOT USED 04/10/23**

**DIVISION 48 - ELECTRICAL POWER GENERATION**

**48 0000 NOT USED 04/10/23**

**END OF SECTION**

# SECTION 00 0115
# LIST OF DRAWINGS

## PART 1 GENERAL

**DRAWINGS PREPARED BY THE ARCHITECTS AND/OR ENGINEERS, NUMBERED, TITLED, AND DATED AS SHOWN BELOW, TOGETHER WITH SPECIFICATIONS, SHOW AND DESCRIBE THE WORK.**

**FURTHER DRAWINGS, IF REQUIRED IN EXPLANATION OF THE WORK, SHALL BE BINDING UPON THE CONTRACTOR AS PART OF THESE DRAWINGS. DRAWINGS AND SPECIFICATIONS SHALL BE CONSIDERED COMPLIMENTARY SO THAT ANYTHING SHOWN UPON ONE, OR DESCRIBED BY THE OTHER, OR IMPLIED BY EITHER OR BOTH, SHALL BE EXECUTED AND PERFORMED AS IF SHOWN AND/OR DESCRIBED BY BOTH.**

| SHEET | SHEET TITLE | ISSUED | REVISED |
|---|---|---|---|
| G0.00 | COVER SHEET | 04/10/23 | |
| LS1.00 | LIFE SAFETY PLAN | 04/10/23 | |
| **CIVIL** | | | |
| C1 | EXISTING SITE CONDITIONS & DEMOLITION PLAN | 04/07/23 | |
| C2 | SITE LAYOUT & UTILITY PLAN | 04/07/23 | |
| C3 | GRADING & EROSION CONTROL PLAN | 04/07/23 | |
| D1 | CONSTRUCTION DETAILS | 04/07/23 | |
| **ARCHITECTURAL** | | | |
| AS1.01 | ARCHITECTURAL SITE PLAN | 04/10/23 | |
| A0.60 | PARTITION DETAILS | 04/10/23 | |
| A1.10 | FLOOR PLAN | 04/10/23 | |
| A1.31 | REFLECTED CEILING & DIMENSION PLAN | 04/10/23 | |
| A1.60 | ENLARGED PLANS & ELEVATIONS | 04/10/23 | |
| A1.61 | ENLARGED PLANS & ELEVATIONS | 04/10/23 | |
| A2.00 | EXTERIOR ELEVATIONS | 04/10/23 | |
| A2.01 | EXTERIOR ELEVATIONS | 04/10/23 | |
| A3.00 | WALL SECTIONS | 04/10/23 | |
| A3.01 | WALL SECTION | 04/10/23 | |
| A3.02 | FRONT PORCH SECTION | 04/10/23 | |
| A3.03 | WALL SECTIONS | 04/10/23 | |
| A3.04 | ETAILS | 04/10/23 | |
| A4.20 | DOOR SCHEDULE & ELEVATIONS | 04/10/23 | |
| A4.21 | DOOR HEAD JAMB & SILL DETAILS | 04/10/23 | |
| A7.00 | CASEWORK DETAILS | 04/10/23 | |
| **STRUCTURAL** | | | |
| S0.10 | GENERAL NOTES | 04/10/23 | |

| | | |
|---|---|---|
| **S0.11** | **SPECIAL INSPECTIONS** | **04/10/23** |
| **S1.10** | **FOUNDATION & ROOF FRAMING PLANS** | **04/10/23** |
| **S1.11** | **ROOF FRAMING PLANS** | **04/10/23** |
| **S2.10** | **FOUNDATION SECTIONS** | **04/10/23** |
| **S3.10** | **SECTIONS & DETAILS** | **04/10/23** |
| **S3.11** | **SECTIONS & DETAILS** | **04/10/23** |

**PLUMBING**

| | | |
|---|---|---|
| **P0.01** | **GENERAL** | **04/10/23** |
| **P0.02** | **SCHEDULES & DETAILS** | **04/10/23** |
| **P1.01** | **OVERALL FLOOR PLAN** | **04/10/23** |
| **P1.02** | **ENLARGED PLANS** | **04/10/23** |

**MECHANICAL**

| | | |
|---|---|---|
| **M0.01** | **GENERAL** | **04/10/23** |
| **M0.02** | **SCHEDULES** | **04/10/23** |
| **M1.01** | **FLOOR PLANS** | **04/10/23** |

**ELECTRICAL**

| | | |
|---|---|---|
| **E0.01** | **GENERAL** | **04/10/23** |
| **E0.02** | **SCHEDULES** | **04/10/23** |
| **E0.03** | **COMPLIANCE REPORT** | **04/10/23** |
| **E1.01** | **FLOOR PLAN - POWER** | **04/10/23** |
| **E1.02** | **FLOOR PLAN - LIGHTING** | **04/10/23** |

**END OF SECTION**

# SECTION 00 5200
# AGREEMENT FORM

## PART 1 GENERAL

**FORM OF AGREEMENT**

**2.01 THE AGREEMENT TO BE EXECUTED IS ATTACHED FOLLOWING THIS PAGE.**

**2.02 AIA DOCUMENT A101 - 2017 EDITION, STANDARD FORM OF AGREEMENT BETWEEN OWNER AND CONTRACTOR - WHERE THE BASIS PAYMENT IS A STIPULATED SUM, FORMS THE BASIS OF CONTRACT BETWEEN THE OWNER AND CONTRACTOR AND IS HEREBY MADE PART OF THESE DOCUMENTS TO THE SAME EXTENT AS IF HEREIN WRITTEN OUT IN FULL.**

**2.03 RELATED REQUIREMENTS**

A. Section 00 7200 - General Conditions.

B. Section 00 7300 - Supplementary Conditions.

## PART 2 PRODUCTS (NOT USED)

## PART 3 EXECUTION (NOT USED)

**END OF SECTION**

# SECTION 00 6000
# PERFORMANCE AND PAYMENT BOND

**FORM OF GENERAL CONDITIONS**

**1.01 THE GENERAL CONDITIONS APPLICABLE TO THIS CONTRACT IS ATTACHED FOLLOWING THIS PAGE.**

**1.02 AIA DOCUMENT A312 - 2010 EDITION, PERFORMANCE BOND, IS THE BASIS FOR THE PERFORMANCE AND PAYMENT BOND BETWEEN THE OWNER AND CONTRACTOR AND IS MADE PART OF THESE DOCUMENTS TO THE SAME EXTENT AS IF WRITTEN OUT IN FULL.**

**1.03 RELATED REQUIREMENTS**

A. Section 00 7200 - General Conditions.

B. Section 00 7300 - Supplementary Conditions.

**PART 2 PRODUCTS (NOT USED)**

**PART 3 EXECUTION (NOT USED)**

**END OF SECTION**

# SECTION 00 7200
# GENERAL CONDITIONS

**FORM OF GENERAL CONDITIONS**

**1.01 THE GENERAL CONDITIONS APPLICABLE TO THIS CONTRACT IS ATTACHED FOLLOWING THIS PAGE.**

**1.02 AIA DOCUMENT A201 - 2007 EDITION, GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION, IS THE GENERAL CONDITIONS BETWEEN THE OWNER AND CONTRACTOR AND IS MADE PART OF THESE DOCUMENTS TO THE SAME EXTENT AS IF WRITTEN OUT IN FULL.**

**RELATED REQUIREMENTS**

**2.01 SECTION 00 7300 - SUPPLEMENTARY CONDITIONS.**

**SUPPLEMENTARY CONDITIONS**

**3.01 REFER TO DOCUMENT 00 7300 - SUPPLEMENTARY CONDITIONS FOR AMENDMENTS TO THESE GENERAL CONDITIONS.**

**END OF SECTION**

# SECTION 00 7300
# SUPPLEMENTARY CONDITIONS

## PART 1 GENERAL

### 1.01 SUMMARY

A. These Supplementary Conditions amend and supplement the General Conditions defined in Document 00 7200 - General Conditions and other provisions of the Contract Documents as indicated below. Provisions that are not so amended or supplemented remain in full force and effect.

B. The terms used in these Supplementary Conditions that are defined in the General Conditions have the meanings assigned to them in the General Conditions.

### 1.02 MODIFICATIONS TO GENERAL CONDITIONS

A. Modify Document A201 - 2007 Edition "The General Conditions of the Contract for Construction" as follows:

### 1.03 GENERAL

A. A General Conditions of the Contract shall be the American Institute of Architect's Document A201 - 2007 Edition. "The General Conditions of the Contract for Construction" are herein after referred to as the "General Conditions". This document is hereby specifically made a part of the Contract Documents with the same force and effect as though set forth in full.

B. The Supplementary General Conditions contain changes and additions to the AIA General Conditions. Where any part of the AIA General Conditions is modified or voided by the Supplementary General Conditions, the unaltered provisions shall remain in effect.

### 1.04 ARTICLE 1 - GENERAL PROVISIONS

A. Paragraph 1.1.1 - Delete the last sentence. Also delete the phrase prior to the last sentence which reads: "or (4), a written order for a minor change in the Work issued by the Architect.

B. Paragraph 1.2.3 - Add the following:

C. The drawings and specifications are intended to supplement one another. Materials and workmanship described are not necessarily found in both. Drawings are not intended to be scaled or to act as shop drawings. Inadvertent discrepancies or omissions shown on one drawing but not on others shall not be cause for additional charges or claims. In the event of conflicts or discrepancies among the Contract Documents, interpretations will be based on the following priorities:
   1. The Agreement.
   2. The GMP and its attachments.
   3. Addenda, with those of later date having precedence over those of earlier date.
   4. The Supplementary Conditions.
   5. The General Conditions of the Contract for Construction.
   6. Drawings and Specifications.

D. In the case of an inconsistency between Drawings and Specifications or within either Document not clarified by addendum, the better quality or greater quantity of Work shall be provided in accordance with the Architect's interpretation.

E. Paragraph 1.2 - Add the following sub-paragraphs:

F. 1.2.4 Should the Contractor observe any conflicts with the Contract Documents, he shall bring them to the Architect's attention for decision and revision as soon as reasonably possible after originally observed. In the even of duplications or conflicts of Contract Documents after the Contract has been executed, the more expensive method of work, materials and equipment shall be constructed as the requirements, with a credit for all costs saved accruing to the Owner in the even the least expensive method of work is directed.

G. 1.2.5 Whenever an item us specified and/or shown on the drawings by detail or reference, it shall be considered typical for other items Which are obviously intended to be the same even

though not so designated or specifically named but do serve the same function in the building.

H. 1.2.6 Wherever the terms "necessary", "suitable", "as directed", "when directed", "satisfactory", "good and sufficient", "approved" or other general qualifying terms are used on the drawings, they are deemed to be followed by the works "in the opinion of the Architect", or "by the architect", as the case may be.

I. 1.2.7 The terms "approval", "approved", "approved equal", "or equal" or "other approved", means approved by the Architect.

J. 1.2.8 Any material specified by reference to the number symbol, or title of a specific standards, such as a commercial Standard, a Federal Specification, a trade association standards, or other similar standard, shall comply with the requirements in the latest revision thereof and any amendment or supplement thereto in effect on the date indicated on the specifications, except as limited, or modified in such references.

K. 1.2.9 The standards referred to, except as modified in the Contract documents, shall have full force and effect as though printed in the Contract Documents. These standards are not furnished to the Contractor for the reason that the manufacturers and trades involved are assumed to be familiar with their requirements. The Contractor is advised to make himself aware of the contents of such documents, and furnish the field office with one (1) full set of each.

L. 1.2.10 If Owner elects to accept any items as a substitution, the Contractor shall assume full responsibility for the proper performance of any substitution to the specifics named and assume the costs of any changes in the work, which may be due to such substitution.

**1.05 ARTICLE 2 - OWNER**

A. Paragraph 2.2 - Add the following sub-paragraph:

B. 2.2.2.1 The Owner shall furnish chemical, air and water pollution tests, tests for hazardous materials, and other laboratory and environmental tests, inspections and reports required by law or environmental agencies unless otherwise noted in the Contract Documents.

**1.06 ARTICLE 3 - CONTRACTOR**

A. Paragraph 3.5 - Add the following sub-paragraphs:

B. 3.5.1 The Contractor shall furnish a written guarantee that all work executed under this Contract will be free from defects of materials and workmanship for a period of one (1) year from the date of Substantial Completion and that all defects occurring within that period shall be replaced at no cost to the Owner.

1. The Contractor shall, in case of work performed by his subcontractors and where guarantees.are required, secure warranties from said subcontractors·and deliver them to the Owner upon completion of the work.
2. Where guarantee or warranties are required in any section for a period of more than one (1) year, such longer terms shall apply.
3. Nothing in the above shall be deemed to imply that this guarantee shall apply to work, which has been abused or neglected by the Owner, modifications nor executed by the Contractor, lack of maintenance, improper operation or normal wear and tear.
4. Contract calls for a Performance Bond to be furnished. It is specifically understood that the terms of all guarantees called for in these specifications, the compliance therewith, and the fulfillment of all obligations there under are fully protected by the Performance Bond furnished by the Contractor.

C. Modify sub-paragraphs 3.8.2-.4 by changing the second sentence to read: "The amount of the Change Order shall be computed by using unit prices included in the Contract."

D. Under paragraph 3.9.1 Add the following sub-paragraph:

E. 3.9.1.1 Unless the Superintendent ceases to be employed by the Contractor, he shall not be removed from the project without the Architect's written consent, which will not be unreasonably withheld. Should the Architect and Owner be dissatisfied with the superintendent's

performance, they may jointly recommend his dismissal from the project.

F. Add the following paragraphs:

G. 3.19 PERFORMANCE AND PAYMENT BONDS

H. 3.19.1 Prior to execution of the Contract, the contractor shall furnish a Performance Bond and a separate Payment Bond, each in the amount of the Contract Sum, written by a Surety licensed to do business in Georgia, who is acceptable to the Board of Education. The form of these bonds shall be as noted in this Specification.

I. 3.19.2 Attorneys-in-fact who sign Bid Bonds or Contract surety Bonds shall file with each Bond a certified copy of their power of attorney to sign bonds on the date of said Bond.

**1.07 ARTICLE 4 - ARCHITECT**

A. Paragraph 4.2.1 - Add to the end of the first sentence "... and during the one year guarantee period."

**1.08 ARTICLE 5 - SUBCONTRACTORS**

A. Add the following paragraphs:

B. 5.5 ARRANGEMENT OF SPECIFICATIONS AND DRAWINGS

C. 5.5.1 The specifications and drawings are separated into numbered and titled sections for convenience of reference. Neither the Owner nor the Architect assumes any responsibility for defining the limits on any subcontracts on account of the arrangement of the specifications and/or drawings. Notwithstanding the appearance of such language in the various sections of the specifications as "The Plumbing Contractor", "The Electrical Contractor", "The Roofing Contractor", etc., the Contractor is responsible to the Owner for the entire contract and the execution of all the work referred to in the Contract documents. Regardless of so called "trade customs", any work called for in any section of the Specifications or any sheet of the drawings must be performed (or furnished) by the Contractor.

D. 5.6 DISPUTES

E. 5.6.1 The Architect will not enter into disputes between the contractor and any subcontractor (except to interpret the Contract Documents) nor shall the Architect be called upon to settle same. Neither shall the Architect be called upon to enter into or to settle disputes between subcontractors and/or suppliers.

**1.09 ARTICLE 7 - CHANGES IN THE WORK**

A. Add the following sub-paragraphs:

B. 7.2.2 The Owner will not be responsible for any changes in the work involving extra cost unless approval in writing is furnished by the Owner before such work is begun. Note that the Architect does not have authority to, order changes in the work involving extra cost.

1. No wages of a foreman shall be allowable for change order work carried on concurrently with contract work unless the cost includes a claim for extension of time caused by the ordering of the change.
2. Contractor agrees that any charges for changes in the work shall be computed as described in the preceding paragraphs. Contractor agrees that he will not make claims for "added office burden", added "capital costs", "consequential damages", lost profits, etc. in connection with any time extension granted by the Owner. Only costs (charges) as described in the preceding paragraphs shall be allowable.

C. 7.2.2.1 In order to facilitate checking of quotations for extras or credits, all proposals, except those so minor that their propriety can be seen by inspection, shall be accompanied by a complete itemization of costs including labor, materials and subcontracts. Labor and materials shall be itemized in the manner prescribed above. Where major cost items are subcontracts, they shall be itemized also and a copy of the subcontractors proposal shall accompany the Contractor's proposal. In no case will a change be approved without appropriate itemization and documentation (back-up).

D. 7.2.2.2 In any change proposal involving both additions and deductions to the contract, resulting in a net addition to the contract, overhead and profit shall be applied only to the total net cost differential.

E. 7.2.2.3 Any extensions of time associated with a change Order shall be indicated on the Change Order and shall be final with the signing of the Change Order.

F. 7.2.3 The allowance for the combined overhead and profit included in the total cost to the Owner shall be based on the following schedule:
   1. For the Contractor, for work performed by the Contractor's own forces, 20% of the cost.
   2. For the Contractor, for work performed by the Contractor's subcontractor, 7 1/2% of the amount due to the subcontract.
   3. For each Sub-contractor or Sub-subcontractor involved, for work performed by that Subcontractor's own forces, 20% of the cost.
   4. For each Sub-contractor, for work performed by the Subcontractor's Subcontractors, 7 1/2% of the amount due to the sub-subcontractor.
   5. Cost to which overhead and profit is to be applied shall be determined in accordance with Subparagraph 7.3.7, Clauses 1-5.
   6. In order to facilitate checking of quotations for extras or credit, all proposals, except those so minor that their propriety can be seen by inspection, shall be accompanied by a complete itemization of costs including labor, materials and Subcontracts. Labor materials shall be itemized in the manner prescribed above. Where major cost items are Subcontracts, they shall be itemized also. In no case will a change involving over $100.00 be approved without such itemization.

G. Modify sub-paragraph 7.3.7:
   1. In subparagraph 7.3.7, in the first sentence, delete the words "a reasonable amount" and substitute "an allowance for overhead and profit in accordance with paragraph 7.2.2 as included in the "Supplementary General Conditions".

**1.10 ARTICLE 8 - TIME**

A. Paragraph 8.1.2, change the first sentence to read: "The date of commencement of the work is the day that the Contractor receives a written Notice to Proceed from the Architect or the Owner".

B. Add the following sub-paragraph:

C. 8.1.2.1 The Contractor shall begin work on the site no later than ten (10) calendar days after his receipt of the Notice to Proceed.

D. Add the following paragraphs:

E. 8.3.4 Completion time will not be extended for normal bad weather. The time for completion as stated in the Contract Documents includes due allowance for days on which work cannot be performed out-of-doors. For the purposes of this Contract, the Contractor agrees that he may expect to lose working days due to bad weather in accordance with the following table:

F. January -10 days July -4 days

G. February -10 daysAugust - 2 days

H. March -7daysSeptember -2 days

I. April -6 days October -3 days

J. May -4 daysNovember -5 days

K. June -3 daysDecember -9 days

L. 8.3.4.1 If the total accumulated number of working .days lost due to weather, from the start of work to the completion date, exceeds the total accumulated number to be expected for the same period from the table above, time for completion will be extended by the number of calendar days needed.to include the excess number of working days lost. No change in the Contract Sum will be authorized because of adjustment of Contract Time due to weather.

## 1.11 ARTICLE 9 - PAYMENTS AND COMPLETION

A. To paragraph 9.3 "Applications for Payment" make the following modifications:
   1. Add the following sentence to subparagraph 9.3.1: The form of Application of Payment shall be notarized AIA Document G702-1992, Application and Certification for payment, supported by AIA Document G703-1992, Continuation Sheet.
   2. Add clause 9.3.1.3 to subparagraph 9.3.1 following 9.3.1.2 and as follows:
   3. 9.3.1.3 Until Substantial Completion, the Owner shall pay 90% of the amount due the Contractor on account of progress payments.
   4. Add paragraph 9.3.4 as follows:
   5. 9.3.4 The Contractor shall furnish with each Application for Payment waivers of lien for itself and for each of its Subcontractors, material suppliers and from every entity who may lawfully be entitled to file liens arising out of the Contract and related to work covered by payment together with such other forms as may be reasonably required by the Owner, to assure an effective waiver of mechanics' or material men's liens in compliance with the laws of the State in which the Project situated. Waivers of lien shall cover the amount of the current month's Application for Payment and be submitted on forms and executed in a manner acceptable to Owner. The contractor shall within fifteen (15) days after receipt of notice of the existence of any lien filed against the Project by any Subcontractor, supplier of the materials or any other person or entity claiming to be a creditor of the Contractor, cause the same to be removed as of record and/or fully bonded at the Contractor's sole cost and expense. Any payment due to the Contractor hereunder shall be reduced by an amount equal to up to one hundred and fifty percent (150%) of the amount of any lien arising out of or related to Contractor's performance under this Contract until such lien is revoked as of record and/or fully bonded to Owner's reasonable satisfaction.

B. To paragraph 9.8 "Substantial Completion", make the following modifications:
   1. Add the following sentence to subparagraph 9.8.5: "The payment shall be sufficient to increase the total payments to 100% of the Contract Sum, less such amounts as the Architect shall determine for incomplete work and unsettled claims".

C. To paragraph 9.10 "Final Completion and Final Payment", make the following modifications:
   1. Following subparagraph 9.10.2, add the Clause 9.10.2.1 as follows:
   2. 9.10.2.1 The following AIA Documents shall be used to submit the appropriate affidavits and/or certifications required by 9.10.2 above:
      a. Contractor's Affidavit of Payment of Debts and Claims, AIA Document G706-1994.
      b. Contractor's Affidavit of Release of Liens, AIA Document G706A-1994.
      c. Consent of Surety Company to Final Payment, AIA Document G707-1994.

## 1.12 ARTICLE 11 - INSURANCE AND BONDS

A. Article 11 - Delete Article 11 Paragraphs 11.1 through 11.3.10 in the General Conditions and add the following:

B. 11.1 INSURANCE TO BE PROVIDED BY CONTRACTOR AND SUBCONTRACTORS
   1. 11.1.1 The Contractor shall procure and maintain, during the life of the Contract, General Comprehensive Liability Insurance Coverage, including Blanket Contractual Policy for not less than any limits of liability required by law or by those shown below and shall include contractual liability insurance as applicable to the Contractor's obligations, with a carrier authorized to do business in the State of Georgia. The General Liability and Auto Liability policy(ies) are to contain or be endorsed to name the Owner, its officers, officials, representatives, agents and employees as Additional Insured as respects the liability arising out of the activities performed in connection with this contract. The coverage shall be primary and shall apply separately to each insured against whom claim is made or suit is brought, except with respect to the limits of the insurer's liability. Original endorsements, signed by a person authorized to bind coverage on its behalf, shall be furnished to the Owner by the contractor.
   2. 11.1.2 Contractor shall indemnify and save harmless the Union County Commissioner's Office, its officers, officials, representatives, agents and employees, from and against any

and all claims, demands, suits, loss, damage, injury and liability, including cost and expenses incurred in connection therewith, resulting from, arising out of, or in any way connected with the performance of the contract, including delivery and unloading of supplies and equipment, except where caused by the active negligence, sole negligence or willful misconduct by the Union County Commissioner's Office. This hold harmless clause is in no way an admission of liability on the part of the Union County Commissioner's Office, or any of its agents, representatives, or employees.

3. 11.1.3 The Contractor acknowledges that he has fully informed himself of the contents and meaning of this hold harmless agreement and has so executed it with full knowledge thereof and that the terms are contractual and not a mere recital. These requirements shall also apply to any Subcontractor whose hazards are not covered by the Contractor's insurance policies.
    a. Public Liability and Property Damage: The Contractor shall maintain insurance for protection against all claims arising from injury to person or persons not in the employ of the Contractor, and against all claims resulting from damage to any property due to any act or omission of the Contractor, his agents, or employees in the operation of the work or the execution of this contract. Where the work to be performed involves excavation or other underground work or construction, the property damage insurance provided shall cover all claims due to destruction of subsurface property such as wire, conduits, pipes, etc., caused by the Contractor's operation. The minimum shall be as follows:
        1) Bodily Injury (Injury or Accidental Death and\or Property Damage
            (a) (Each Occurrence) $1,000,000 Combined Single Limit
        2) General Aggregate $2,000,000
        3) Excess Liability Umbrella $10,000,000 over Primary Coverage
    b. Automobile Public Liability and Property Damage: The Contractor shall maintain automobile Public Liability and Property Damage Insurance for protection against all claims arising from the use of vehicles, rented vehicles, or any other vehicle in the prosecution of the work included in this contract. Such insurance shall cover the use of automobiles and trucks on and off the site of the project. The minimum amounts of Automobile Public Liability and Property Damage Insurance shall be as follows:
        1) Bodily Injury (Injury or Accidental Death) and Property Damage
            (a) (Each Occurrence)$1,000,000 Combined Single Limit
    c. Worker's Compensation Insurance: The Contractor shall maintain Worker's Compensation Insurance for all his employees who are in any way connected with the performance under this agreement. Such insurance shall comply with all applicable state laws. Contractor shall provide the Owner with a Certificate of Insurance showing proof of insurance acceptable to the Owner. Certificates containing wording that releases the insurance company from liability for non-notification of cancellation of the insurance policy are not acceptable. Policy(ies) is to be endorsed to include a waiver of subrogation against the Owner, its officers, officials, agents and employees in accordance with Article 11.4. Contractor and its employees are independent Contractors and not employees of the Owner. Contractor and or its insurers are responsible for payment of any liability arising out of Worker's Compensation, unemployment or employee benefits offered to its employees.
4. 11.1.4 Insurance is to be placed with insurers with a current A.M. Best's rating of no less than A:VII, unless otherwise acceptable to the Owner.
5. 11.1.5 Separate endorsements are required, naming the Owner and its representative as additional insured, for liability insurance and providing a waiver of subrogation for Worker's Compensation Insurance.
6. 11.1.6 The Contractor shall maintain the insurance until the final certification accepting the work is issued by the Owner. Said insurance shall contain a provision that coverage afforded under the policies will not be canceled unless and until thirty (30) days prior written notice has been given to the Owner.

7. 11.1.7 Endorsements are to be received and approved by the Owner before work commences. Should Contractor cease to have insurance as required during any time, all work by Contractor, pursuant to this agreement, shall cease until insurance acceptable to the Owner is provided.
8. 11.1.8 If the Contractor or any of its said Subcontractors of any tier should fail to comply with their respective obligations, under the Subparagraph, the Owner may withhold any payments due to the Contractor until such time as the Contractor and its Subcontractors of any tier shall have performed their said obligations to the reasonable satisfaction of the Owner.
9. 11.1.9 If the Project is suspended or abandoned in whole or in part for more than three (3) months the contractor agrees to maintain insurance as provided in Article 11 during any such period of suspension or abandonment prior to the termination of the Project in order to protect the interest of the Owner.
10. 11.1.10 Each insurance policy required hereunder shall name as Additional Insureds: Owner, the Architect, and their respective parent companies, the subsidiary, related and affiliated companies of each of and the officers, directors, agents, employees and assigns of each. The insurance required shall be PRIMARY with respect to any other insurance available to said additional insureds.

C. 11.2 PROPERTY INSURANCE

1. 11.2.1 Unless otherwise provided, the Contractor shall purchase and maintain property insurance upon the entire Work under their contract at the site to the full insurable value thereof. This insurance shall include the interest of the Owner, the Architect, the Contractor, the Contractor's subcontractors and Sub-subcontractors in the Work, and shall insure against the perils of fire and extended coverage and shall include "all risk" insurance for physical loss or damage, including, without duplication of coverage, theft, vandalism and malicious mischief. If not covered under the all risk insurance or otherwise provided in the Contract Documents, the Contractor shall effect and maintain similar property insurance on portions of the Work stored off the site or in transit when such portions of the Work are to be included in an Application for Payment. The form of policy for this coverage shall be Complete Value.
2. 11.2.2 The Contractor shall purchase and maintain such boiler and machinery insurance as may be required by the Contract Documents or by law. This insurance shall include the interest of the Owner, the Architect, the Contractor and its subcontractors and Sub-subcontractors in the Work.
3. 11.2.3 The Contractors waive all rights against (I) each other and the Subcontractors, Subsubcontractors, agents and employees of each other, and (2) the Owner, Architect, and separate contractors, if any, and their subcontractors, sub-subcontractors, agents and employees, for damages caused by fire of other perils to the extent covered by insurance obtained pursuant to Paragraph 11.3 of any other property insurance applicable to the Work. The foregoing waiver afforded the Architect, their agents and employees shall not extend to the liability imposed by Subparagraph 3.18. The Owner or the Contractor, as appropriate, shall require of the Architect, separate contractors, subcontractors and sub-subcontractors by appropriate agreements, written where legally required for validity, similar waivers each in favor of all other parties enumerated in this Subparagraph 11.3 .6.
4. 11.2.4 If required in writing by any party in interest, the Contractor, upon the occurrence of an insured loss, give bond for the proper performance of the Contractor's duties. The Contractor shall deposit in a separate account any money so received, and shall distribute it in accordance with such agreement as the parties in interest may reach, or in accordance with an award by arbitration in which case the procedure shall be as provided in Article 4.5. If after such loss no other special agreement is made, replacement of damaged Work shall be covered by an appropriate Construction Change or Change Order.
5. 11.2.5 The Contractor shall have power to adjust and settle any loss with the insurers unless one of the parties in interest shall object, in writing within five (5) days after the occurrence of loss, to the Contractor's exercise of this power, and if such objection be

made, arbitrator shall be chosen as provided in Article 4.5. The Contractor shall, in that case, make settlement with the insurers in accordance with the directions of such arbitrators. If distribution of the insurance proceeds by arbitration is required, the arbitrators will direct such distribution.

6. 11.2.6 If the Owner finds it necessary to occupy or use a portion or portions of the Work prior to Substantial Completion thereof, such occupancy shall not commence prior to a time mutually agreed to by the Owner and the Contractor and to which the insurance company or companies providing the property insurance have consented by endorsement to the policy or policies. This insurance shall not be canceled or lapsed on account of such partial occupancy. Consent of the Contractor and of the insurance company or companies to such occupancy or use shall not be unreasonably withheld.

D. 11.3 LOSS OF USE INSURANCE

1. 11.3.1 The Owner, at the Owner's option, may purchase and maintain insurance for protection against loss of use of the Owner's property due to fire or other hazards, however caused. The Owner waives all rights of action against the Contractor for loss of use of the Owner's property, including consequential losses due to fire or other hazards however caused, to the extent covered by insurance under this Paragraph 11.4.

E. 11.4 WAIVERS OF SUBROGATION RIGHTS

1. 11.4.1 When the Owner, Contractor or Subcontractor implement any Insurance coverages mentioned in the Contract except for the amount of the deductibles, the Owner, the Contractor, its Subcontractors of any tier, each on their own behalf and on behalf of anyone claiming by, through or under them, whether by way of subrogation or otherwise, hereby waive any and all subrogation rights which they may now or hereafter have against each other and the parent, related and affiliated companies, the successors and assigns of each other, in connection with the performance of the work, to the extent such subrogation rights are not the result of any intentional wrongful act or omissions of the party causing such loss and are covered losses under the insured provided hereunder. Nothing contained in the Article shall relieve the Contractor, its Subcontractors of any tier of their respective obligations to exercise due care in the performance of their duties in connection with the work or to complete the work in strict compliance with the Contract Documents.

**PART 2 PRODUCTS - NOT USED**

**PART 3 EXECUTION - NOT USED**

**END OF SECTION**

# SECTION 00 9111
# ADDENDUM

## 1.01 GENERAL

A. The following sets forth the format for issued Addenda.

ADDENDUM NO._____, dated {Month, Day, Year}.

RE: Union County Gymnasium

FROM: Gardner Spencer Smith Tench and Jarbeau, PC

Tower Place Building 3340 Peachtree Road NE Suite 1800 Atlanta, GA 30326-1064

_____

Architect's Stamp & Signature

TO: ALL PROSPECTIVE BIDDERS:

B. This Addendum forms a part of the Contract Documents and modifies the Proposal Documents dated {month, year}, as noted below. Acknowledge' receipt of the Addendum in the space provided on Bid Form. Failure to do so may result in the proposal being deemed non-responsive.

C. The Addendum consists of ___ pages, and the attached drawing, Sheet No. ____ with the revised date of ____.

1. CHANGES TO PROPOSAL REQUIREMENTS TABLE OF CONTENTS {Make appropriate changes to the number of pages for each section affected by Addendum}.
2. CHANGES TO PRIOR ADDENDUM:
   a. Addendum No.___, Item No.___, Page No.___ {Provide description of the changes}
3. CHANGES TO BID DOCUMENTS {Describe changes to the BID Documents starting with each document in the numerical order in which they are located on Table of Contents}
4. CHANGES TO CONDITIONS OF THE CONTRACT: {All modifications to General Conditions shall be addressed in Supplementary Conditions}
5. CHANGES TO SPECIFICATIONS: {Make required changes to the relevant Specifications sections in sequence and accordance with the CSI numerical order of occurrence of the section and the various Division classifications}
6. CHANGES TO DRAWINGS: {Describe changes made to Drawings indicating detail number, sheet number, etc., all in sequence}
7. OTHER CHANGES AS SET FORTH: {Describe other changes, if any, made to the BID Documents not covered by Items A through F.}
8. Clarification or any other notice of a change in the Proposal Documents will be issued only by the OWNER Contracts Department and only in tim form of a written Addendum, transmitted by fax or e-mail to all who are known by the issuing office to have received a complete set of BID Documents. Any other purported Addenda are void and unenforceable.

**END OF DOCUMENT**

# SECTION 01 0001
# ABBREVIATIONS SYMBOLS AND ACRONYMS

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. List of abbreviations, symbols, and acronyms of societies, institutes, and associations generally appearing in the Contract Documents.

### 1.02 RELATED REQUIREMENTS

A. Division 01: General Requirements.

## PART 2 PRODUCTS - NOT USED

## PART 3 EXECUTION

### 3.01 ABBREVIATIONS

A. ac Alternating current
B. amp ampere
C. BTU British thermal unit
D. cfh Cubic feet per hour
E. cfm Cubic feet per minute
F. cm Centimeter
G. Co. Company
H. COP Coefficient of performance
I. Corp. Corporation
J. d Penny
K. db. Decibel
L. DB Dry bulb
M. dc Direct current
N. EER Energy efficiency ratio
O. F Degrees Fahrenheit
P. fpm Feet per minute
Q. ft Foot or feet
R. gph Gallons per hour
S. gpm Gallons per minute
T. HP Horsepower
U. HVAC Heating, ventilating and air conditioning
V. Hz Hertz
W. Inc. Incorporated
X. KHz Kilohertz
Y. Kip thousand pounds
Z. Ksf Thousand pounds per square foot
AA. Ksi Thousand pounds per square inch
BB. Kv Kilovolt
CC. KVA Kilovolt amperes

DD. KW Kilowatt
EE. KWH Kilowatt hour
FF. LF Linear foot
GG. lb Pound
HH. LED Light emitting diode
II. MBH 1000 BTUs per hour
JJ. MHz Mega hertz
KK. mil Thousandth of an inch
LL. mm Millimeter
MM. mph Miles per hour
NN. oz. Ounce
OO. PCF Pounds per cubic foot
PP. pH Acidity-alkalinity balance
QQ. psf Pounds per square foot
RR. psi Pounds per square inch
SS. psig Pounds per square inch, gage
TT. RF Radio frequency
UU. rpm Revolutions per minute
VV. SF Square foot
WW. SY Square yard
XX. V Volt
YY. WB Wet bulb

**3.02 SYMBOLS**

A. # Number or pound
B. ' Foot or feet
C. " Inch(es)
D. % Percent

**3.03 ACRONYMS**

A. AA The Aluminum Association, Inc
B. AABC Associated Air Balance Council
C. AAMA American Architectural Manufacturers Association
D. AASHTO American Association of State Highway and Transportation Officials
E. AATCC American Association of Textile Chemists and Colorists
F. ABMA American Boiler Manufacturers Association
G. ACI American Concrete Institute
H. ADA Americans with Disabilities Act
I. ADAAG Americans with Disabilities Act Accessibility Guidelines
J. AGA American Gas Association
K. AGCIH American Conference of Governmental Industrial Hygienists
L. AI Asphalt Institute

M. AIA American Institute of Architects
N. AISC American Institute of Steel Construction
O. AISI American Iron and Steel Institute
P. AITC American Institute of Timber Construction
Q. AMCA Air Movement and Control Association, Inc.
R. ANSI American National Standards Institute
S. APA APA – The Engineered Wood Association
T. ARI Air-Conditioning and Refrigeration Institute
U. ASHRAE American Society of Heating, Refrigeration and Air Conditioning Engineers
V. ASME American Society of Mechanical Engineers
W. ASTM American Society for Testing and Materials
X. ATBCB Architectural & Transportation Barriers Compliance Board
Y. AWI Architectural Woodwork Institute
Z. AWPA American Wood Preservers Association
AA. AWPI American Wood Preservers Institute
BB. AWS American Welding Society
CC. AWWA American Water Works Association
DD.
EE. BHMA Builders Hardware Manufacturers Association
FF. BIA Brick Institute of America
GG.
HH. CFR Code of Federal Regulations
II. CISPI Cast Iron Soil Pipe Institute
JJ. CLFMI Chain Link Fence Manufacturers Institute
KK. CRI Carpet and Rug Institute
LL. CRSI Concrete Reinforcing Steel Institute
MM. CS Commercial Standards, U.S. Department of Commerce
NN. CSI Construction Specifications Institute
OO. CTIOA Ceramic Tile Institute of America
PP. CTI Cooling Tower Institute
QQ.
RR. DHI Door and Hardware Institute
SS.
TT. EPA Environmental Protection Agency
UU. ETL ETL Testing Laboratories
VV.
WW. FCC Federal Communication Commission
XX. FM Factory Mutual
YY. FS Federal Specifications
ZZ.

AAA. GA Gypsum Association
BBB. GANA Glass Association of North America
CCC. GPC Georgia State Plumbing Code
DDD.
EEE. HMMA Hollow Metal Manufacturer's Association
FFF. HPVA Hardwood Plywood & Veneer Association
GGG.
HHH. IACS International Annealed Copper Standards
III. IAMPO International Association of Plumbing and Mechanical Officials
JJJ. ICBO International Conference of Building Officials
KKK. ICEA Insulated Cable Engineers Association
LLL. IEEE Institute of Electrical & Electronic Engineers, Inc.
MMM. IES Illuminating Engineering Society
NNN. IMI International Masonry Institute
OOO. IRI Industrial Risk Insurers
PPP. ISOInternational Organization for Standardization
QQQ.
RRR. MLSFA Metal Lath/Steel Framing Association
SSS. MSS Manufacturers Standardization Society of the Valve & Fittings Industry.
TTT. NAAMM National Association of Architectural Metal Manufacturers
UUU.
VVV. NBFU National Board of Fire Underwriters
WWW. NBS National Bureau of Standards
XXX. NCMA National Concrete Masonry Association
YYY. NEBB National Environmental Balancing Bureau
ZZZ. NEMA National Electrical Manufacturers Association
AAAA. NEC National Electrical Code
BBBB. NFPA National Fire Protection Association
CCCC. NFPA National Forest Products Association
DDDD. NIOSH National Institute for Occupational Safety and Health
EEEE. NIST National Institute of Standards and Technology
FFFF. NOFMA National Oak Flooring Manufacturers Association
GGGG. NPCA National Paint and Coatings Association
HHHH. NPDES National Pollutant Discharge Elimination System
IIII. NRCA National Roofing Contractors Association
JJJJ. NSF National Sanitation Foundation
KKKK. NTMA National Terrazzo & Mosaic Association
LLLL. NWMA National Woodwork Manufacturers Association
MMMM.
NNNN. OSHA Occupational Safety and Health Administration

OOOO.
PPPP. PCA Portland Cement Association
QQQQ. PCI Precast/Prestressed Concrete Institute
RRRR. PDI Plumbing and Drainage Institute
SSSS. PEI Porcelain Enamel Institute
TTTT. PS Product Standard, U.S. Department of Commerce
UUUU.
VVVV. RFCI Resilient Floor Covering Institute
WWWW.
XXXX. SBC Standard Building Code
YYYY. SDEI Steel Deck Institute
ZZZZ. SDI Steel Door Institute
AAAAA. SFM State Fire Marshal
BBBBB. SFPA Southern Forest Products Association
CCCCC. SGC Standard Gas Code
DDDDD. SIGMA Sealed Insulating Glass Manufacturers Association
EEEEE. SJI Steel Joist Institute
FFFFF. SMACNA Sheet Metal and Air Conditioning Contractors National Association
GGGGG. SSPC Steel Structures Painting Council
HHHHH. SWI Steel Window Institute
IIIII.
JJJJJ. TCA Tile Council of America
KKKKK.
LLLLL. UBPPA Uni-Bell PVC Pipe Association
MMMMM. UCI Uniform Construction Index
NNNNN. UFAS Uniform Federal Accessibility Standards
OOOOO. UL Underwriters' Laboratories, Inc.
PPPPP.
QQQQQ. WDMA Window and Door Manufacturers Association

**END OF SECTION**

# SECTION 01 1000
# SUMMARY

## PART 1 GENERAL

### 1.01 PROJECT

A. Project Name: Union County Gymnasium.

B. Owner's Name: Union County Commissioner's Office.

C. Architect's Name: Gardner Spencer Smith Tench and Jarbeau, PC.

D. Summary:
   1. Briefly and without force and effect on the requirements of the Contract Documents, the project and the work of the Contract can be described in summary as follows:
      a. Work included:
         1) Sitework, including earthwork, site utilities, walks, final asphaltic concrete topping and stripping, paving and curb and gutters, landscaping and grassing.
         2) General construction of the building and associated support systems.

### 1.02 OWNER'S REPRESENTATIVE

A. All documentation required by the Specifications to be submitted to the Union County Commissioner's Office shall be submitted to Gardner Spencer Smith Tench and Jarbeau, PC for review and transmittal to the Union County Commissioner's Office.

B. All instructions and requests for changes from the Union County Commissioner's Office to the Contractor will be issued through Gardner Spencer Smith Tench and Jarbeau, PC; Provided, that Gardner Spencer Smith Tench and Jarbeau, PC shall not have the authority to authorize any changes in the Work which would result in change to the Contract Sum or to the Contract Time, provided further, that Gardner Spencer Smith Tench and Jarbeau, PC will receive and review Contractor's proposal for such changes and will submit recommendations to the Union County Commissioner's Office for issuance of Change Orders.

C. Changes in the Contract Sum shall be authorized in writing solely by Union County Commissioner's Office.

D. Except as otherwise noted, the Contractor shall disregard any instructions from persons other than Gardner Spencer Smith Tench and Jarbeau, PC.

E. Should a situation arise in conflict with these requirements, the Contractor shall notify Gardner Spencer Smith Tench and Jarbeau, PC immediately.

F. The Contractor shall bear all costs incurred by his failure to follow instructions contained in the preceding paragraphs.

### 1.03 OBLIGATIONS OF CONTRACTOR

A. Except as otherwise specifically noted, provide and pay for:
   1. Labor, materials and equipment;
   2. Tools, construction equipment and machinery;
   3. Temporary heat and utilities required for construction;
   4. Other temporary facilities and services necessary for proper execution and completion of work;
   5. Temporary facilities such as partitions, lights, barricades, walkways, steps, ladders, railings, etc. necessary to assure the safety of the workers and staff of the facility as well as the general public;
   6. "As-Built" drawings.

B. Pay legally required sales, consumer and use taxes.

C. Make all applications, secure and pay for as may be required for proper execution and completion of the work, and as required by authorities having jurisdiction:

1. Any Permits, Business Licenses, deposits and/or fees of any kind that are a prerequisite for doing any of the work of this Contract.
2. Interim and final inspections of the Work and/or any portions of the Work.
3. Post all bonds (and/or security deposits) that are a prerequisite for doing any of the work of this Contract.

D. Give required notices.

E. Comply with codes, ordinances, rules, regulations, orders and other legal requirements of public authorities having jurisdiction over this work.

F. Promptly submit written notice to Gardner Spencer Smith Tench and Jarbeau, PC of any observed variance of Contract Documents from legal requirements.

G. The Contractor shall have a supervisor on the project anytime any work is taking place or when delivery of equipment is expected.

**1.04 CONTRACT DESCRIPTION**

A. Contract Type: A single prime contract based on a Stipulated Price as described in Document 00 5200 - Agreement Form.

**1.05 EXECUTIVE ORDERS**

A. The Contractor, by signing the Contract, acknowledges that he is aware of and will comply with the contents and requirements of the following Acts and Executive Orders.

B. The non-discrimination clause contained in Section 202, Executive Order 11246, as amended by Executive Order 11375, relative to Equal Employment Opportunity for all persons without regard to race, color, religion, sex, or national origin. The implementing rules and regulations described by the Secretary of Labor are incorporated.

**1.06 WORK/COSTS BY OWNER**

A. Loose furnishings, not otherwise called for.

B. Items marked N.I.C. on the drawings.

**1.07 OWNER OCCUPANCY**

A. Union County Commissioner's Office intends to continue to occupy adjacent portions of the existing building during the entire construction period.

B. Union County Commissioner's Office intends to occupy the Project upon Substantial Completion.

C. Cooperate with Union County Commissioner's Office to minimize conflict and to facilitate Union County Commissioner's Office's operations.

D. Schedule the Work to accommodate Union County Commissioner's Office occupancy.

**1.08 CONTRACTOR USE OF SITE AND PREMISES**

A. Construction Operations: Limited to areas noted on Drawings.

B. Arrange use of site and premises to allow:
1. Union County Commissioner's Office occupancy.
   a. Union County Commissioner's Office will endeavor to cooperate with the Contractor's operation when the Contractor has notified Union County Commissioner's Office in advance of the need for changes in operations in order to accommodate construction operations.
   b. Conduct the work so as to cause the least interference with Union County Commissioner's Office's operations.
2. Unless otherwise noted on the drawings or approved in advance the site and its parking is off limits to all construction personnel.
3. Work by Others.
4. Work by Union County Commissioner's Office.
5. Use of site and premises by the public.

C. Access to the site will be extremely limited; obtain Union County Commissioner's Office's approval of proposed routing of construction traffic and time of day access.

D. Provide access to and from site as required by law and by Union County Commissioner's Office:
   1. Do not obstruct roadways, sidewalks, or other public ways without permit.

E. Storage and staging areas are limited but will be available on site.

F. Signs: Provide signs adequate to direct visitors and Union County Commissioner's Office's personnel.
   1. Do not install, or allow to be installed, signs other than specified sign(s) and signs identifying the principal entities involved in the project, unless authorized by Union County Commissioner's Office
   2. Do not install any signs in violation of local zoning ordinances.

G. Existing building spaces may not be used for storage.

H. Time Restrictions:
   1. Limit conduct of especially noisy especially noisy, malodorous, and dusty exterior work to the hours of time mutually agreeable to the Contractor and Owner.

I. Utility Outages and Shutdown:
   1. Limit disruption of utility services to hours the building is unoccupied.
   2. Do not disrupt or shut down life safety systems, including but not limited to fire sprinklers and fire alarm system, without 7 days notice to Union County Commissioner's Office and authorities having jurisdiction.
   3. Prevent accidental disruption of utility services to other facilities.

**1.09 WORK SEQUENCE**

A. Coordinate construction schedule and operations with Union County Commissioner's Office.

**PART 2 PRODUCTS - NOT USED**

**PART 3 EXECUTION**

**3.01 SECURITY AND SAFETY PROCEDURES**

A. Coordinate construction security and safety measures with security and safety programs of the Union County Commissioner's Office.
   1. Establish procedures and notification priority required for emergency action including, but not limited to, events involving fire, injury, and/or damage to property.
   2. Post and maintain current list of emergency numbers required for action or requested by the Union County Commissioner's Office.

B. Do not allow any cameras or photography on site unless authorized by the Union County Commissioner's Office.

C. Maintain log of workers and visitors accessing the site, available to the Union County Commissioner's Office upon request.

D. Limit access to the site to persons involved in the work.

E. Provide secure storage for materials for which the Union County Commissioner's Office has made payment and which are stored on site.

F. Secure completed work as required to prevent loss.

**3.02 PROTECTION OF PUBLIC FROM INJURY**

A. Due to the proximity of the work to the public and to the potential large number of personnel in the vicinity of the construction area, the Contractor is cautioned to exercise special care in protecting the public from injury during all phases of the work. Contractor is directed to provide adequate protective barriers to restrain public access to all hazardous areas. Before commencing the Work, a safety plan shall be developed by Contractor. Contractor shall make provisions for enforcing protection of property and public including locations of barricades,

construction signs, and exit signs.

B. As the development and implementation of the safety plan is the sole responsibility of Contractor, it shall not be reviewed by the Gardner Spencer Smith Tench and Jarbeau, PC.

**3.03 SPECIAL REQUIREMENTS**

A. There will be no tobacco use allowed on property.

B. Attire: Proper attire shall be worn at all times.
   1. Shirts shall be worn while on property at all times. No tank tops or undershirts will be permitted.
   2. Clothing displaying nudity, obscene language, obscene symbols or pro-drug slogans is prohibited.
   3. Shorts will not be permitted.
   4. Fraternization: Workers shall not fraternize with staff of the facility.
   5. Any failure to follow these requirements will result in removal from the grounds, without recourse.

**3.04 COORDINATION**

A. If necessary, inform each party involved, in writing, of procedures required for coordination; include requirements for giving notice, submitting reports, and attending meetings.
   1. Inform the Union County Commissioner's Office when coordination of his work or activities is required.

B. When the following must be modified or in any way interrupted, provide alternate facilities acceptable to Union County Commissioner's Office:
   1. Emergency means of egress.
   2. Utilities which must remain in operation.

C. See other requirements in other portions of the contract documents.

D. Prepare coordination drawings where limited space available may cause conflicts in the locations of installed products, and where required to coordinate installation of products.
   1. Where space is limited, show plan and cross-section dimension of space available, including structural obstructions and ceilings as applicable.
   2. Coordinate shop drawings prepared by separate entities.
   3. Show installation sequence when necessary for proper installation.

**END OF SECTION**

# SECTION 01 1050
# COORDINATION

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. This Section specifies administrative and procedural requirements necessary for coordinating Work operations including, but not limited to, the following:
   1. General coordination procedures.
   2. Coordination drawings.

### 1.02 RELATED REQUIREMENTS

A. Section 01 1000 - Summary: Contract descriptions, description of alterations work, work by others, future work, occupancy conditions, use of site and premises, work sequence.

B. Section 01 3000 - Administrative Requirements: Submittal procedures, project meetings, progress schedules and documentation, reports, coordination.

C. Section 01 4000 - Quality Requirements: Procedures for testing, inspection, mock-ups, reports, certificates; use of reference standards.

D. Section 01 5000 - Temporary Facilities and Controls.

E. Section 01 6000 - Product Requirements: Fundamental product requirements, substitutions and product options, delivery, storage, and handling.

F. Section 01 7000 - Execution Requirements: Examination, preparation, and general installation procedures; preinstallation meetings; cutting and patching; cleaning and protection; starting of systems; demonstration and instruction; closeout procedures except payment procedures; requirements for alterations work.

G. Section 01 7800 - Closeout Submittals: Project record documents, operation and maintenance (O&M) data, warranties and bonds.

## PART 2 PRODUCTS - NOT USED

## PART 3 EXECUTION

### 3.01 COORDINATION

A. Contractor shall coordinate operations included in various sections of the Contract Documents to assure efficient and orderly installation of each part of the Work. Coordinate Work operations included under related sections of the Contract Documents that depend on each other for proper installation, connection, and operation of the Work, including but not limited to:
   1. Schedule construction operations in the sequence required 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 assure maximum accessibility for required maintenance, service, and repair.
   3. Provide provisions to accommodate items scheduled for later installation.
   4. Prepare and administer provisions for coordination of drawings.

B. Where necessary, prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required in notices, reports, attendance at meetings, and:
   1. Prepare similar memoranda for Union County Commissioner's Office and Separate Work Contract where coordination of their Work is required.

C. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities to avoid conflicts and assure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:
   1. Preparation of schedules.
   2. Installation, relocation, and removal of temporary facilities.
   3. Delivery and processing of submittals.

4. Progress meetings.
5. Project closeout activities.

D. Conservation: Coordinate Work operations to assure operations are carried out with consideration given to conservation of energy, water, materials, and:
   1. Salvage materials and equipment involved in performance of, but not actually incorporated into the Work.

**3.02 SUBMITTALS**

A. Coordination Drawings: Contractor shall prepare coordination drawings for coordination of installation of products and materials fabricated by separate entities. Prepare coordination drawings for those areas where limited space availability necessitates maximum utilization of space for efficient installation of different components.

B. Prepare coordination drawings in the following manner:
   1. Mechanical, electrical, and plumbing Subcontractors are to first submit their respective Shop Drawings for review in order to make any necessary changes prior to going through the coordination process.
   2. The routing process will begin with the HVAC Subcontractor who will provide a black line mylar denoting all of the approved ductwork. HVAC Subcontractor is to locate on mylar all ductwork and/or piping in orange pencil lines. Forward drawings to plumbing Subcontractor.
   3. Plumbing Subcontractor is to locate the plumbing lines on mylar in blue pencil lines. Fire sprinkler Subcontractor is to locate all piping on mylar in red pencil lines and forward drawing to electrical Subcontractor.
   4. Electrical Subcontractor to indicate service and feeder conduit runs in green pencil lines and forward to Contractor.
   5. Contractor will perform the last coordination review. As each coordination drawing is completed, Contractor will meet with Gardner Spencer Smith Tench and Jarbeau, PC and Union County Commissioner's Office to review and resolve all conflicts on the coordination drawings.
   6. All coordination meetings will be held in the Project field office of Contractor. Contractor is required to distribute Shop Drawings, cut sheets and submittals to Subcontractors where appropriate. Reviewed coordination drawings will be maintained in the Project field office of Contractor.

**END OF SECTION**

# SECTION 01 1600
# REQUEST FOR INFORMATION

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Procedure for requesting clarification of the intent of the Contract Documents.

B. General Conditions, Supplementary Conditions and General Requirements shall govern the work of this Section.

### 1.02 RELATED REQUIREMENTS

A. Section 01 1000 - Summary: Contract descriptions, description of alterations work, work by others, future work, occupancy conditions, use of site and premises, work sequence.

B. Section 01 2000 - Price and Payment Procedures: Applications for payment, Schedule of Values, modifications procedures, closeout procedures.

C. Section 01 3000 - Administrative Requirements: Submittal procedures, project meetings, progress schedules and documentation, reports, coordination.

D. Section 01 4000 - Quality Requirements: Procedures for testing, inspection, mock-ups, reports, certificates; use of reference standards.

E. Section 01 5000 - Temporary Facilities and Controls.

F. Section 01 6000 - Product Requirements: Fundamental product requirements, substitutions and product options, delivery, storage, and handling.

G. Section 01 7000 - Execution Requirements: Examination, preparation, and general installation procedures; preinstallation meetings; cutting and patching; cleaning and protection; starting of systems; demonstration and instruction; closeout procedures except payment procedures; requirements for alterations work.

H. Section 01 7800 - Closeout Submittals: Project record documents, operation and maintenance (O&M) data, warranties and bonds.

## PART 2 PRODUCTS - NOT USED

## PART 3 EXECUTION

### 3.01 PROCEDURE

A. Contractor shall transmit the Request for Information to Gardner Spencer Smith Tench and Jarbeau, PC.

B. Gardner Spencer Smith Tench and Jarbeau, PC’s response is a clarification of the intent of the Contract Documents and does not authorize changes in the Contract Amount, Milestones and/or Contract Time. Gardner Spencer Smith Tench and Jarbeau, PC response shall be routed through the Union County Commissioner's Office’s representative for approval before being released to Contractor.

C. A Request for Information may be returned with the notation "Not Reviewed” if:
   1. The requested information is not ambiguous or unclear;
   2. The requested information is equally available to the requesting party by researching and/or examining the Contract Documents;
   3. Contractor has not reviewed the Request for Information prior to submittal.

D. Allow a minimum of nine (9) days for review and response time, after receipt by Gardner Spencer Smith Tench and Jarbeau, PC and Union County Commissioner's Office’s representative. Contractor shall verify and is responsible in verifying Gardner Spencer Smith Tench and Jarbeau, PC and Union County Commissioner's Office’s representative receipt of a Request for Information.

E. Changes or alterations to the approved drawings or specifications shall be made by means of addenda or change order.

**END OF SECTION**

# SECTION 01 2000
# PRICE AND PAYMENT PROCEDURES

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Procedures for preparation and submittal of applications for progress payments.

B. Documentation of changes in Contract Sum and Contract Time.

C. Correlation of Contractor submittals based on changes.

D. Procedures for preparation and submittal of application for final payment.

### 1.02 RELATED REQUIREMENTS

A. Document 00 7200 - General Conditions and Document 00 7300 - Supplementary Conditions: Additional requirements for progress payments, final payment, changes in the Work.

B. Document 00 7300 - Supplementary Conditions: Percentage allowances for Contractor's overhead and profit.

### 1.03 SCHEDULE OF VALUES

A. Electronic media printout including equivalent information will be considered in lieu of standard form specified; submit draft to Gardner Spencer Smith Tench and Jarbeau, PC for approval.

B. Forms filled out by hand will not be accepted.

C. Coordination: Coordinate preparation of the schedule of values with preparation of Contractor's/Construction Manager’s construction schedule.
   1. Coordinate line items in the schedule of values with other required administrative forms and schedules, including the following:
      a. Application for Payment forms with continuation sheets.
      b. Submittal schedule.
      c. Items required to be indicated as separate activities in the construction schedule.
   2. Submit the schedule of values to Architect/Engineer at earliest possible date, but no later than ten days before the date scheduled for submittal of initial Applications for Payment.
   3. Subschedules for Phased Work: Where the Work is separated into phases requiring separately phased payments, provide subschedules showing values coordinated with each phase of payment.
   4. Subschedules for Separate Design Contracts: Where the Owner has retained the Architect/Engineer under separate project contracts and Architect/Engineer will provide separate payment certifications for each project, provide subschedules showing values coordinated with the scope of each design contract.

D. 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. Arrange schedule of values consistent with format of AIA Document G703.
   2. Provide a breakdown of the Contract Sum in enough detail to facilitate continued evaluation of Applications for Payment and progress reports. Coordinate with Project Manual table of contents.
   3. 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, if off-site storage has been approved by the Owner. Include evidence of insurance.
   4. Provide separate line items in the schedule of values for initial cost of materials, for each subsequent stage of completion, and for total installed value of that part of the Work.
   5. Each item in the schedule of values and Applications for Payment shall be complete. Include total cost and proportionate share of general overhead and profit for each item.

a. Temporary facilities and other major cost items that are not direct cost of actual work-in-place may be shown either as separate line items in the schedule of values or distributed as general overhead expense, at Contractor's option.

6. Schedule Updating: Update and resubmit the schedule of values before the next Applications for Payment when Change Orders or Construction Change Directives result in a change in the Contract Sum.

**1.04 APPLICATIONS FOR PROGRESS PAYMENTS**

A. Payment Period: Submit at intervals stipulated in the Agreement.

B. Form to be used: AIA Document G702 and AIA Document G703 and Georgia DOE Form 0263, Revised June 2010 as forms for Applications for Payment.

C. Electronic media printout including equivalent information will be considered in lieu of standard form specified; submit sample to Gardner Spencer Smith Tench and Jarbeau, PC for approval.

D. Forms filled out by hand will not be accepted.

E. Application Preparation: Complete every entry on form. Notarize and execute by a person authorized to sign legal documents on behalf of Contractor. Gardner Spencer Smith Tench and Jarbeau, PC will return incomplete applications for correction, without action.

1. Entries shall match data on the schedule of values and 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 and/or approved before last day of construction period covered by application.

F. 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, if off-site storage has been approved by the Union County Commissioner's Office.

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.

G. Transmittal: Submit five signed and notarized original copies of each Application for Payment to Architect/Engineer by a method ensuring receipt within 48 hours. One copy shall include waivers of lien and similar attachments if required.

H. 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. 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.

4. Owner reserves the right to designate which entities involved in the Work must submit waivers.

I. 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. Construction schedule (preliminary if not final).
4. Submittal schedule (preliminary if not final).
5. List of Contractor's/Construction Manager's staff assignments.
6. Copies of building permits, authorizations and licenses for performance of the Work.
7. Initial progress report.
8. Report of preconstruction conference.
9. Certificates of insurance and insurance policies.
10. Performance and payment bonds.

J. Application for Payment at Substantial Completion: After Architect/Engineer issues the Certificate of Substantial Completion, submit an Application for Payment 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.

K. 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 including completion of all Punch List items.
2. Receipt by Owner and Architect/Engineer of all required project construction records including As-Build Drawings.
3. Removal of all temporary facilities, services, surplus materials and rubbish.
4. Change-over of all door locks and other Contractor access provisions to the Owner.
5. Insurance certificates for products and completed operations where required and proof that taxes, fees, and similar obligations were paid.
6. Updated final statement, accounting for final changes to the Contract Sum.
7. Receipt of conditional final lien waivers from all entities lawfully entitled to a lien.
8. AIA Document G706A, "Contractor's Affidavit of Release of Liens."
9. AIA Document G707, "Consent of Surety to Final Payment."
10. Receipt by Architect/Engineer of Statutory Affidavit.
11. Receipt by Architect/Engineer of Contractor's/Construction Manager's Warranty.
12. Receipt by Architect/Engineer of Roofing Guarantee and Roofing Weathertightness Warranty.
13. Evidence that claims have been settled.

L. Execute certification by signature of authorized officer.

## 1.05 MODIFICATION PROCEDURES

A. For minor changes not involving an adjustment to the Contract Price or Contract Time, Gardner Spencer Smith Tench and Jarbeau, PC will issue instructions directly to Contractor.
1. Architect/Engineer will issue supplemental instructions authorizing minor changes in the Work, not involving adjustment to the Contract Sum or the Contract Time, on Architect's Field Report or on AIA Document G710, "Architect's Supplemental Instructions."

B. For other required changes, Gardner Spencer Smith Tench and Jarbeau, PC will issue a document signed by Union County Commissioner's Office instructing Contractor to proceed with the change, for subsequent inclusion in a Change Order.
1. Owner-Initiated Proposal Requests: Architect/Engineer will issue a detailed description of proposed changes in the Work that may require adjustment to the Contract Sum or the Contract Time. If necessary, the description will include supplemental or revised Drawings

and Specifications.

a. Work Change Proposal Requests issued by Architect are not instructions either to stop work in progress or to execute the proposed change.
b. Within at earliest possible date but in no case later than 15 days after receipt of Proposal Request, submit a quotation estimating cost adjustments to the Contract Sum and the Contract Time necessary to execute the change
    1) Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
    2) Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
    3) Include costs of labor and supervision directly attributable to the change.
    4) Include an updated construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.

2. Contractor-Initiated Proposals: If latent or changed conditions require modifications to the Contract, Contractor may initiate a claim by submitting a request for a change to Gardner Spencer Smith Tench and Jarbeau, PC.
    a. Include a statement outlining reasons for the change and the effect of the change on the Work. Provide a complete description of the proposed change. Indicate the effect of the proposed change on the Contract Sum and the Contract Time.
    b. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
    c. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
    d. Include costs of labor and supervision directly attributable to the change.
    e. Include an updated construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
    f. Comply with requirements in Division 01 Section Substitution Procedures if the proposed change requires substitution of one product or system for product or system specified.
3. The document will describe the required changes and will designate method of determining any change in Contract Sum or Contract Time.
4. Promptly execute the change.

C. For changes for which advance pricing is desired, Gardner Spencer Smith Tench and Jarbeau, PC will issue a document that includes a detailed description of a proposed change with supplementary or revised drawings and specifications, a change in Contract Time for executing the change with a stipulation of any overtime work required and the period of time during which the requested price will be considered valid. Contractor shall prepare and submit a fixed price quotation within 15 (fifteen) days.

D. Administrative Change Orders Allowance Adjustment:
    1. Allowance Adjustment: See Division 01 Section Allowances for administrative procedures for preparation of Change Order Proposal for adjusting the Contract Sum to reflect actual costs of allowances.
    2. Unit-Price Adjustment: See Division 01 Section Unit Prices for administrative procedures for preparation of Change Order Proposal for adjusting the Contract Sum to reflect measured scope of unit-price work.

E. On Owner's approval of a Work Changes Proposal Request, Architect/Engineer will issue a Change Order for signatures of Owner and Contractor on AIA Document G701.

F. Construction Change Directive: Architect/Engineer may issue a Construction Change Directive on AIA Document G714. Construction Change Directive instructs Contractor/Construction Manager to proceed with a change in the Work, for subsequent inclusion in a Change Order.
   1. Construction Change Directive contains a complete description of change in the Work. It also designates method to be followed to determine change in the Contract Sum or the Contract Time.
   2. Documentation: Maintain detailed records on a time and material basis of work required by the Construction Change Directive.
   3. After completion of change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.

G. Computation of Change in Contract Amount: As specified in the Agreement and Conditions of the Contract.

**1.06 APPLICATION FOR FINAL PAYMENT**

A. Prepare Application for Final Payment as specified for progress payments, identifying total adjusted Contract Sum, previous payments, and sum remaining due.

**PART 2 PRODUCTS - NOT USED**

**PART 3 EXECUTION**

**3.01 ATTACHMENTS**

STATUTORY AFFIDAVIT

State of Georgia, County of _____

From: _____

To: _____

Re: Contract entered into on the ____day of _____, 20____, between the above mentioned parties for the construction of_____ at _____

KNOW ALL MEN BY THESE PRESENTS

The undersigned hereby certifies that all work required under the above contract has been performed in accordance with the terms thereof, that all materialmen, subcontractors, mechanics, and laborers have been paid and satisfied in full, and that there are no outstanding claims of any character arising out of the performance of the contract which have not been paid and satisfied in full.

The undersigned further certifies that to the best of his knowledge and belief there are no unsatisfied claims or damages resulting from injury of death of any employees, subcontractors, or the public at large arising out of this performance of the contract, or any suits or claims for any other damage of any kind, nature, or description which might constitute a lien upon the property of the Owner.

The undersigned makes this affidavit as provided by law and for the purpose of receiving final payment in full settlement of all claims arising under or by virtue of the contract, and acceptance of such payment is acknowledged as a release of the Owner from any and all claims arising under or by virtue of the contract.

IN WITNESS THEREOF, the undersigned has signed and sealed this instrument this ____ day of _____, 20____.

By: _____

Personally appeared before the undersigned,_____and _____ who after being duly sworn, deposed(s) and say(s) that the fact stated in the above affidavit are true.

_____

Notary Public

_____ County, Georgia

This ____day of _____, 20____

My commission expires _____

WARRANTY BY GENERAL CONTRACTOR/CONSTRUCTION MANAGER

Owner:_____

Project Name: _____

Project Address: _____

County of: _____

State of: _____

Date: _____

_____, as Contractor/Construction Manager on the above construction project, do hereby guarantee that all work executed under the plans and specifications will be free from defects in materials and/or workmanship for a period of one year beginning on _____ and ending on _____, and that all defects occurring within the warranty period shall be replaced or repaired at no cost to the Owner.

This guarantee covers all work shown on the plans and specified in the Project Manual and Contract Documents.

Nothing in the above shall be deemed to imply that this guarantee shall apply to any work which has been abused or neglected by the Owner.

Legal Name of Contractor/Construction Manager:

_____

By: _____

Title: _____

_____

Notary Public

This ____day of _____, 20____

**END OF SECTION**

# SECTION 01 2100
# ALLOWANCES

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Cash allowances.

B. Payment and modification procedures relating to allowances.

### 1.02 RELATED REQUIREMENTS

A. Division 01 - Price and Payment Procedures: Additional payment and modification procedures.

### 1.03 SUMMARY

A. Allowances as set forth in the Specifications are to be used as compensation for items as set forth in this Section. The amounts listed in the schedule and/or Specifications are to be included in the base bid and shall be listed separately in the Schedule of Values and Application for Payment.

B. This section specifies administrative and procedural requirements governing handling and processing allowance. Selected materials and equipment, and in some cases, their installation, are shown and specified in the Contract Documents by allowances. Allowances have been established in lieu of additional requirements and to defer determination of actual quantities of materials and equipment to a later date when additional information is available for evaluation. Additional requirements, if necessary, will be issued by Change Order.

C. Types of allowances:
   1. Lump sum allowance.

D. Definitions:
   1. Material and/or installation allowance: Stated allowance include ALL cost except delivery, layout, fees, supervision, general expense, insurance, overhead, applicable taxes, profit and other incidentals; these "except" cost shall be included in the Base Bid.

### 1.04 CASH ALLOWANCES

A. Use the allowances only as authorized for Union County Commissioner's Office purposes and only by an approved allowance disbursement form that indicate the amounts to be charged to the respective allowance amount.

B. Gardner Spencer Smith Tench and Jarbeau, PC Responsibilities:
   1. Consult with Contractor for consideration and selection of products, suppliers , and installers.
   2. Select products in consultation with Union County Commissioner's Office and transmit decision to Contractor.
   3. Prepare Change Order.

C. Contractor Responsibilities:
   1. Assist Gardner Spencer Smith Tench and Jarbeau, PC in selection of products, suppliers , and installers.
   2. Obtain proposals from suppliers and offer recommendations. Contractor shall submit cost of material from a minimum of three qualified material suppliers itemized and supported by sufficient data to permit proper evaluation of proposals, seven (7) days prior to installation.
   3. Obtain proposals from suppliers and offer recommendations.
   4. On notification of which products have been selected, execute purchase agreement with designated supplier .
   5. Contractor shall submit invoices or delivery slips to indicate actual quantities of materials delivered to the site for use in fulfillment of each allowance.

D. Differences in costs will be adjusted by Change Order.

E. All remaining monies in the Contract shall be returned to Union County Commissioner's Office.

**1.05 ALLOWANCE DISBURSEMENT**

A. Contractor shall submit a request for allowance disbursement on an allowance disbursement form. Include all substantiating and/or required data along with the request.

B. The request shall have the requested amount listed as an allowance disbursement without Contractor overhead and markup.

C. Once the Union County Commissioner's Office's OR has accepted the disbursement, Gardner Spencer Smith Tench and Jarbeau, PC and Union County Commissioner's Office's OR will sign the allowance disbursement form.

**1.06 ALLOWANCES SCHEDULE**

A. Lump sum allowance.
   1. Allowance for Unforseen Conditions: 5% of total price.

B. Lump sum allowance.
   1. Allowance for Testing and Laboratory Services: $20,000.00.

**PART 2 PRODUCTS - NOT USED**

**PART 3 EXECUTION - NOT USED**

**END OF SECTION**

# SECTION 01 2200
# UNIT PRICES

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. List of unit prices, for use in preparing Bids.

B. Measurement and payment criteria applicable to Work performed under a unit price payment method.

C. Defect assessment and non-payment for rejected work.

### 1.02 COSTS INCLUDED

A. The Unit Prices established on the Bid Form will be used to adjust the contract sum in case a quantity is different from that shown on the drawings or if unforseen conditions occur.

B. Unit Prices included on the Bid Form shall include full compensation for all required labor, products, tools, equipment, plant, transportation, services and incidentals; erection, application or installation of an item of the Work; overhead and profit.

### 1.03 UNIT QUANTITIES SPECIFIED

A. Quantities indicated in the Bid Form are for bidding and contract purposes only. Quantities and measurements of actual Work will determine the payment amount.

### 1.04 MEASUREMENT OF QUANTITIES

A. Measurement methods delineated in the individual specification sections complement the criteria of this section. In the event of conflict, the requirements of the individual specification section govern.

B. Take all measurements and compute quantities. Measurements and quantities will be verified by Gardner Spencer Smith Tench and Jarbeau, PC.

C. Assist by providing necessary equipment, workers, and survey personnel as required.

D. Measurement by Weight: Concrete reinforcing steel, rolled or formed steel or other metal shapes will be measured by handbook weights. Welded assemblies will be measured by handbook or scale weight.

E. Measurement by Volume: Measured by cubic dimension using mean length, width and height or thickness.

F. Measurement by Area: Measured by square dimension using mean length and width or radius.

G. Linear Measurement: Measured by linear dimension, at the item centerline or mean chord.

H. Perform surveys required to determine quantities, including control surveys to establish measurement reference lines. Notify Gardner Spencer Smith Tench and Jarbeau, PC prior to starting work.

I. Contractor's Engineer Responsibilities: Sign surveyor's field notes or keep duplicate field notes , calculate and certify quantities for payment purposes.

### 1.05 PAYMENT

A. Payment for Work governed by unit prices will be made on the basis of the actual measurements and quantities of Work that is incorporated in or made necessary by the Work and accepted by the Gardner Spencer Smith Tench and Jarbeau, PC, multiplied by the unit price.

B. Payment will not be made for any of the following:
   1. Products wasted or disposed of in a manner that is not acceptable.
   2. Products determined as unacceptable before or after placement.
   3. Products not completely unloaded from the transporting vehicle.
   4. Products placed beyond the lines and levels of the required Work.
   5. Products remaining on hand after completion of the Work.

6. Loading, hauling, and disposing of rejected Products.

**1.06 DEFECT ASSESSMENT**

A. Replace Work, or portions of the Work, not complying with specified requirements.

B. If, in the opinion of Gardner Spencer Smith Tench and Jarbeau, PC, it is not practical to remove and replace the Work, Gardner Spencer Smith Tench and Jarbeau, PC will direct one of the following remedies:
   1. The defective Work may remain, but the unit price will be adjusted to a new unit price at the discretion of Gardner Spencer Smith Tench and Jarbeau, PC.
   2. The defective Work will be partially repaired to the instructions of the Gardner Spencer Smith Tench and Jarbeau, PC, and the unit price will be adjusted to a new unit price at the discretion of Gardner Spencer Smith Tench and Jarbeau, PC.

C. The individual specification sections may modify these options or may identify a specific formula or percentage price reduction.

D. The authority of Gardner Spencer Smith Tench and Jarbeau, PC to assess the defect and identify payment adjustment is final.

**1.07 SCHEDULE OF UNIT PRICES**

A. Item: Tile Carpeting; Section 09 6813 and as shown on the drawing(s).
   1. Provide cost per square yard for installation of tile carpeting and accessories.

B. Item: Tiling; Section 09 3000 and as shown on drawing(s)
   1. Provide cost per square foot for installation of <u>floor</u> tiling and accessories.

C. Item: Tiling; Section 09 3000 and as shown on drawing(s)
   1. Provide cost per square foot for installation of <u>wall</u> tiling and accessories.

D. Item: Resilient Flooring; Section 09 6500 and as shown on drawing(s)
   1. Provide cost per square foot for installation of resilient flooring and accessories.

E. Item: Unsuitable Soil Excavation; Division 31 and as shown on drawing(s).
   1. Provide cost per cubic yard for excavation of unsuitable soil.

F. Item: Unsuitable Soil Haul-Off from Site; Division 31 and as shown on drawing(s).
   1. Provide cost per cubic yard for haul-off of unsuitable soil from the site.

G. Item: Suitable Soil Haul-In to Site; Division 31 and as shown on drawing(s).
   1. Provide cost per cubic yard for haul-in of suitable soil to the site.

H. Item: Compacting Fill; Division 31 and as shown on drawing(s).
   1. Provide cost per cubic yard for compacting suitable soil that replaced unsuitable soil.

I. Item: Placement of Geotechnical Fabric; Division 31.
   1. Provide cost per square yard for placement of geotechnical fabric.

J. Item: Placement of #3 Stone; Division 31.
   1. Provide cost per ton for placement of #3 stone.

K. Item: Cut Grading and Haul-Off from Site; Division 31 and as shown on drawing(s).
   1. Provide cost per cubic yard for providing cut grading and haul-off from site.

**PART 2 PRODUCTS - NOT USED**

**PART 3 EXECUTION - NOT USED**

**END OF SECTION**

# SECTION 01 2300
# ALTERNATES

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Description of Alternates.

B. Procedures for pricing Alternates.

### 1.02 DEFINITIONS

A. An alternate is 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 decided to accept a corresponding change in either the amount of construction to be completed, or in the products, materials, equipment, systems, or installation methods described in the Contract Documents.

1. The cost or credit for each alternate is the net addition to or deduction from the Contract Sum to incorporate the Alternate into the Work. No other adjustments are made to the Contract Sum.

### 1.03 ACCEPTANCE OF ALTERNATES

A. Alternates quoted on Bid Forms will be reviewed and accepted or rejected at Union County Commissioner's Office's option. Accepted Alternates will be identified in the Owner-Contractor Agreement.

B. Coordinate related work and modify surrounding work to integrate the Work of each Alternate.

### 1.04 PROCEDURES

A. Coordination: Modify or adjust affected adjacent Work as necessary to completely and fully integrate that Work into the 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 mentioned as part of the Alternate.

B. Notification: Immediately following the award of the Contract, notify each party involved, in writing, of the status of each alternate. Indicate whether alternates have been accepted, rejected, or deferred for later consideration. Include a complete description of negotiated modifications to alternates. Owner shall have the right to accept, reject, or defer alternates in any order and/or combination.

C. Execute accepted alternates under the same conditions as other Work of this Contract. Where materials are omitted, labor shall also be omitted and reflected accordingly in cost or credit.

D. Schedule: A "Schedule of Alternate" is included at the end of this Section. Specification Sections referenced in the Schedule contain requirements for materials necessary to achieve the Work described under each alternate.

### 1.05 SCHEDULE OF ALTERNATES

A. Alternate No. 1 - TBD:

1. TBD

B. Alternate No. 2 - TBD:

1. TBD

## PART 2 PRODUCTS - NOT USED

## PART 3 EXECUTION - NOT USED

**END OF SECTION**

# SECTION 01 3000
# ADMINISTRATIVE REQUIREMENTS

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Preconstruction meeting.

B. Site mobilization meeting.

C. Progress meetings.

### 1.02 RELATED REQUIREMENTS

A. Section 00 7200 - General Conditions: Duties of the Construction Manager.

B. Section 00 7300 - Supplementary Conditions: Duties of the Construction Manager.

C. Section 01 7800 - Closeout Submittals: Project record documents; operation and maintenance data; warranties and bonds.

## PART 2 PRODUCTS - NOT USED

## PART 3 EXECUTION

### 3.01 PRECONSTRUCTION MEETING

A. Union County Commissioner's Office will schedule a meeting after Notice of Award.

B. Attendance Required:
1. Union County Commissioner's Office's representation.
2. Gardner Spencer Smith Tench and Jarbeau, PC.
3. Contractor.

C. Agenda:
1. Execution of Union County Commissioner's Office-Contractor Agreement.
2. Submission of executed bonds and insurance certificates.
3. Distribution of Contract Documents.
4. Submission of list of subcontractors, list of products, schedule of values, and progress schedule.
5. Designation of personnel representing the parties to Contract and <1|A/E|>.
6. Procedures and processing of field decisions, submittals, substitutions, applications for payments, proposal request, Change Orders, and Contract closeout procedures.
7. Scheduling.
8. Scheduling activities of a Geotechnical Engineer.

D. Record minutes and distribute copies within two days after meeting to participants, with two copies to Gardner Spencer Smith Tench and Jarbeau, PC, Union County Commissioner's Office, participants, and those affected by decisions made.

### 3.02 SITE MOBILIZATION MEETING

A. Gardner Spencer Smith Tench and Jarbeau, PC will schedule meeting at the Project site prior to Contractor occupancy.

B. Attendance Required:
1. Contractor.
2. Union County Commissioner's Office.
3. Gardner Spencer Smith Tench and Jarbeau, PC.
4. Contractor's superintendent.
5. Major subcontractors.

C. Agenda:
1. Use of premises by Union County Commissioner's Office and Contractor.
2. Union County Commissioner's Office's requirements.
3. Construction facilities and controls provided by Union County Commissioner's Office.

4. Temporary utilities provided by Union County Commissioner's Office.
5. Survey and building layout.
6. Security and housekeeping procedures.
7. Schedules.
8. Application for payment procedures.
9. Procedures for testing.
10. Procedures for maintaining record documents.
11. Requirements for start-up of equipment.
12. Inspection and acceptance of equipment put into service during construction period.

D. Record minutes and distribute copies within two days after meeting to participants, with two copies to Gardner Spencer Smith Tench and Jarbeau, PC, Union County Commissioner's Office, participants, and those affected by decisions made.

**3.03 PROGRESS MEETINGS**

A. Make arrangements for meetings, prepare agenda with copies for participants, preside at meetings.

B. Attendance Required:
1. Contractor.
2. Union County Commissioner's Office.
3. Gardner Spencer Smith Tench and Jarbeau, PC.
4. Contractor's superintendent.
5. Major subcontractors.

C. Agenda:
1. Review minutes of previous meetings.
2. Review of work progress.
3. Field observations, problems, and decisions.
4. Identification of problems that impede, or will impede, planned progress.
5. Review of submittals schedule and status of submittals.
6. Review of off-site fabrication and delivery schedules.
7. Maintenance of progress schedule.
8. Corrective measures to regain projected schedules.
9. Planned progress during succeeding work period.
10. Coordination of projected progress.
11. Maintenance of quality and work standards.
12. Effect of proposed changes on progress schedule and coordination.
13. Other business relating to work.

D. Record minutes and distribute copies within two days after meeting to participants, with two copies to Gardner Spencer Smith Tench and Jarbeau, PC, Union County Commissioner's Office, participants, and those affected by decisions made.

**END OF SECTION**

# SECTION 01 3100
# SPECIAL INSPECTIONS

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. General requirements and instructions.

B. Statement of Special Inspections Form.

C. Schedule of Special Inspection Services Form.

D. Final Report of Special Inspections Form.

### 1.02 RELATED SECTIONS

A. Division 01 - Testing and Inspections.

### 1.03 OVERVIEW

A. The program consists of three independent forms which must be filled out and submitted to the building department and shall include all buildings associated with the Project.

B. The Statement of Special Inspections and the Schedule of Special Inspection Services forms are completed and submitted by Gardner Spencer Smith Tench and Jarbeau, PC at the time of the permit application.

C. Forms shall be maintained in a central location at the project site by the Contractor.

D. The Schedule of Special Inspection Services form will need access on a regular basis by the special inspector(s) for the project.

E. The Final Report of Special Inspections form is completed and submitted to the building official by the Contractor at the completion of construction to become part of the required record closeout documents.

### 1.04 STATEMENT OF SPECIAL INSPECTION

A. The SSI form provides the general project information.
   1. Project location, the permit applicant, the project architect, the project structural engineer, and the project registered design professional in responsible charge.
   2. Firm or company names are sufficient (individuals need not be listed).

B. Depending on the project organization, the registered design professional in responsible charge could be the project architect, project engineer, or an independent third party representing the Union County Commissioner's Office.

C. In accordance with section 1701 of the International Building Code, the registered design professional in responsible charge is responsible for preparation of the special inspection program and would complete the "Prepared by" section of this form.

D. The form establishes the frequency interim inspection reports shall be furnished.

E. The registered design professional or the building official may attach a separate schedule listing the required report frequency.

F. The bottom portion of the form shall be filled out by the building official in conjunction with permit review process. It identifies the building official has approved the special inspection program.

G. A copy of this approved form shall be kept at the project site with the Schedule of Special Inspection Services.

### 1.05 SCHEDULE OF SPECIAL INSPECTION SERVICES

A. The SSIS form provides an itemized list of which special inspection activities are required for the specific project and which individual, firm, or agency will be performing the special inspection services associated with each required task.

B. The SSIS form lists the various tasks required by Chapter 17 of the International Building Code and provides a column for the permit applicant to identify with a "yes" or "no" which items apply to the specific project.

C. The "Extent" column is where the applicant can provide additional information or detail regarding the scope of the special inspections.
   1. Identify which items require continuous inspections and which require periodic inspection.
   2. For periodic inspections, the frequency of inspection can be identified.
   3. Exceptions to a special task may be noted in this column.
   4. Special instructions regarding how to perform inspections may be included.

D. Multiple special inspectors may exist on one project. The multiple special inspectors are identified and numbered at the end of the form. The number next to the individual. firm, or agency's name shall be listed in the schedule under the column heading "Agent" for the tasks that individual, firm, or agency will perform.

E. In some instances, it may be desirable to have more than one special inspector involved in the same task.

F. The only column not filled in on the schedule at the time of permit application shall be the "Completed" column. The Contractor shall coordinate the work so when an individual special inspection task in the schedule is completed for the last time on the project and the special inspector has performed their final review, inspection, or test of that item for the project, the special inspector shall initial and date the cell in the "Completed" column adjacent to that task.

G. At the conclusion of the project the Contractor shall provide a copy of the Schedule of Special Inspection Services form with initials in the "Completed" column for each task relevant to the project shall be submitted to the building department with the Final Report of Special Inspections.

**1.06 FINAL REPORT OF SPECIAL INSPECTIONS**

A. The FRSI form is submitted when all the special inspection requirements for a project have been fulfilled. Each special inspector corresponding to an agent number in the Schedule of Special Inspection Services will be required to complete a copy of this form for submittal to the building official, by the Contractor, for their scope of work. The special inspection program will not be considered complete until forms from all agents have been received by the Contractor and submitted to the building department.

**PART 2 PRODUCTS - NOT USED**

**PART 3 EXECUTION**

**3.01 PRECONSTRUCTION MEETING**

A. Gardner Spencer Smith Tench and Jarbeau, PC will schedule a meeting after Notice of Award.

B. Attendance Required:
   1. Union County Commissioner's Office.
   2. Gardner Spencer Smith Tench and Jarbeau, PC.
   3. Contractor.
   4. Structural Engineer.
   5. Mechanical Engineer.

C. Agenda:
   1. Overview of the Special Inspection Program Instructions.
   2. Review the Schedule of Special Inspection Services.
   3. Definition of appropriate parties, titles and responsibilities.
   4. Procedures and processing of field decisions, submittals, Contract closeout procedures.
   5. Scheduling.

D. Record minutes and distribute copies within two days after meeting to participants, with two copies to Gardner Spencer Smith Tench and Jarbeau, PC, Union County Commissioner's

Office, participants, and those affected by decisions made.

**3.02 SUBMITTALS FOR INFORMATION**

A. When the following are specified in individual sections, submit them for information:
   1. Test reports.
   2. Inspection reports.
   3. Field reports.
   4. Other types indicated.

B. Submit for Gardner Spencer Smith Tench and Jarbeau, PC's knowledge as contract administrator or for Union County Commissioner's Office. No action will be taken.

**3.03 SUBMITTALS FOR PROJECT CLOSEOUT**

A. When the following are specified in individual sections, submit them at project closeout:
   1. Statement of Special Inspections.
   2. Schedule of Special Inspection Services.
   3. Final Report of Special Inspections.
   4. Other types as indicated.

B. Submit for Union County Commissioner's Office's benefit during and after project completion.

**3.04 NUMBER OF COPIES OF SUBMITTALS**

A. Documents for Review:
   1. Small Size Sheets, Not Larger Than 8-1/2 x 11 inches: Submit the number of copies which the Contractor requires, plus two copies which will be retained by the Gardner Spencer Smith Tench and Jarbeau, PC.
   2. Larger Sheets, Not Larger Than 36 x 48 inches: Submit one reproducible transparency and one opaque reproduction.

B. Documents for Information: Submit two copies.

C. Documents for Project Closeout: Make one reproduction of submittal originally reviewed. Submit one extra of submittals for information.

**3.05 SUBMITTAL PROCEDURES**

A. Transmit each submittal with approved form.

B. Sequentially number the transmittal form. Revise submittals with original number and a sequential alphabetic suffix.

C. Identify Project, Contractor, Subcontractor or supplier; pertinent drawing and detail number, and specification section number, as appropriate on each copy.

D. Discrepancies in the Contractor's work shall be brought to immediate attention of the Contractor by Special Inspector(s).

E. Deliver submittals to Gardner Spencer Smith Tench and Jarbeau, PC at business address.

F. Schedule submittals to expedite the Project, and coordinate submission of related items.

G. For each resubmittal for noncompliance, allow 10 days excluding delivery time to and from the Contractor

H. Identify variations from Contract Documents and Product or system limitations which may be detrimental to successful performance of the completed Work.

I. When revised for resubmission, identify all changes made since previous submission.

J. Distribute copies of reviewed submittals as appropriate. Instruct parties to promptly report any inability to comply with requirements.

K. Submittals not requested will not be recognized or processed.

**3.06 FIELD QUALITY CONTROL**

A. Perform field inspection and testing in accordance with Section 01 4110 - Testing Laboratory Services.

**3.07 EXHIBITS**

**FINAL REPORT OF SPECIAL INSPECTIONS**

**NAME OF PROJECT: _____**

**STREET ADDRESS:**
**_____**

**CITY AND STATE:**
**_____**

**PERMIT APPLICANT:**
**_____**

**APPLICANT'S ADDRESS:**
**_____**

**PROJECT ARCHITECT:_____**

**PROJECT STRUCTURAL ENGINEER:**
**_____**

**REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE:**
**_____**

**ARCHITECTS PROJECT NO.:**
**_____**

**TO THE BEST OF MY INFORMATION, KNOWLEDGE, AND BELIEF, THE SPECIAL INSPECTIONS OR TESTING REQUIRED FOR THIS PROJECT, AND DESIGNATED FOR THIS AGENT IN THE SCHEDULE OF SPECIAL INSPECTION SERVICES SUBMITTED FOR PERMIT, HAVE BEEN COMPLETED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.**

**INTERIM REPORTS SUBMITTED PRIOR TO THIS FINAL REPORT AND NUMBERED _____ TO _____, FORM A BASIS FOR, AND ARE TO BE CONSIDERED AN INTEGRAL PART OF THIS FINAL REPORT. THE FOLLOWING DISCREPANCIES THAT WERE OUTSTANDING SINCE THE LAST INTERIM REPORT DATED _____HAVE BEEN CORRECTED:**

**PREPARED BY:**

**SPECIAL INSPECTION AGENT/FIRM _____**

**TYPE OR PRINT NAME _____**

**SIGNATURE W/ SEAL _____**

**DATE _____**

# SECTION 01 3150
# PROJECT MANAGEMENT AND COORDINATION

## PART 1 GENERAL

### 1.01 SUMMARY

A. SUMMARY

B. This Section includes administrative provisions for coordinating construction operations on Project including, but not limited to, the following:
   1. General project coordination procedures.
   2. Coordination Drawings.
   3. Administrative and supervisory personnel.
   4. Project meetings.

C. Related Sections: The following Sections contain requirements that relate to this Section:
   1. Division 01 Section "Construction Progress Documentation" for preparing and submitting the Contractor's Construction Schedule.
   2. Division 01 Section "Execution Requirements" for procedures for coordinating general installation and field-engineering services, including establishment of benchmarks and control points.
   3. Division 01 Section "Closeout Procedures" for coordinating Contract closeout.

### 1.02 COORDINATION

A. Coordination: Coordinate construction operations included in various 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 with other contractors to ensure maximum accessibility for required maintenance, service, and repair.
   3. Make adequate provisions to accommodate items scheduled for later installation.

B. If necessary, 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 Union County Commissioner's Office 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.

### 1.03 SUBMITTALS

A. Coordination Drawings: Prepare Coordination Drawings if limited space availability necessitates maximum utilization of space for efficient installation of different components or if coordination is required for installation of products and materials fabricated by separate entities.

1. Indicate relationship of components shown on separate Shop Drawings.
2. Indicate required installation sequences.
3. Refer to Division 23 Section "Basic Mechanical Materials and Methods" for specific Coordination Drawing requirements for mechanical and electrical installations.

B. Staff Names: Within 15 days of starting construction operations, submit a list of principal staff assignments, including superintendents and other personnel in attendance at Project site. Identify individuals and their duties and responsibilities; list addresses and telephone numbers, including home and office telephone numbers. Provide names, addresses, and telephone numbers of individuals assigned to Project.
   1. Post copies of list in Project office.

**1.04 ADMINISTRATIVE AND SUPERVISORY PERSONNEL**

A. General: In addition to Project superintendent, provide other administrative and supervisory personnel as required for proper performance of the Work.

B. Contractor to designate an on-site party responsible for instructing workers and overseeing the environmental goals for the project.

**1.05 PROJECT MEETINGS**

A. General: Schedule and conduct meeting 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 Union County Commissioner's Office and Gardner Spencer Smith Tench and Jarbeau, PC of scheduled meeting dates and times.
   2. Agenda: Prepare the meeting agenda. Distribute the agenda to all invited attendees.
   3. Minutes: Contractor shall record significant discussions and agreements achieved. Distribute the meeting minutes to everyone concerned, including Union County Commissioner's Office and Gardner Spencer Smith Tench and Jarbeau, PC, within five (5) days of the meeting.

B. Preconstruction Conference: Schedule a preconstruction conference before starting construction, at a time convenient to Union County Commissioner's Office and Gardner Spencer Smith Tench and Jarbeau, PC, but no later than 15 days after execution of the Agreement. Hold the conference at Project site or another counties and personnel assignments.
   1. Attendees: Authorized representatives of Union County Commissioner's Office, Gardner Spencer Smith Tench and Jarbeau, PC, and their consultants; Contractor and its superintendent; major subcontractors; manufacturers; suppliers; and other concerned parties shall attend the conference. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
   2. Agenda: Discuss items of significance that could affect progress, including the following:
      a. Tentative construction schedule.
      b. Phasing.
      c. Critical work sequencing.
      d. Designation of responsible personnel.
      e. Procedures for processing field decisions and Change Orders.
      f. Procedures for processing Applications for Payment.
      g. Distribution of the Contract Documents.
      h. Submittal procedures.
      i. Preparation of Record Documents.
      j. Use of the premises.
      k. Responsibility for temporary facilities and controls.
      l. Parking availability.
      m. Office, work, and storage areas.

n. Equipment deliveries and priorities.
o. First aid.
p. Security.
q. Progress cleaning.
r. Working hours.

C. Preinstallation Conferences: Conduct a preinstallation conference at Project site before each construction activity that requires coordination with other construction.
1. Attendees: Installer and representatives of manufacturers and fabricators involved in or affected by the installation and its coordination or integration with other materials and installations that have preceded or will follow, shall attend the meeting. Advise Gardner Spencer Smith Tench and Jarbeau, PC of scheduled meeting dates.
2. Agenda: Review progress of other construction activities and preparations for the particular activity under consideration, including requirements for the following:
a. Contract Documents.
b. Options.
c. Related Change Orders.
d. Purchases.
e. Deliveries.
f. Submittals.
g. Review of mockups.
h. Possible conflicts.
i. Times schedules.
j. Weather limitations.
k. Manufacturer’s written recommendations.
l. Warranty requirements.
m. Compatibility of materials.
n. Acceptability of substrates.
o. Temporary facilities and controls.
p. Space and access limitations.
q. Regulations of authorities having jurisdiction.
r. Testing and inspecting requirements.
s. Required performance results.
t. Protection of construction and personnel.
3. Record significant conference discussions, agreements, and disagreements.
4. Do not proceed with installation if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of the Work and reconvene the conference at earliest feasible date.

D. Progress Meetings: Conduct progress meetings at regular intervals. Coordinate dates of meetings with preparation of payment requests.
1. Attendees: In addition to representatives of Union County Commissioner's Office and Gardner Spencer Smith Tench and Jarbeau, PC, subcontractors, suppliers and other entities will be scheduled to attend the meeting on an as-needed basis by the Contractor. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
2. 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.

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) Work hours.
   10) Hazards and risks.
   11) Progress cleaning.
   12) Quality and work standards.
   13) Review Solid Waste Management and Environmental Protection Plan.
   14) Change Orders.
   15) Documentation of information for payment requests.

3. Reporting: Distribute minutes of the meeting to each party present and to parties who should have been present. Include a brief summary, in narrative form, of progress since the previous meeting and report.
   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**

# SECTION 01 3200
# CONSTRUCTION PROGRESS DOCUMENTATION

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. This Section includes administrative and procedural requirements for documenting the progress of construction during performance of the Work, including the following:
   1. Preliminary Construction Schedule.
   2. Contractor's Construction Schedule.
   3. Submittals Schedule.

### 1.02 RELATED REQUIREMENTS

A. Division 01 Section "Payment Procedures" for submitting the Schedule of Values.

B. Division 01 Section "Submittal Procedures" for submitting schedules and reports.

C. Division 01 Section "Quality Requirements" for submitting a schedule of tests and inspections.

D. Division 01 Section "Closeout Procedures" for submitting photographic images as Project Record Documents at Project closeout.

### 1.03 DEFINITIONS

A. Activity; A discrete part of a project that can be identified for planning, scheduling, monitoring, and controlling the construction project. Activities included in a construction schedule consume time and resources.
   1. Critical activities are activities on the critical path. They must start and finish on the planned early start and finish times.
   2. Predecessor activity is an activity that must be completed before a given activity can be started.

B. CPM: Critical path method, which is a method of planning and scheduling a construction project where activities are arranged based on activity relationships. Network calculations determine when activities can be performed and the critical path of Project.

C. Critical Path: The longest continuous chain of activities through the network schedule that establishes the minimum overall Project duration and contains no float.

D. Event: The starting or ending point of an activity.

E. Float: The measure of leeway in starting and completing an activity.
   1. Float time is not for the exclusive use or benefit of either Union County Commissioner's Office or Contractor, but is a jointly owned, expiring Project resource available to both parties as needed to meet schedule milestones and Contract completion date.
   2. Free float is the amount of time an activity can be delayed without adversely affecting the early start of the following activity.
   3. Total float is the measure of leeway in starting or completing an activity without adversely affecting the planned project completion date.

F. Major Area: A story of construction, a separate building, or a similar significant construction element.

G. Milestone: A key or critical point in time for reference or measurement.

### 1.04 SUBMITTALS

A. Qualification Data: For firms and persons specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of architects and owners other information specified.

B. Submittals Schedule: Submit three copies of schedule. Arrange the following information in a tabular format:

1. Scheduled date for first submittal.
2. Specification Section number and title.
3. Submittal category (action or informational).
4. Name of subcontractor.
5. Description of the Work covered.
6. Scheduled date for Gardner Spencer Smith Tench and Jarbeau, PC's and Contractor's final release or approval.

C. Preliminary Construction Schedule: Submit an electronic copy and two printed copies.

D. Contractor's Construction Schedule: Submit an electronic copy and two printed copies of initial schedule large enough to show entire schedule for entire construction period.

E. CPM Reports: Concurrent with CPM schedule, submit an electronic copy and three printed copies of each of the following computer-generated reports. Format for each activity in reports shall contain activity number, activity description, original duration, remaining duration, early start date, early finish date, late start date, late finish date, and total float.
   1. Activity Report: List of all activities sorted by activity number and then early start date, or actual start date if known.
   2. Logic Report: List of preceding and succeeding activities for all activities" sorted in ascending order by activity number and then early start date, or actual start date if known.
   3. Total Float Report: List of all activities sorted in ascending order of total float.

**1.05 QUALITY ASSURANCE**

A. Scheduling Consultant Qualifications: An experienced specialist in CPM scheduling and reporting.

**1.06 COORDINATION**

A. Coordinate preparation and processing of schedules and reports with performance of construction activities and with scheduling and reporting of separate contractors.

B. Coordinate Contractor's Construction Schedule with the Schedule of Values, list of subcontracts, Submittals Schedule, progress reports, payment requests, and other required schedules and reports.
   1. Secure time commitments for performing critical elements of the Work from parties involved.
   2. Coordinate each construction activity in the network with other activities and schedule them in proper sequence.

**PART 2 PRODUCTS**

**2.01 SUBMITTALS SCHEDULE**

A. Preparation: Submit a schedule of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review, resubmittal, ordering, manufacturing, fabrication, and delivery when establishing dates.
   1. Coordinate Submittals Schedule with list of subcontracts, the Schedule of Values, and Contractor's Construction Schedule.
   2. Initial Submittal: Submit concurrently within 14 days of date established for commencement of the Work. Include submittals required during the first 60 days of construction. List those required to maintain orderly progress of the Work and those required early because of long lead time for manufacture or fabrication.
      a. At Contractor's option, show submittals on the Preliminary Construction Schedule, instead of tabulating them separately.
   3. Final Submittal: Submit concurrently with the first complete submittal of Contractor's Construction Schedule.

**2.02 CONTRACTOR'S CONSTRUCTION SCHEDULE, GENERAL**

A. Procedures: Comply with procedures contained in AGC's "Construction Planning & Scheduling."

B. Time Frame: Extend schedule from date established for the Notice to Proceed to date of Final Completion.
   1. Contract completion date shall not be changed by submission of a schedule that shows an early completion date, unless specifically authorized by Change Order.

C. Activities: Comply with the following:
   1. Activity Duration: Define activities so no activity is longer than 20 days, unless specifically allowed by Architect.
   2. Procurement Activities: Include procurement process activities for long lead items and major items, requiring a cycle of more than 60 days, as separate activities in schedule. Procurement cycle activities include, but are not limited to, submittals, approvals, purchasing, fabrication, and delivery.
   3. Submittal Review Time: Coordinate submittal review times in Contractor's Construction Schedule with Submittals Schedule.
   4. Substantial Completion: Indicate completion in advance of date established for Substantial Completion, and allow time for Gardner Spencer Smith Tench and Jarbeau, PC's administrative procedures necessary for certification of Substantial Completion.

D. Constraints: Include constraints and work restrictions indicated in the Contract Documents and as follows in schedule, and show how the sequence of the Work is affected.
   1. Phasing: Arrange list of activities on schedule by phase.
   2. Work under More Than One Contract: Include a separate activity for each contract.
   3. Work by Owner: Include a separate activity for each portion of the Work performed by Owner.
   4. Products Ordered in Advance: Include a separate activity for each product.
   5. Owner-Furnished Products: Include a separate activity for each product.
   6. Work Restrictions: Show the effect of the following items on the schedule:
      a. Seasonal variations.
      b. Environmental control.
   7. Work Stages: Indicate important stages of construction for each major portion of the Work, including, but not limited to, the following:
      a. Subcontract awards.
      b. Submittals.
      c. Purchases.
      d. Mockups.
      e. Fabrication.
      f. Sample testing.
      g. Deliveries.
      h. Installation.
      i. Tests and inspections.
      j. Adjusting.
      k. Curing.
         1) Startup and placement into final use and operation.
   8. Area Separations: Identify each major area of construction for each major portion of the Work. Indicate where each construction activity within a major area must be sequenced or integrated with other construction activities to provide for the following:
      a. Structural completion.
      b. Permanent space enclosure.
      c. Completion of mechanical .installation.
      d. Completion of electrical installation.

e. Substantial Completion.

E. Milestones: Include milestones indicated in the Contract Documents in schedule, including, but not limited to, the Notice to Proceed, Substantial Completion, and Final Completion.

F. Contract Modifications: For each proposed contract modification and concurrent with its submission, prepare a time-impact analysis using fragnets to demonstrate the effect of the proposed change on the overall project schedule.

G. Computer Software: Prepare schedules using a program that has been developed specifically to manage construction schedules.

**2.03 PRELIMINARY CONSTRUCTION SCHEDULE**

A. Bar-Chart Schedule: Submit preliminary horizontal bar-chart-type construction schedule within seven days of date established for commencement of the Work.

B. Preparation: Indicate each significant construction activity separately. Identify first workday of each week with a continuous vertical line. Outline significant construction activities for first 90 days of construction. Include skeleton diagram for the remainder of the Work.

**2.04 CONTRACTOR'S CONSTRUCTION SCHEDULE (CPM SCHEDULE)**

A. General: Prepare network diagrams using AON (activity-on-node) format.

B. Preliminary Network Diagram: Submit diagram within 14 days of date established for commencement of the Work. Outline significant construction activities for the first 60 days of construction. Include skeleton diagram for the remainder of the Work.

C. CPM Schedule: Prepare Contractor's Construction Schedule using a CPM network analysis diagram.
   1. Develop network diagram in sufficient time to submit CPM schedule so it can be accepted for use no later than 30 days after date established for commencement of the Work.
   2. Establish procedures for monitoring and updating CPM schedule and for reporting progress. Coordinate' procedures with progress meeting and payment request dates.
   3. Use "one workday" as the unit of time.

D. CPM Schedule Preparation: Prepare a list of all activities required to complete the Work. Using the preliminary network diagram, prepare a skeleton network to identify probable critical paths.
   1. Activities: Indicate the estimated time duration, sequence requirements, and relationship of each activity in relation to other activities. Include estimated time frames for the following activities:
      a. Preparation and processing of submittals.
      b. Purchase of materials.
      c. Delivery.
      d. Fabrication.
      e. Installation.
   2. Processing: Process data to produce output data or a computer-drawn, time-scaled network. Revise data, reorganize activity sequences, and reproduce as often as necessary to produce the CPM schedule within the limitations of the Contract Time.
   3. Format: Mark the critical path. Locate the critical path near center of network; locate paths with most float near the edges.
      a. Subnetworks on separate sheets are permissible for activities clearly off the critical path.

E. Initial Issue of Schedule: Prepare initial network diagram from a list of straight "early start-total float" sort. Identify critical activities. Prepare tabulated reports showing the following:
   1. Contractor or subcontractor and the Work or activity.
   2. Description of activity.
   3. Principal events of activity.
   4. Immediate preceding and succeeding activities.

5. Early and late start dates.
6. Early and late finish dates.
7. Activity duration in workdays.
8. Total float or slack time.
9. Average size of workforce.
10. Dollar value of activity (coordinated with the Schedule of Values).

F. Schedule Updating: Concurrent with making revisions to schedule, prepare tabulated reports showing the following:
1. Identification of activities that have changed.
2. Changes in early and late start dates.
3. Changes in early and late finish dates,
4. Changes in activity durations in workdays.
5. Changes in the critical path.
6. Changes in total float or slack time.
7. Changes in the Contract Time.

G. Value Summaries: Prepare two cumulative value lists, sorted by finish dates.
1. In first list, tabulate activity number, early finish date, dollar value, and cumulative dollar value.
2. In second list, tabulate activity number, late finish date, dollar value, and cumulative dollar value.
3. In subsequent issues of both lists, substitute actual finish dates for activities completed as of list date.
4. Prepare list for ease of comparison with payment requests; coordinate timing with progress meetings.
   a. In both value summary lists, tabulate "actual percent complete" and "cumulative value completed" with total at bottom.
   b. Submit value summary printouts one week before each regularly scheduled progress meeting.

**2.05 REPORTS**

A. Daily Construction Reports: Prepare a daily construction report recording the following information concerning events at Project site:
1. List of subcontractors at Project site.
2. List of separate contractors at Project site.
3. Approximate count of personnel at Project site.
4. High and low temperatures and general weather
5. Accidents.
6. Meetings and significant decisions.
7. Unusual events (refer to special reports).
8. stoppages, delays, shortages, and losses.
9. Meter readings and similar recordings.
10. Emergency procedures.
11. Orders and requests of authorities having jurisdiction .
12. Change Orders received and implemented.
13. Construction Change Directives received.
14. Services connected and disconnected.
15. Equipment or system tests and startups.
16. Partial Completions and occupancies.
17. Substantial Completions authorized.

B. Material Location Reports: At monthly intervals, prepare a comprehensive list of materials delivered to and stored at Project site. List shall be cumulative, showing materials previously reported plus items recently delivered. Include with list a statement of progress on and delivery

dates for materials or items of equipment fabricated or stored away from Project site.

C. Field Condition Reports: Immediately on. discovery of a difference between field conditions and the Contract Documents, prepare a detailed report. Submit with a request for information. Include a detailed description of the differing conditions, together with recommendations for changing the Contract Documents.

**2.06 SPECIAL REPORTS**

A. General: Submit special reports directly to Owner within one day of an occurrence. Distribute copies of report to parties affected by the occurrence.

B. Reporting Unusual Events: When an event of an unusual and significant nature occurs at Project site, whether or not related directly to the Work, prepare and submit a special report. List chain of events, persons participating, response by Contractor's personnel, evaluation of results or effects, and similar pertinent information. Advise Union County Commissioner's Office in advance when these events are known or predictable.

**PART 3 EXECUTION**

**3.01 CONTRACTOR'S CONSTRUCTION SCHEDULE**

A. Contractor's Construction Schedule Updating: At monthly intervals, update schedule to reflect actual construction progress and activities. Issue schedule at each regularly scheduled progress meeting.
   1. Revise schedule immediately after each meeting or other activity where revisions have been recognized or made. Issue updated schedule concurrently with the report of each such meeting.
   2. Include a report with updated schedule that indicates every change, including, but not limited to, changes in logic, durations, actual starts and finishes, and activity durations.
   3. As the Work progresses, indicate Actual Completion percentage for each activity.

B. Distribution: Distribute copies of approved schedule to Gardner Spencer Smith Tench and Jarbeau, PC, Union County Commissioner's Office, separate contractors, testing and inspecting agencies, and other parties identified by Contractor with a need-to-know schedule responsibility.
   1. Post copies in Project meeting rooms and temporary field offices.
   2. When revisions are made, distribute updated schedules to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in performance of construction activities.

**3.02 CONSTRUCTION PHOTOGRAPHS**

A. Submit photographs with each application for payment, taken not more than 3 days prior to submission of application for payment.

B. Maintain one set of all photographs at project site for reference; same copies as submitted, identified as such.

C. Photography Type: Digital; electronic files.

D. Provide photographs of site and construction throughout progress of Work produced by an experienced photographer, acceptable to Gardner Spencer Smith Tench and Jarbeau, PC.

E. In addition to periodic, recurring views, take photographs of each of the following events:
   1. Completion of site clearing.
   2. Excavations in progress.
   3. Foundations in progress and upon completion.
   4. Structural framing in progress and upon completion.
   5. Enclosure of building, upon completion.
   6. Final completion, minimum of ten (10) photos.

F. Take photographs as evidence of existing project conditions as follows:
   1. Before starting construction, take three (3) color photographs of Project site and surrounding properties from different vantage points, as directed by Gardner Spencer Smith Tench and Jarbeau, PC. Show existing conditions of adjacent to property.

G. Views:
   1. Provide aerial photographs from three views at each specified time, until structure is enclosed.
   2. Provide non-aerial photographs from four cardinal views at each specified time, until Date of Substantial Completion.
   3. Consult with Gardner Spencer Smith Tench and Jarbeau, PC for instructions on views required.
   4. Provide factual presentation.
   5. Provide correct exposure and focus, high resolution and sharpness, maximum depth of field, and minimum distortion.

H. Digital Photographs: 24 bit color, minimum resolution of 1024 by 768, in JPG format; provide files unaltered by photo editing software.
   1. Delivery Medium: Via email.
   2. File Naming: Include project identification, date and time of view, and view identification.
   3. PDF File: Assemble all photos into printable pages in PDF format, with 2 to 3 photos per page, each photo labeled with file name; one PDF file per submittal.
   4. Hard Copy: Printed hardcopy (grayscale) of PDF file and point of view sketch.

I. Field Office Prints: Retain one set of prints of periodic photographs in field office at Project site, available all times for reference. Identify photographs the same for those submitted to Gardner Spencer Smith Tench and Jarbeau, PC.
   1. Prints: Full color; one print of each view as well as all prints saved digitally on compact disk.
   2. Glossy; smooth texture; white tint; single weight; contrast grade 4, extra hard.
   3. Size: 8 x 10 inch .
   4. Identify each print on back. Identify name of Project, contract number, phase, orientation of view, date and time of view, name and address of photographer, and photographer's numbered identification of exposure.
   5. Assemble prints into transparent holder sheets for 3-ring binder.
   6. Binders: Provide two complete binders with closeout document submittal.

J. Deliver prints and compact disk with each Application for Payment with transmittal letter specified in this Section.

**END OF SECTION**

# SECTION 01 3310
# SUBMITTAL PROCEDURES

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. This Section includes administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other miscellaneous submittals.

### 1.02 RELATED SECTIONS

A. Division 01 for submitting Applications for Payment.

B. Division 01 for submitting schedules and reports, including Contractor's Construction Schedule and the Submittals Schedule and construction photographs.

C. Division 01 for submitting test and inspection reports and Delegated-Design Submittals and erecting mock-ups.

D. Division 01 for submitting warranties, project Record Documents and operation and maintenance manuals.

### 1.03 DEFINITIONS

A. Action Submittals: Written and graphic information that requires Architect's responsive action.

B. Informational Submittals: Written information that does not require Architect's approval. Submittals may be rejected for not complying with requirements.

C. Post-consumer Recycled Content: The percentage of waste material by weight from industrial use incorporated into a building material.

D. Post-industrial Recycled Content: The percentage of waste material by weight from industrial use incorporated into a building material.

### 1.04 SUBMITTAL PROCEDURES

A. General: Electronic copies of CAD Drawings of the Contract Drawings will not be provided by Gardner Spencer Smith Tench and Jarbeau, PC for contractor's use in preparing submittals.

B. 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 requires sequential activity.
   2. 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. Gardner Spencer Smith Tench and Jarbeau, PC reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.

C. Submittal Schedule: Comply with requirements in Division 1 for list of submittals and time requirements for schedule performance of related construction activities.

D. Processing Time: Allow enough time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Gardner Spencer Smith Tench and Jarbeau, PC's receipt of submittal.
   1. Initial Review: Allow 10 business days for initial review of each submittal. Allow additional time of processing must be delayed to permit coordination with subsequent submittals. Gardner Spencer Smith Tench and Jarbeau, PC will advise Contractor when a submittal being processed must be delayed for coordination.
   2. Concurrent Review: Where concurrent review of submittals by Gardner Spencer Smith Tench and Jarbeau, PC's consultants, Owner, or other parties is required, allow 15 business days for initial review of each submittal.
   3. If intermediate submittal is necessary, process it in same manner as initial submittal.

4. Allow 10 business days for processing each resubmittal.
5. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing.

E. Identification: Place a permanent label or title block on each submittal for identification.
1. Indicate name of firm or entity that prepared each submittal on label or title block.
2. Provide a space approximately 4 by 5 inches on label or beside title block to record Contractor's review and approval markings and action taken by Gardner Spencer Smith Tench and Jarbeau, PC.
3. Include the following information on label for processing and recording action taken:
a. Project name.
b. Date.
c. Name and address of subcontractor.
d. Name and address of supplier.
e. Name of manufacturer.
f. Unique identifier, including revision number.
g. Number and title of appropriate Specification Section.
h. Drawing number and detail references, as appropriate.
i. Other necessary identification.

F. Deviations: Highlight, encircle, or otherwise identify deviations from Contract Documents on submittals.

G. Transmittal: Package each submittal individually and appropriately for transmittal and handling. Transmit each submittal using a transmittal form. Gardner Spencer Smith Tench and Jarbeau, PC will discard or notify Contractor if submittals are received from sources other than the Contractor.
1. On an attached separate sheet, prepared on Contractor's letterhead, record relevant information, requests for data, revisions other than those requested by Gardner Spencer Smith Tench and Jarbeau, PC on previous submittals, and deviations from requirements of the Contract Documents, including minor variations and limitations. Include the same label information as the related submittal.
2. Include Contractor's certification stating that information submitted complies with requirements of the Contract Documents.
3. Transmittal Form: Provide locations of form for the following information:
a. Project name.
b. Date.
c. Destination (To:).
d. Source (From:).
e. Names of subcontractor, manufacturer, and supplier.
f. Category and type of submittal.
g. Submittal and transmittal distribution record.
h. Remarks.
i. Signature of transmitter.

H. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.

I. Use for Construction: Use only final submittals with mark indicating action taken by Gardner Spencer Smith Tench and Jarbeau, PC in connection with construction.

## PART 2 PRODUCTS

### 2.01 ACTION SUBMITTALS

A. General: Prepare and submit Action Submittals required by individual Specification Sections.
1. Number of Copies: Submit five copies of each submittal, unless otherwise indicated. Gardner Spencer Smith Tench and Jarbeau, PC will return two copies. Mark up and retain

one returned copy as a Project Record Document.
a. Submit one correctable, translucent, reproducible print and blue- or black-line prints. Gardner Spencer Smith Tench and Jarbeau, PC will return the reproducible print.

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 printed 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 written recommendations.
b. Manufacturer's product specifications.
c. Manufacturer's installation instructions.
d. Standard color charts.
e. Manufacturer's catalog cuts.
f. Wiring diagram showing factory-installed wiring.
g. Printed performance curves.
h. Operational range diagrams.
i. Mill reports.
j. Standard product operating and maintenance manuals.
k. Compliance with recognized trade association standards.
l. Compliance with recognized testing agency standards.
m. Application of testing agency labels and seals.
n. Notation of coordination requirements.
4. Includes the following information for all products:
a. Location where product was manufactured.
b. Location where product was harvested or extracted.
c. Percent Post-industrial recycled content.
d. Percent Post-consumer recycled content.

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: Include the following information, as applicable:
a. Dimensions.
b. Identification of products.
c. Fabrication and installation drawings.
d. Roughing-in and setting diagrams.
e. Wiring diagrams showing field-installed wiring, including power, signal, and control wiring.
f. Shop work manufacturing instructions.
g. Templates and patterns.
h. Schedules.
i. Design calculations.
j. Compliance with specified standards.
k. Notation of coordination requirements.
l. Notation of dimensions established by field measurement.
2. Wiring Diagrams: Differentiate between manufacturer-installed and field-installed wiring.
3. 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 longer than 30 by 40 inches.

D. Coordination Drawings: Comply with requirements in Division 01.

E. Samples: Prepare physical units of materials or products, including the following:
1. Comply with requirements in Division 01 for mockups.
2. 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.

3. Sample for Verification: Submit full-size units or Samples used for the Work, cured and finished in manner specified, and physically identical with the product proposed for use, and that show full range of color and texture 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.
4. Preparation: Mount, display, or package Samples in manner specified to facilitate review of qualities indicated. Prepare Samples to match Gardner Spencer Smith Tench and Jarbeau, PC's sample where so indicated. Attach label on unexposed side that includes the following:
   a. Generic Description of Sample.
   b. Product name or name manufacturer.
   c. Sample source.
5. Additional Information: On an attached separate sheet, prepared on Contractor's letterhead, provide the following:
   a. Size limitations.
   b. Compliance with recognized standards.
   c. Availability.
   d. Delivery time.
6. Submit Samples for review of kind, color, pattern, and texture for a final check of these characteristics between final submittal and actual component as delivered and installed.
   a. If variation in color, pattern, texture, or other characteristic is inherent in the product represented by a Sample, submit at least three sets of paired units that show approximate limits of the variations.
   b. Refer to individual Specifications Sections for requirements for Samples that illustrate workmanship, fabrication techniques, details of assembly, connections, operation, and similar construction characteristics.
7. Number of Samples for Initial Selection: Submit one full set of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Gardner Spencer Smith Tench and Jarbeau, PC will return submittal with options selected.
8. Number of Samples for Verification: Submit three sets of Samples. Gardner Spencer Smith Tench and Jarbeau, PC will retain two Sample sets; remainder will be returned. Mark up and retain one returned Sample set as a Project Record Sample.
   a. Submit a single Sample where assembly details, workmanship, fabrication techniques, connections, operation, and other similar characteristics are to be demonstrated.
9. 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.

F. Delegated-Design Submittal: Comply with requirements in Division 01.

G. Submittal Schedule: Comply with requirements in Division 01.

H. Application for Payment: Comply with requirements in Division 01.

I. Schedule of Values: Comply with requirements in Division 01.

J. 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. Include the following information in tubular 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.

**2.02 INFORMATIONAL SUBMITTALS**

A. General: prepare and submit Informational Submittals required by other Specification Sections.

1. Number of Copies: Submit two copies of each submittal, unless otherwise indicated. Gardner Spencer Smith Tench and Jarbeau, PC will not return copies.
2. Certificates and Certifications: Provide a notarized statement that includes signature of entry 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.
3. Test and Inspection Reports: Comply with requirements in Division 01.

B. Contractor's Construction Schedule: Comply with requirements in Division 01.

C. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include list of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.

D. Product Certificates: Prepare written statements on manufacturer's letterhead certifying that product complies with requirements.

E. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements. Submit record of Welding Procedure Specification (WPS) and Procedure Qualification Record (PQR) on AWS forms. Include names of firms and personnel certified.

F. Installer Certificates: Prepare written statements on manufacturer's letterhead certifying that Installer complies with requirements and, where required, is authorized for this specific Project.

G. Manufacturer Certificates: Prepare written statements on manufacturer's letterhead certifying that manufacturer complies with requirements. Include evidence of manufacturing experience where required.

H. Material Certificates: Prepare written statements on manufacturer's letterhead certifying that material complies with requirements.

I. Material Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements.

J. Preconstruction Test Reports: Prepare 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.

K. Compatibility Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, 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.

L. Field Test Reports: Prepare reports written by qualified testing agency, on testing agency's standard form, 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.

M. Product Test Reports: Prepare written reports indicating current product produced by manufacturer complies with requirements. 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.

N. Research/Evaluation Reports: Prepare written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project. Include the following information:
1. Name of evaluation organization.
2. Date of evaluation.
3. Time period when report is in effect.
4. Product and manufacturer's names.
5. Description of product.
6. Test procedures and results.

7. Limitations of use.

O. Maintenance Data: Prepare written and graphic instructions and procedures for operation and normal maintenance of products and equipment. Comply with requirements in Division 01.

P. Design Data: Prepare 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 summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Include page numbers.

Q. Manufacturer's Instructions: Prepare written or published information that documents manufacturer's recommendations, guidelines, and procedures for installing or operating a product or equipment. Include name of product and name, address, and telephone number of manufacturer. Include the following, as applicable:
1. Preparation of substrates.
2. Required substrate tolerances.
3. Sequence of installation or erection.
4. Required installation tolerances.
5. Required adjustments.
6. Recommendations for cleaning and protection.

R. Manufacturer's Field Reports: Prepare written information documenting factory-authorized service representative's tests and inspections. Include the following, as applicable:
1. Name, address, and telephone number of factory-authorized service 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.

S. Insurance Certificates and Bonds: Prepare written information indicating current status of insurance or bonding coverage. Include name of entity covered by insurance or bond, limits of coverage, amounts of deductibles, if any, and term of the coverage.

T. Construction Photographs: Comply with requirements in Division 01.

## PART 3 EXECUTION

### 3.01 CONTRATOR'S REVIEW

A. Review each submittal and check for compliance with Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Gardner Spencer Smith Tench and Jarbeau, PC

B. 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.

### 3.02 ARCHITECTS ACTIONS

A. General: Gardner Spencer Smith Tench and Jarbeau, PC will not review submittals that do not bear Contractor's approval stamp and will return them without action.

B. Action Submittals: Gardner Spencer Smith Tench and Jarbeau, PC will review each submittal, make marks to indicate corrections or modifications required, and return it. Gardner Spencer Smith Tench and Jarbeau, PC will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action taken, as follows:

1. Final Unrestricted Release: When the Gardner Spencer Smith Tench and Jarbeau, PC marks a submittal “Approved,” the Work covered by the submittal may proceed provided it complies with requirements of the Contract Documents. Final payment depends on that compliance.
2. Final-But-Restricted Release: When Gardner Spencer Smith Tench and Jarbeau, PC marks a submittal “Approved as Noted,” the Work covered by the submittal may proceed provided it complies with notations or corrections on the submittal and requirements of the Contract Documents. Final payment depends on that compliance.
3. Returned for Resubmittal: When Gardner Spencer Smith Tench and Jarbeau, PC marks a submittal “Rejected/Resubmit,” do not proceed with Work covered by the submittal, including purchasing, fabrication, delivery, or other activity. Revise or prepare a new submittal according to the notations; resubmit without delay. Repeat if necessary to obtain different action mark.
    a. Do not use, or allow others to use, submittals marked “Rejected/Resubmit” at the Project Site or elsewhere where work is in progress.
4. Other Action: Where a submittal is for information or record purposes or special processing or other activity, Gardner Spencer Smith Tench and Jarbeau, PC will return the submittal without action.

C. Informational Submittals: Gardner Spencer Smith Tench and Jarbeau, PC will review each submittal and will not return it, or will reject and return it if it does not comply with requirements. Gardner Spencer Smith Tench and Jarbeau, PC will forward each submittal to appropriate party.

D. Unsolicited Submittals: Gardner Spencer Smith Tench and Jarbeau, PC will return or discard unsolicited submittals to the sender without action.

**END OF SECTION**

# SECTION 01 3500
# SUBSTITUTION PROCEDURES

## PART 1 GENERAL

### 1.01 ALLOWANCE OPTIONS

A. The Contractor may select any product by any manufacturer which meets the standards of the specifications referenced when only referenced by ASTM standard and Federal Specifications.

B. The Contractor may propose substitutions of products specified by the naming of one or more manufacturers.

C. Gardner Spencer Smith Tench and Jarbeau, PC will consider requests for substitutions only within 15 days after date of Agreement.

D. Substitutions will not be considered when a product becomes unavailable through no fault of the Contractor.

E. Document each request with complete data substantiating compliance of proposed substitution with Contract Documents.

F. A request for substitution constitutes a representation that the submitter:
   1. Has investigated proposed product and determined that it meets or exceeds the quality level of the specified product.
   2. Will provide the same warranty for the substitution as for the specified product.
   3. Will coordinate installation and make changes to other Work which may be required for the Work to be complete with no additional cost to Union County Commissioner's Office.
   4. Waives claims for additional costs or time extension which may subsequently become apparent.
   5. Will reimburse Union County Commissioner's Office and Gardner Spencer Smith Tench and Jarbeau, PC for review or redesign services associated with re-approval by authorities.

G. Substitutions will not be considered when they are indicated or implied on shop drawing or product data submittals, without separate written request, or when acceptance will require revision to the Contract Documents.

H. Substitution Submittal Procedure:
   1. Submit three copies of request for substitution for consideration. Limit each request to one proposed substitution.
   2. Submit shop drawings, product data, and certified test results attesting to the proposed product equivalence. Burden of proof is on proposer.
   3. The Gardner Spencer Smith Tench and Jarbeau, PC will notify Contractor in writing of decision to accept or reject request.

### 1.02 SUBSTITUTION APPROVAL

A. Gardner Spencer Smith Tench and Jarbeau, PC will consider substitutions of products from the Contractor when formally submitted in writing as outlined herein.

B. Gardner Spencer Smith Tench and Jarbeau, PC will consider only those request submitted in the proper format accompanied by a complete, signed copy of the "Substitution Request Form" and the required attachments.

C. Gardner Spencer Smith Tench and Jarbeau, PC will not consider substitutions indicated or implied on the shop drawings or project data submittals which are not accompanied by the required written or printed documents.

D. Gardner Spencer Smith Tench and Jarbeau, PC will not consider substitutions which require substantial revisions of the Contract Documents.

E. Acceptance of substitutions is not final until approved in writing.

**1.03 SUBSTITUTIONS**

A. As a prerequisite for obtaining approval of substitute "Accepted Equal" items, Contractor shall submit the following in writing to the Architect:
   1. Reasons for not giving priority to specified items.
   2. Date indicating an investigation has been made to determine the affect of the substitution on all work of other Sections directly or indirectly involved.
   3. Drawings, description, illustrations, catalogs, record of test, samples, and all other information essential for judging the quality of materials, finish and durability of proposed substitutions.
   4. Information indicating satisfactory use of substitute materials or methods under similar operating conditions.
   5. Evidence of mechanical and electrical substitutions that they are equally well recognized and have established sources of service and repair.
   6. The saving to the Union County Commissioner's Office in accepting a substitute cost alone is giving as a reason for substitution.

B. Gardner Spencer Smith Tench and Jarbeau, PC may request that any items proposed for substitution be tested by a laboratory as approved. If , in Gardner Spencer Smith Tench and Jarbeau, PC's opinion, test data submitted on item is insufficient for judging quality, Contractor shall bear all cost incurred.

C. When either ability to obtain delivery within required time, or when the specified product is no longer available is given as a reason for offering substitution, submit a letter to this effect written by General Contractor.

D. If substitute "Acceptable Equal" items require redesign of structure, partitions, foundation, piping, wiring or any other part of mechanical, electrical or architectural layout, all such redesign, and any new drawings and detailing shall be prepared by Gardner Spencer Smith Tench and Jarbeau, PC at the expense of Contractor.

E. When substitute "Acceptable Equal" items require a different quantity and arrangement of foundation, structure, partitions, duct work, piping, wiring, conduit or equipment from that specified or indicated on drawings, Section requesting change shall bear cost of changes in work.

F. When Manufacturers are not specified by name, provide materials and methods in accordance with specified performance requirements.

**PART 2 PRODUCTS (NOT USED)**

**PART 3 EXECUTION (NOT USED)**

**SUBSTITION REQUEST FORM**

**FROM:**
**NAME OF MANUFACTURER**
_____
**STREET ADDRESS**
_____
**CITY AND STATE**
_____
**NAME AND CONTACT PHONE#**
_____
**PROJECT:**
**LOCATION** _____
**ARCHITECTS PROJECT NO.**
_____

**TO:**
**GARDNER SPENCER SMITH TENCH AND JARBEAU, PC**
**TOWER PLACE BUILDING 3340 PEACHTREE ROAD NE SUITE 1800 ATLANTA, GA 30326-1064**

**MANUFACTURER**
_____
**SIGNATURE OF MANUFACTURER'S REP.**
_____
**INSTALLER**
_____
**SIGNATURE OF INSTALLER'S REP.**
_____
**CONTRACTOR**
_____
**SIGNATURE OF CONTRACTOR'S REP.**
_____

**END OF SECTION**

# SECTION 01 4000
# QUALITY REQUIREMENTS

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. This Section includes administrative and procedural requirements for quality assurance and quality control.

B. References and standards.

C. Submittals.

D. References and standards.

E. Control of installation.

F. Control of installation.

### 1.02 RELATED REQUIREMENTS

A. Divisions 02 through 48 Sections for specific test and inspection requirements.

B. Document 00 7200 - General Conditions: Inspections and approvals required by public authorities.

C. Section 01 3000 - Administrative Requirements: Submittal procedures.

### 1.03 REFERENCE STANDARDS

A. ASTM C1021 - Standard Practice for Laboratories Engaged in Testing of Building Sealants 2008 (Reapproved 2019).

B. ASTM C1077 - Standard Practice for Agencies Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Testing Agency Evaluation 2017.

C. ASTM C1093 - Standard Practice for Accreditation of Testing Agencies for Masonry 2022a.

D. ASTM D3740 - Standard Practice for Minimum Requirements for Agencies Engaged in Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction 2019.

E. ASTM E329 - Standard Specification for Agencies Engaged in Construction Inspection, Testing, or Special Inspection 2021.

F. ASTM E543 - Standard Specification for Agencies Performing Nondestructive Testing 2021.

### 1.04 DEFINITIONS

A. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and ensure that proposed construction complies with requirements.

B. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that competed construction complies with requirements. Services do not include contract enforcement activities performed by Architect.

C. Mockups: Full-size, physical example assemblies to illustrate finishes and materials. Mockups are used to verify selections made under Sample submittals, to demonstrate aesthetic effects and, where indicated, qualities of materials and execution, and to review construction, coordination, testing, or operation; they are not Samples. Mockups establish the standard by which the Work will be judged.

D. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.

### 1.05 DELEGATED DESIGN

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.

**1.06 SUBMITTALS**

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Qualification Data: For testing agencies specified in “Quality Assurance” Article to demonstrate their capabilities and experience. Include proof of qualifications in the form of a recent report in the inspection of the testing agency by a recognized authority.

C. Delegated-Design Submittal: In addition to Shop Drawings, Product Data, and other required submittals, submit a statement, signed and sealed by the responsible design professional, for each product and system specially assigned to Contractor to be designed or certified by a design professional, indicating that the products and systems are in compliance with performance and design criteria indicated. Include list of codes, loads, and other factors used in performing these services.

D. Testing Agency Qualifications:
1. Testing Agency Qualifications: An agency with the experience and capability to conduct testing and inspecting indicated, as documented by ASTM E 548, and that specializes in types of tests and inspections to be performed.
2. Prior to start of Work, submit agency name, address, and telephone number, and names of full time registered Engineer and responsible officer.

E. Design Data: Submit for Gardner Spencer Smith Tench and Jarbeau, PC's knowledge as contract administrator for the limited purpose of assessing conformance with information given and the design concept expressed in the contract documents, or for Union County Commissioner's Office's information.

F. Schedule of Tests and Inspections: Prepare in tabular form and include the following:
1. Specification Section number and title.
2. Description of test and inspection.
3. Identification of applicable standards.
4. Identification of test and inspection methods.
5. Number of tests and inspections required.
6. Time schedule or time span for tests and inspections.
7. Entity responsible for performing tests and inspections.
8. Requirements for obtaining samples.
9. Unique characteristics of each quality-control service.

G. Test Reports: After each test/inspection, promptly submit two copies of report to Gardner Spencer Smith Tench and Jarbeau, PC and to Contractor.
1. Include:
a. Date issued.
b. Project title and number.
c. Name of inspector.
d. Date and time of sampling or inspection.
e. Identification of product and specifications section.
f. Location in the Project.
g. Type of test/inspection.
h. Date of test/inspection.
i. Results of test/inspection.
j. Conformance with Contract Documents.
k. When requested by Gardner Spencer Smith Tench and Jarbeau, PC, provide interpretation of results.

H. Certificates: When specified in individual specification sections, submit certification by the manufacturer and Contractor or installation/application subcontractor to Gardner Spencer Smith Tench and Jarbeau, PC, in quantities specified for Product Data.

1. Indicate material or product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.
2. Certificates may be recent or previous test results on material or product, but must be acceptable to Gardner Spencer Smith Tench and Jarbeau, PC.

I. Manufacturer's Instructions: When specified in individual specification sections, submit printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing, for the Union County Commissioner's Office's information. Indicate special procedures, perimeter conditions requiring special attention, and special environmental criteria required for application or installation.

J. Manufacturer's Field Reports: Submit reports for Gardner Spencer Smith Tench and Jarbeau, PC's benefit as contract administrator or for Union County Commissioner's Office.
1. Submit report in duplicate within 30 days of observation to Gardner Spencer Smith Tench and Jarbeau, PC for information.
2. Submit for information for the limited purpose of assessing conformance with information given and the design concept expressed in the contract documents.

K. Erection Drawings: Submit drawings for Gardner Spencer Smith Tench and Jarbeau, PC's benefit as contract administrator or for Union County Commissioner's Office.
1. Submit for information for the limited purpose of assessing conformance with information given and the design concept expressed in the contract documents.
2. Data indicating inappropriate or unacceptable Work may be subject to action by Gardner Spencer Smith Tench and Jarbeau, PC or Union County Commissioner's Office.

L. 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.

## 1.07 REFERENCES AND STANDARDS

A. For products and workmanship specified by reference to a document or documents not included in the Project Manual, also referred to as reference standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.

B. Conform to reference standard of date of issue current on date of Contract Documents, except where a specific date is established by applicable code.

C. Obtain copies of standards where required by product specification sections.

D. Maintain copy at project site during submittals, planning, and progress of the specific work, until Substantial Completion.

E. Should specified reference standards conflict with Contract Documents, request clarification from Gardner Spencer Smith Tench and Jarbeau, PC before proceeding.

F. Neither the contractual relationships, duties, or responsibilities of the parties in Contract nor those of Gardner Spencer Smith Tench and Jarbeau, PC shall be altered from the Contract Documents by mention or inference otherwise in any reference document.

## 1.08 QUALITY ASSURANCE

A. 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.

B. 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.

C. 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.

D. 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.

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 kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or product that are similar to those indicated for this Project in material, design, and extent.

F. Testing Agency Qualifications: An agency with the experience and capability to conduct testing and inspecting indicated, as documented by ASTM E 548, and that specializes in types of tests and inspections to be performed.

G. Preconstruction Testing: Testing agency shall perform preconstruction testing for compliance with specified requirements for performance and test methods.
   1. Contractor responsibilities include the following:
      a. Provide test specimens and assemblies representative of proposed materials and construction. Provide sizes and configurations of assemblies to adequately demonstrate capability of product to comply with performance requirements.
      b. Submit specimens in a timely manner with sufficient time for testing and analyzing results to prevent delaying the Work.
      c. Fabricate and install test assemblies using installers who will perform the same tasks for Project.
      d. When testing is complete, remove assemblies; do not reuse materials on Project.
   2. Testing Agency Responsibilities: Submit a certified written report of each test, inspection, and similar quality assurance service to Architect, with copy to Contractor. Interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from the Contract Documents.

H. 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 Gardner Spencer Smith Tench and Jarbeau, PC ten business days in advance of dates and times when mockups will be constructed.
   3. Demonstrate the proposed range of aesthetic effects and workmanship.
   4. Obtain Gardner Spencer Smith Tench and Jarbeau, PC’s approval of mockups before starting work, fabrication, or construction.
   5. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed work.
   6. Demolish and remove mockups when directed, unless otherwise indicated.

## 1.09 QUALITY CONTROL

A. Union County Commissioner's Office Responsibilities: Where quality-control services are indicated as Union County Commissioner's Office’s responsibility, Owner will engage a qualified testing agency to perform these services.
   1. Union County Commissioner's Office will furnish Contractor with names, addresses, and telephone numbers of testing agencies engaged and a description of the types of testing and inspecting they are engaged to perform.
   2. Costs for re-testing and re-inspecting 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: Unless otherwise indicated, provide quality-control services specified and required by authorities having jurisdiction.

1. Where services are indicated as Contractor's responsibility, engage a qualified testing agency to perform these quality-control services.
   a. Contractor shall not employ the same entity engaged by Union County Commissioner's Office, unless agreed to in writing by Union County Commissioner's Office.
2. Notify testing agencies at lest 24 hours in advance of time when Work that requires testing or inspecting will be performed.
3. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.
4. Testing and inspecting requested by Contractor and not required by the Contract documents are Contractor's responsibility.
5. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.

C. Special Tests and Inspections: Union County Commissioner's Office will engage a testing agency to conduct special tests and inspections required by authorities having jurisdiction as the responsibility of Union County Commissioner's Office.
   1. Testing agency will notify Gardner Spencer Smith Tench and Jarbeau, PC and Contractor promptly of irregularities and deficiencies observed in the Work during performance of its services.
   2. Testing agency will submit a certified written report of each test, inspection, and similar quality-control service to Gardner Spencer Smith Tench and Jarbeau, PC with copy to Contractor and to authorities having jurisdiction.
   3. Testing agency will submit a final report of special tests and inspections at Substantial Completion, which includes a list of unresolved deficiencies.
   4. Testing agency will interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from the Contract Documents.
   5. Testing agency will retest and re-inspect corrected work.

D. 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.

E. Re-testing/Re-inspecting: regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including re-testing and re-inspecting, for construction that revised or replaced Work that failed to comply with requirements established by the Contract Documents.

F. Testing Agency Responsibilities: Cooperate with Gardner Spencer Smith Tench and Jarbeau, PC and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.
   1. Notify Gardner Spencer Smith Tench and Jarbeau, PC and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
   2. Interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from requirements.
   3. Submit a certified written report, in duplicate, of each test, inspection, and similar quality-control service through Contractor.
   4. Do not release, revoke, alter, or increase requirements of the Contract Documents or approve or accept any portion of the Work.
   5. 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. Incident 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. Preliminary design mix proposed for use for material mixes that require control by testing agency.
6. 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 quality-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. Submit schedule within 30 days of date established for commencement of the Work.
   1. Distribution: Distribute schedule to Union County Commissioner's Office, Gardner Spencer Smith Tench and Jarbeau, PC, testing agencies, and each party involved in performance of portions of the Work where tests and inspections are required.

## PART 2 PRODUCTS - NOT USED

## PART 3 EXECUTION

### 3.01 CONTROL OF INSTALLATION

A. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce Work of specified quality.

B. Comply with manufacturers' instructions, including each step in sequence.

C. Should manufacturers' instructions conflict with Contract Documents, request clarification from Gardner Spencer Smith Tench and Jarbeau, PC before proceeding.

D. Comply with specified standards as minimum quality for the Work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.

E. Have Work performed by persons qualified to produce required and specified quality.

F. Verify that field measurements are as indicated on shop drawings or as instructed by the manufacturer.

G. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, and disfigurement.

### 3.02 REPAIR AND PROTECTION

A. General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.

B. Provide materials and comply with installation requirements specified in other Sections of these Specifications. Restore patched areas and extend restoration into adjoining areas in a manner that eliminates evidence of patching.

C. Protect construction exposed by or for quality-control service activities.

D. Repair and protection are Contractor’s responsibility, regardless of the assignment of responsibility for quality-control services.

**END OF SECTION**

# SECTION 01 4110
# TESTING LABORATORY SERVICES

## PART 1 GENERAL

### 1.01 SUMMARY

A. General: See individual specification sections for requirements of testing.

B. Applicable standards, latest edition, if not otherwise indicated in the individual sections where testing is required.
   1. American Concrete Institute (ACI).
   2. American Institute of Steel Construction. (AISC).
   3. American National Standards Institute (ANSI).
   4. American Society for Testing and Materials (ASTM).
   5. American Welding Society (AWS).

### 1.02 TESTING AGENCY

A. Except as otherwise specified, testing will be performed by an independent testing agency or agencies selected by Union County Commissioner's Office and paid by the Contractor using the Testing Laboratory Services Allowance established in Section 01 2100 - Allowances.

B. Contractor shall pay costs for testing beyond the scope of that required by the Contract Documents and for re-testing if initial tests reveal non-conformance with specified requirements.

C. Tests and Inspections shall be conducted in accordance with specified requirements, and if not specified, in accordance with the applicable standards of the American Society for Testing and Materials (ASTM) or other recognized and accepted authorities in the field.

D. Work Included:
   1. Earthwork.
   2. Cast-in-place Concrete.
   3. Structural Steel.
   4. Asphaltic concrete.

### 1.03 QUALIFICATION OF LABORATORY

A. The Testing Laboratory selected should meet the basic requirements of ASTM E329 "Standard of Recommended Practice for Inspection and Testing Agencies for Concrete, Steel, and Bituminous Materials as Used in Construction", shall be inspected and approved by the ELF, FC & PA Joint Technical Committee, Inc. or by an equivalent recognized national authority and shall submit to the Union County Commissioner's Office, Gardner Spencer Smith Tench and Jarbeau, PC, and the Engineer, a copy of the report of inspection of their facilities.

B. The Testing Laboratory selected shall meet "Recommended Requirements for Independent Laboratory Qualification", latest edition, as published by the "American Council of Independent Laboratory Qualification".

C. Testing machines shall be calibrated at intervals not exceeding 12 months by devices of accuracy traceable to the National Bureau of Standards or accepted values of natural physical constants. The testing laboratory shall submit a copy of certificate of calibration made by an accredited calibration agency.

D. The Testing Laboratory is only required to have testing facilities for work included in this project.

E. The agent of the Testing Laboratory performing field sampling and field testing of concrete shall be certified by the American Concrete Institute as a Concrete Field Testing Technician - Grade 1, or by an equivalent recognized national authority for an equivalent level of competence, or shall be a Licensed Professional, Engineer.

### 1.04 AUTHORITIES AND DUTIES OF THE LABORATORY

A. The Testing Laboratory shall obtain and review the project plans and specifications with Gardner Spencer Smith Tench and Jarbeau, PC and Engineer six (6) weeks prior to the start of

construction. The Laboratory shall attend pre-construction conferences with Gardner Spencer Smith Tench and Jarbeau, PC, Engineer, Contractor's Project Manager, Contractor's Superintendent, and Material Suppliers, to coordinate materials inspection and testing requirements with the planned construction schedule. The Laboratory will participate in such conferences throughout the course of the project.

B. The Testing Laboratory shall be responsible for outlining a written detailed testing program conforming to the requirements as specified in the Contract Documents and in consultation with the Union County Commissioner's Office, Gardner Spencer Smith Tench and Jarbeau, PC, and Engineer. The testing program shall contain an outline of inspections and tests to be performed with reference to applicable sections of the specifications or drawings and a list of personnel assigned to each portion of the work. Such testing program shall be submitted to the Union County Commissioner's Office, Gardner Spencer Smith Tench and Jarbeau, PC, and Engineer five (5) weeks in advance of the start of construction so as not to delay the start of construction. It shall be the Testing Laboratory's responsibility that such program conforms to the requirements of the Specifications and falls within the Union County Commissioner's Office's budget for testing laboratory services. If the allocated budget is not sufficient to cover the services as outlined in the Specifications, it shall be the responsibility of the Laboratory to notify the Gardner Spencer Smith Tench and Jarbeau, PC, Engineer, and Union County Commissioner's Office, so the start of Laboratory services can be modified accordingly prior to the start of construction. Furthermore, the Testing Laboratory shall monitor its expenditures throughout the course of the job and notify immediately the Union County Commissioner's Office, Gardner Spencer Smith Tench and Jarbeau, PC, and Engineer, of any significant deviation from the planned testing program and budget.

C. The Laboratory shall cooperate with the Gardner Spencer Smith Tench and Jarbeau, PC, Engineer, and Contractor, and provide qualified personnel promptly on notice.

D. The Laboratory shall perform the required inspections, sampling, and testing of materials as specified under each section, and observe methods of construction for compliance with the requirements of the Contract Documents.

E. The Laboratory shall notify Gardner Spencer Smith Tench and Jarbeau, PC and Contractor first by telephone and then in writing, of observed irregulantles and deficiencies of the work and other conditions not in compliance with the requirements of the Contract Documents.

**1.05 CONTRACTOR'S GENERAL RESPONSIBILITIES**

A. Cooperate with Testing Agency personnel. Provide access to the Work and to material supplier's plant and operations.

B. Provide representative samples of materials proposed for use in the Work, in quantities sufficient for accurate testing as specified.

C. Submit copies of Mill Test reports.

D. Furnish casual labor and facilities:
   1. To provide access to Work to be tested or inspected.
   2. To obtain and handle samples at the site under the direction of the Testing Agency.
   3. To facilitate inspections and tests.

E. Notify Testing Agency sufficiently in advance of operations to allow for assignment of personnel and scheduling of tests.

F. Furnish and pay for the following:
   1. Soil survey of location of borrow soil materials, samples of existing soil materials, delivered to the Testing Agency.
   2. Certification of reinforcing steel mill order.
   3. Certifications and tests of post-tensioning materials.
   4. Certification of Portland cement.
   5. Weld procedure qualification tests.

6. Tests and samples when source of material changed after original test or inspection has been made.
7. Samples and mock-ups of substitute material, when the substitution is requested by Contractor and the tests are necessary, in the opinion of Gardner Spencer Smith Tench and Jarbeau, PC, to establish equality with specified items.
8. Provide and maintain, for the sole use of the Testing Agency, adequate facilities for safe storage and proper curing of such test specimens which must remain on the project site prior to testing.

G. Neither the observations, inspections, tests or approvals by Gardner Spencer Smith Tench and Jarbeau, PC or the Testing Agency shall relieve Contractor from his obligation to perform the Work in accordance with the Contract Documents.

H. Contractor shall notify Gardner Spencer Smith Tench and Jarbeau, PC in writing and receive a written reply prior to proceeding with additional testing beyond that specified in the Contract Documents.

I. Contractor shall designate one individual in his organization to be responsible for conducting Contractor's duties relative to testing. The individual so identified will be instructed in his duties by the Testing Agency. The individual shall not be changed without notice to Gardner Spencer Smith Tench and Jarbeau, PC.

**1.06 AUTHORITY OF DESIGNATED TESTING AGENCY PERSONNEL**

A. When requested by Gardner Spencer Smith Tench and Jarbeau, PC, the Testing Agency will render professional opinions regarding corrective measures for construction deficiencies.

B. The Testing Agency is not authorized to revoke or change requirements of the Contract Documents or to approve or accept any portion of the Work.

**1.07 REPORTS**

A. The Testing Agency shall submit one copy each of reports of tests and inspection and certification as required herein to Union County Commissioner's Office, Gardner Spencer Smith Tench and Jarbeau, PC and engineering consultant, as applicable, for information only.

B. Copies of test reports shall be distributed within three working days after each date of test or inspection.

C. Tests and inspection reports will be in standard outline form including the following:
1. Issue date.
2. Project title and number.
3. Testing Agency name and address.
4. Name of technician.
5. Signature of reviewing registered engineer.
6. Date of inspection or sampling.
7. Significant weather conditions.
8. Report number.
9. Sample number.
10. Location in project.
11. Observations regarding compliance with Contract Documents.
12. Pertinent remarks.

D. Field reports shall include the following items:
1. Items inspected.
2. Specific location of the inspection.
3. Explanation of deficiencies or non-conforming installations.
4. Listing of parties informed and corrections made.
5. A statement certifying that the final inspection proved the installation to be in accordance with the Contract Documents.

E. Upon completion of the job, the Testing Laboratory shall furnish to the Union County Commissioner's Office, Gardner Spencer Smith Tench and Jarbeau, PC and Engineer of responsibility, a statement certified by a Notary Public that all required tests and inspections were made in accordance with the requirements of the Contract Documents.

**1.08 EXTENT OF SERVICES FOR EARTHWORK**

A. Moisture Density Relationship for Natural and Fill Materials:
   1. The Testing Laboratory will provide one (1) optimum moisture density curve for each type of soil, natural, imported fill, or on-site fill, encountered in subgrade and fills under building slabs and paved areas. Curves shall be generated in accordance with ASTM 0698.

B. Control Testing Required During Construction:
   1. The Testing Laboratory shall inspect and, approve the following subgrades and fill layers before further construction work is performed thereon:
      a. Paved Areas and Building Slab Subgrade: Make at least one (1) field density test of the natural density test of the natural subgrade for every 2,500 square feet of paved area or building slab, but in no case less than three (3) tests. In each compacted fill layer, make one (1) field density test for every 2,500 square feet of building slab on paved area, but in no case less than three (3) tests.
      b. Foundation Wall Backfill: Make at least one (1) field density test for each 200 lineal feet of all with a minimum of four (4) tests for each basement wall around the perimeter of the building and a minimum of one (1) test for every other type of foundation wall on the site. Tests shall be at random locations and elevations for each wall.
   2. Field Density Tests shall be run according to ASTM 01556 (Density of Soil in Place by the Sand Cone Method), ASTM 02167) (Density of Soil in Place by the Rubber Balloon Method) or ASTM 02922 (Density of Soil and Soil Aggregate in Place by Nuclear Methods) as applicable.
   3. The results of field density tests by the Testing Laboratory will not be considered satisfactory unless their value meet the required density.
   4. The Testing Laboratory shall submit all moisture density curves and results of field density tests to the parties listed herein.
   5. If reports by the Testing Laboratory indicate field densities lower than specified above, additional tests will be run by the Testing Laboratory with at least the frequencies scheduled above on re-compacted fill and/or natural subgrade. The Testing Laboratory shall notify the Contractor on a timely basis for any required re-testing so as not to delay the work. The costs of such tests shall be borne by the Contractor.
   6. The Geotechnical Engineer shall provide inspection service of each dug footing subgrade prior to pouring foundation concrete. Such inspection shall verify that field conditions are consistent with soil report test results and that the foundation is being installed in the proper soil strata at the proper elevation. The Geotechnical Engineer shall submit written field inspection reports promptly after inspection to all parties listed herein, and report his findings after each inspection by telephone to the Structural Engineer.

C. Procedures for the Initiation of a Change Order for Removal of Rock or Unsuitable Soil:
   1. Union County Commissioner's Office's testing laboratory soils engineer will confirm the existence of rock or unsuitable soil as defined in the contract documents.
   2. Union County Commissioner's Office's surveyor will survey the area from which the material will be removed.
   3. Contractor will remove the material.
   4. Union County Commissioner's Office's surveyor will measure the area of the removed material to determine the total cubic yards.
   5. Contractor will be paid by Change Order based on the unit cost amounts in the contract, which were accepted from the bid proposal, or as subsequently negotiated.

**1.09 EXTENT OF SERVICE FOR CONCRETE MATERIALS AND POURED N-PLACE CONCRETE**

A. Concrete Test Cylinders:

1. Cylinders for strength tests shall be molded and laboratory cured in accordance with ASTM C31 "Method of Making and Curing Concrete Test Cylinders in the Field" and tested in accordance with ASTM C39 "Method of Testing for Compressive Strength of Cylindrical Concrete Specimens."
2. Field samples for strength tests shall be taken in accordance with ASTM C172 "Method of Sampling Fresh Concrete".
3. Frequency of Testing: Each set of test cylinders shall consist of a minimum of four (4) standard test cylinders. A set of test cylinders shall be made according to the following frequency:
   a. One (1) set for each class of concrete taken not less than once a day.
   b. For walls and floors, one (1) set for each 100 cubic yards or fraction thereof not less than one (1) set for each 5,000 square feet of surface area.
   c. For columns, one (1) set for each 150 cubic yards or fraction thereof with a minimum of two (2) sets per floor.
   d. For all other concrete, a minimum of one (1) set for each 100 cubic yards or fraction thereof.
   e. No more than one (1) set of cylinders at a time shall be made from any single truck.
   f. If the total volume of concrete is such that the frequency of testing as specified above would provide less than five (5) strength tests for a given class of concrete, tests shall be made from at least five (5) randomly selected batches or from each batch if fewer than five batches are used.
   g. The above frequencies assume that one (1) batch plant will be used for each pour. If more than one (1) batch plant is used, the frequencies cited above shall apply for each plant used.
4. The cylinders shall be numbered, dated, and the point of concrete placement in the building recorded. Of the four (4) cylinders per set, break one at seven days, two at 28 days, and one automatically at 56 days if either 28 day cylinder break is below required strength. One (1) additional cylinder per set will be required for formed slab and pan joist floors for the purpose of evaluating the concrete strength at the time of form stripping.
5. This cylinder shall be stored on the floor where form removal is to occur under the same exposure conditions as the floor concrete.
6. This cylinder shall be cured under field conditions in accordance with ASTM C31 "Method of Making and Curing Concrete Test Specimen in the Field". Field cured test cylinders shall be molded at the same time and from the same samples as laboratory cured test specimens. This cylinder shall be broken at the time of form removal as directed by Contractor.
7. For concrete with design strength in excess of 5,000 PSI, Contractor shall be responsible for providing a temperature controlled and protected concrete cylinder storage box at a point on the job site mutually agreeable with the Testing Laboratory for the purpose of storing concrete cylinders until they are transported to the Laboratory.
8. The Testing Laboratory shall be responsible for transporting the cylinders to the Laboratory in a protected environment such that no damage or ill effect will occur to the concrete cylinders.
9. The Testing Laboratory shall make and distribute concrete test reports after each job cylinder is broken. Such reports shall contain the following information:
   a. Truck number and ticket number.
   b. Concrete Batch Plant.
   c. Mix design number.
   d. Accurate location of pour in the structure.
   e. Strength requirement.
   f. Date cylinders made and broken.
   g. Technician making cylinders.
   h. Concrete temperature at placing.
   i. Air temperature at point of placement in the structure.

j. Amount of water added to the truck at the batch plant and at the site.
k. Slump..
l. Unit weight.
m. Air content.
n. Cylinder compressive strengths with type of failure if concrete does not meet Specification requirements, Seven (7) day breaks are to be flagged if they are less than 70% of the required, 28 day strength. 28 day breaks are to be flagged if either cylinder fails to meet Specification requirements.

B. Other Tests of Concrete Required by the Testing Laboratory:
1. Slump tests (ASTM C143) shall be made at the beginning of concrete placement for each batch plant and for each set of test cylinders made.
2. Air entrainment (ASTM C233) tests shall be made at the same time slump tests are made as cited above.
3. Concrete Temperature at placement at the same time slump tests are made as cited above.

C. Evaluation and Acceptance of Concrete:
1. A strength test shall be defined as the average strength of two (2) 28-day cylinder breaks from each set of cylinders.
2. The strength level of an individual class of concrete shall be considered satisfactory if both of the following requirements are met:
a. The average of all sets of three (3) consecutive strength tests equal or exceed the required f'c.
b. No individual strength tests (average of two (2) 28-day cylinder breaks) fall below the required f'c by more than 500 PSI.
c. If either of the above requirements is not met, the Testing Laboratory shall immediately notify the Engineer by telephone. Steps shall immediately be taken to increase the average of subsequent strength tests.

D. Investigation of Low Strength Concrete Test Results:
1. If any strength test of laboratory cured cylinders fall below the required f'c by more than 500 PSI, the Contractor shall take steps immediately to assure that the load carrying capacity of the structure is not jeopardized.
2. The Testing Laboratory shall, under the direction of the Engineer, perform non-destructive field test of the concrete in question using Swiss Hammer, Windsor Probe, or other appropriate methods and report the results the same as for cylinder test reports.
3. If the likelihood of low strength concrete is confirmed and computations indicate that the load carrying capacity of the structure has been significantly reduced, tests of cores drilled from the area in question under the direction of the Engineer will be required in accordance with ASTM C42 (Method of Obtaining and Testing Drilled Cores and Sawed Beams of Concrete). In such case, three (3) cores shall be taken for each strength test more than 500 PSI below required f'c. If concrete in the structure will be dry under service conditions, cores shall be air dried (temperature 60 degrees to 80 degrees, relatively humidity less than 60 percent) for seven (7) days before test and shall be tested dry. If concrete in the structure will be more than superficially wet under service conditions, cores shall be immersed in water for at least 48 hours and tested wet. Contractor shall fill all holes made by drilling cores with an approved dry-pack concrete.
4. Concrete in an area represented by core test shall be considered structurally adequate if the average of three (3) cores is equal to at least 85% of f'c and if no single core is less than 75% of f'c. To check testing accuracy, locations of erratic core strengths may be re-tested.
5. If the above criteria are not met, and the structure adequacy remains in doubt, the Engineer may order a load test, as specified in ACI 318 for the questionable portion of the structure.
6. If the structural adequacy of the affected portion of the structure remains in doubt, the Engineer may order the structure to be strengthened by an appropriate means or torn

down and re-built.

7. The costs of all investigations of low strength concrete shall be borne by Contractor.

E. Job Site Inspection by the Testing Laboratory:
1. The scope of the work to be performed by the inspector on the job site shall be as follows:
a. Verify that air temperatures at the point of placement in the structure are within acceptable limits as specified prior to ordering of concrete by the Contractor.
b. Inspect concrete upon arrival to verify that the proper concrete mix number, type of concrete, and concrete strength is being placed at the proper location.
c. Inspect plastic concrete upon arrival at the job site to verify proper batching. The responsibility for adding water to trucks at the job site shall rest only with a duly appointed representative mutually agreeable to the Contractor, Union County Commissioner's Office, and Engineer, prior to the start of any concrete operations.
d. Obtain concrete test cylinders as specified.
e. Perform slump tests and air entrainment tests as specified.
f. Record information for concrete test reports as specified.
g. Verify that all concrete being placed meets job Specifications. Reject concrete not meeting the specified requirements and immediately notify Contractor, Batch Plant Inspector, Gardner Spencer Smith Tench and Jarbeau, PC, Engineer, and Union County Commissioner's Office.
h. Pick up and transport to Laboratory, cylinders cast the previous day.
i. Check concrete placing techniques to determine that concrete deposited is uniform and that vertical drop does not exceed six feet.
j. The job site inspector shall report any irregularities that occur in the concrete at the job site or test results to Contractor, Gardner Spencer Smith Tench and Jarbeau, PC, Union County Commissioner's Office, and Engineer.

F. Causes for Rejection of Concrete Delivered to the Site:
1. A duly appointed representative agreeable to the Gardner Spencer Smith Tench and Jarbeau, PC, Union County Commissioner's Office and Engineer, shall reject all concrete delivered to the site for any of the following reasons:
a. Wrong class of concrete (incorrect mix design number).
b. Air Temperature: Air temperature limits shall be as follows:
1) Cold Weather: Air temperature must be 40°F. and rising.
2) Hot Weather: Air temperature must be cooler than 100°F.
3) Concrete may be placed at other air temperature ranges only with approval to the duly appointed representative.
c. Concrete with temperatures exceeding 95°F may not be placed in the structure without approval of the job inspector for the Testing Laboratory or other duly appointed representative.
d. Air contents outside the limits specified in the mix designs.
e. Slumps outside the limits specified or the mix design.
f. Excessive Age: Concrete shall be discharged within 90 minutes of plant departure or before it begins to set if sooner than 90 minutes unless approved by the Laboratory job inspector or other duly appointed representative.

## 1.10 EXTENT OF SERVICES FOR STRUCTURAL STEEL AND RELATED WORK

A. Union County Commissioner's Office Responsibility: Union County Commissioner's Office shall pay for all initial shop and field inspections and tests as required during, the fabrication and erection of the structural steel.

B. Contractor Responsibility: Contractor shall pay for and arrange with the Testing Laboratory for the certification of all shop and field welders. The costs of all re-testing of material or workmanship not in conformance with the Contract Documents shall be borne by Contractor.

C. The Fabricator and Erector shall provide the laboratory inspector with access to all places where work is being done. A minimum of 24 hours notification shall be given prior to

commencement of work.

D. Testing Laboratory Responsibility: The inspection of shop work by the Testing Laboratory shall be performed in the Fabricator's shop to the fullest extent possible. Such inspections shall be in sequence, timely, and performed in such a manner as to minimize disruptions in operations and to permit the repair of all non-conforming work while the materials in process in the fabricating shop. Inspection of field work shall be completed promptly so that corrections can be made without delaying the progress of the work. The Testing Laboratory shall provide test reports of all shop and field inspections. Shop test reports shall include shop welders certifications.

E. All test reports shall indicate types and locations of all defects found during inspection, the performed to correct such defects, statements of final measures required and approval of all welding and bolting of shop and field In addition to the parties listed, the fabricator and erector shall receive copies of all test reports.

F. Gardner Spencer Smith Tench and Jarbeau, PC, Engineer, and Testing Laboratory reserve the right to reject any material or workmanship not in conformance with the Contract Documents at any time during the progress of the work. However, this provision does not allow waiving the obligation for timely, in sequence inspection.

G. Mill Tests of Structural Steel:
   1. Mill Order Steel: The Fabricator shall furnish certified mill test reports and an affidavit stating that the structural steel furnished meets the requirements of the grade specified on the structural drawings for all mill order steel. In case of controversy, certified reports of tests, according to ASTM A6 or A568 as applicable, made by the Union County Commissioner's Office's Testing Laboratory, paid for by the Contractor, shall be made to verify conformity with ASTM standards.
   2. Local Stock Steel: Materials taken from stock by a Fabricator for use for structural purposes must be of a quality at least equal to that required by the ASTM specifications applicable to the classification covering the Intended use.
   3. Certified mill test reports shall be accepted as sufficient record of the quality of materials carried in stock by the fabricator. In case of controversy, certified reports as specified for mill order steel shall be required.
   4. If tests are required, test specimens shall be taken by Contractor under the direction of the Testing Laboratory and shall be machined by the Testing Laboratory to dimensions as required by the applicable ASTM standards.

H. Shop Inspections and Tests: The Testing Laboratory shall provide inspection at the designated fabrication shops for the designated periods of time to perform shop inspection and tests. The designated fabrication shops and time periods of inspections shall be determined in consultation with Gardner Spencer Smith Tench and Jarbeau, PC, Union County Commissioner's Office, and Engineer prior to the start of fabrication in a timely manner so as not to delay the fabrication process. The following tests and inspections shall be performed:
   1. Review shop drawings and shop procedures with fabricator's supervisory personnel.
   2. Review welding procedures and obtain welder certificates.
   3. Verify welding electrodes to be used and other welding consumables as the job progresses.
   4. Provide inspection of surface preparation for coating and coating operations.

I. Inspections and Tests: The Testing Laboratory shall provide inspection in the field for a period of time as determined in consultation with Gardner Spencer Smith Tench and Jarbeau, PC, Union County Commissioner's Office, and Engineer prior to the start of erection in a timely manner so as to not delay the start of erection. The following tests and inspections shall be made:
   1. Obtain the planned erection procedure, and review with the Erector's supervisory personnel.
   2. Check the installation of base plates for proper leveling grout type, and grout application.
   3. Verify field welding procedures and obtain welder certificates.

4. Check steel as received in the field for possible shipping damage, workmanship, and piece marking.
5. Check plumbing and frame alignment as erection progresses.
6. Check required camber of floor beams.
7. Check joint preparation and fit up, backing strips, and run-out plates for welded moment connections and column splices.
8. Check pre-heating to assure proper temperature, uniformity and thoroughness through the full material thickness.
9. Review welding sequence.
10. Visually inspect field welding for size, length, and quality.
11. Perform non-destructive examination services for various weldments of field erection determined in consultation with the Structural Engineer prior to the start of erection. The laboratory shall furnish a qualified technician with the necessary equipment to perform radiographic, ultrasonic, magnetic particle, or dye penetrant inspection as required for the item being tested and other duties as outlined for shop inspection.
12. Check calibration of impact wrenches used in field bolted connections.
13. Check high strength field bolted connections according to inspection procedures outlined in the "Specification for Structural Joints Using ASTM A325 or A490 Bolts". Unless specified otherwise, test one (1) bolt in 10% of the bolted connections. If that bolt is found to be improperly tightened, test all bolts in the connection.
14. Visually inspect the welding of metal deck to the structure.
15. Perform field tests on 10% of completed shear connectors according to inspection procedures outlined in AWS 01.1.

**1.11 EXTENT OF SERVICES FOR ASPHALTIC CONCRETE**

A. Make one laboratory density and stability test on each type of asphaltic concrete for each day's operation in accordance with ASTM 01559. Provide one test per 5000 sf surface area.

B. Make one extraction and gradation test on each type of asphaltic concrete for each day's operation in accordance with ASTM 02726.

**PART 2 PRODUCT - NOT USED**

**PART 3 EXECUTION - NOT USED**

**END OF SECTION**

# SECTION 01 5000
# TEMPORARY FACILITIES AND CONTROLS

## PART 1 GENERAL

### 1.01 SUMMARY

A. This Section includes requirements for temporary facilities and controls, including temporary utilities, support facilities, and security and protection facilities.

B. Temporary utilities include, but are not limited to, the following:
1. Sewers and drainage.
2. Water service and distribution.
3. Sanitary facilities, including toilets, wash facilities, and drinking-water facilities.
4. Heating and cooling facilities.
5. Ventilation.
6. Electric power service.
7. Lighting.
8. Telephone Service.

C. Security and protection facilities include, but are not limited to, the following:
1. Environmental protection.
2. Stormwater control.
3. Tree and plant protection.
4. Pest control.
5. Site enclosure fence.
6. Security enclosure and lockup.
7. Barricades, warning signs, and lights.
8. Covered walkways.
9. Temporary enclosures.
10. Temporary partitions.
11. Fire protection.

### 1.02 RELATED REQUIREMENTS

A. Division 01 Section “Submittal Procedures” for procedures for submitting copies of implementation and termination schedule and utility reports.

B. Division 02 through 26 for temporary heat, ventilation, and humidity requirements for products in those sections.

### 1.03 DEFINITIONS

A. Permanent Enclosure: As determined by Gardner Spencer Smith Tench and Jarbeau, PC, permanent or temporary roofing is complete, insulated, and weathertight; exterior walls are insulated, and weathertight; and all openings are closed with permanent construction or substantial temporary closures.

### 1.04 PERSONNEL RESTRICTIONS

A. Sexual Harassment, defined in its broadest and most inclusive form, immoral, lewd, indecent, disruptive or disorderly behavior or conduct is not allowed. Unauthorized association with any student or teacher on campus is prohibited. Union County Commissioner's Office reserves the right to direct Contractor to immediately eject any person violating this requirement from the Union County Commissioner's Office's property.

B. While on Union County Commissioner's Office's property, construction personnel shall be fully clothed, wearing shirts, shoes, and required safety equipment at all times. Smoking is prohibited.

### 1.05 USE CHARGES

A. General: Cost or use charges for temporary facilities are not chargeable to Union County Commissioner's Office or Gardner Spencer Smith Tench and Jarbeau, PC and shall be

included in the Contract Sum. Allow other entities to use temporary services and facilities without cost, including, but not limited to, the following:
1. Owner's construction forces.
2. Occupants of Project.
3. Architects.
4. Testing Agencies.
5. Personnel of authorities having jurisdiction.

B. Sewer Service: Pay sewer service use charges for sewer usage, by all parties engaged in construction, at Project site.

C. Water Service: Pay water service use charges, whether metered or otherwise, for water used by all entities engaged in construction activities at Project site.

D. Electric Power Service: Pay electric power service use charges whether metered or otherwise, for electricity used by all entities engaged in construction activities at Project site.

**1.06 QUALITY ASSURANCE**

A. Standards: Comply with ANSI A10.6, NECA's "Temporary Electrical Facilities," and NFPA 241.
1. Trade Jurisdictions: Assigned responsibilities for installation and operation of temporary utilities are not intended to interfere with trade regulations and union jurisdictions.
2. Electrical Service: Comply with NECA, NEMA, and UL standards and regulations for temporary electric service. Install service to comply with NFPA 70.

B. Test and Inspections: Arrange for authorities having jurisdiction to test and inspect each temporary utility before use. Obtain required certifications and permits.

**1.07 PROJECT CONDITIONS**

A. Temporary Utilities: At Substantial Completion, when acceptable to Union County Commissioner's Office, change over from use of temporary service to use of permanent service.
1. Temporary Use of Permanent Facilities: Installer of each permanent service shall assume responsibility for operation, maintenance, and protection of each permanent service during its use as a construction facility before Union County Commissioner's Office's acceptance, regardless of previously assigned responsibilities.

B. Conditions of Use: The following conditions apply to the use of temporary services and facilities by all parties engages in the Work:
1. Keep temporary service and facilities clean and neat.
2. Relocate temporary services and facilities as required by progress of the Work.

**PART 2 PRODUCTS**

**2.01 MATERIALS**

A. General: Provide new materials. Undamaged, previously used materials in serviceable condition may be used if approved by Architect. Provide material suitable for use intended.

B. Pavement: Comply with Division 02 pavement Sections.

C. Chain-Link Fencing: Minimum 2-inch (50mm), 0.148 inch- (3.76mm)thick, galvanized steel, chain-link fabric fencing; minimum 6 feet (1.8 m) high with galvanized steel pipe posts; minimum 2-3/8 inch- (60mm) OD line posts and 2-7/8 inch- (73mm) OD corner and pull posts.

D. Portable Chain-Link Fencing: Minimum 2 inch (50mm) 9-gage, galvanized steel, chain-link fabric fencing; minimum 6 feet (1.8m) high with galvanized steel pipe post; minimum 2-3/8 inch (60mm) OD line posts and 2-7/8 inch (73mm) OD corner and pull posts, with 1-5/8 inch (42mm) OD top and bottom rails. Provide concrete bases for supporting posts.

E. Lumber and Plywood: Comply with requirements in Division 06 Section "Miscellaneous Carpentry."

F. Paint: Comply with requirements in Division 09 Section "Painting."

G. Tarpaulins: Fire-resistive labeled with flame-spread rating of 15 or less.

H. Water: Potable.

**2.02 EQUIPMENT**

A. General: Provide equipment suitable for use intended.

B. Field Offices: Mobile units with lockable entrances, operable windows, and serviceable finishes; heated and air conditioned; on foundations adequate for normal loading.

C. Fire Extinguishers: Hand carried, portable, UL rated. Provide class and extinguishing agent as indicated or a combination of extinguishers of NFPA-recommended classes for exposures.
   1. Comply with NFPA 10 and NFPA 241 for classification, extinguishing agent, and size required by location and class of fire exposure.

D. Self-Contained Toilet Units: Single-occupant units of chemical aerated recirculation, or combustion type; vented; fully enclosed with a glass-fiber-reinforced polyester shell or similar nonabsorbent material.

E. Drinking-Water Fixtures: Containerized, tap-dispenser, bottled-water drinking-water units, including paper cup supply.

F. Heating Equipment: Unless Owner authorizes use of permanent heating system, provide vented, self-contained, liquid-propane-gas or fuel-oil heaters with individual space thermostatic control.
   1. Use of gasoline-burning space heaters, open-flame heaters, or salamander-type heating units is prohibited.
   2. Heating Units: Listed and labeled, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use for type of fuel being used.

G. Electrical Outlets: Properly configured, NEMA-polarized outlets to prevent insertion of 110- to 220-V plugs into higher-voltage outlets; equipped with ground-fault circuit interrupters, reset button, and pilot light.

H. Power Distribution System Circuits: Where permitted and over-head and exposed for surveillance, wiring circuits, not exceeding 125-V ac, 20-A rating, and lighting circuits may be nonmetallic sheathed cable.

**PART 3 EXECUTION**

**3.01 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.

B. Provide each facility ready for use when needed to avoid delay. Maintain and modify as required. Do not remove until facilities are no longer needed or are replaced by authorized use of complete permanent facilities.

**3.02 TEMPORARY UTILITIES**

A. Contractor shall submit to Union County Commissioner's Office's representative reports of tests, inspections, meter readings and similar procedures performed on temporary utilities.

B. Contractor shall coordinate with the appropriate utility company to install temporary services. Where the utility company provides only partial service, Contractor shall provide and install the remainder with matching compatible materials and equipment.

C. Temporary Water:
   1. Contractor shall furnish, install and pay for all necessary permits, inspections, move ins/out, temporary water lines, connections & fees, extensions and distribution, metering devices and use charges, deliveries/pick ups, rentals, storage, transportation, taxes, labor, insurance, bonds, material, equipment and all other miscellaneous items for the temporary water system, and upon Substantial Completion of the Work, removal of all such temporary water system devices and appurtenances.
   2. Contractor shall provide and maintain temporary water service, including water distribution piping and outlet devices of the size and required flow rates in order to provide service to

all areas of the Project site.

3. Contractor shall provide and pay for all potable water needed for construction and all other uses associated with the Work.
4. Contractor shall at their expense and without limitation, remove, extend and/or relocate temporary water systems as rapidly as required in order to provide for progress of the Work.

D. Temporary Electric:
1. Contractor shall furnish, install, maintain and pay for all necessary permits, inspections, temporary wiring, metering devices and use charges, move ins/outs, connections & fees, service, extension and distribution, deliveries/pickups, rentals, storage, transportation, taxes, labor, insurance, bonds, materials, equipment and all other required miscellaneous items for the temporary electric systems including on-site electrical generators, and upon Substantial Completion of Work, removal of all such temporary electric systems and appurtenances.
2. Contractor shall furnish, install, maintain, extend and distribute temporary electric area distribution boxes, so located that individual trades can obtain adequate power and artificial lighting, at all points required for the Work, for inspection and for safety.
3. Contractor shall provide temporary electric for construction, temporary facilities, and connections for construction equipment requiring power or lighting, at all points required for the Work, for inspection and safety.
4. Contractor shall provide 20 foot candles minimum lighting levels inside building(s) and 5 foot candles outside for safety and security.
5. Contractor shall ensure welding equipment is supplied by electrical generators.
6. Contractor shall at their expense and without limitation remove, extend and/or relocate temporary electric systems as rapidly as required in order to provide for progress of the Work.

E. Temporary Gas:
1. Contractor shall furnish, install, maintain and pay for all necessary permits, inspections, metering devices and use charges, move ins/out, extension and distribution, deliveries/pickups, rentals, storage, transportation, equipment and piping, rentals, taxes, labor, material, insurance, bonds, and all other required miscellaneous items for the temporary gas systems necessary to perform the Work, and upon Substantial Completion of the Work, removal of all such temporary gas system devices and appurtenances.
2. Contractor shall at their expense and without limitation remove, extend and/or relocate temporary gas systems as rapidly as required in order to provide for progress of the Work.

F. Temporary Heating, Ventilation and Air Conditioning:
1. Contractor shall furnish, install, maintain, and pay for all necessary permits, inspections, move ins/out, extensions and distribution, connections and fees, use charges, metering devices and use charges, equipment, rentals, deliveries/pick ups, storage, transportation, taxes, labor, insurance, bonds, material, equipment and all other required miscellaneous items for temporary heat and ventilation needed for proper installation of the Work and to protect materials and finishes from damage due to weather. Upon Substantial Completion of the Work, Contractor shall remove all such temporary heating and ventilating system devices and appurtenances.
2. Contractor shall provide, maintain and pay for all temporary ventilation of enclosed Work areas to cure materials, disperse humidity, remove fumes, and to prevent accumulation of dust, irritants, or gases.
3. Union County Commissioner's Office will not accept utilization of the permanent HVAC system for temporary HVAC until Substantial Completion.
4. Contractor shall maintain manufacturer required levels of room and/or space temperature, humidity and ventilation necessary to install products, materials and/or systems of the Work.
5. Contractor shall at their expense and without limitation, remove, extend and/or relocate temporary heating and ventilating systems as rapidly as required in order to provide for

progress of the Work.

G. Temporary Telephone and Data:
   1. Contractor shall furnish, install, maintain and pay for all necessary permits, inspections, move ins/outs, extensions and distribution, devices, connections and fees, use charges, rentals, deliveries/pickups, storage, transportation, taxes, labor, insurance, bonds, material, equipment and all other required miscellaneous items for temporary phone, data service and distribution to Project site temporary offices as required by this Section.
   2. Contractor shall at their expense and without limitation, remove, extend and/or relocate temporary phone service and distribution as rapidly as required in order to provide for progress of the Work.
   3. Upon Substantial Completion of the Work, Contractor shall remove all such temporary phone service, distribution, devices and appurtenances.

**3.03 TEMPORARY UTILITY INSTALLATION**

A. General: Engage appropriate local utility company to install temporary service or connect to existing service. Where utility company provides only part of the service, provide the remainder with matching, compatible materials and equipment. Comply with utility company recommendations.
   1. Arrange with utility company, Union County Commissioner's Office, and existing users for time when service can be interrupted, if necessary, to make connections for temporary services.
   2. Provide adequate capacity at each stage of construction. Before temporary utility is available, provide trucked-in service.

B. Water Service: Install water service and distribution piping in sizes and pressures adequate for construction until permanent water service is in use. Provide water outlets as directed to serve the project site. Sterilize temporary water piping before use.

C. Sanitary Facilities: Provide temporary toilets, wash facilities, and drinking-water fixtures. Comply with regulations and health codes for type, number, location, operation, and maintenance of fixtures and facilities.
   1. Disposable Supplies: Provide toilet tissue, paper towels, paper cups, and similar disposable materials for each facility. Maintain adequate supply. Provide covered waste containers for disposal of used material.
   2. Toilets: Install self-contained toilet units. Shield toilets to ensure privacy.
   3. Wash Facilities: Install wash facilities supplied with potable water at convenient locations for personnel who handle materials that require wash up. Dispose of drainage properly. Supply cleaning compounds appropriate for each type of material handled.
   4. Drinking-Water Facilities: Provide bottled-water, drinking-water units.

D. 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 from that specified that will not have a harmful effect on completed installations or elements being installed.
   1. Maintain a minimum temperature of 50 deg F (10 deg C) in permanently enclosed portions of building for normal construction activities, and 65 deg F (18.3 deg C) for finishing activities and areas where finished work has been installed.

E. 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 from that specified 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.

F. Power Service: Provide weatherproof, grounded electric power service and distribution system of sufficient size, capacity, and power characteristics during construction period. Include meters, transformers, overload-protected disconnecting means, automatic ground-fault interrupters, and main distribution switchgear.

1. Install electric power service underground, unless overhead service must be used.
2. Install power distribution wiring overhead and rise vertically where least exposed to damage.
3. Connect temporary service to Owner's existing power source, as directed by electric company officials.

G. Electric Distribution: Provide receptacle outlets adequate for connection of power tools and equipment.
1. Provide waterproof connectors to connect separate lengths of electrical power cords if single lengths will not reach areas where construction activities are in progress. Do not exceed safe length-voltage ratio.
2. Provide 4-gage outlets, spaced so 100-foot (30 m) extension cord can reach each area for power hand tools and task lighting. Provide a separate 125-V ac, 20-A circuit for each outlet.

H. Lighting: Provide temporary lighting with local switching that provides adequate illumination for construction operations and traffic conditions.
1. Install and operate temporary lighting that fulfills security and protection requirements without operating entire system.
2. Provide one 100-W incandescent lamp per 500 sq. ft. (45 sq. m), uniformly distributed, for general lighting, or equivalent illumination.
3. Provide one 100-W incandescent lamp per story in stairways and ladder runs, located to illuminate each landing and flight.
4. Provide one 100-W incandescent lamp per story in stairways and ladder runs, located to illuminate each landing and flight.
5. Install exterior-yard site lighting that will provide adequate illumination for construction operations, traffic conditions, and signage visibility when the work is being performed.
6. Install lighting for Project identification sign.

I. Telephone Service: Provide temporary telephone service through-out construction period for common-use facilities used by all personnel engaged in construction activities. Install separate telephone line for each field office and first-aid station.
1. Provide additional telephone lines for the following:
   a. In field office with more than two occupants, install a telephone for each additional occupant or pair of occupants.
   b. Provide a dedicated telephone line for each facsimile machine and computer with modem in each field office.
   c. Provide a separate telephone line for Union County Commissioner's Office's use.
2. At each telephone, post a list of important telephone numbers.
   a. Police and fire departments.
   b. Ambulance service.
   c. Contractor's home office.
   d. Gardner Spencer Smith Tench and Jarbeau, PC's office.
   e. Engineers' offices.
   f. Union County Commissioner's Office's office.
   g. Principal subcontractor's field and home offices.
3. Provide an answering machine or voice-mail service on superintendent's telephone.
4. Furnish superintendent with electronic paging device or portable two-way radio for use when away from field office.
5. Provide a portable cellular telephone for superintendent's use in making and receiving telephone calls when away from field office.

## 3.04 SUPPORT FACILITIES INSTALLATION

A. General: Comply with the following:
1. Locate field offices, storage sheds, sanitary facilities, and other temporary construction and support facilities for easy access.

2. Provide incombustible construction for offices, shops, and sheds located within construction area or within 30 feet (9m) of building lines. Comply with NFPA 241.
3. Maintain support facilities until near 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 to support loads and to withstand exposure to traffic during construction period. Locate temporary roads and paved areas. 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 Division 2 Section “Earthwork.”
3. Recondition base after temporary use, including removing contaminated material, regrading, proofrolling, compacting and testing.

C. Traffic Controls: Provide temporary traffic controls at junction of temporary roads with public roads. Include warning signs for public traffic and “STOP” signs for entrance onto public roads. Comply with requirements of authorities having jurisdiction.

D. Dewatering Facilities and Drains: Comply with requirements in applicable Division 2 Sections for temporary drainage and dewatering facilities and operations not directly associated with construction activities include in individual Sections. Where feasible, use same facilities. Maintain Project site, excavations, and construction free of water.
1. Dispose of rainwater in a lawful manner that will not result in flooding Project or adjoining property nor endanger permanent Work or temporary facilities.
2. Before connection and operation of permanent drainage piping system, provide temporary drainage where roofing or similar waterproof deck construction is completed.
3. Remove snow and ice as required to minimize accumulations.

E. Project Identification and Temporary Signs: Prepare Project identification and other signs in sizes indicated. Install signs where indicated to inform public and persons seeking entrance to Project. Do not permit installation of unauthorized signs.
1. Engage an experienced sign painter to apply graphics for Project identification signs. Comply with details indicated.
2. Prepare temporary signs to provide directional information to construction personnel and visitors.
3. Construct signs of exterior-type Grade B-B high-density concrete form overlay plywood in sizes and thicknesses indicated. Support on posts or framing of preservative-treated wood or steel.
4. Paint sign panel and applied graphics with exterior-grade alkyd gloss enamel over exterior primer.

F. Waste Disposal Facilities: Provide waste-collection containers in sizes adequate to handle waste from construction operations. Containerize and clearly label hazardous, dangerous, or unsanitary waste materials separately from other waste. Comply with Division 01 Section “Execution Requirements” for progress cleaning requirements.
1. If required by authorities having jurisdiction, provide separate containers, clearly labeled, for each type of waste material to be deposited.
2. Develop a waste management plan for Work performed on Project. Indicate types of waste materials Project will produce and estimate quantities of each type. Provide detailed information for on-site waste storage and separation of recyclable materials. Provide information on destination of each type of waste material and means to be used to dispose of all waste material.

G. Janitorial Services: Provide janitorial services on a daily basis for temporary offices, first-aid stations, toilets, wash facilities, lunchrooms, and similar areas.

H. Common-Use Field Office: Provide an insulated, weathertight, air-conditioned field office; of sufficient size to accommodate required personnel and meetings of 10 persons at Project site. Keep office clean and orderly.
   1. Furnish and equip offices as follows:
      a. Desk and four chairs, four-drawer file cabinet, a plan table, a plan rack, and bookcase.
      b. Provide fax machine with dedicated phone line and copy machine.
      c. Water cooler and private toilet complete with water closet, lavatory, and medicine cabinet with mirror.
      d. Coffee machine and supplies, including regular and decaffeinated coffee, filters, cups, stirring sticks, creamer, sugar, and sugar substitute.
      e. Provide a room of not less than 240 sq. ft. (22.5 sq. m) for Project meetings. Furnish room with conference table, 12 folding chairs, and 4-foot- (1.2 m) square tack board.
   2. Provide an electric heater with thermostat capable of maintaining a uniform indoor temperature of 68 deg F (20 deg C). Provide and air-conditioning unit capable of maintaining an indoor temperature of 72 deg F (23 deg C).
   3. Provide fluorescent light fixtures capable of maintaining average illumination of 20 fc (215 1x) at desk height. Provide 110- to 120-V duplex outlets spaced at not more than 12-foot (4 m) intervals, 1 per wall in each room.

I. Storage and Fabrication Shed: Provide sheds sized, furnished, and equipped to accommodate materials and equipment involved, including temporary utility services. Sheds may be open shelters or fully enclosed spaces within building or elsewhere on-site.
   1. Construct framing, sheathing, and siding using fire-retardant-treated lumber and plywood.
   2. Paint exposed lumber and plywood with exterior-grade acrylic-latex emulsion over exterior primer.

J. Temporary Elevator Usage: Refer to Division 14 Sections for temporary use of new elevators.

K. Temporary Stairs: Until permanent stairs are available, provide temporary stairs where ladders are not adequate. Cover finished, permanent stairs with protective covering of plywood or similar material so finishes will be undamaged at time of acceptance.

## 3.05 SECURITY AND PROTECTION FACILITIES INSTALLATION

A. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction in ways and by methods that comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects. Avoid using tools and equipment that produce harmful noise. Restrict use of noise making tools and equipment to hours that will minimize complaints from persons or firms near Project site.

B. Stormwater Control: Provide earthen embankments and similar barriers in and around excavations and subgrade construction, sufficient to prevent flooding by runoff of stormwater from heavy rains.

C. Tree and Plant Protection: Comply with requirements in Division 02 Section “Tree Protection and Trimming.”

D. Pest Control: Before deep foundation work has been completed, retain a local exterminator or pest-control company to recommend practices to minimize attraction and harboring of rodents, roaches, and other pests. Engage this pest-control service to perform extermination and control procedures at regular intervals so Project will be free of pests and their residues at Substantial Completion. Obtain extended warranty for Owner. Perform control operations lawfully, using environmentally safe materials.

E. Site Enclosure Fence: Install chain-link enclosure fence with lockable entrance gates. Locate where indicated, or portion determined sufficient to accommodate construction operations. Install in a manner that will prevent people, dogs, and other animals from easily entering site except by entrance gates.

1. Provide gates in sizes and at locations necessary to accommodate delivery vehicles and other construction operations.

F. Barricades, Warning Signs, and Lights: Comply with standards and code requirements for erecting structurally adequate barricades. Paint with appropriate colors, graphics, and warning signs to inform personnel and public of possible hazard. Where appropriate and needed, provide lighting, including flashing red or amber lights.

G. Temporary Enclosures: Provide temporary enclosures for protection of construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities. Provide temporary weathertight enclosure for building exterior.
   1. Where heating or cooling is needed and permanent enclosure is not complete, provided temporary enclosures. Coordinate enclosure with ventilating and material drying or curing requirements to avoid dangerous conditions and effects.
   2. Vertical Openings: Close openings of 25 sq. ft. (2.3 sq. m) or less with plywood or similar materials.
   3. Horizontal Openings: Close openings in floor or roof decks and horizontal surfaces with load-bearing, wood-framed construction.
   4. Install tarpaulins securely using fire-retardant-treated wood framing and other materials.

H. Temporary Partitions: Erect and maintain dustproof partitions and temporary enclosures to limit dust and dirt migration and to separate areas from fumes and noise.

I. Temporary Fire Protection: Until fire-protection needs are supplied by permanent facilities, install and maintain temporary fire-protection facilities of types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 241.
   1. Provide fire extinguishers, installed on walls on mounting brackets, visible and accessible from space being served, with sign mounted above.
      a. Field Offices: Class A stored-pressure water-type extinguishers.
      b. Other Locations: Class ABC dry-chemical extinguishers or combination of extinguishers of NFPA-recommended classes for exposes.
      c. Locate fire extinguishers where convenient and effective for their intended purpose; provide not less than one extinguisher on each floor at or near each usable stairwell.
   2. Store combustible materials in containers in fire-safe locations.
   3. Maintain unobstructed access to fire extinguishers, fire hydrants, temporary fire-protection facilities, stairways, and other access routes for firefighting. Prohibit smoking in hazardous fire-exposure areas.
   4. Supervise welding operations, combustion-type temporary heating units, and similar sources of fire ignition.
   5. Permanent Fire Protection: At earliest feasible date in each area of Project, complete installation of permanent fire-protection facility, including connected services, and place into operation and use. Instruct key personnel on use of facilities.
   6. Develop and supervise an overall fire-protection and first-aid fire-protection program for personnel at Project site. Review needs with local fire department and establish procedures to be followed. Instruct personnel in method and procedures. Post warnings and information.

## 3.06 OPERATION, TERMINATION, AND REMOVAL

A. Supervision: Enforce strict disciplines in use of temporary facilities. To minimize waste and abuse, limit availability of temporary facilities to essential and intended uses.

B. Maintain facilities in good operating condition until removal. Protect from damage caused by freezing temperatures and similar elements.
   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.
   2. Prevent water-filled piping from freezing. Maintain markers for underground lines. Protect from damage during excavation operations.

C. Temporary Facility Changeover: Except for using permanent fire protection as soon as available, do not change over from using temporary facilities to permanent facilities until Substantial Completion.

D. 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 within two weeks after Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with temporary facility. Repair damage Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.
   1. Materials and facilities that constitute temporary facilities are the property of Contractor. Owner reserves right to take possesion of Project identification signs.
   2. Remove temporary paving not intended for or acceptable for integration into permanent paving. 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, clean and renovate permanent facilities used during construction period. Comply with final cleaning requirements in Division 1 Section “Closeout Procedures.”

**END OF SECTION**

# SECTION 01 6000
# PRODUCT REQUIREMENTS

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. General product requirements.

B. Transportation, handling, storage and protection.

C. Substitution limitations and procedures.

D. Procedures for Union County Commissioner's Office-supplied products.

E. Spare parts and maintenance materials.

### 1.02 RELATED SECTIONS

A. Section 01 1000 - Summary: Lists of products to be removed from existing building.

B. Section 01 3500 - Substitution Procedures: Product options and substitution procedures.

C. Section 01 4000 - Quality Requirements: Product quality monitoring.

### 1.03 DEFINITIONS

A. Products: Items purchased 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, except that products consisting of recycled-content materials are allowed, unless explicitly stated otherwise. 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. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor.

C. Basis-of-Design Product Specification: Where a specific manufacturer's product is named and accompanied by the words "basis of design," 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 evaluation comparable products of other named manufacturers.

D. Manufacturer,' s Warranty: Preprinted written warranty published by individual manufacturer for a particular product and specifically endorsed by manufacturer to Union County Commissioner's Office.

E. Special Warranty: Written warranty required by or incorporated into the Contract Documents, either to extend time limit provided by manufacturer's warranty or to provide more rights for Union County Commissioner's Office.

### 1.04 SUBMITTALS

A. Proposed Products List: Submit list of major products proposed for use, with name of manufacturer, trade name, and model number of each product.

1. Submit within 15 days after date of Agreement.
2. For products specified only by reference standards, list applicable reference standards.

B. Product Data Submittals: Submit manufacturer's standard published data. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers'

standard data to provide information specific to this Project.

C. Shop Drawing Submittals: Prepared specifically for this Project; indicate utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.

D. Sample Submittals: Illustrate functional and aesthetic characteristics of the product, with integral parts and attachment devices. Coordinate sample submittals for interfacing work.
   1. For selection from standard finishes, submit samples of the full range of the manufacturer's standard colors, textures, and patterns.

E. Indicate utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.

F. Basis-of-Design Product Specification Submittal: Comply with requirements in Division 01 Section "Submittal Procedures." Show compliance with requirements.

**1.05 PRODUCT DELIVERY, STORAGE, AND HANDLING**

A. Deliver, store, and handle products using means and methods that will prevent damage, deterioration, and loss, including theft. Comply with manufacturer's written instructions.
   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 ensure compliance with the Contract Documents and to ensure that products are undamaged and properly protected.
   5. Store products to allow for inspection and measurement of quantity or counting of units.
   6. Store materials in a manner that will not endanger Project structure.
   7. Store products that are subject to damage by the elements, under cover in a weathertight enclosure above ground, with ventilation adequate to prevent condensation.
   8. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.
   9. Protect stored products from damage.

B. Storage: Provide a secure location and enclosure at Project site for storage of materials and equipment by Union County Commissioner's Office's construction forces. Coordinate location with Union County Commissioner's Office.

**1.06 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.

B. Special Warranties: Prepare a written document that contains appropriate terms and identification, ready for execution. Submit a draft for approval before final execution.
   1. Manufacturer's Standard Form: Modified to include Project-specific information and properly executed.

C. Submittal Time: Comply with requirements in Division 01 Section "Closeout Procedures."

**PART 2 PRODUCTS**

**2.01 PRODUCT OPTIONS**

A. General Product Requirements: Provide products that comply the Contract Documents, that are undamaged, and unless otherwise indicated, that 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: 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. Union County Commissioner's Office 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," Gardner Spencer Smith Tench and Jarbeau, PC will make selection.
5. Where products are accompanied by the term "match sample," sample to be matched is Gardner Spencer Smith Tench and Jarbeau, PC's.
6. Descriptive, performance, and reference standard requirements in the Specifications establish "salient characteistics" of products.

B. Product Selection Procedures: Procedures for product selection include the following:
1. Product: Where Specification paragraphs or subparagraphs titled "Product:" name a single product and manufacturer, provide the product named.
2. Manufacturer/Source: Where Specification paragraphs or subparagraphs titled "Manufacturer" or "Source" name single manufacturers or sources, provide a product by the manufacturer or from the source named that complies with requirements.
3. Products: Where Specification paragraphs or subparagraphs titled "Products" introduce a list of names of both products and manufacturers, provide one of the products listed that complies with requirements.
4. Manufacturers: Where Specification paragraphs or subparagraphs titled "Manufacturers" introduce a list of manufacturers' names, provide a product by one of the manufacturers listed that complies with requirements.
5. Basis-of-Design Products: Where Specification paragraphs or subparagraphs titled "Basis-of-Design Product[s]" are included and also introduce or refer to a list of manufacturers' names, provide either the specified 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 provisions in "Comparable Products" Article to obtain approval for use of an unnamed product.
6. Visual Matching Specification: Where Specifications require matching an established Sample, select a product (and manufacturer) that complies with requirements and matches Gardner Spencer Smith Tench and Jarbeau, PC's sample. Gardner Spencer Smith Tench and Jarbeau, PC's decision will be final on whether a proposed product matches satisfactorily.
7. Visual Selection Specification: Where Specifications include, the phrase "as selected from manufacturer's colors, patterns, textures" or a similar phrase, select a product (and manufacturer) that complies with other specified requirements.
   a. Standard Range: Where Specifications include the phrase "standard range of colors, patterns, textures" or similar phrase, Architect will select color, pattern, or texture from manufacturer's product line that does not include premium items.
   b. Full Range: Where Specifications include the phrase "full range of colors, patterns, textures" or similar phrase, Gardner Spencer Smith Tench and Jarbeau, PC will select color, pattern, or texture from manufacturer's product line that includes both standard and premium items.
8. Allowances: Refer to individual Specification Sections and "Allowance" provisions in Division 01 for allowances that control product selection and for procedures required for processing such selections.

**2.02 NEW PRODUCTS**

A. Provide new products unless specifically required or permitted by the Contract Documents.

**2.03 COMPARABLE PRODUCTS**

A. Where products or manufacturers are specified by name, submit the following, in addition to other required submittals, to obtain approval of an unnamed product:
   1. Evidence that the proposed product does not require extensive 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.

**2.04 SPARE PARTS AND MAINTENANCE PRODUCTS**

A. Provide spare parts, maintenance, and extra products of types and in quantities specified in individual specification sections.

B. Deliver to Project site; obtain receipt prior to final payment.

**PART 3 EXECUTION**

**3.01 SUBSTITUTION PROCEDURES**

A. Comply with requirements specified in Section 01 3500 - Substitution Procedures.

**3.02 OWNER-SUPPLIED PRODUCTS**

A. See Section 01 1000 - Summary for identification of Union County Commissioner's Office-supplied products.

B. Union County Commissioner's Office's Responsibilities:
   1. Arrange for and deliver Union County Commissioner's Office reviewed shop drawings, product data, and samples, to Contractor.
   2. Arrange and pay for product delivery to site.
   3. On delivery, inspect products jointly with Contractor.
   4. Submit claims for transportation damage and replace damaged, defective, or deficient items.
   5. Arrange for manufacturers' warranties, inspections, and service.

C. Contractor's Responsibilities:
   1. Review Union County Commissioner's Office reviewed shop drawings, product data, and samples.
   2. Receive and unload products at site; inspect for completeness or damage jointly with Union County Commissioner's Office.
   3. Handle, store, install and finish products.
   4. Repair or replace items damaged after receipt.

**3.03 TRANSPORTATION AND HANDLING**

A. Coordinate schedule of product delivery to designated prepared areas in order to minimize site storage time and potential damage to stored materials.

B. Transport and handle products in accordance with manufacturer's instructions.

C. Transport materials in covered trucks to prevent contamination of product and littering of surrounding areas.

D. Promptly inspect shipments to ensure that products comply with requirements, quantities are correct, and products are undamaged.

E. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage.

F. Arrange for the return of packing materials, such as wood pallets, where economically feasible.

**3.04 STORAGE AND PROTECTION**

A. Designate receiving/storage areas for incoming products so that they are delivered according to installation schedule and placed convenient to work area in order to minimize waste due to excessive materials handling and misapplication.

B. Store and protect products in accordance with manufacturers' instructions.

C. Store with seals and labels intact and legible.

D. Store sensitive products in weather tight, climate controlled, enclosures in an environment favorable to product.

E. For exterior storage of fabricated products, place on sloped supports above ground.

F. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to prevent condensation and degradation of products.

G. Prevent contact with material that may cause corrosion, discoloration, or staining.

H. Provide equipment and personnel to store products by methods to prevent soiling, disfigurement, or damage.

I. Arrange storage of products to permit access for inspection. Periodically inspect to verify products are undamaged and are maintained in acceptable condition.

**END OF SECTION**

# SECTION 01 6116
# VOLATILE ORGANIC COMPOUND (VOC) CONTENT RESTRICTIONS

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Requirements for Indoor-Emissions-Restricted products.

B. Requirements for VOC-Content-Restricted products.

C. Requirement for installer certification that they did not use any non-compliant products.

### 1.02 RELATED REQUIREMENTS

A. Division 01 Section "Administrative Requirements" Submittal procedures.

B. Division 01 Section "Quality Requirements" Procedures for testing and certifications.

C. Division 01 Section "Product Requirements" Fundamental product requirements, substitutions and product options, delivery, storage, and handling.

### 1.03 DEFINITIONS

A. Indoor-Emissions-Restricted Products: All products in the following product categories, whether specified or not:

B. VOC-Content-Restricted Products: All products in the following product categories, whether specified or not:
   1. Interior paints and coatings applied on site.
   2. Interior adhesives and sealants applied on site, including flooring adhesives.

C. Interior of Building: Anywhere inside the exterior weather barrier.

D. Adhesives: All gunnable, trowelable, liquid-applied, and aerosol adhesives, whether specified or not; including flooring adhesives, resilient base adhesives, and pipe jointing adhesives.

E. Sealants: All gunnable, trowelable, and liquid-applied joint sealants and sealant primers, whether specified or not; including firestopping sealants and duct joint sealers.

F. Inherently Non-Emitting Materials: Products composed wholly of minerals or metals, unless they include organic-based surface coatings, binders, or sealants; and specifically the following:

### 1.04 REFERENCE STANDARDS

A. 40 CFR 59, Subpart D - National Volatile Organic Compound Emission Standards for Architectural Coatings; U.S. Environmental Protection Agency current edition.

B. ASTM D3960 - Standard Practice for Determining Volatile Organic Compound (VOC) Content of Paints and Related Coatings 2005 (Reapproved 2018).

C. CAL (CDPH SM) - Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers Version 1.2 2017.

D. CARB (SCM) - Suggested Control Measure for Architectural Coatings; California Air Resources Board 2020.

E. CRI (GLP) - Green Label Plus Testing Program - Certified Products Current Edition.

F. SCAQMD 1113 - Architectural Coatings 1977, with Amendment (2016).

G. SCAQMD 1168 - Adhesive and Sealant Applications 1989, with Amendment (2022).

### 1.05 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Evidence of Compliance: Submit for each different product in each applicable category.

C. Product Data: For each VOC-restricted product used in the project, submit evidence of compliance.

D. Installer Certifications Regarding Prohibited Content: Require each installer of any type of product (not just the products for which VOC restrictions are specified) to certify that either 1) no adhesives, joint sealants, paints, coatings, or composite wood or agrifiber products have been used in the installation of installer's products, or 2) that such products used comply with these requirements.

**1.06 QUALITY ASSURANCE**

A. VOC Content Test Method: 40 CFR 59, Subpart D (EPA Method 24), or ASTM D3960, unless otherwise indicated.
   1. Evidence of Compliance: Acceptable types of evidence are:
      a. Report of laboratory testing performed in accordance with requirements.

B. Testing Agency Qualifications: Independent firm specializing in performing testing and inspections of the type specified in this section.

**PART 2 PRODUCTS**

**2.01 MATERIALS**

A. All Products: Comply with the most stringent of federal, State, and local requirements, or these specifications.
   1. Product data submittals showing VOC content are NOT acceptable forms of evidence.

B. VOC-Content-Restricted Products: VOC content not greater than required by the following:
   1. Adhesives, Including Flooring Adhesives: SCAQMD 1168 Rule.
   2. Joint Sealants: SCAQMD 1168 Rule.
   3. Paints and Coatings: Each color; most stringent of the following:
      a. 40 CFR 59, Subpart D.
      b. SCAQMD 1113 Rule.
      c. CARB (SCM).

**PART 3 EXECUTION**

**3.01 FIELD QUALITY CONTROL**

A. Union County Commissioner's Office reserves the right to reject non-compliant products, whether installed or not, and require their removal and replacement with compliant products at no extra cost to Union County Commissioner's Office.

B. Additional costs to restore indoor air quality due to installation of non-compliant products will be borne by Contractor.

**END OF SECTION**

# SECTION 01 7000
# EXECUTION REQUIREMENTS

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Examination, preparation, and general installation procedures.

B. Pre-installation meetings.

C. Cutting and patching.

D. Surveying for laying out the work.

E. Field engineering.

F. General installation of products.

G. Coordination of Owner-installed products.

H. Cleaning and protection.

I. Starting of systems and equipment.

J. Demonstration and instruction of Union County Commissioner's Office personnel.

K. Closeout procedures, except payment procedures.

L. General requirements for maintenance service.

### 1.02 RELATED SECTIONS

A. Section 01 1000 - Summary: Limitations on working in existing building; continued occupancy; work sequence; identification of salvaged and relocated materials.

B. Section 01 3000 - Administrative Requirements: Submittals procedures.

C. Section 01 4000 - Quality Requirements: Testing and inspection procedures.

D. Section 01 5000 - Temporary Facilities and Controls: Temporary interior partitions.

E. Section 01 7310 - Cutting and Patching: Additional procedures for cutting and patching work.

F. Section 01 7800 - Closeout Submittals: Project record documents, operation and maintenance data, warranties and bonds.

G. Individual Product Specification Sections:
   1. Advance notification to other sections of openings required in work of those sections.

### 1.03 SUBMITTALS

A. See Division 01 - Administrative Requirements, for submittal procedures.

B. Survey work: Submit name, address, and telephone number of Surveyor before starting survey work.
   1. On request, submit documentation verifying accuracy of survey work.
   2. Submit a copy of site drawing signed by the Land Surveyor, that the elevations and locations of the work are in conformance with Contract Documents.
   3. Submit surveys and survey logs for the project record.

C. Cutting and Patching: Submit written request in advance of cutting or alteration that affects:
   1. Structural integrity of any element of Project.
   2. Integrity of weather exposed or moisture resistant element.
   3. Efficiency, maintenance, or safety of any operational element.
   4. Visual qualities of sight exposed elements.
   5. Work of Union County Commissioner's Office or separate Contractor.
   6. Include in request:
      a. Identification of Project.
      b. Location and description of affected work.
      c. Necessity for cutting or alteration.

d. Description of proposed work and products to be used.
e. Effect on work of Union County Commissioner's Office or separate Contractor.
f. Written permission of affected separate Contractor.
g. Date and time work will be executed.

D. Project Record Documents: Accurately record actual locations of capped and active utilities.

E. Landfill Receipts: Submit copy of receipts issued by a landfill facility, licensed to accept hazardous materials, for hazardous waste disposal.

**1.04 QUALIFICATIONS**

A. For survey work, employ a land surveyor registered in 04/10/23 and acceptable to Gardner Spencer Smith Tench and Jarbeau, PC. Submit evidence of Surveyor's Errors and Omissions insurance coverage in the form of an Insurance Certificate.
   1. Certificates: Submit documentation signed by professional engineer or licensed surveyor certifying that location and elevation of improvements comply with requirements.

B. For field engineering, employ a professional engineer of the discipline required for specific service on Project, licensed in Georgia.

**1.05 PROJECT CONDITIONS**

A. Grade site to drain. Maintain excavations free of water. Provide, operate, and maintain pumping equipment.

B. Protect site from puddling or running water. Provide water barriers as required to protect site from soil erosion.

C. Fire Protection:
   1. Keep flammable materials in non-combustible containers; store away from potential fire sources; remove flammable wastes regularly.
   2. Keep temporary and permanent fire fighting facilities readily accessible; keep fire fighting routes open.
   3. Do not allow smoking in areas where highly combustible or explosive materials are present.
   4. Carefully supervise the operation of potential fire sources, including heating units.
   5. Conduct welding operations in manner to prevent fire; comply with local regulations.

D. Physical Hazard Protection:
   1. Provide barricades, warning lights, or signs as required to inform personnel and the public of hazard being protected against.
   2. Barricades: Comply with regulations.
   3. Provide temporary walkways where walking surfaces are hazardous.
   4. Notify the Union County Commissioner's Office before beginning work that involves hazardous operations, including use of explosives and the like.
   5. Comply with other requirements and recommendations of the Contractor's or Union County Commissioner's Office's insurance carrier relative to minimum protection of people and property.

E. Ventilate enclosed areas to assist cure of materials, to dissipate humidity, and to prevent accumulation of dust, fumes, vapors, or gases.

F. Dust Control: Execute work by methods to minimize raising dust from construction operations. Provide positive means to prevent air-borne dust from dispersing into atmosphere and over adjacent property.

G. Erosion and Sediment Control: Plan and execute work by methods to control surface drainage from cuts and fills, from borrow and waste disposal areas. Prevent erosion and sedimentation.
   1. Minimize amount of bare soil exposed at one time.
   2. Provide temporary measures such as berms, dikes, and drains, to prevent water flow.
   3. Construct fill and waste areas by selective placement to avoid erosive surface silts or clays.

4. Periodically inspect earthwork to detect evidence of erosion and sedimentation; promptly apply corrective measures.

H. Noise Control: Provide methods, means, and facilities to minimize noise produced by construction operations.

I. Pest and Rodent Control: Provide methods, means, and facilities to prevent pests and insects from damaging the work.

J. Rodent Control: Provide methods, means, and facilities to prevent rodents from accessing or invading premises.

K. Pollution Control: Provide methods, means, and facilities to prevent contamination of soil, water, and atmosphere from discharge of noxious, toxic substances, and pollutants produced by construction operations. Comply with federal, state, and local regulations.

**1.06 COORDINATION**

A. Coordinate scheduling, submittals, and work of the various sections of the Project Manual to ensure efficient and orderly sequence of installation of interdependent construction elements, with provisions for accommodating items installed later.

B. Notify affected utility companies and comply with their requirements.

C. Verify that utility requirements and characteristics of new operating equipment are compatible with building utilities. Coordinate work of various sections having interdependent responsibilities for installing, connecting to, and placing in service, such equipment.

D. Coordinate space requirements, supports, and installation of mechanical and electrical work that are indicated diagrammatically on Drawings. Follow routing shown for pipes, ducts, and conduit, as closely as practicable; place runs parallel with lines of building. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.

E. In finished areas except as otherwise indicated, conceal pipes, ducts, and wiring within the construction. Coordinate locations of fixtures and outlets with finish elements.

F. Coordinate completion and clean-up of work of separate sections.

G. After Union County Commissioner's Office occupancy of premises, coordinate access to site for correction of defective work and work not in accordance with Contract Documents, to minimize disruption of Union County Commissioner's Office's activities.

**PART 2 PRODUCTS**

**2.01 PATCHING MATERIALS**

A. New Materials: As specified in product sections; match existing products and work for patching and extending work.

B. Type and Quality of Existing Products: Determine by inspecting and testing products where necessary, referring to existing work as a standard.

C. Product Substitution: For any proposed change in materials, submit request for substitution described in Division 01.

**PART 3 EXECUTION**

**3.01 EXAMINATION**

A. Existing utilities: 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 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; and underground electrical services.
2. Furnish location data for work related to Project that must be performed by public utilities serving Project site.

B. Acceptance of Conditions: 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. Written Report: Where a written report listing conditions detrimental to performance of the Work is required by other Sections, include the following:
      a. Description of the Work.
      b. List of detrimental conditions, including substrates.
      c. List of unacceptable installation tolerances.
      d. Recommended corrections.
   2. Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.
   3. Examine walls, floors, and roofs for suitable conditions where products and systems are to be installed.

C. Verify that existing site conditions and substrate surfaces are acceptable for subsequent work. Start of work means acceptance of existing conditions.

D. Verify that existing substrate is capable of structural support or attachment of new work being applied or attached.

E. Examine and verify specific conditions described in individual specification sections.

F. Take field measurements before confirming product orders or beginning fabrication, to minimize waste due to over-ordering or misfabrication.

G. Verify that utility services are available, of the correct characteristics, and in the correct locations.

H. Prior to Cutting: Examine existing conditions prior to commencing work, including elements subject to damage or movement during cutting and patching. After uncovering existing work, assess conditions affecting performance of work. Beginning of cutting or patching means acceptance of existing conditions.

**3.02 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. Clean substrate surfaces prior to applying next material or substance.

E. Seal cracks or openings of substrate prior to applying next material or substance.

F. Apply manufacturer required or recommended substrate primer, sealer, or conditioner prior to applying any new material or substance in contact or bond.

G. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents, submit a request for information to Architect. Include a detailed description of problem encountered, together with recommendations for changing the Contract Documents.

**3.03 PREINSTALLATION MEETINGS**

A. When required in individual specification sections, convene a preinstallation meeting at the site prior to commencing work of the section.

B. Require attendance of parties directly affecting, or affected by, work of the specific section.

C. Notify Gardner Spencer Smith Tench and Jarbeau, PC 2 weeks days in advance of meeting date.

D. Prepare agenda and preside at meeting:
   1. Review conditions of examination, preparation and installation procedures.
   2. Review coordination with related work.

E. Record minutes and distribute copies within two days after meeting to participants, with two copies to Gardner Spencer Smith Tench and Jarbeau, PC, Union County Commissioner's Office, participants, and those affected by decisions made.

**3.04 LAYING OUT THE WORK**

A. Verify locations of survey control points prior to starting work.

B. Promptly notify Gardner Spencer Smith Tench and Jarbeau, PC of any discrepancies discovered.

C. Protect survey control points prior to starting site work; preserve permanent reference points during construction.

D. Promptly report to Gardner Spencer Smith Tench and Jarbeau, PC the loss or destruction of any reference point or relocation required because of changes in grades or other reasons.

E. Replace dislocated survey control points based on original survey control. Make no changes without prior written notice to Gardner Spencer Smith Tench and Jarbeau, PC.

F. Utilize recognized engineering survey practices.

G. Establish elevations, lines and levels. Locate and lay out by instrumentation and similar appropriate means:
   1. Site improvements including pavements; stakes for grading, fill and topsoil placement; utility locations, slopes, and invert elevations.
   2. Grid or axis for structures.
   3. Building foundation, column locations, ground floor elevations.

H. Periodically verify layouts by same means.

I. Maintain a complete and accurate log of control and survey work as it progresses.

J. Site Improvements: Locate and lay out site improvements including pavements, grading, fill and topsoil placement, utility slopes, and invert elevations.

K. Building Lines and Levels: Locate and layout 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.

L. 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.

**3.05 FIELD ENGINEERING**

A. Identification: Owner will identify existing benchmarks, control points, and property corners.

B. Reference Points: Locate existing benchmarks or control points, and similar reference points before beginning the Work. Preserve and protect permanent benchmarks and control points during construction operations.
   1. Do not change or relocate existing benchmarks or control points without prior written approval of the Architect. Report the need to relocate permanent benchmarks or control points to Architect before proceeding.
   2. Report lost or destroyed permanent benchmarks or control points promptly. Base replacements on original survey control points.

C. Benchmarks: Establish and maintain a minimum of two permanent benchmarks on Project site, referenced to data established by survey control points. Comply with authorities having jurisdiction for type and size of benchmark.
   1. Record benchmark locations, with horizontal and vertical data, on Project Record Documents.
   2. Where the actual location or elevation of layout points cannot be marked, provide temporary reference points sufficient to locate the Work.
   3. Remove temporary reference points when no longer needed. Restore marked construction to its original condition.
   4. Certified Survey: On completion of foundation walls, major site improvements, and other work requiring field-engineering services, prepare a certified survey showing dimensions, locations, angles, and elevations of construction and sitework.

D. Final Property Survey: Prepare a final property survey showing significant features (real property) for Project. Include on the survey a certification, signed by professional engineer or licensed surveyor, that principal metes, bounds, lines, and levels of Project are accurately positioned as shown on the survey.
   1. Show boundary lines, monuments, streets, site improvements and utilities, existing improvements and significant vegetation, adjoining properties, acreage, grade contours, and the distance and bearing from a site corner to a legal point.
   2. Recording: At Final Completion, have the final property survey recorded by or with authorities having jurisdiction as the official "property survey."

**3.06 GENERAL INSTALLATION REQUIREMENTS**

A. Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.

B. Install products as specified in individual sections, in accordance with manufacturer's instructions and recommendations, and so as to avoid waste due to necessity for replacement.

C. Make vertical elements plumb and horizontal elements level, unless otherwise indicated.

D. Install equipment and fittings plumb and level, neatly aligned with adjacent vertical and horizontal lines, unless otherwise indicated.

E. Make consistent texture on surfaces, with seamless transitions, unless otherwise indicated.

F. Make neat transitions between different surfaces, maintaining texture and appearance.

G. Where space is limited, install components to maximize space available for maintenance and to maximize ease of removal for replacement.

H. In finished areas, conceal pipes, ducts, and wiring within construction, unless otherwise indicated.

I. Coordinate exact locations of fixtures and outlets with finish elements.

J. Maintain minimum headroom clearance of 8 feet (2.4 m) in spaces without a suspended ceiling.

**3.07 INSTALLATION OF COMPONENTS**

A. Mounting heights: Obtain Gardner Spencer Smith Tench and Jarbeau, PC instructions for uncertain mounting heights.

B. Separate incompatible materials with suitable materials or spacing to prevent cathodic corrosion.

C. Provide all anchors and fasteners required and use methods necessary to securely fasten work.
   1. Allow for thermal expansion and contraction, and for building movement.

D. After installation, adjust operating components to proper operation.

E. Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Substantial Completion.

F. 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.

G. Anchors and Fasteners: Provide anchors and fasteners as required to anchor each component securely in place, accurately located and aligned with other portions of the Work.
   1. Allow for building movement, including thermal expansion and contraction.

H. 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.

I. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.

**3.08 CUTTING AND PATCHING**

A. Whenever possible, execute the work by methods that avoid cutting or patching.

B. Perform whatever cutting and patching is necessary to:
   1. Complete the work.
   2. Fit products together to integrate with other work.
   3. Provide openings for penetration of mechanical, electrical, and other services.
   4. Match work that has been cut to adjacent work.
   5. Repair areas adjacent to cuts to required condition.
   6. Repair new work damaged by subsequent work.
   7. Remove samples of installed work for testing when requested.
   8. Remove and replace defective and non-conforming work.

C. Execute work by methods that avoid damage to other work and that will provide appropriate surfaces to receive patching and finishing. In existing work, minimize damage and restore to original condition.

D. Employ original installer to perform cutting for weather exposed and moisture resistant elements, and sight exposed surfaces.

E. Cut rigid materials using masonry saw or core drill. Pneumatic tools not allowed without prior approval.

F. Restore work with new products in accordance with requirements of Contract Documents.

G. Fit work air tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.

H. At penetrations of fire rated walls, partitions, ceiling, or floor construction, completely seal voids with fire rated material in accordance with Section 07 8400, to full thickness of the penetrated element.

I. Patching:
   1. Finish patched surfaces to match finish that existed prior to patching. On continuous surfaces, refinish to nearest intersection or natural break. For an assembly, refinish entire unit.
   2. Match color, texture, and appearance.
   3. Repair patched surfaces that are damaged, lifted, discolored, or showing other imperfections due to patching work. If defects are due to condition of substrate, repair substrate prior to repairing finish.

**3.09 OWNER INSTALLED PRODUCTS**

A. Site Access: Provide access to Project site for Owner's construction forces.

B. Coordination: Coordinate construction and operations of the Work with work performed by Owner's construction forces.
   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. Preinstallation Conferences: Include Owner's construction forces at preinstallation conferences covering portions of the Work that are to receive Owner's work. Attend preinstallation conferences conducted by Owner's construction forces if portions of the Work depend on Owner's construction.

**3.10 PROGRESS CLEANING**

A. General: Clean Project site and work areas daily, including common areas. Coordinate progress cleaning for joint-use and where more than one installer has worked. 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 materials more than 7 days during normal weather or 3 days if the temperature is expected to rise above 80 deg F (27deg C) .
   3. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.

B. Site: Maintain Project site free of waste materials and debris.

C. Maintain areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition.

D. Concealed Spaces: Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces, prior to enclosing the space.

E. Broom and vacuum clean interior areas prior to start of surface finishing, and continue cleaning to eliminate dust.

F. Clean areas in which work is to be done to the level of cleanliness necessary for proper execution of that work.
   1. Where dust would impair execution of work, broom- and vacuum-clean the entire interior area and keep clean.

G. 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.

H. Exposed Surfaces: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.

I. Cutting and Patching: Clean areas and spaces where cutting and patching are performed. Completely remove paint, mortar, oils, putty, and similar materials.
   1. Thoroughly clean piping, conduit, and similar features before applying paint or other finishing materials. Restore damaged pipe covering to its original condition.

J. Waste Disposal: Burying or burning waste materials on-site will not be permitted. Washing waste materials down sewers or into waterways will not be permitted.

K. 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.

L. 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.

M. 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.

**3.11 PROTECTION OF INSTALLED WORK**

A. Protect installed work from damage by construction operations.

B. Provide special protection where specified in individual specification sections.

C. Provide temporary and removable protection for installed products. Control activity in immediate work area to prevent damage.

D. Provide protective coverings at walls, projections, jambs, sills, and soffits of openings.

E. Protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects, by protecting with durable sheet materials.

F. Prohibit traffic or storage upon waterproofed or roofed surfaces. If traffic or activity is necessary, obtain recommendations for protection from waterproofing or roofing material manufacturer.

G. Prohibit traffic from landscaped areas.

H. Remove protective coverings when no longer needed; reuse or recycle plastic coverings if possible.

**3.12 SYSTEM STARTUP**

A. Coordinate schedule for start-up of various equipment and systems.

B. Notify Gardner Spencer Smith Tench and Jarbeau, PC and owner seven days prior to start-up of each item.

C. Verify that each piece of equipment or system has been checked for proper lubrication, drive rotation, belt tension, control sequence, and for conditions that may cause damage.

D. Verify tests, meter readings, and specified electrical characteristics agree with those required by the equipment or system manufacturer.

E. Verify that wiring and support components for equipment are complete and tested.

F. Execute start-up under supervision of applicable Contractor personnel and manufacturer's representative in accordance with manufacturers' instructions.

G. When specified in individual specification Sections, require manufacturer to provide authorized representative to be present at site to inspect, check, and approve equipment or system installation prior to start-up, and to supervise placing equipment or system in operation.

H. Submit a written report that equipment or system has been properly installed and is functioning correctly.

**3.13 DEMONSTRATION AND INSTRUCTION**

A. Demonstrate operation and maintenance of products to Union County Commissioner's Office's personnel two weeks prior to date of Substantial Completion.

B. Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, maintenance, and shutdown of each item of equipment at scheduled time, at equipment location.

C. For equipment or systems requiring seasonal operation, perform demonstration for other season within six months.

D. Provide a qualified person who is knowledgeable about the Project to perform demonstration and instruction of owner personnel.

E. Utilize operation and maintenance manuals as basis for instruction. Review contents of manual with Union County Commissioner's Office's personnel in detail to explain all aspects of operation and maintenance.

F. Prepare and insert additional data in operations and maintenance manuals when need for additional data becomes apparent during instruction.

**3.14 ADJUSTING**

A. Adjust operating products and equipment to ensure smooth and unhindered operation.

B. Testing, adjusting, and balancing HVAC systems: See Division 15.

### 3.15 FINAL CLEANING

A. Execute final cleaning prior to Substantial Completion.
   1. Clean areas to be occupied by Union County Commissioner's Office prior to final completion before Union County Commissioner's Office occupancy.

B. Use cleaning materials that are nonhazardous.

C. Clean interior and exterior glass, surfaces exposed to view; remove temporary labels, stains and foreign substances, polish transparent and glossy surfaces, vacuum carpeted and soft surfaces.

D. Clean equipment and fixtures to a sanitary condition with cleaning materials appropriate to the surface and material being cleaned.

E. Clean filters of operating equipment.

F. Clean debris from roofs, gutters, downspouts, and drainage systems.

G. Clean site; sweep paved areas, rake clean landscaped surfaces.

H. Remove waste, surplus materials, trash/rubbish, and construction facilities from the site; dispose of in legal manner; do not burn or bury.

### 3.16 CLOSEOUT PROCEDURES

A. Make submittals that are required by governing or other authorities.
   1. Provide copies to Gardner Spencer Smith Tench and Jarbeau, PC and Union County Commissioner's Office.
      a. Obtain Certificate of Occupancy for posting as directed by Union County Commissioner's Office
      b. Obtain elevator inspection (if any) required by governing authorities for operation of equipment and mount as required.

B. Notify Gardner Spencer Smith Tench and Jarbeau, PC when work is considered ready for Substantial Completion.

C. Submit written certification that Contract Documents have been reviewed, work has been inspected, and that work is complete in accordance with Contract Documents and ready for Gardner Spencer Smith Tench and Jarbeau, PC's review.

D. Correct items of work listed in executed Certificates of Substantial Completion and comply with requirements for access to Union County Commissioner's Office-occupied areas.

E. Notify Gardner Spencer Smith Tench and Jarbeau, PC when work is considered finally complete.

F. Complete items of work determined by Gardner Spencer Smith Tench and Jarbeau, PC's final inspection.

### 3.17 MAINTENANCE

A. Provide service and maintenance of components indicated in specification sections.

B. Maintenance Period: As indicated in specification sections or, if not indicated, not less than one year from the Date of Substantial Completion or the length of the specified warranty, whichever is longer.

C. Examine system components at a frequency consistent with reliable operation. Clean, adjust, and lubricate as required.

D. Include systematic examination, adjustment, and lubrication of components. Repair or replace parts whenever required. Use parts produced by the manufacturer of the original component.

E. Maintenance service shall not be assigned or transferred to any agent or subcontractor without prior written consent of the Union County Commissioner's Office.

**END OF SECTION**

# SECTION 01 7310
# CUTTING AND PATCHING

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Procedural requirements for cutting and patching.

### 1.02 RELATED REQUIREMENTS

A. Divisions 02 through 14 Sections for specific requirements and limitations applicable to cutting and patching individual parts of the Work.
   1. Requirements in this Section apply to mechanical and electrical installations. Refer to Divisions 21-23 and 26 Sections for other requirements and limitations applicable to cutting and patching mechanical and electrical installations.

B. Section 01 1000 - Summary: Contract descriptions, description of alterations work, work by others, future work, occupancy conditions, use of site and premises, work sequence.

C. Section 01 2000 - Price and Payment Procedures: Applications for payment, Schedule of Values, modifications procedures, closeout procedures.

D. Section 01 3000 - Administrative Requirements: Submittal procedures, project meetings, progress schedules and documentation, reports, coordination.

E. Section 01 4000 - Quality Requirements: Procedures for testing, inspection, mock-ups, reports, certificates; use of reference standards.

F. Section 01 5000 - Temporary Facilities and Controls.

G. Section 01 6000 - Product Requirements: Fundamental product requirements, substitutions and product options, delivery, storage, and handling.

H. Section 01 7000 - Execution Requirements: Examination, preparation, and general installation procedures; preinstallation meetings; cutting and patching; cleaning and protection; starting of systems; demonstration and instruction; closeout procedures except payment procedures; requirements for alterations work.

I. Section 01 7800 - Closeout Submittals: Project record documents, operation and maintenance.

J. Division 07 Section "Through-penetration Firestop Systems" for patching fire-rated construction.

### 1.03 DEFINITIONS

A. Cutting: Removal of existing construction necessary to permit installation or performance of other Work.

B. Patching: Fitting and repair work required to restore surfaces to original conditions after installation of other Work.

### 1.04 SUBMITTALS

A. Cutting and Patching Proposal: Submit a proposal describing procedures at least 10 days before the time cutting and patching will be performed, requesting approval to proceed. Include the following information:
   1. Extent: Describe cutting and patching, show how they will be performed, and indicate why they cannot be avoided.
   2. Changes to Existing Construction: Describe anticipated results. Include changes to structural elements and operating components as well as changes in building's appearance and other significant visual elements.
   3. Products: List products to be used and firms or entities that will perform the Work.
   4. Dates: Indicate when cutting and patching will be performed.
   5. Utilities: List utilities that cutting and patching procedures will disturb or affect. List utilities that will be relocated and those that will be temporarily out of service. Indicate how long service will be disrupted.

6. Structural Elements: Where cutting and patching involve adding reinforcement to structural elements, submit details and engineering calculations showing integration of reinforcement with original structure.
7. Gardner Spencer Smith Tench and Jarbeau, PC's Approval: Obtain approval of cutting and patching proposal before cutting and patching. Approval does not waive right to later require removal and replacement of unsatisfactory work.

B. Request for Utility Interruption: Where utilities are to be interrupted, submit the "Request for Department - Utility Interruption" form, at the end of this section for review and approval by the Union County Commissioner's Office.

**1.05 QUALITY ASSURANCE**

A. Structural Elements: Do not cut and patch structural elements in a manner that could change their load-carrying capacity or load-deflection ratio.

B. Operational Elements: Do not cut and patch the following 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.
1. Primary operational systems and equipment.
2. Air or smoke barriers.
3. Fire-protection systems.
4. Control systems.
5. Communication systems.
6. Conveying systems.
7. Electrical wiring systems.
8. Operating systems of special construction in Division 13 Sections.

C. Miscellaneous Elements: Do not cut and patch the following elements or related 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.
1. Water, moisture, or vapor barriers.
2. Membranes and flashings.
3. Exterior curtain-wall construction.
4. Equipment supports.
5. Piping, ductwork, vessels, and equipment.
6. Noise- and vibration-control elements and systems.

D. Visual Requirements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch construction exposed on the exterior or in occupied spaces in a manner that would, in Gardner Spencer Smith Tench and Jarbeau, PC's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.
1. If possible, retain original Installer or fabricator to cut and patch exposed Work listed below. If it is impossible to engage original Installer or fabricator, engage another recognized, experienced, and specialized firm.
   a. Processed concrete finishes.
   b. Stonework and stone masonry.
   c. Ornamental metal.
   d. Matched-veneer woodwork.
   e. Preformed metal panels.
   f. Roofing.
   g. Firestopping.
   h. Window wall system.
   i. Finished wood flooring.
   j. Fluid-applied flooring.
   k. HVAC enclosures, cabinets, or covers.

**1.06 WARRANTY**

A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during cutting and patching operations, by methods and with materials so as not to void existing warranties.

**PART 2 PRODUCTS**

**2.01 MATERIALS**

A. General: Comply with requirements specified in other Sections of these Specifications.

B. Existing Materials: Use materials identical to existing materials. For exposed surfaces, use materials that visually match existing adjacent surfaces to the fullest extent possible.
   1. If identical materials are unavailable or cannot be used, use materials that, when installed, will match the visual and functional performance of existing materials.

**PART 3 EXECUTION**

**3.01 EXAMINATION**

A. Examine surfaces to be cut and patched and conditions under which cutting and patching are to be performed.
   1. Compatibility: Before patching, verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
   2. Proceed with installation only after unsafe or unsatisfactory conditions have been corrected.

**3.02 PREPARATION**

A. Temporary Support: Provide temporary support of Work to be cut.

B. Protection: Protect existing 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.

C. Adjoining Areas: Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.

**3.03 PERFORMANCE**

A. 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 existing construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to the original condition.

B. Cutting: Cut existing 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 as small as possible, neatly to size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
   2. Existing Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
   3. Concrete or 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 Division 2 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.

C. 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 possible. Provide materials and comply with installation requirements specified in other Sections of these Specifications.
   1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate 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 eliminate evidence of patching and refinishing.
   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 existing 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, apply primer and intermediate paint coats 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 re-hang existing 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 weathertight condition.

**3.04 CLEANING**

A. Clean areas and spaces where cutting and patching are performed. Completely remove paint, mortar, oils, putty, and similar items. Thoroughly clean piping, conduit, and similar features before applying paint or other finishing materials. Restore damaged coverings to their original condition.

**3.05 ATTACHMENTS**

**3.06**

**3.07**

**3.08**

A. REQUEST FOR DEPARTMENT-UTILITY INTERRUPTION

B. DATE: _____ REQUEST NO.:_____

C. ********** **

D. PROPOSED INTERRUPTION: FROM: (DATE)_____

E. (TIME)_____

F. TO:(DATE)_____

G. (TIME)_____

H. ********** **

I. APPROVALS NEEDED:

J. _____DATE:_____ ___

K. _____DATE:_____ ___

L. _____DATE:_____

M. _____DATE:_____

N. **********

O. PLEASE INDICATE THE TYPE OF UTILITY TO BE AFFECTED:

P. [ ] WATER[ ] ELECTRIC[ ] PHONE[ ]GASES

Q. [ ] HVAC[ ] SEWER[ ] EXHAUST[ ]VACUUM

R. [ ] ALARM[ ] OTHER_____

S. **********

T. LOCATION OF THE UTILITY WORK TO BE DONE:_____

U. _____

V. _____

W. **********

X. COPIES:

Y. SUB-CONTRACTOR:

Z. NOTES:

AA.

BB.

**END OF SECTION**

# SECTION 01 7800
# CLOSEOUT SUBMITTALS

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Project Record Documents.
   1. Record drawings.
   2. Record project manual (specifications).
   3. Record submittals:
      a. Shop drawings.
      b. Product data.

B. Operation and Maintenance Data.

C. Warranties and bonds.

D. Final cleaning.

### 1.02 RELATED REQUIREMENTS

A. Division 01 Section "Payment Procedures" for requirements for Applications for Payment for Substantial and Final Completion.

B. Division 01 Section "Construction Progress Documentation" for submitting Final Completion construction photographs and negatives.

C. Division 01 Section "Execution Requirements" for progress cleaning of Project site.

D. Divisions 02 through 26 Sections for specific closeout and special cleaning requirements for products of those Sections.

E. Section 00 7200 - General Conditions: Performance bond and labor and material payment bonds, warranty, and correction of work.

F. Section 01 3000 - Administrative Requirements: Submittals procedures, shop drawings, product data, and samples.

G. Section 01 7000 - Execution and Closeout Requirements: Contract closeout procedures.

H. Individual Product Sections: Specific requirements for operation and maintenance data.

I. Individual Product Sections: Warranties required for specific products or Work.

### 1.03 SUBMITTALS

A. Project Record Documents: Submit documents to Gardner Spencer Smith Tench and Jarbeau, PC with claim for final Application for Payment.
   1. Record drawings: Submit in form of opaque bond prints.
      a. Submit original marked-up set.
      b. Submit three (3) additional opaque bond print copy sets.
      c. Sets shall include all drawings whether changed or not.
   2. Other record documents: Submit originals or good quality photocopies.

B. Operation and Maintenance Data:
   1. Submit two copies of preliminary draft or proposed formats and outlines of contents before start of Work. Gardner Spencer Smith Tench and Jarbeau, PC will review draft and return one copy with comments.
   2. For equipment, or component parts of equipment put into service during construction and operated by Union County Commissioner's Office, submit completed documents within ten days after acceptance.
   3. Submit one copy of completed documents 15 days prior to final inspection. This copy will be reviewed and returned after final inspection, with Gardner Spencer Smith Tench and Jarbeau, PC comments. Revise content of all document sets as required prior to final submission.

4. Submit two sets of revised final documents in final form within 10 days after final inspection.

C. Warranties and Bonds:
1. For equipment or component parts of equipment put into service during construction with Union County Commissioner's Office's permission, submit documents within 10 days after acceptance.
2. Make other submittals within 10 days after Date of Substantial Completion, prior to final Application for Payment.
3. For items of Work for which acceptance is delayed beyond Date of Substantial Completion, submit within 10 days after acceptance, listing the date of acceptance as the beginning of the warranty period.

**1.04 SUBSTANTIAL COMPLETION**

A. Preliminary Procedures: Before requesting inspection for determining date of Substantial Completion, complete the following. List items below that are incomplete in request.
1. Prepare a list of items to be completed and corrected (punch list), the value of items on the list, and reasons why the Work is not complete.
2. Advise Union County Commissioner's Office of pending insurance changeover requirements.
3. Submit specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
4. Obtain and submit releases permitting Union County Commissioner's Office unrestricted Use of the. Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
5. Prepare and submit Project Record Documents, operation and maintenance manuals, Final Completion construction photographs, damage or settlement surveys, property surveys, and similar final record information.
6. Deliver tools, spare parts, extra materials, and similar items to location designated by Union County Commissioner's Office. Label with manufacturer's name and model number where applicable.
7. Make final changeover of permanent locks and deliver keys to Union County Commissioner's Office. Advise Union County Commissioner's Office's personnel of changeover in security provisions.
8. Complete startup testing of systems.
9. Submit test/adjust/balance records bearing Gardner Spencer Smith Tench and Jarbeau, PC's approval without exception.
10. Terminate and remove temporary facilities from Project site, along with mockups, Project signs, construction tools, and similar elements.
11. Advise Union County Commissioner's Office of changeover in heat and other utilities.
12. Submit changeover information related to Union County Commissioner's Office's occupancy, use, operation, and maintenance.
13. Complete final cleaning requirements, including touchup painting.
14. Touch up and otherwise repair and restore marred exposed finished to eliminate visual defects.

B. Inspection: Submit a written request for inspection for Substantial Completion. On receipt of request, Gardner Spencer Smith Tench and Jarbeau, PC will either proceed with inspection or notify Contractor of unfulfilled requirements. Gardner Spencer Smith Tench and Jarbeau, PC 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 Gardner Spencer Smith Tench and Jarbeau, PC, 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.

**1.05 FINAL COMPLETION**

A. Preliminary Procedures: Before requesting final inspection for determining date of Final Completion, complete the following:
   1. Submit a final Application for Payment according to Division 1 Section "Payment Procedures."
   2. Submit certified copy of Gardner Spencer Smith Tench and Jarbeau, PC's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Gardner Spencer Smith Tench and Jarbeau, PC. The certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
   3. Submit evidence of final, continuing insurance coverage complying with insurance requirements.
   4. Submit pest-control final inspection report and warranty.
   5. Instruct Union County Commissioner's Office's personnel in operation, adjustment, and maintenance of products, equipment, and systems.

B. Inspection: Submit a written request for final inspection for acceptance. On receipt of request, Gardner Spencer Smith Tench and Jarbeau, PC will either proceed with inspection or notify Contractor of unfulfilled requirements. Gardner Spencer Smith Tench and Jarbeau, PC 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.

**1.06 LIST OF INCOMPLETE ITEMS (PUNCH LIST)**

A. Preparation: Submit three copies 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.
   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.

**PART 2 PRODUCTS - NOT USED**

**PART 3 EXECUTION**

**3.01 PROJECT RECORD DOCUMENTS**

A. Maintain on site one set of the following record documents; record actual revisions to the Work:
   1. Drawings.
      a. Keep drawings in labelled, bound sets.
         1) Mark with red pencil.
         2) Mark work of separate contracts with different colors of pencils.
         3) Incorporate new drawings into existing sets, as they are issued.
      b. When the contractor is required by a provision of a modification to prepare a new drawing, rather than to revise existing drawings, obtain instruction from Gardner Spencer Smith Tench and Jarbeau, PC for drawing scale and information required.
   2. Specifications.
      a. Maintain a complete copy of the project manual, marked to show changes.
   3. Addenda.
   4. Change Orders and other modifications to the Contract.

5. Reviewed shop drawings, product data, and samples.
6. Manufacturer's instruction for assembly, installation, and adjusting.

B. Ensure entries are complete and accurate, enabling future reference by Union County Commissioner's Office.

C. Store record documents separate from documents used for construction.

D. Record information concurrent with construction progress.

E. Specifications: Legibly mark and record at each product section description of actual products installed, including the following:
1. Manufacturer's name and product model and number.
2. Product substitutions or alternates utilized.
3. Changes made by Addenda and modifications.

F. Record Drawingsand Shop Drawings: Legibly mark each item to record actual construction including:
1. Measured depths of foundations in relation to finish first floor datum.
2. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
3. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the Work.
   a. Actual routings of piping and conduits.
   b. Revisions to electrical circuits.
   c. Sizes and routings of ducts.
   d. Actual equipment locations.
4. Particulars on concealed products which will not be easy to identify later.
5. Field changes of dimension and detail.
6. Details not on original Contract drawings.
   a. Note changes made by modifications to the contract; include identification numbers if applicable.
7. New information which may be useful to the Owner, but which was not shown in either the contract documents or submittals.

G. Record Submittals
1. Maintain a complete set of all submittals made during construction, marked to show changes.
   a. Maintain submittals in cardboard file boxes, labeled to show contents.
   b. Sort submittals by applicable specification section and file in order of submittal a identification number.
2. Record Shop Drawings: Record the types of information specified for all record documents.
   a. Mark changes on record shop drawings only when contract drawing would not be capable of showing the change clearly or completely.
   b. Mark changes in manner specified for record drawings.
3. Record Product Data Submittals: Record the types of information specified for all record documents.
   a. In addition, record the following types of information:
      1) Changes in the products as delivered to the site.
      2) Changes in manufacturer's instructions or recommendations for installation.
4. Record Coordination Drawings: Record the types of information required for all record documents.
   a. Mark up in the manner specified for record drawings.

H. Gardner Spencer Smith Tench and Jarbeau, PC will make the original contract drawings available to the Contractor for printing transparencies.

I. Where record drawings are also required as part of operation and maintenance data submittals, make copies from the original record drawing set.

**3.02 OPERATION AND MAINTENANCE DATA**

A. Source Data: For each product or system, list names, addresses and telephone numbers of Subcontractors and suppliers, including local source of supplies and replacement parts.

B. Product Data: Mark each sheet to clearly identify specific products and component parts, and data applicable to installation. Delete inapplicable information.

C. Drawings: Supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams. Do not use Project Record Documents as maintenance drawings.

D. Typed Text: As required to supplement product data. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions.

**3.03 ASSEMBLY OF OPERATION AND MAINTENANCE MANUALS**

A. Assemble operation and maintenance data into durable manuals for Union County Commissioner's Office's personnel use, with data arranged in the same sequence as, and identified by, the specification sections.

B. Where systems involve more than one specification section, provide separate tabbed divider for each system.

C. Prepare instructions and data by personnel experienced in maintenance and operation of described products.

D. Prepare data in the form of an instructional manual.

E. Binders: Commercial quality, 8-1/2 by 11 inch three D side ring binders with durable plastic covers; 2 inch maximum ring size. When multiple binders are used, correlate data into related consistent groupings.
   1. In addition to binders, all Operation & Maintenance documentation will be submitted on CD.

F. Cover: Identify each binder with typed or printed title OPERATION AND MAINTENANCE INSTRUCTIONS; identify title of Project; identify subject matter of contents.

G. Project Directory: Title and address of Project; names, addresses, and telephone numbers of Gardner Spencer Smith Tench and Jarbeau, PC, Consultants, Contractor and subcontractors, with names of responsible parties.

H. Tables of Contents: List every item separated by a divider, using the same identification as on the divider tab; where multiple volumes are required, include all volumes Tables of Contents in each volume, with the current volume clearly identified.

I. Dividers: Provide tabbed dividers for each separate product and system; identify the contents on the divider tab; immediately following the divider tab include a description of product and major component parts of equipment.

J. Text: Manufacturer's printed data, or typewritten data on 24 pound paper.

K. Drawings: Provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.

L. Arrange content by systems under section numbers and sequence of Table of Contents of this Project Manual.

M. Contents: Prepare a Table of Contents for each volume, with each product or system description identified, in three parts as follows:
   1. Part 1: Directory, listing names, addresses, and telephone numbers of Gardner Spencer Smith Tench and Jarbeau, PC, Contractor, Subcontractors, and major equipment suppliers.

2. Part 2: Operation and maintenance instructions, arranged by system and subdivided by specification section. For each category, identify names, addresses, and telephone numbers of Subcontractors and suppliers. Identify the following:
   a. Significant design criteria.
   b. List of equipment.
   c. Parts list for each component.
   d. Operating instructions.
   e. Maintenance instructions for equipment and systems.
   f. Maintenance instructions for special finishes, including recommended cleaning methods and materials, and special precautions identifying detrimental agents.
3. Part 3: Project documents and certificates, including the following:
   a. Shop drawings and product data.
   b. Air and water balance reports.
   c. Certificates.
   d. Photocopies of warranties and bonds.

N. Provide a listing in Table of Contents for design data, with tabbed dividers and space for insertion of data.

O. Table of Contents: Provide title of Project; names, addresses, and telephone numbers of Gardner Spencer Smith Tench and Jarbeau, PC , Consultants, and Contractor with name of responsible parties; schedule of products and systems, indexed to content of the volume.

**3.04 WARRANTIES AND BONDS**

A. Obtain warranties and bonds, executed in duplicate by responsible Subcontractors, suppliers, and manufacturers, within 10 days after completion of the applicable item of work. Except for items put into use with Union County Commissioner's Office's permission, leave date of beginning of time of warranty until Date of Substantial completion is determined.

B. Verify that documents are in proper form, contain full information, and are notarized.

C. Co-execute submittals when required.

D. Retain warranties and bonds until time specified for submittal.

E. Manual: Bind in commercial quality 8-1/2 by 11 inch three D side ring binders with durable plastic covers.
   1. In addition to binders, all Warranty, Guarantee, and Bond documentation will be submitted on CD.

F. Cover: Identify each binder with typed or printed title WARRANTIES AND BONDS, with title of Project; name, address and telephone number of Contractor and equipment supplier; and name of responsible company principal.

G. Table of Contents: Neatly typed, in the sequence of the Table of Contents of the Project Manual, with each item identified with the number and title of the specification section in which specified, and the name of product or work item.

H. Separate each warranty or bond with index tab sheets keyed to the Table of Contents listing. Provide full information, using separate typed sheets as necessary. List Subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal.

**3.05 DEMONSTRATION AND TRAINING**

A. Instruction: Instruct Union County Commissioner's Office's personnel to adjust, operate, and maintain systems, subsystems, and equipment not part of a system.
   1. Provide instructors experienced in operation and maintenance procedures.
   2. Provide instruction at mutually agreed-on times. For equipment that requires seasonal operation, provide similar instruction at the start of each season.
   3. Schedule training with Union County Commissioner's Office, through Gardner Spencer Smith Tench and Jarbeau, PC with at least seven days' advance notice.

4. Coordinate instructors, including providing notification of dates, times, length of instruction, and course content.

B. Contractor to provide an agenda of instruction for each system.

C. Contractor to provide an "Acknowledgement of Instruction" sign-in sheet for each system. Submit triplicate copies for file.

D. Contractor will video all Owner training sessions and submit two (2) CD's of each training session with Closeout Documents.

**3.06 FINAL CLEANING**

A. General: Provide 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 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. Pressure wash as required to remove stains.
   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. Remove snow and ice to provide safe access to building.
   f. 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.
   g. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
   h. Sweep concrete floors broom clean in unoccupied spaces.
   i. Vacuum carpet and similar soft surfaces, removing debris and excess nap; shampoo if visible sailor stains remain.
   j. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials. Polish mirrors and glass, taking care not to scratch surfaces.
   k. Remove labels that are not permanent.
   l. Touch up and otherwise repair and restore marred, exposed finishes and surfaces. Replace finishes and surfaces that cannot be satisfactorily repaired or restored or that already show evidence of repair or restoration.
      1) Do not paint over "UL" and similar labels, including mechanical and electrical name plates.
   m. Wipe surfaces of mechanical and electrical equipment, elevator equipment, and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.
   n. Replace parts subject to unusual operating conditions.
   o. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.
   p. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grilles.
   q. Clean ducts, blowers, and coils if units were operational without filters during construction.

r. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency. Replace burned-out bulbs, and those noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.
s. Leave Project clean and ready for occupancy.

C. Pest Control: Engage an experienced, licensed exterminator to make a final inspection and rid Project of rodents, insects, and other pest. Prepare and submit a written report for file.

**3.07 ATTACHMENTS**

A. CHECK-OFF LIST

B.

C. DOCUMENTNO. OF COPIESDATE RECEIVED

D. ********** **

E. CONTRACTORS WARRANTY_____

F. SUBCONTRACTORS WARRANTY_____

G. STATUTORY AFFIDAVIT_____

H. NON-INFLUENCE AFFIDAVIT_____

I. INSPECTION REPORTS

J. SITE_____

K. BUILDING_____

L. PLUMBING_____

M. ELECTRICAL_____

N. HEALTH_____

O. OTHER_____

P. FIRE MARSHAL OCCUPANCY CERTIFICATE _____

Q. AS-BUILT DRAWINGS_____

R. MAINTENANCE MANUALS_____

S. STAFF INSTRUCTIONS_____

T. SPECIAL WARRANTIES_____

U. CERTIFICATE OF SUB. COMPLETION*_____

V. CERTIFICATE OF COMPLETION**_____

W.

X. I certify that, being familiar with the Contract Documents for this project, to the best of my knowledge, the items checked off herein above constitute all that are applicable to this project.

Y.

Z. Date submitted to Gardner Spencer Smith Tench and Jarbeau, PC. _____

AA. Date submitted to the Union County Commissioner's Office._____

BB. CONTRACTOR_____

CC. * Submit following Owner's acceptance of building for use.

DD. ** Hold all other documents and submit in a package when all requirements are complete. (No exceptions, piecemeal submittal will be returned.)

EE. WARRANTY BY CONTRACTOR

FF.

GG. **********
HH.
II. OWNER:Union County Commissioner's Office
JJ.
KK. JOB NAME:_____
LL.
MM. ADDRESS:_____
NN.
OO. COUNTY OF:_____
PP.
QQ. STATE OF:_____
RR.
SS. DATE:_____
TT.
UU. _____, as General Contractor on the above job does hereby guarantee that all work executed under the plans and Specifications will be free from defects of materials and/or workmanship for a period of _____Year(s), beginning_____and ending_____and that all defects occurring within the warranty period shall be replaced or repaired at no cost to Union County Commissioner's Office.
VV.
WW. This guarantee covers all work as shown on the plans and specified in the Specifications and Contract Documents.
XX.
YY. LEGAL NAME OF CONTRACTOR
ZZ. _____
AAA. By:_____
BBB. Title:_____
CCC. _____
DDD. Notary Public
EEE. This ____day of_____, 20____.
FFF.
GGG. WARRANTY BY SUBCONTRACTOR
HHH.
III. **********
JJJ.
KKK. OWNER:Union County Commissioner's Office
LLL.
MMM. JOB NAME:_____
NNN.
OOO. ADDRESS:_____

PPP.

QQQ. COUNTY OF:_____

RRR.

SSS. STATE OF:_____

TTT.

UUU. DATE:_____

VVV.

WWW. _____, as Sub-Contractor on the above job does hereby guarantee that all work executed under the plans and Specifications will be free from defects of materials and/or workmanship for a period of _____Year(s), beginning_____and ending_____and that all defects occurring within the warranty period shall be replaced or repaired at no cost to Union County Commissioner's Office.

XXX.

YYY. This guarantee covers all work as shown on the plans and specified in the Specifications and Contract Documents.

ZZZ.

AAAA. LEGAL NAME OF SUBCONTRACTOR

BBBB. _____

CCCC. By:_____

DDDD. Title:_____

EEEE. _____

FFFF. Notary Public

GGGG. This ____day of_____, 20____.

HHHH.

**END OF SECTION**

# SECTION 01 7875
# FINAL CLEANING

## PART 1 GENERAL

### 1.01 RELATED REQUIREMENTS

A. Section 01 1000 - Summary: Contract descriptions, description of alterations work, work by others, future work, occupancy conditions, use of site and premises, work sequence.

B. Section 01 2000 - Price and Payment Procedures: Applications for payment, Schedule of Values, modifications procedures, closeout procedures.

C. Section 01 3000 - Administrative Requirements: Submittal procedures, project meetings, progress schedules and documentation, reports, coordination.

D. Section 01 4000 - Quality Requirements: Procedures for testing, inspection, mock-ups, reports, certificates; use of reference standards.

E. Section 01 5000 - Temporary Facilities and Controls.

F. Section 01 6000 - Product Requirements: Fundamental product requirements, substitutions and product options, delivery, storage, and handling.

G. Section 01 7000 - Execution and Closeout Requirements: Examination, preparation, and general installation procedures; preinstallation meetings; cutting and patching; cleaning and protection; starting of systems; demonstration and instruction; closeout procedures except payment procedures; requirements for alterations work.

H. Section 01 7800 - Closeout Submittals: Project record documents, operation and maintenance (O&M) data, warranties and bonds.

### 1.02 DEFINITIONS

A. Final Cleaning is hereby defined to include the general requirements near the end of the Contract Time, in preparation for final acceptance, final payment, normal termination of the Contract, occupancy by the Owner and similar actions evidencing completion of the work. Specific requirements for individual units of work are specified in the sections of Division 01 through 48. The time of final cleaning is recognized to be directly related to "Substantial Completion", and therefore may be either a single time period for the entire work or a series of time periods for individual parts of the work which have been certified as substantially complete at different dates.

B. Final Cleaning includes all work associated with remedial cleaning required after any work of the contractor, regardless of when the work was completed.

### 1.03 SUBSTANTIAL COMPLETION

A. Prior to requesting Gardner Spencer Smith Tench and Jarbeau, PC's inspection for certification of Substantial Completion (for either the entire work or portions thereof), Final Cleaning must be complete and list all known exceptions in the request.

### 1.04 CERTIFICATION OF FINAL ACCEPTANCE

A. Prior to requesting Gardner Spencer Smith Tench and Jarbeau, PC's final inspection for certification of final acceptance and final payment, as required by the General Conditions, complete the following and list known exceptions (if any) in request.

## PART 2 PRODUCTS (NOT USED)

## PART 3 EXECUTION

### 3.01 FINAL CLEANING OF NEW FACILITIES OR ADDITIONS

A. General: Special cleaning for specific units of work is specified in the Sections of Division 02 through 48.

B. Provide final cleaning of the Work as part of the project being declared substantially complete. Contractor is responsible for providing any additional cleaning for any work performed as part

of his contract after acceptance of final cleaning. Final clean consists of cleaning each surface or unit of work to the normal "clean" condition expected for a first-class building cleaning and maintenance program. Comply with manufacturer's instructions for cleaning operations. The following are examples, but not by way of limitation, of the cleaning levels required:

1. Remove labels which are not required as permanent labels.
2. Clean transparent materials, including mirrors and window/door glass, to a polished condition, removing substances which are noticeable as vision-obscuring materials. Replace broken glass.
3. Clean exposed exterior and interior hard-surfaced finishes, including metals,
   a. masonry, concrete, painted surfaces, plastics, tile, wood, special coatings, and similar surfaces, to a dirt free condition, free of dust, stains, films and similar noticeable distracting substances. Except as otherwise indicated, avoid the disturbance of natural weathering of exterior surfaces. Restore reflective surfaces to original reflective condition.
4. Wipe surfaces of mechanical and electrical equipment clean, including equipment in addition to that specified in Division 23 and 26; remove excess lubrication and other substances.
5. Remove debris and surface dust from limited-access spaces including roofs, plenums shafts, trenches, equipment vaults, manholes, attics and similar spaces.
6. Clean concrete floors in non-occupied spaces broom clean.
7. Vacuum clean carpeted surfaces and similar soft surfaces.
8. Vinyl Flooring: Sweep dust and debris from all vinyl floor tiles. See cleaning and protection instructions in Division 09 Section "Resilient Flooring".
9. Restrooms: Clean walls beginning at top of walls and work down, cleaning attached fixtures, partitions and floor mounted fixtures. Scrub and sanitize flooring. Ensure all fixture drains and floor drains are free of construction debris and that they drain properly.
10. Clean light fixtures and lamps so as to function with full efficiency.
11. Clean project site (yard and grounds), including landscape, development areas, of litter and foreign substances. Sweep paved areas to a broom-clean condition; remove stains, petrochemical spills and other foreign deposits. Rake grounds clean of all debris that accumulated as a result of the construction.

**3.02 CONTINUING INSPECTIONS**

A. Except as otherwise required by special guarantees, warranties, agreements to maintain, workmanship bonds, and similar continuing commitments, comply with the Owner's requests to participate in inspections at the end of each time period of such continuing commitments. Participate in the general inspection(s) of the work approximately one year beyond the date(s) of Substantial Completion.

**END OF SECTION**

# SECTION 02 3000
# SOIL INVESTIGATION DATA

## PART 1 GENERAL

### 1.01 SUBSURFACE INVESTIGATION

A. Investigations of the project site subsurface conditions have been conducted by NOVA, entitled "Geotechnical Engineering Report Braselton Civic Center Braselton, Georgia NOVA Project Number 2016117" dated September 6, 2016. This investigation and subsequent analysis is published in report form and included herein.

B. The information included in this report is made available for the convenience of the Contractor and is not to be construed as warranties of accuracy. Union County Commissioner's Office and/or Gardner Spencer Smith Tench and Jarbeau, PC are not responsible for interpretations or conclusions drawn by the Contractor from information concerning subsurface conditions.

### 1.02 PART 2 PRODUCTS - NOT USED

### 1.03 PART 3 EXECUTION

A. Exibits
   1. Attached Exhibit.

**END OF SECTION**

# SECTION 02 4100
# DEMOLITION

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Selective demolition of built site elements.

B. Selective demolition of building elements for alteration purposes.

C. Removal of existing utilities.

### 1.02 RELATED REQUIREMENTS

A. Section 01 1000 - Summary: Limitations on Contractor's use of site and premises.

B. Section 01 1000 - Summary: Sequencing and staging requirements.

C. Section 01 1000 - Summary: Description of items to be salvaged or removed for re-use by Contractor.

D. Section 01 5000 - Temporary Facilities and Controls: Site fences, security, protective barriers, and waste removal.

E. Section 01 6000 - Product Requirements: Handling and storage of items removed for salvage and relocation.

F. Section 01 7000 - Execution and Closeout Requirements: Project conditions; protection of bench marks, survey control points, and existing construction to remain; reinstallation of removed products; temporary bracing and shoring.

### 1.03 REFERENCE STANDARDS

A. 29 CFR 1926 - Safety and Health Regulations for Construction Current Edition.

B. NFPA 241 - Standard for Safeguarding Construction, Alteration, and Demolition Operations 2022, with Errata (2021).

### 1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Demolition Plan: Submit demolition plan as specified by OSHA and local authorities.
   1. Indicate extent of demolition, removal sequence, bracing and shoring, and location and construction of barricades and fences.
   2. Identify demolition firm and submit qualifications.
   3. Include a summary of safety procedures.

C. Project Record Documents: Accurately record actual locations of capped and active utilities and subsurface construction.

### 1.05 PROJECT CONDITIONS

A. Minimize production of dust due to demolition operations; do not use water if that will result in ice, flooding, sedimentation of public waterways or storm sewers, or other pollution.

## PART 2 PRODUCTS -- NOT USED

## PART 3 EXECUTION

### 3.01 SCOPE

A. Remove portions of existing building as shown in drawings.

B. Remove designated concrete slabs on grade as indicated on drawings.

C. Remove other items indicated, for salvage, relocation, and recycling.

### 3.02 GENERAL PROCEDURES AND PROJECT CONDITIONS

A. Comply with applicable codes and regulations for demolition operations and safety of adjacent structures and the public.

1. Obtain required permits.
2. Take precautions to prevent catastrophic or uncontrolled collapse of structures to be removed; do not allow worker or public access within range of potential collapse of unstable structures.
3. Provide, erect, and maintain temporary barriers and security devices.
4. Use physical barriers to prevent access to areas that could be hazardous to workers or the public.
5. Conduct operations to minimize effects on and interference with adjacent structures and occupants.
6. Do not close or obstruct roadways or sidewalks without permit.
7. Conduct operations to minimize obstruction of public and private entrances and exits; do not obstruct required exits at any time; protect persons using entrances and exits from removal operations.
8. Obtain written permission from owners of adjacent properties when demolition equipment will traverse, infringe upon or limit access to their property.

B. Do not begin removal until receipt of notification to proceed from Union County Commissioner's Office.

C. Protect existing structures and other elements that are not to be removed.
1. Provide bracing and shoring.
2. Prevent movement or settlement of adjacent structures.
3. Stop work immediately if adjacent structures appear to be in danger.

D. If hazardous materials are discovered during removal operations, stop work and notify Gardner Spencer Smith Tench and Jarbeau, PC and Union County Commissioner's Office; hazardous materials include regulated asbestos containing materials, lead, PCB's, and mercury.

E. Perform demolition in a manner that maximizes salvage and recycling of materials.
1. Dismantle existing construction and separate materials.
2. Set aside reusable, recyclable, and salvageable materials; store and deliver to collection point or point of reuse.

**3.03 EXISTING UTILITIES**

A. Coordinate work with utility companies; notify before starting work and comply with their requirements; obtain required permits.

B. Protect existing utilities to remain from damage.

C. Do not disrupt public utilities without permit from authority having jurisdiction.

D. Do not close, shut off, or disrupt existing life safety systems that are in use without at least 7 days prior written notification to Union County Commissioner's Office.

E. Do not close, shut off, or disrupt existing utility branches or take-offs that are in use without at least 3 days prior written notification to Union County Commissioner's Office.

F. Locate and mark utilities to remain; mark using highly visible tags or flags, with identification of utility type; protect from damage due to subsequent construction, using substantial barricades if necessary.

G. Remove exposed piping, valves, meters, equipment, supports, and foundations of disconnected and abandoned utilities.

**3.04 SELECTIVE DEMOLITION FOR ALTERATIONS**

A. Drawings showing existing construction and utilities are based on casual field observation and existing record documents only.
1. Verify that construction and utility arrangements are as indicated.
2. Report discrepancies to Gardner Spencer Smith Tench and Jarbeau, PC before disturbing existing installation.
3. Beginning of demolition work constitutes acceptance of existing conditions that would be apparent upon examination prior to starting demolition.

B. Remove existing work as indicated and as required to accomplish new work.
   1. Remove items indicated on drawings.

C. Services (Including but not limited to HVAC, Plumbing, Fire Protection, Electrical, and Telecommunications): Remove existing systems and equipment as indicated.
   1. Maintain existing active systems that are to remain in operation; maintain access to equipment and operational components.
   2. Where existing active systems serve occupied facilities but are to be replaced with new services, maintain existing systems in service until new systems are complete and ready for service.
   3. Verify that abandoned services serve only abandoned facilities before removal.
   4. Remove abandoned pipe, ducts, conduits, and equipment, including those above accessible ceilings; remove back to source of supply where possible, otherwise cap stub and tag with identification.

D. Protect existing work to remain.
   1. Prevent movement of structure; provide shoring and bracing if necessary.
   2. Perform cutting to accomplish removals neatly and as specified for cutting new work.
   3. Repair adjacent construction and finishes damaged during removal work.
   4. Patch as specified for patching new work.

**3.05 DEBRIS AND WASTE REMOVAL**

A. Remove debris, junk, and trash from site.

B. Leave site in clean condition, ready for subsequent work.

C. Clean up spillage and wind-blown debris from public and private lands.

**END OF SECTION**

# SECTION 02 4300
# MISCELLANEOUS WORK

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Operations which cannot be specified in detail as separate items but can be sufficiently described as to the kind and extent of work involved. Furnish all labor, materials, equipment and incidentals to complete the work under this section.

B. The work includes, but is not limited to the following:
   1. Surveying as-built conditions for the purpose of obtaining required governmental approvals.
   2. Incidental work.

### 1.02 RELATED SECTIONS

A. Division 01 - Application for Payment: Progress photographs.

### 1.03 SUBMITTALS

A. See Division 01 - Administrative Requirements, for submittal procedures.

### 1.04 QUALITY ASSURANCE

A. Qualifications: Company specializing in required fields with a minimum of three years of documented experience.

### 1.05 PROJECT CONDITIONS

A. Sequence installation to ensure utility connections are achieved in an orderly and expeditious manner.

B. Arrange schedule with Union County Commissioner's Office's requirements , work of other sections , and final close-out documentation required for Substantial Completion of project.

## PART 2 PRODUCTS

### 2.01 EQUIPMENT AND MATERIALS

A. Materials required for this section shall be same quality as materials that are restored. Where possible, reuse existing materials that have been removed.

B. Provide equipment to replicate same quality of work being replaced.

## PART 3 EXECUTION

### 3.01 EXAMINATION

A. Identify utility services and obstructions to be removed, relocated, or abandoned during progress of the Work.

B. Damage Determination:
   1. Before restoration, inspect existing conditions thoroughly and notify Gardner Spencer Smith Tench and Jarbeau, PC in writing of visible defects and factors that could affect Substantial Completion of project..

### 3.02 INSTALLATION

A. Restoring of Sidewalks, Driveways, Aprons, Curbing, and Fencing:
   1. Existing public and private sidewalks and driveways disturbed shall be replaced. Paved sidewalks and drives shall be repaved to the limits and thickness existing prior to construction.
   2. Existing curbing shall be protected. If necessary, curbing shall be removed and replace after backfilling. Curbing which is damaged during construction shall be replaced with curbing of equal quality and dimension.

B. Surveying As-Built Conditions:

1. This item shall include any surveying required for work performed by the Contractor whether or not shown on the drawings, for obtaining required governmental approvals for final close-out documents and Substantial Completion.

C. Progress Photographs: Do not allow any cameras or photography on site unless authorized by the Union County Commissioner's Office and or is here-in required.
   1. Submit photographs with each application for payment, taken not more than 3 days prior to submission of application for payment.
   2. Maintain one set of all photographs at project site for reference; same copies as submitted, identified as such.
   3. Photography Type: Digital; electronic files.
   4. Provide photographs of site and construction throughout progress of Work produced by an experienced photographer, acceptable to Gardner Spencer Smith Tench and Jarbeau, PC.
   5. In addition to periodic, recurring views, take photographs of each of the following events:
   6. Take photographs during each phase and as follows:
      a. Completion of site clearing.
      b. Excavations in progress.
      c. Foundations in progress and upon completion.
      d. Structural framing in progress and upon completion.
      e. Enclosure of building, upon completion.
      f. Final completion, minimum of ten (10) photos.
   7. Views:
      a. Provide non-aerial photographs from four cardinal views at each specified time, until Date of Substantial Completion.
      b. Consult with Gardner Spencer Smith Tench and Jarbeau, PC for instructions on views required.
      c. Provide factual presentation.
      d. Provide correct exposure and focus, high resolution and sharpness, maximum depth of field, and minimum distortion.
   8. Digital Photographs: 24 bit color, minimum resolution of 1024 by 768, in JPG format; provide files unaltered by photo editing software.
      a. Delivery Medium: Via email.
      b. File Naming: Include project identification, date and time of view, and view identification.
      c. PDF File: Assemble all photos into printable pages in PDF format, with 2 to 3 photos per page, each photo labeled with file name; one PDF file per submittal.
      d. Photo CD(s): Provide 1 copy including all photos cumulative to date and PDF file(s), with files organized in separate folders by submittal date.
      e. Hard Copy: Printed hardcopy (grayscale) of PDF file and point of view sketch.
   9. Deliver prints and compact disk with each Application for Payment with transmittal letter specified in this Section.

D. Incidental Work:
   1. Do incidental work not otherwise specified or can be reasonably be anticipated, or is obviously necessary for the proper completion of the contract as specified and shown on the drawings.

**3.03 CLEANING**

A. Keep the work area and adjacent areas clean during the work. Remove all excess materials, debris, and equipment from site.

B. Repair any damage to adjacent materials and surfaces resulting from installation of this work.

**END OF SECTION**

# SECTION 03 1000
# CONCRETE FORMING AND ACCESSORIES

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Formwork for cast-in place concrete, with shoring, bracing and anchorage.

B. Openings for other work.

C. Form accessories.

D. Form stripping.

### 1.02 RELATED REQUIREMENTS

A. Section 01 4110 - Testing Laboratory Services.

B. Section 03 2000 - Concrete Reinforcing.

C. Section 03 3000 - Cast-In-Place Concrete.

D. Section 04 0090 - Masonry Accessories: Spacing for masonry accessories recessed in concrete.

E. Section 04 7250 - Manufactured Masonry Veneer: Spacing for veneer anchor reglets recessed in concrete.

F. Division 05: Structural Steel; Placement of embedded steel anchors and plates in cast-in-place concrete.

G. Division 05: Steel Decking; Placement of steel anchors in composite decking.

H. Division 31: Earthwork; Shoring and underpinning for excavation.

### 1.03 REFERENCE STANDARDS

A. ACI 117 - Specification for Tolerances for Concrete Construction and Materials 2010 (Reapproved 2015).

B. ACI 301 - Specifications for Concrete Construction 2020.

C. ACI 318 - Building Code Requirements for Structural Concrete 2019 (Reapproved 2022).

D. ACI 347R - Guide to Formwork for Concrete 2014 (Reapproved 2021).

E. ASME A17.1 - Safety Code for Elevators and Escalators Includes Requirements for Elevators, Escalators, Dumbwaiters, Moving Walks, Material Lifts, and Dumbwaiters with Automatic Transfer Devices 2019, with Errata (2021).

F. PS 1 - Structural Plywood 2019.

### 1.04 DESIGN REQUIREMENTS

A. Design, engineer and construct formwork, shoring and bracing to conform to design and code requirements; resultant concrete to conform to required shape, line and dimension.

### 1.05 SUBMITTALS

A. See Section 01 3200 - Construction Progress Documentation, for submittal procedures.

B. Product Data: Provide data on void form materials and installation requirements.

C. Shop Drawings: Indicate pertinent dimensions, materials, bracing, and arrangement of joints and ties.

### 1.06 QUALITY ASSURANCE

A. Perform work of this section in accordance with ACI 347, ACI 301, and ACI 318.

B. Designer Qualifications: Design formwork under direct supervision of a Professional Structural Engineer experienced in design of concrete formwork and licensed in Georgia.

C. Plywood: Conform to tables for form design and strength in APA Form V 345.

**1.07 REGULATORY REQUIREMENTS**

A. Conform to applicable code for design, fabrication, erection and removal of formwork.

**1.08 DELIVERY, STORAGE, AND HANDLING**

A. Deliver prefabricated forms and installation instructions in manufacturer's packaging.

B. Store prefabricated forms off ground in ventilated and protected manner to prevent deterioration from moisture.

**PART 2 PRODUCTS**

**2.01 FORMWORK - GENERAL**

A. Provide concrete forms, accessories, shoring, and bracing as required to accomplish cast-in-place concrete work.

B. Design and construct concrete that complies with design with respect to shape, lines, and dimensions.

C. Comply with applicable state and local codes with respect to design, fabrication, erection, and removal of formwork.

**2.02 GENERAL**

A. Form materials may be reused during progress of the Work provided they are completely cleaned and reconditioned, recoated for each use, capable of producing formwork of required quality, and are structurally sound.

B. Form Lumber: WCLIB Construction Grade or Better, WWPA No. 1 or Better.

C. Plywood: PS 1-95, Group I, Exterior Grade B-B Plyform or better, minimum 5-ply and 3/4 inch thick for exposed locations and at least 5/8 inch thick for unexposed locations, grade marked, not mill oiled. Furnished plywood with medium or high density overlay is permitted.

D. Coated Form Plywood: For exposed painted concrete, plastic overlaid plywood of grade specified above, factory coated with a form coating and release agent Noxcrete", or equal.

E. Tube Forms: Burke "SmoothTube," Sonoco "Seamless Sonotubes," or Alton Building Products "Sleek Seamless Standard Wall," of the type leaving no marks in concrete, one-piece lengths for required heights.

F. Joist Forms: Code recognized steel or molded plastic types as required.

G. Special Forms: For exposed integrally-colored concrete, plywood as above with high density overlay, plywood with integral structural hardboard facing or fibrous glass reinforced plastic facing, providing specified finish.

H. For Exposed Concrete Finish:
   1. Plywood: New, waterproof, synthetic resin bonded, exterior type Douglas fir or Southern pine plywood manufactured especially for concrete formwork and conforming to NIST PS 1, BB grade, class I.
   2. Glass-Fiber-Fabric Reinforced Plastic Forms: Matched, tight fitting, stiffened to support weight of concrete without deflection detrimental to structural tolerances and appearance of finished concrete surfaces.
   3. Steel: Minimum 16 gage sheet, well matched, tight fitting, stiffened to support weight of concrete, without deflection detrimental to tolerances and appearances of finished concrete surfaces.
   4. Plywood: "Finland Form," or "Combi Form" distributed by North American Plywood Corporation. The material shall be furnished with hard smooth birch face veneers with phenolic resin thermally fused onto panel sides. Edges shall be factory sealed.

I. Form Ties: Prefabricated rod, flat band, wire, internally threaded disconnecting type, not leaving metal within 1-1/2 inch of concrete surface.

J. Form Coating: Non-staining clear coating free from oil, silicone, wax, not grain-raising, "Formshield" by A.C. Horn, Inc., "Release" by Burke Concrete Accessories, or "Cast-Off" by Sonneborn Building Products. Where form liners are furnished, provide form coatings recommended by form liner manufacturer.

K. Form Liner: Rigid or resilient type by L.M. Scofield, Labrado Forms, Symons, or Greenstreak.

L. Void Forms: Manufactured by SureVoid Products, Inc, or equal. Forms shall be "WallVoid" for temporary support of concrete walls and grade beams spanning between supports, and "SlabVoid" for creating gaps between concrete slabs or steps and underlying soils. Void forms shall be fabricated of corrugated paper with moisture resistant exterior, and shall be capable of withstanding working load of 1,500 psf. Provide accessories as required.

**2.03 FORMWORK ACCESSORIES**

A. Form Ties: Removable type, galvanized metal, fixed length, cone type, with waterproofing washer, free of defects that could leave holes larger than 1 inch in concrete surface.

B. Form Release Agent: Colorless mineral oil that will not stain concrete.

C. Corners: Filleted, rigid plastic type; 3/4 inch size; maximum possible lengths.

D. Dovetail Anchor Slot: Galvanized steel, 22 gage thick, foam filled, release tape sealed slots, anchors for securing to concrete formwork.

E. Flashing Reglets: Galvanized steel, 22 gage thick, longest possible lengths, with alignment splines for joints, foam filled, release tape sealed slots, anchors for securing to concrete formwork.

F. Nails, Spikes, Lag Bolts, Through Bolts, Anchorages: Sized as required, of sufficient strength and character to maintain formwork in place while placing concrete.

G. Embedded Anchor Shapes, Plates, Angles and Bars: As specified in Section 05 1200.

H. Waterstops: Rubber, minimum 1,750 psi tensile strength, minimum 50 degrees F to plus 175 degrees F working temperature range, 6 inch wide, maximum possible lengths, ribbed profile, preformed corner sections, heat welded jointing.
   1. Manufacturers:
      a. Paul Murphy Plastics Co., ribbed bulb, 6 inch.
      b. American Colloid Company, Waterstop RX, Butyl rubber bentonite compound rope, 25% composition.
      c. Synko - Flex Products, Inc. Superstop.
      d. Substitutions: See Division 01 - Product requirements.

**PART 3 EXECUTION**

**3.01 EXAMINATION**

A. Verify lines, levels and centers before proceeding with formwork. Ensure that dimensions agree with drawings.

**3.02 EARTH FORMS**

A. Do not use earth cuts for formed vertical surfaces unless approved by Gardner Spencer Smith Tench and Jarbeau, PC.

B. Where allowed, hand trim sides and bottom of earth forms. Remove loose soil prior to placing concrete.

**3.03 ERECTION - FORMWORK**

A. Erect formwork, shoring and bracing to achieve design requirements, in accordance with requirements of ACI 301.

B. Provide bracing to ensure stability of formwork. Shore or strengthen formwork subject to overstressing by construction loads.

C. Forms shall be constructed so as to shape final concrete structure conforming to shape, lines and dimensions of members required by Drawings and Specifications, and shall be sufficiently tight to prevent leakage of mortar. They shall be properly braced or tied together to maintain position and shape. Forms and their supports shall be designed so that previously placed structures will not be damaged. Forms shall be true to line within a tolerance of plus-or-minus 1/250 of the span.

D. Plywood shall be installed with horizontal joints level, vertical joints plumb and with joints tight. Back joints by studs or solid blocking, and fill where necessary for smoothness. Reused plywood shall be thoroughly cleaned, damaged edges or surfaces repaired and both sides and edges oiled with colorless form oil. Nail plywood along edges, and to intermediate supports, with common wire nails spaced as necessary to maintain alignment and prevent warping.

E. Provisions for Other Trades: Provide openings in concrete formwork to accommodate work of other trades and accurately place and securely support items to be built into forms.

F. Openings for Cleaning: Provide temporary openings at points in formwork to facilitate cleaning and inspection. At base of walls and wide piers, bottom form board on one face for entire length shall be omitted until form has been cleaned and inspected.

G. Preparation and Tightening: Thoroughly clean forms and adjacent surfaces to receive concrete.
   1. Form Surface Treatment:
      a. Before placing reinforcing steel or concrete, coat the form surfaces with a material that will effectively prevent absorption of moisture, prevent bond with concrete and not stain concrete.
      b. A field applied form release agent or factory applied non-absorptive liner material may be used.
      c. Do not allow form release agent to stand in puddles, come into contact with reinforcing steel or hardened concrete against which fresh concrete is to be placed.
   2. Remove loose metal, wood chips, sawdust, dirt, trash, and other debris just prior to concrete placement.
   3. Re-tighten forms during and immediately after concrete placement to eliminate leaks.

H. Arrange and assemble formwork to permit dismantling and stripping. Do not damage concrete during stripping. Permit removal of remaining principal shores.

I. Align joints and make watertight. Keep form joints to a minimum.

J. Obtain approval before framing openings in structural members that are not indicated on drawings.

K. Provide fillet and chamfer strips on external corners of beams, joists, and columns.

L. Install void forms in accordance with manufacturer's recommendations. Protect forms from moisture or crushing.

M. Coordinate this section with other sections of work that require attachment of components to formwork.

N. If formwork is placed after reinforcement, resulting in insufficient concrete cover over reinforcement, request instructions from Gardner Spencer Smith Tench and Jarbeau, PC before proceeding.

**3.04 APPLICATION - FORM RELEASE AGENT**

A. Apply form release agent on formwork in accordance with manufacturer's recommendations.

B. Apply prior to placement of reinforcing steel, anchoring devices, and embedded items.

C. Do not apply form release agent where concrete surfaces will receive special finishes or applied coverings that are affected by agent. Soak inside surfaces of untreated forms with clean water. Keep surfaces coated prior to placement of concrete.

**3.05 INSERTS, EMBEDDED PARTS, AND OPENINGS**

A. Set and build into the work anchorage devices, inserts, and other embedded items required for material attached to or supported by cast-in-place concrete.

B. Use setting drawings, diagrams, instructions, and directions provided by suppliers items to be attached.

C. Do not place embedded items in any manner that will displace or interfere with the reinforcing steel.

D. Conduit:
   1. Embed all electrical conduit in slabs.
   2. Wire conduit inside layers of reinforcement.
   3. Wire conduit to reinforcement perpendicular to the conduit. Do not wire to parallel reinforcement.
   4. Separate parallel conduit by 2 inches, minimum.

E. Waterstops:
   1. Install in greatest continuous lengths possible.
   2. Do not displace concrete reinforcement.
   3. Splice waterstops in accordance with manufacturer's written recommendations.

F. Junction Boxes:
   1. Boxes of any depth may be located in slabs, beams and soffits, and headers.
   2. Do not locate in joist soffits.
   3. Provide header to accommodate junction boxes over 2 1/4 inches deep.

G. Provide formed openings where required for items to be embedded in passing through concrete work.

H. Locate and set in place items that will be cast directly into concrete.

I. Coordinate with work of other sections in forming and placing openings, slots, reglets, recesses, sleeves, bolts, anchors, other inserts, and components of other work.

J. Position recessed anchor slots for brick veneer masonry anchors to spacing and intervals specified in Division 04.

K. Install accessories in accordance with manufacturer's instructions, so they are straight, level, and plumb. Ensure items are not disturbed during concrete placement.

L. Install waterstops in accordance with manufacturer's instructions, so they are continuous without displacing reinforcement. Heat seal joints so they are watertight.

M. Provide temporary ports or openings in formwork where required to facilitate cleaning and inspection. Locate openings at bottom of forms to allow flushing water to drain.

N. Close temporary openings with tight fitting panels, flush with inside face of forms, and neatly fitted so joints will not be apparent in exposed concrete surfaces.

**3.06 FORM CLEANING**

A. Clean forms as erection proceeds, to remove foreign matter within forms.

B. Clean formed cavities of debris prior to placing concrete.
   1. Flush with water or use compressed air to remove remaining foreign matter. Ensure that water and debris drain to exterior through clean-out ports.
   2. During cold weather, remove ice and snow from within forms. Do not use de-icing salts. Do not use water to clean out forms, unless formwork and concrete construction proceed within heated enclosure. Use compressed air or other means to remove foreign matter.

**3.07 FORMWORK TOLERANCES**

A. Construct formwork to maintain tolerances required by ACI 117, unless otherwise indicated.

B. Construct and align formwork for elevator hoistway in accordance with ASME A17.1.

C. Camber slabs and beams in accordance with ACI 301.

D. Construct formwork to provide completed cast-in-place concrete surfaces:
   1. Variation in depth of stair treads: 3/16 inch, maximum.
   2. Variation from level in slabs: +/- 1/4 inch in any 10 foot radius.
   3. Piers, Columns, and Walls:
      a. Variation in plan from straight lines parallel to specified linear building lines:
         1) 1/40 in/ft adjacent members less than 20 feet apart or any wall or bay length less than 20 feet.
         2) 1/2 inch adjacent members 20 feet or more apart or any wall or bay length 20 feet or more.
      b. Variation in elevation from lines parallel to specified grade lines:
         1) 1/40 in/ft adjacent members less than 20 feet apart or any wall or bay length less than 20 feet.
         2) 1/2 inch adjacent members 20 feet or more apart or any wall or bay length 20 feet or more.
      c. Variation in cross-sectional dimension of pan formed joist: Minus 1/4 inch, plus 1 1/2 inch.

**3.08 RE-USE OF FORMS**

A. Re-Use forms only when properly maintained and in condition to produce the formed finish required.

B. Do not re-use forms that cannot be tightly butted and made watertight.

C. Repair forms between uses:
   1. Align and tighten to provide secure and watertight joints and avoid offsets.
   2. Do not plug old tie holes that will not be reused.
   3. Replace materials containing unused tie holes.
   4. Split, frayed, delaminated or otherwise damaged form facing material is not acceptable.
   5. Do not use patched forms for exposed concrete surfaces unless approved by Gardner Spencer Smith Tench and Jarbeau, PC.

**3.09 FIELD QUALITY CONTROL**

A. An independent testing agency will perform field quality control tests, as specified in Division 01.

B. Inspect erected formwork, shoring, and bracing to ensure that work is in accordance with formwork design, and to verify that supports, fastenings, wedges, ties, and items are secure.

**3.10 FORM REMOVAL**

A. Do not remove forms or bracing until concrete has gained sufficient strength to carry its own weight and imposed loads.

B. Forms shall not be removed until concrete has sufficiently hydrated to maintain its integrity and not be damaged by form removal operations. Unless noted otherwise and/or permitted by Gardner Spencer Smith Tench and Jarbeau, PC, columns and wall forms shall not be removed in less than 5 days, floor slabs in less than 7 days, beams and girders in less than 15 days, metal pan forms for joists may be removed after 3 days, but joist centering shall not be removed until after 15 days, and ramp, landing, steps and floor slabs shall not be removed in less than 7 days. Shoring shall not be removed until member has acquired sufficient strength to support its weight, load upon it, and added load of construction.

C. Compressive strength of in-place concrete shall be determined by testing field-cured specimens representative of concrete location or members, as specified in Section 03 3000 - Cast-In-Place Concrete.

D. Loosen forms carefully. Do not wedge pry bars, hammers, or tools against finish concrete surfaces scheduled for exposure to view.

E. Store removed forms to prevent damage to form materials or to fresh concrete. Discard damaged forms.

**3.11 PROTECTION**

A. Protect the Work of this section until Substantial Completion.

**3.12 CLEAN UP**

A. Remove rubbish, debris and waste materials and legally dispose of off the Project site.

**END OF SECTION**

# SECTION 03 2000
# CONCRETE REINFORCING

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Reinforcing steel for cast-in-place concrete.

B. Supports and accessories for steel reinforcement.

### 1.02 RELATED REQUIREMENTS

A. Section 01 4110 - Testing Laboratory Services.

B. Section 03 1000 - Concrete Forming and Accessories.

C. Section 03 3000 - Cast-In-Place Concrete.

### 1.03 REFERENCE STANDARDS

A. ACI 301 - Specifications for Concrete Construction 2020.

B. ACI 318 - Building Code Requirements for Structural Concrete 2019 (Reapproved 2022).

C. ACI SP-66 - ACI Detailing Manual 2004.

D. ASTM A82/A82M - Standard Specification for Steel Wire, Plain, for Concrete Reinforcement; 2007.

E. ASTM A184/A184M - Standard Specification for Welded Deformed Steel Bar Mats for Concrete Reinforcement 2019.

F. ASTM A185/A185M - Standard Specification for Steel Welded Wire Reinforcement, Plain, for Concrete; 2007.

G. ASTM A497/A497M - Standard Specification for Steel Welded Wire Reinforcement, Deformed, for Concrete; 2007.

H. ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement 2022.

I. ASTM A641/A641M - Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire 2019.

J. ASTM A704/A704M - Standard Specification for Welded Steel Plain Bar or Rod Mats for Concrete Reinforcement 2019, with Editorial Revision.

K. AWS D1.4/D1.4M - Structural Welding Code - Steel Reinforcing Bars 2018, with Amendment (2020).

L. CRSI (DA4) - Manual of Standard Practice 2018, with Errata (2019).

M. CRSI (P1) - Placing Reinforcing Bars, 10th Edition 2019.

### 1.04 SUBMITTALS

A. See Section 01 3200 - Construction Progress Documentation, for submittal procedures.

B. Shop Drawings: Comply with requirements of ACI SP-66. Include bar schedules, shapes of bent bars, spacing of bars, and location of splices.

1. Prepare shop drawings under seal of a Professional Structural Engineer experienced in design of work of this type and licensed in Georgia.

C. Manufacturer's Certificate: Certify that reinforcing steel and accessories supplied for this project meet or exceed specified requirements.

D. Reports: Submit certified copies of mill test report of reinforcement materials analysis.

E. Closeout Submittals: Record exact locations of reinforcing that vary from Shop Drawings.

### 1.05 QUALITY ASSURANCE

A. Perform work of this section in accordance with ACI 301.

B. Provide Gardner Spencer Smith Tench and Jarbeau, PC with access to fabrication plant to facilitate inspection of reinforcement. Provide notification of commencement and duration of shop fabrication in sufficient time to allow inspection.

C. Welders' Certificates: Submit certifications for welders employed on the project, verifying AWS qualification within the previous 12 months.

D. Source Quality Control: Refer to Division 01 Sections for general requirements and to following paragraphs for specific procedures. Testing laboratory retained by Union County Commissioner's Office shall perform following conformance testing, select test Samples of bars, ties, and stirrups from the material at the Project site or from the place of distribution, with each Sample consisting of not less than two 18 inch long pieces, and perform the following tests according to ASTM A 615.
   1. Identified Bars: If Samples are obtained from bundles as delivered from the mill, identified as to heat number, accompanied by mill analyses and mill test reports, and properly tagged with the identification certificate so as to be readily identified, perform one tensile and one bend test for each 10 tons or fraction thereof of each size of bars. Submit mill reports when Samples are selected.
   2. Unidentified Bars: When positive identification of reinforcing bars cannot be performed and when random Samples are obtained, perform tests for each 2.5 tons or fraction thereof, one tensile and one bend test from each size of bars.

**1.06 DELIVERY, STORAGE AND HANDLING**

A. Avoid exposure to dirt, moisture or conditions harmful to reinforcing.

B. Reinforcing steel bars, wire, and wire fabric shall be stored on the Project site to permit easy access for examination and identification of each shipment. Material of each shipment shall be separated for size and shape.

**PART 2 PRODUCTS**

**2.01 REINFORCEMENT**

A. Provide reinforcing of sizes, gages and lengths indicated, bent to indicated shapes.

B. Steel Reinforcing Bars: ASTM A 615, or ASTM A 706 deformed grade 60 billet steel unless otherwise specified or indicated.

C. Bars or Rod Mats: ASTM A 184.

D. Wire Fabric for Reinforcement: ASTM A 185.

E. Reinforcement Accessories:
   1. Tie Wire: ASTM A 82, fully annealed, copper-bearing steel wire, 16 gage minimum.
   2. Chairs, Spacers, Supports, and Other Accessories: Standard manufacture conforming to ACI-315 fabricated from steel wire of required types and sizes. For reinforcement supported from grade, provide properly sized dense precast blocks of concrete.

**2.02 FABRICATION**

A. Comply with CRSI Manual of Standard Practice for Reinforced Concrete Construction for fabrication of reinforcing steel.

B. Bending and Forming: Fabricate bars of the indicated sizes and bend and form to required shapes and lengths by methods not injurious to materials. Do not heat reinforcement for bending. Bend bars No. 6 size and larger in the shop only. Bars with unscheduled kinks or bends are not permitted. Provide only tested and permitted bar materials.

C. Welding: Provide only ASTM A 706 steel where welding is indicated. Perform welding by the direct electric arc process in accordance with AWS D1.4 and specified low-hydrogen electrodes. Preheat 6 inches each side of joint. Protect joints from drafts during the cooling process; accelerated cooling is not permitted. Do not tack weld bars. Clean metal surfaces to be welded of loose scale and foreign material. Clean welds each time electrode is changed and chip burned edges before placing welds. When wire brushed, the completed welds must exhibit

uniform section, smooth welded metal, feather edges without undercuts or overlays, freedom from porosity and clinkers, and good fusion and penetration into the base metal. Cut out welds or parts of welds deemed defective, using chisel, and replace with proper welding.

## PART 3 EXECUTION

### 3.01 PLACEMENT

A. Place, support and secure reinforcement against displacement. Do not deviate from required position.

B. Do not displace or damage vapor barrier.

C. Accommodate placement of formed openings.

D. Bars shall be bent cold. Bars partially embedded in concrete shall not be field bent except as indicated on reviewed Shop Drawings. Before installation, clean reinforcing of loose scale, rust, oil, dirt and any coating that could reduce bond.

E. Accurately position, install, and secure reinforcing to prevent displacement during the placement of concrete.

F. Provide metal chairs to hold reinforcement the required distance above form bottoms. In beams and slab construction, provide chairs under top slab reinforcement as well as under bottom reinforcement. Space chairs so that reinforcement will not be displaced during installation. Provide metal spacers to secure proper spacing. Stirrups shall be accurately and securely wired to bars at both top and bottom. At slabs, footings, and beams in contact with earth, provide concrete blocks to support reinforcement at required distance above grade.

G. Install and secure reinforcement to maintain required clearance between parallel bars and between bars and forms. Lapped splices shall be installed wherever possible in a manner to provide required clearance between sets of bars. Stagger lapped splices. Dowels and bars extending through construction joints shall be secured in position against displacement before concrete is installed and subsequently cleaned of concrete encrustation's while they are still soft.

H. Do not install reinforcing in supported slabs and beams until walls and columns have been installed to underside of slabs and beams or until construction joints have been thoroughly cleaned. Reinforcing shall be inspected before placement of concrete and cleaned as required.

I. Use deformed bars unless otherwise indicated, except for spiral reinforcement.

### 3.02 FIELD QUALITY CONTROL

A. An independent testing agency, as specified in Division 01, will inspect installed reinforcement for conformance to contract documents before concrete placement.

### 3.03 CLEAN UP

A. Remove rubbish, debris and waste materials and legally dispose of off the Project site.

### 3.04 PROTECTION

A. Protect the Work of this section until Substantial Completion.

**END OF SECTION**

# SECTION 03 3000
# CAST-IN-PLACE CONCRETE

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Floors and slabs on grade.

### 1.02 RELATED REQUIREMENTS

A. Section 01 4110 - Testing Laboratory Services.

B. Section 03 1000 - Concrete Forming and Accessories: Forms and accessories for formwork.

C. Section 03 2000 - Concrete Reinforcing.

D. Section 03 3511 - Concrete Floor Finishes: Densifiers, hardeners, applied coatings, and polishing.

E. Section 05 8000 - Expansion Joint Cover Assemblies.

F. Section 06 1000 - Rough Carpentry: Field-applied termiticide and mildicide for concrete surfaces.

G. Section 07 2500 - Vapor Retarders: Below slab vapor retarders.

H. Section 07 9005 - Joint Sealers: Products and installation for sealants for saw cut joints and isolation joints in slabs.

I. Division 23: Mechanical; Items for casting into concrete.

J. Division 26: Electrical; Items for casting into concrete.

### 1.03 REFERENCE STANDARDS

A. ACI 211.1 - Selecting Proportions for Normal-Density and High Density-Concrete - Guide 2022.

B. ACI 211.2 - Standard Practice for Selecting Proportions for Structural Lightweight Concrete 1998 (Reapproved 2004).

C. ACI 301 - Specifications for Concrete Construction 2020.

D. ACI 302.1R - Guide to Concrete Floor and Slab Construction 2015.

E. ACI 304R - Guide for Measuring, Mixing, Transporting, and Placing Concrete 2000 (Reapproved 2009).

F. ACI 305R - Guide to Hot Weather Concreting 2020.

G. ACI 306R - Guide to Cold Weather Concreting 2016.

H. ACI 308R - Guide to External Curing of Concrete 2016.

I. ACI 318 - Building Code Requirements for Structural Concrete 2019 (Reapproved 2022).

J. ASTM A185/A185M - Standard Specification for Steel Welded Wire Reinforcement, Plain, for Concrete; 2007.

K. ASTM A497/A497M - Standard Specification for Steel Welded Wire Reinforcement, Deformed, for Concrete; 2007.

L. ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement 2022.

M. ASTM A767/A767M - Standard Specification for Zinc-Coated (Galvanized) Steel Bars for Concrete Reinforcement 2019.

N. ASTM A775/A775M - Standard Specification for Epoxy-Coated Steel Reinforcing Bars 2022.

O. ASTM A884/A884M - Standard Specification for Epoxy-Coated Steel Wire and Welded Wire Reinforcement 2019, with Editorial Revision (2020).

P. ASTM C33/C33M - Standard Specification for Concrete Aggregates 2018.

Q. ASTM C39/C39M - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens 2021.

R. ASTM C94/C94M - Standard Specification for Ready-Mixed Concrete 2022a.

S. ASTM C143/C143M - Standard Test Method for Slump of Hydraulic-Cement Concrete 2020.

T. ASTM C150/C150M - Standard Specification for Portland Cement 2022.

U. ASTM C171 - Standard Specification for Sheet Materials for Curing Concrete 2020.

V. ASTM C173/C173M - Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method 2016.

W. ASTM C260/C260M - Standard Specification for Air-Entraining Admixtures for Concrete 2010a (Reapproved 2016).

X. ASTM C494/C494M - Standard Specification for Chemical Admixtures for Concrete 2019, with Editorial Revision (2022).

Y. ASTM C618 - Standard Specification for Coal Ash and Raw or Calcined Natural Pozzolan for Use in Concrete 2023.

Z. ASTM C685/C685M - Standard Specification for Concrete Made by Volumetric Batching and Continuous Mixing 2017.

AA. ASTM C979/C979M - Standard Specification for Pigments for Integrally Colored Concrete 2016.

BB. ASTM C1059/C1059M - Standard Specification for Latex Agents for Bonding Fresh to Hardened Concrete 2021.

CC. ASTM D994/D994M - Standard Specification for Preformed Expansion Joint Filler for Concrete (Bituminous Type) 2011 (Reapproved 2022).

DD. ASTM D1751 - Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types) 2018.

EE. ASTM D3963/D3963M - Standard Specification for Fabrication and Jobsite Handling of Epoxy-Coated Steel Reinforcing Bars 2021.

FF. ASTM E1155 - Standard Test Method for Determining FF Floor Flatness and FL Floor Levelness Numbers 2020.

GG. ASTM E 1155M - Standard Test Method for Determining F(F) Floor Flatness and F(L) Floor Levelness Numbers [Metric]; 1996 (Reapproved 2008).

HH. ASTM E1745 - Standard Specification for Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill Under Concrete Slabs 2017.

II. COE CRD-C 48 - Handbook for Concrete and Cement Standard Test Method for Water Permeability of Concrete 1992.

JJ. COE CRD-C 513 - Handbook for Concrete and Cement Corps of Engineers Specifications for Rubber Waterstops 1974.

KK. COE CRD-C 572 - Handbook for Concrete and Cement Corps of Engineers Specifications for Polyvinylchloride Waterstop 1974.

**1.04 SUBMITTALS**

A. See Division 01 - Administrative Requirements, for submittal procedures.

B. Shop Drawings: Submit Shop Drawings indicating locations of cast-in-place concrete Work and accessory items such as vapor barriers. Include details and locations of reinforcing, embedded items, and interfacing with other Work.

C. Product Data: Submit manufacturers' data on manufactured products showing compliance with specified requirements and installation instructions.

D. Material Samples: Submit Samples illustrating concrete finishes, minimum 12 inches x 12 inches in size.

E. Manufacturer's Installation Instructions: For concrete accessories, indicate installation procedures and interface required with adjacent construction.

F. Project Record Documents: Accurately record actual locations of embedded utilities and components that will be concealed from view upon completion of concrete work.

G. Certificates: Submit a notarized certificate that each of following conforms to standards indicated:
   1. Aggregates – ASTM Standards C33.
   2. Admixtures - ASTM Standards C260.
   3. Curing materials - ASTM Standards C171.

**1.05 RECORD DOCUMENTS**

A. Ready-mixed concrete shall be used for all cast-in-place concrete. Ready-mixed concrete suppliers shall each qualify under the requirements of ASTM Specification C 94-06a entitled "Ready-Mixed Concrete". Ready-mixed concrete shall be mixed and transported as required by the same ASTM Specification, and delivery tickets shall be dated the time of leaving the plant and the time the truck is completely unloaded..

B. Submit shop drawings in accordance with the requirements of the Submittals Section. Show size, type, and location of all reinforcing bars, bar supports, and forms. Drawings must bear the approval of the General contractor. Drawings will not be reviewed without this approval.

C. Submit mix designs for review.

**1.06 QUALITY ASSURANCE**

A. Perform work of this section in accordance with ACI 301 and ACI 318.

B. Follow recommendations of ACI 305R when concreting during hot weather.

C. Follow recommendations of ACI 306R when concreting during cold weather.

D. Continuous inspection shall be provided at the batch plant and for transit-mixed concrete to run check sieve analysis of aggregate, check moisture content of fine aggregate, check design of mix, check cement being used with test reports, check loading of mixer trucks, and certify to quantities of materials placed in each mixer truck.

E. Inspection shall be performed by a representative of a testing laboratory selected by Union County Commissioner's Office. Union County Commissioner's Office will pay for inspection costs. Notify the laboratory 24 hours in advance of time concrete is to be mixed. Notify the laboratory of postponement or cancellation of mixing within at least 24 hours of scheduling time.

F. Continuous batch plant inspection requirement may be waived. Waiver shall be in writing, including Union County Commissioner's Office approval.

G. Strength Test of Concrete: Refer to Division 01: Testing and Inspection.

**1.07 WARRANTY**

A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.

**1.08 DELIVERY, STORAGE AND HANDLING**

A. Mixing and Placing Concrete: Refer to Division 01: Testing and Inspection.

B. Ready-mix concrete shall be mixed and delivered in accordance with ASTM C 94 . Each batch of concrete delivered to the Project site shall be accompanied by a time slip bearing departure time and signature of batch plant supervisor. Concrete shall be placed within 90 minutes after start of mixing.

C. Store cement and aggregate materials so as to prevent their deterioration or intrusion by foreign matter. Deteriorated or contaminated materials shall not be furnished.

**1.09 JOB CONDITIONS**

A. Cold Weather Requirements:
   1. Adequate equipment shall be provided for heating concrete materials and protecting concrete during freezing or near-freezing weather. Surfaces, in which concrete is to come in contact with, shall be free from frost or ice. No frozen materials or materials containing ice shall be furnished.
   2. When placing concrete during freezing or near-freezing weather the mix shall have a temperature of at least 50 degrees F., but not more than 90 degrees F. when cement is added. Concrete shall be maintained at a temperature of at least 50 degrees F. for at least 72 hours after placing or until it has thoroughly hydrated. When necessary, concrete materials shall be heated before mixing. Special precautions shall be provided for protection of transit-mixed concrete.

B. Hot Weather Requirements: During hot weather, proper attention shall be provided for ingredients, production methods, handling, placing, protection and curing, to prevent excessive concrete temperatures or water evaporation which could impair required strength or durability.

**PART 2 PRODUCTS**

**2.01 GENERAL**

A. Ready-Mixed Concrete: Mix and deliver in accordance with requirements of ASTM C94.

B. Strength of Concrete: Concrete, unless otherwise indicated or specified, shall be provided with a minimum ultimate 28-day strength of 3000 psi (f'c). For high-early-strength concrete, age for reaching the f'c shall be as indicated on Drawings.

**2.02 FORMWORK**

A. Comply with requirements of Section 03 1000 - Concrete Forming and Accessories.

**2.03 REINFORCEMENT**

A. Comply with requirements of Section 03 2000 - Concrete Reinforcing.

**2.04 CONCRETE MATERIALS**

A. Cement: ASTM C 150. Furnished cement shall be as selected and reviewed for concrete proportioning.

B. Aggregates: Aggregates shall conform to ASTM C 33 and C 227 except as modified herein. Any suitable individual grading of coarse aggregate may be furnished, provided Grading of Combined Aggregate indicated in following table is obtained. Refer to Section 01420: Testing and Inspection.

**2.05 GRADING OF COMBINED AGGREGATE**

A. Sieve Number or1-1/2"1"3/4"

B. Size in Inches MaximumMaximumMaximum

C. Passing a 2"----------

D. Passing a 1-1/2"95-100----------

E. Passing a 1"70-9090-100------

F. Passing a 3/4"50-8070-9590-100

G. Passing a 3/8"40-6045-7055-75

H. Passing a No. 435-5535-5540-60

I. Passing a No. 825-4027-4530-46

J. Passing a No. 1616-3420-3823-40

K. Passing a No. 3012-2512-2713-28

L. Passing a No. 502-125-155-15

M. Passing a No. 1000-30-50-5

N.

O. Water: Water shall be potable and free from deleterious matter.

P. Admixtures: ASTM C 494.

Q. Expansion Joint Fillers: Preformed strips, non-extruding and resilient bituminous type, of thickness indicated, conforming to ASTM D 1751.

R. Curing Paper and Liquid Curing Compounds: See Section 03350- Concrete Finishing.

S. Abrasive Aggregate: See Section 03 3513 - Concrete Finishing.

T. Underlayment: Latex underlayment for filling low spots in concrete shall be Tile-Tex by Flintkote Co., Webtex #60 or Fixallatex by Dowman Products Co.

U. Vapor Retarder: See Section 07 2500 - Vapor Retarders.

**2.06 CONCRETE MIX DESIGN**

A. All Concrete
   1. 28-Day Strength: 3000 psi
   2. Type: Normal Weight
   3. Slump Range: 4" + 1"
   4. Weight: 135 pcf - 150pcf
   5. Air Entrained: 5% + 1% (For Exterior Concrete Only)

B. Accessories: Accessories used in exposed concrete shall be galvanized. Footing and slab-on-ground reinforcements shall be supported on solid blocks of concrete, concrete brick, or similar concrete masonry.

**PART 3 EXECUTION**

**3.01 GENERAL**

A. Time of Placing: Do not place concrete until reinforcement, conduits, outlet boxes, anchors, hangers, sleeves, bolts, and other embedded materials are securely fastened in place. Contact the Union County Commissioner's Office's OR at least 24 hours before placing concrete; do not place concrete until inspected by the Union County Commissioner's Office's OR.

B. Pouring Record: A record shall be kept on the Project site of time and date of placing concrete in each portion of structure. Such record shall be maintained on the Project site until Substantial Completion and shall be available for examination by Gardner Spencer Smith Tench and Jarbeau, PC and Union County Commissioner's Office's OR.

**3.02 EXAMINATION**

A. Verify lines, levels, and dimensions before proceeding with work of this section.

**3.03 PREPARATION**

A. Vapor Retarder: See Section 07 2500 - Vapor Retarders for instructions.

B. Reglets and Rebates:
   1. Form reglets and rebates in concrete to receive flashing, frames and other equipment as detailed and required. Coordinate dimensions and locations required with other related Work.
   2. If concrete slabs on grade adjoin a wall or other perpendicular concrete surface, form a reglet in wall to receive and carry horizontal concrete Work. Reglet shall be full thickness of the slab and shall be 3/4 inch wide, unless otherwise indicated. Requirement does not apply to exterior walks, unless specifically indicated.

C. Anchor Slots: Dove-tail anchor slots at concrete walls to receive masonry veneer shall be set vertically in forms, 24 inches maximum on centers measured horizontally. Anchor slots shall be No. 24 gage galvanized sheet steel with removable fiber filler to prevent seepage of cement in slot.

D. Screeds: Install screeds accurately and maintain at required grade or slab elevations after steel reinforcement has been installed , but before starting to place concrete. Install screeds adjacent to walls and in parallel rows not to exceed 8 feet on centers.

E. Interior Slabs on Grade: Install vapor retarder under interior slabs on grade. Lap joints minimum 6 inches. Seal joints, seams and penetrations watertight with manufacturer's recommended products and follow manufacturer's written instructions. Repair damaged vapor retarder before covering.

**3.04 PLACING CONCRETE**

A. Place concrete in accordance with ACI 304R.

B. Place concrete for floor slabs in accordance with ACI 302.1R.

C. Conveying and Placing:
   1. Concrete shall be placed only under direct observation of the Union County Commissioner's Office's OR. Do not place concrete outside of regular working hours, unless the Union County Commissioner's Office's OR has been notified at least 48 hours in advance.
   2. Concrete shall be conveyed from mixer to location of final placement by methods, which will prevent separation or loss of materials.
   3. Concrete shall be placed as nearly as practicable to its final position to avoid segregation due to re-handling or flowing. No concrete that has partially hydrated or has been contaminated by foreign materials shall be placed, nor shall re-tempered concrete or concrete which has been remixed after initial set be placed.
   4. In placing concrete in columns, walls or thin sections, provide openings in forms, elephant trunks, tremies or other recognized devices, to prevent segregation and accumulation of partially hydrated concrete on forms or metal reinforcement above level of concrete being placed. Such devices shall be installed so that concrete will be dropped vertically. Unconfined vertical drop of concrete from end of such devices to final placement surface shall not exceed 6 feet.
   5. Concrete shall be placed as a continuous operation until placing of panel or section is completed. Top surfaces of vertically formed lifts shall be level.
   6. Concrete shall be thoroughly consolidated during placement, and shall be worked around reinforcement and embedded fixtures with mechanical vibrators.
      a. Vibrators of the internal type shall be used to mechanically vibrate concrete while being placed. Particular attention shall be given the vibrating concrete to insure a dense, homogeneous mass free of air bubbles and honeycombs; however, care shall be taken not to separate materials by excessive vibrating. Vibrators shall not be used as a transporting facility.
   7. Where conditions make consolidation difficult, or where reinforcement is congested, batches of mortar containing same proportions of cement, sand, and water as provided in the concrete, shall first be deposited in the forms to a depth of at least one inch.

D. Compaction and Screeding:
   1. Tamp freshly placed concrete with a heavy tamper until at least 3/8 inch of mortar is brought to surface. Concrete shall then be tamped with a light tamper and screeded with a heavy straightedge until depressions and irregularities are eliminated, and surface is true to finish grades or elevations. Remove excess water and debris.
   2. Where slabs are to receive separate cement finish or mortar setting bed, continued tamping to raise mortar to surface is not performed. Laitance shall be removed by brushing with a stiff brush or by light sandblasting to expose clean top surface of coarse aggregate.

E. Filling, Leveling and Patching:
   1. Concrete slabs exhibiting high or low spots and indicated to receive resilient floor covering or soft floor covering, shall have surfaces repaired. High spots shall be honed, or ground with power-driven machines to required tolerances. Low spots shall be filled with latex

underlayment, installed in strict accordance with manufacturer's written recommendations.

2. Holes resulting from form ties or sleeve nuts shall be solidly packed, through exterior walls, by pressure grouting with cement grout, as specified. Grouted holes on exposed surfaces shall be screeded flush and finished to match adjoining surfaces.
3. Areas requiring patching shall not exceed two square feet per 1000 square feet of surface area. Areas having excessive defects, as determined by Gardner Spencer Smith Tench and Jarbeau, PC, shall be removed and replaced.
4. Following the finishing operation, patch voids, honeycombs, form tie holes and defects using a mixture of similar proportions to original concrete, deleting coarse aggregate where necessary.
5. In preparing areas to receive patch, remove loose pieces and chip out adjacent sound concrete to avoid featheredge conditions.
6. Apply coating of bonding agent to areas being patched. Take care to prevent staining of exposed surfaces. Apply bonding agent in accord with manufacturer's product recommendations.
7. Fill in area with selected mix, bringing to same level as original concrete. Brush out area to match surrounding work. Allow to cure.

F. Cement Base: Cement base shall be of the height, thickness, and shape detailed. Base shall be reinforced with one inch mesh, 18 gage, zinc-coated wire fabric. Base finish mixture shall be one part Portland cement, 2 parts of fine aggregate and one part pea gravel. Colored cement base shall include a chemically inert mineral oxide pigment in the mix.

G. Conduit Work: Electrical conduit shall be completely buried in the concrete. Low conduit shall be tied down on top of the bottom reinforcing rods. No conduit shall be spaced closer than 2 1/2 inches on center.

H. Finish floors level and flat, unless otherwise indicated, within the tolerances specified below.

**3.05 SLAB JOINTING**

A. Locate joints as indicated on the drawings.

B. Anchor joint fillers and devices to prevent movement during concrete placement.

C. Isolation Joints: Use preformed joint filler with removable top section for joint sealant, total height equal to thickness of slab, set flush with top of slab.

**3.06 FLOOR FLATNESS AND LEVELNESS TOLERANCES**

A. An independent testing agency, as specified in Section 01 4000, will inspect finished slabs for conformance to specified tolerances.

B. Minimum F(F) Floor Flatness and F(L) Floor Levelness Values:
   1. Exposed to View and Foot Traffic: F(F) of 20; F(L) of 15, on-grade only.
   2. Under Portland Cement Terrazzo: F(F) of 50; F(L) of 50, on-grade only.
   3. Under Thick-Bed Tile: F(F) of 20; F(L) of 15, on-grade only.
   4. Under Carpeting: F(F) of 25; F(L) of 20, on-grade only.
   5. Under Thin Resilient Flooring and Thinset Tile: F(F) of 35; F(L) of 25, on-grade only.

C. Measure F(F) and F(L) in accordance with ASTM E1155, within 48 hours after slab installation; report both composite overall values and local values for each measured section.

D. Correct the slab surface if composite overall value is less than specified and if local value is less than two-thirds of specified value or less than F(F) 13/F(L) 10.

E. Correct defects by grinding or by removal and replacement of the defective work. Areas requiring corrective work will be identified. Re-measure corrected areas by the same process.

**3.07 FIELD QUALITY CONTROL**

A. An independent testing agency will perform field quality control tests, as specified in Division 01.

B. Provide free access to concrete operations at project site and cooperate with appointed firm.

C. Take one additional test cylinder during cold weather concreting, cured on job site under same conditions as concrete it represents.

D. Molded Cylinder Tests:
   1. Union County Commissioner's Office Consultant will prepare cylinders. Each cylinder shall be dated, given a number, point in structure from which sample was obtained, mix design number, mix design strength and result of accompanying slump test noted.
   2. Separate tests of molded concrete cylinders obtained at same place and time shall be made at age of 3 days, 7 days, and 28 days. A strength test shall be the average of the compressive strength of 2 cylinders, obtained from the same sample of concrete and tested at 28 days or at test age designated for determination of f'c.
   3. Test cylinders shall be prepared at the Project site and stored in testing laboratory in accordance with ASTM C 31, and tested in accordance with ASTM C 39.

E. Core Test: At request of Gardner Spencer Smith Tench and Jarbeau, PC, cores of hardened concrete shall be cut from portions of hydrated structures for testing, in accordance with ASTM C 42.
   1. Provide 4 inch diameter cores at representative places throughout the structure as designated by the Architect.
   2. In general, provide sufficient cores to represent concrete placed with at least one core for each 4,000 square feet of building area, and at least 3 cores total for each Project.
   3. Where cores have been removed, fill voids with drypack, and patch the finish to match the adjacent existing surfaces.

F. Concrete Consistency: Measure consistency according to ASTM C 143. Test twice each day or partial day's run of the mixer.

G. Adjustment of Mix: If the strength of any grade of concrete for any portion of Work, as indicated by molded test cylinders, fall below minimum 28 days compressive strength specified or indicated, adjust mix design for remaining portion of construction so that resulting concrete meets minimum strength requirements.

H. Concrete For Equipment Pads, Mechanical and Electrical Work: Unless otherwise indicated, strength shall be 3,000 psi concrete. Exposed concrete shall be provided with a hand trowel finish with radius corners and edges. Form and place concrete where necessary as described in Section 03 1000 - Concrete Forming and Accessories, and reinforced as described in Section 03 2000 - Concrete Reinforcing. Calcium chloride shall not be furnished in any concrete mix provided for the installation of underground electrical conduits. For concrete encasement of more than one conduit, furnish 3/4 inch to 1 inch aggregate as specified for concrete mix.

**3.08 DEFECTIVE CONCRETE**

A. Should strength of any grade of concrete, for any portion of Work indicated by tests of molded cylinders and core tests, fall below minimum 28 days strength specified or indicated, concrete will be deemed defective Work and shall be replaced or adequately strengthened in a manner acceptable to the Gardner Spencer Smith Tench and Jarbeau, PC and Union County Commissioner's Office's OR.

B. Concrete Work that is not formed as indicated, is not true within 1/250 of span, not true to intended alignment, not plumb or level where so intended, not true to intended grades and levels, contains sawdust shavings, wood or embedded debris, or does not fully conform to Contract provisions, shall be deemed to be defective Work and shall be removed and replaced.

C. Repair or replacement of defective concrete will be determined by the Gardner Spencer Smith Tench and Jarbeau, PC. The cost of additional testing shall be borne by Contractor when defective concrete is identified.

D. Do not patch, fill, touch-up, repair, or replace exposed concrete except upon express direction of Gardner Spencer Smith Tench and Jarbeau, PC for each individual area.

**3.09 CLEAN UP**

A. Remove rubbish, debris and waste materials and legally dispose of off the Project site.

**3.10 PROTECTION**

A. Do not permit traffic over unprotected concrete floor surface until fully cured.

B. Protect the Work of this section until Substantial Completion.

**END OF SECTION**

# SECTION 03 3513
# CONCRETE FINISHING

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Finishing slabs on grade, monolithic floor slabs, and separate floor toppings.
   1. Finishes shall be defined in ACI 301. Uses of finishes shall be as defined herein, shown on drawings or as suggested in ACI 301 where not indicated.

B. Surface treatment with concrete hardener, sealer, and slip resistant coatings.

C. Single application cure-densifier-hardener for new and existing concrete floors.

### 1.02 RELATED SECTIONS

A. Section 03 1000 - Concrete Forming and Accessories.

B. Section 03 2000 - Concrete Reinforcing.

C. Section 03 3000 - Cast-In-Place Concrete: Prepared concrete floors ready to receive finish.

D. Section 03 3000 - Cast-In-Place Concrete: Control and formed expansion and contraction joints and joint devices.

E. Section 07 9005 - Joint Sealers.

### 1.03 REFERENCES

A. ACI 117 - Standard Tolerances for Concrete Construction and Materials.

B. ACI 301 - Specifications for Structural Concrete for Buildings; American Concrete Institute International; 2005.

C. ACI 302.1R - Guide for Concrete Floor and Slab Construction; American Concrete Institute International; 2004.

D. ACT 305 - Hot Weather Concreting.

E. ACT 306 - Cold Weather Concreting.

F. ACT 308 - Standard Practice for Curing Concrete.

G. ASTM C779 Standard Test Method for Abrasion Resistance of Horizontal Concrete Surfaces.

H. ASTM C805 Standard Test Method for Rebound Number of Hardened Concrete.

I. ASTM D3359 Standard Test Methods for Measuring Adhesion by Tape Test.

J. ASTM E 1155 - Standard Test Method for Determining F(F) Floor Flatness and F(L) Floor Levelness Numbers; 1996 (Reapproved 2001).

### 1.04 SUBMITTALS

A. See Section 01 3200 - Construction Progress Documentation, for submittal procedures.

B. Product Data: Provide data on concrete hardener, sealer, slip resistant treatment, and any other manufactured products, including information on compatibility of different products and limitations.

C. Maintenance Data: Provide data on maintenance renewal of applied coatings.

D. Samples: Submit five pounds of aggregate proposed for exposed aggregate finishes, indicate color, texture and size anticipated in finish work conditions.

### 1.05 QUALITY ASSURANCE

A. Perform Work in accordance with ACI 301.

### 1.06 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials in manufacturer's sealed packaging, including application instructions.

B. Storage and Protection: Store materials protected from exposure to harmful environmental conditions and at temperature and humidity conditions recommended by the manufacturer.

C. Handling: Protect materials from dirt, corrosion, oil, grease and other contaminants.

**1.07 PROJECT CONDITIONS**

A. Coordinate the work with concrete floor placement and concrete floor curing.

**1.08 ENVIRONMENTAL REQUIREMENTS**

A. Concrete shall be protected from premature drying, excessively hot or cold temperatures, and mechanical injury immediately after placement and shall be maintained with minimal moisture loss at relatively constant temperature for the period necessary for hydration of the cement and hardening of the concrete.

B. Concrete finishes shall be protected against frost and freezing, rapid drying, and heavy rains.

**PART 2 PRODUCTS**

**2.01 COMPOUNDS - HARDENERS AND SEALERS**

A. Curing Densifying and Hardening Compound:
   1. Type: Clear, chemically reactive, water-based treatment that penetrates into the concrete surface, forming a chemical reaction of crystaline growth that fills in the natural pores and voids in the concrete surface.
   2. Acceptable products:
      a. Basis of Design: Ashford Formula, Cure-Densifier-Hardener.
      b. W.R. Meadows Co., Liqui-Hard.
   3. Characteristics:
      a. Abrasion Resistance to Revolving Disks: At least a 32.5% improvement over untreated samples when tested in accordance with ASTM C779.
      b. Surface Adhesion: At least a 22% increase in adhesion for epoxy when tested in accordance with ASTM D3359.
      c. Hardening: As follows when tested in accordance with ASTM C39:
         1) After 7 Days: An increase of at least 40% over untreated samples.
         2) After 28 Days: An increase of at least 38% over untreated samples.
      d. Rebound Number: An increase of at least 13.3% over untreated samples when tested in accordance with ASTM C805.
   4. Location: Use Curing Densifying and Hardening Compound on concrete floor slabs in areas not scheduled to receive additional finish or where noted on the Finish Schedule.

B. Liquid Curing Compound:
   1. Type: Clear, water-based, non-yellowing, meeting ASTM C309, Type I.
   2. Acceptable products:
      a. W.R. Meadows Co., SealTight 1100 Clear Curing Compound.
      b. Degussa Building Systems, Kure-N-Seal.
      c. Symons, Resi-Chem Clear.
   3. Location: Use Liquid Curing Compound at all slab-on-grade locations specified to receive carpet, resilient VCT flooring, terrazzo, ceramic or quarry tile.

**2.02 SLIP RESISTANT TREATMENT**

A. Abrasive Aggregate: 95 percent minimum fused homogeneous aluminum oxide.
   1. After floating and while the surface is still plastic, uniformly broadcast aluminum oxide particles onto surface at the rate of 25 pounds per 100 sq. ft. Trowel particles into surface to provide embedment but do not force below surface. Use for exposed floors and slabs which constitute ramps with slope of 6 percent or greater, exposed stair treads, and as indicated.

## PART 3 EXECUTION

### 3.01 MANUFACTURER'S INSTRUCTIONS

A. Compliance: Comply with manufacturer's product data, including product technical bulletins, product catalog installation instructions and product carton instructions for installation.

### 3.02 EXAMINATION

A. Verify that floor surfaces are acceptable to receive the work of this section.

B. Do not begin installation until substrates have been properly prepared and are suitable for application of product.

C. If substrate preparation is the responsibility of another installer, notify Gardner Spencer Smith Tench and Jarbeau, PC of unsatisfactory preparation before proceeding.

D. See individual Floor Finish - Division 09 requirements for allowable vapor emission and floor flatness requirements.

### 3.03 PREPARATION

A. Clean surfaces thoroughly prior to installation.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

C. Do not use frozen material. Thaw and agitate prior to use.

D. If construction equipment must be used for application, diaper all components that might drip oil, hydraulic fluid or other liquids.

### 3.04 FINISHING

A. Finish concrete floor surfaces in accordance with ACI 301 and ACI 302.1R.

B. Finishing of Formed Surfaces:
   1. Rough form finish:
      a. Leave surfaces with the texture imparted by forms, except patch tie holes and defects.
      b. Remove fins exceeding 1/4 inch in height.
      c. Use for below grade exterior cast-in-place foundation walls and concealed spaces.
   2. Smooth form finish:
      a. Coordinate as necessary to secure form construction using smooth, hard, uniform surfaces, with number of seams kept to a practical minimum and in a uniform and orderly pattern.
      b. Patch tie holes and defects.
      c. Remove fins completely.
      d. All interior and exterior cast-in-place concrete surfaces exposed to view but receiving an additional finish covering (excluding paint) shall receive a smooth formed finish.
   3. Smooth rubbed finish:
      a. Produce on newly hardened concrete no later than the day following form removal.
      b. Wet the surfaces, and rub with carborundum brick or other abrasive until uniform color and texture are produced.
      c. Do not use a cement grout other than the cement paste drawn from the concrete itself by the rubbing process.
      d. All interior and exterior cast-in-place concrete surfaces exposed to view with no finish coating other than paint shall receive a smooth rubbed finish.
   4. Grout cleaned finish:
      a. Do not start cleaning operations until all contiguous surfaces to be cleaned are completed and accessible.
      b. Do not permit cleaning as the work progresses.
      c. Mix one part Portland cement and 1-1/2 parts fine sand with sufficient water to produce a grout having the consistency of thick paint.

d. Wet the surface of the concrete sufficiently to prevent absorption of water from the grout and apply the grout uniformly with brushes or spray gun.
e. Immediately after applying the grout, scrub the surface vigorously with a cork float or stone to coat the surface and fill all air bubbles and holes.
f. While the grout is still plastic, remove all excess grout by working the surface with a rubber float, sack, or other means.
g. After the surface whites from drying (about 30 minutes at normal temperatures), rub vigorously with clean burlap.
h. Keep the surface damp for at least 36 hours after final rubbing.
i. Use for repair of exposed finish surfaces to receive paint or clear sealer.

5. Medium sandblast finish:
   a. Concrete must have cured a minimum of 14 days prior to sandblasting.
   b. Perform sandblasting finishing in as continuous an operation as possible, utilizing same work crew to maintain continuity of finish on each surface or area of work.
   c. Maintain depth of cut and general aggregate exposure to match field sample.
   d. Use sharp quartz sand under sufficient air pressure to remove dirt, form oil and other foreign materials, and roughen surface to provide a proper bond.
   e. After sandblasting to required finish, wash to clean exposed aggregate surfaces to match Gardner Spencer Smith Tench and Jarbeau, PC's sample.
   f. Use where plywood or other smooth forms have been furnished for exterior concrete surfaces to receive portland cement plaster coat finish.
6. Sacking finish:
   a. Do not start sacking until patching and filling of holes has been completed.
   b. Entire sacking operation for any continuous area shall be started and completed within the same day.
   c. Mix one part portland cement and 1-1/2 parts fine sand with sufficient water to produce a grout having consistency of thick paint.
   d. Wet surface of concrete sufficiently to prevent absorption of water from grout.
   e. Apply grout uniformly with a brush or spray gun, then immediately float surface with a cork or other suitable float, and rub.
   f. While grout is still plastic, finish surface with a sponge-rubber float, removing excess grout.
   g. Allow surface to dry thoroughly, then rub vigorously with dry burlap to completely remove dried grout.
   h. No visible film or grout shall remain after rubbing with burlap.
   i. Use for exposed concrete curbs, and where indicted.

C. Finishing Slabs:
1. Uniformly spread, screed and consolidate concrete. Do not spread concrete by vibration.
2. Float Finish:
   a. Float with hand float or with a powered disc float. High spots to be cut down and low spots to be filled.
   b. Use as preparation for further finishing.
3. Troweled Finish:
   a. After floating, steel trowel to smooth, mark free surface.
   b. Use for exposed floors and slabs to receive carpeting and/or resilient flooring and where indicated.
4. Fine Broom Finish:
   a. After floating and while the surface is still plastic, provide a fine textured finish by drawing a fine fiber bristle broom uniformly over the surface in one direction only.
   b. Use exposed for floors and slabs to receive ceramic tile using the thin set setting method and where indicated.
   c. Apply broom finish to all exterior exposed concrete deck slabs.
5. Slip Resistant Finish:

a. After floating a non-slip rotary finish and while the surface is still plastic, uniformly broadcast aluminum oxide particles onto surface at the rate of 30 pounds per 100 sq. ft. evenly installed by dust-on method and embedded into surface during first troweling operation. Trowel particles into surface to provide embedment but do not force below surface. Additional abrasive grains, in amount of 30 pounds per 100 square feet, shall then be evenly installed and embedded into surface during final troweling operation.
b. Use abrasive finish for concrete stair treads, landings, ramps and steps on interior and exterior of buildings, and interior exposed floors and slabs in maintenance, utility and locker room areas, if no other finish is specified.

**3.05 FLOOR SURFACE TREATMENT**

A. Curing:
1. Cure concrete surfaces in accordance with ACI 301.
2. Application of compound shall be by a trained applicator acceptable to compound manufacturer.
3. Concrete shall be maintained above 50 degrees F., and in a moist condition for 7 days after placing, except that high early strength concrete shall be maintained in a moist condition for 3 days.
4. Before applying curing paper, interior floor treated with colored hardener shall be given a heavy protective coat of colored wax left unpolished, and then immediately covered with paper. If wax is not applied within two hours after final troweling, concrete shall be sprayed with a fine water mist and maintained continuously moist until wax is applied, unless spraying is not recommended by hardener manufacturer. After other Work such as plastering and painting has been completed, curing paper shall be removed and waxed floors cleaned of protective wax coating.
5. Forms containing concrete, top of concrete between forms, and exposed concrete surfaces after removal of forms shall be maintained in a thoroughly wet condition for at least 7 consecutive days after placing.
6. If weather is hot or surface has dried out, spray surface of concrete slabs and paving with fine mist of water, starting not later than 2 hours after final troweling and continuing until sunset. Surface of finish shall be kept continuously wet until curing medium has been installed.
7. Immediately after finishing, roof slabs and monolithic floor finish to receive resilient floor covering shall be uniformly and completely coated with liquid curing compound.
   a. Install compound in a manner and quantity sufficient to produce a uniform continuous thin film of water-impervious membrane. Compound shall be installed in accordance with manufacturer's directions.
   b. Protect adjoining surfaces from damage during installation. If curing compound is not applied immediately, cover finished concrete with wet burlap or curing paper and keep concrete surface wet for a period not to exceed thirty hours following finishing of concrete. At end of that time, burlap or paper shall be removed and curing compound installed as specified above.
8. Immediately after finishing, monolithic floor slabs not scheduled to receive resilient floor covering shall be covered with curing paper. Paper shall be lapped 3 inches at joints and sealed with waterproof sealer. Edges shall be cemented to finish. Repair or replace paper damaged during construction operations.
9. Within 24 hours after finishing, exterior slabs and paving, and interior slabs to receive cement topping or mortar setting beds, shall be covered with sand to a depth of 2 inches and kept thoroughly wet for 7 days.
   a. Instead of sand covering, exterior walks and paving where no other surface treatment is specified, may be cured with clear liquid curing compound immediately installed in accordance with manufacturer's directions.

B. Sealing:

1. Apply sealing compound on finished floor slab surfaces that are not to receive a finished floor covering and are indicated to be exposed and sealed.
2. Apply sealing compound immediately following finishing operation.
3. Apply sealing compound in sufficient quantities to keep entire surface wet for a minimum of 30 minutes.
4. Lightly mist surface with water as compound is absorbed into surface.
5. Flush surface with water and squeegee surface free of excess compound.

C. Hardener:
1. Exposed interior concrete floors throughout shall be treated with floor hardener, as specified. Install hardener after surface of concrete has reached the point where no excess moisture is present, but while it is still plastic. Hardener shall be installed as follows:
2. Colored Hardener: Install at rate of 40 pounds per 100 square feet of surface for initial application.
3. Gray (natural) Hardener: Install at rate of 20 pounds per 100 square feet of surface for initial application.
4. Hardener shall be evenly distributed and thoroughly floated into surface mortar with a wood float. An additional 20 pounds of hardener, colored or gray, specified as above, shall be installed over each 100 square feet, and troweled to an even surface having uniform color and texture.

D. Curing Densifying Hardening:
1. New Concrete: Apply cure-densifier hardener to new concrete as soon as the concrete is firm enough to work on after troweling; with colored concrete, wait a minimum of 30 days before application.
   a. Spray on at rate of 200 ft2/gal (5 m2/L).
   b. Keep surface wet with cure-densifier-hardener for a minimum soak-in period of 30 minutes without allowing it to dry or become slippery. If slipperiness occurs before the 30 minute time period has elapsed, apply additional cure-densifier-hardener, as needed, to keep the entire surface in a non-slippery state for the first 15 minutes; for the remaining 15 minutes, mist the surface as needed with water to keep the material in a non-slippery state. In hot weather conditions, follow manufacturer's special application procedures.
   c. When the treated surface becomes slippery after this period, lightly mist with water until slipperiness disappears.
   d. Wait for surface to become slippery again, and then flush entire surface with water to remove all cure-densifier-hardener residue.
   e. Squeegee surface completely dry, flushing any remaining slippery areas until no residue remains.
   f. Wet vacuum or scrubbing machines can be used in accordance with manufacturer's instructions to remove residue.
2. Existing Concrete: Apply cure-densifier-hardener only to clean, bare concrete.
   a. Thoroughly remove previous treatments, laitance, oil and other contaminants.
   b. Saturate surface with cure-densifier-hardener; respray or broom excess onto dry spots.
   c. Keep surface wet with cure-densifier-hardener for a minimum soak-in period of 30–40 minutes.
   d. If most of the material has been absorbed after the 30 minute soak-in period, remove all excess material, especially from low spots, using broom or squeegee.
   e. If most of the material remains on the surface after the 30 minute soak-in period, wait until the surface becomes slippery and then flush with water, removing all cure-densifier-hardener residue. Squeegee completely dry, flushing any remaining slippery areas until no residue remains.
   f. If water is not available, remove residue using squeegee.

E. Apply slip resistant finish to scheduled floor surfaces in accordance with manufacturer's instructions.

**3.06 TOLERANCES**

A. An independent testing agency, as specified in Section 01 4000, will inspect finished slabs for flatness.

B. Minimum F(F) Floor Flatness and F(L) Floor Levelness Values:
   1. Exposed to View and Foot Traffic: F(F) of 20; F(L) of 15, on-grade only.
   2. Under Thick-Bed Tile: F(F) of 20; F(L) of 15, on-grade only.
   3. Under Carpeting: F(F) of 25; F(L) of 20, on-grade only.
   4. Under Thin Resilient Flooring and Thinset Tile: F(F) of 35; F(L) of 25, on-grade only.
   5. Under Portland Cement Terrazzo: F(F) of 50; F(L) of 50, on-grade only.

C. Measure F(F) and F(L) in accordance with ASTM E1155, within 48 hours after slab installation; report both composite overall values and local values for each measured section.

D. Correct the slab surface if composite overall value is less than specified and if local value is less than two-thirds of specified value or less than F(F) 13/F(L) 10.

E. Correct defects by grinding or by removal and replacement of the defective work. Areas requiring corrective work will be identified. Re-measure corrected areas by the same process.

**3.07 PROTECTION**

A. Protect freshly placed concrete from damage due to water, falling objects or persons marring finish surface of concrete. Surfaces damaged due to lack of protective measures shall be removed and replaced with fresh concrete.

B. Protect concrete surfaces and finishes to be left exposed from damage during subsequent construction operations and make necessary repairs to damaged areas, returning to original condition.

C. Areas requiring patching shall not exceed two square feet per 1000 square feet of surface area. Areas having excessive defects, as determined by the Gardner Spencer Smith Tench and Jarbeau, PC, shall be removed and replaced.

D. Following the finishing operation, patch voids, honeycombs, form tie holes and defects using a mixture of similar proportions to original concrete, deleting coarse aggregate where necessary.

E. In preparing areas to receive patch, remove loose pieces and chip out adjacent sound concrete to avoid featheredge conditions.

F. Apply a coating of bonding agent to areas being patched. Take care to prevent staining of exposed surfaces. Apply bonding agent in accord with manufacturer's product recommendations.

G. Fill in area with selected mix, bringing to same level as original concrete. Brush out area to match surrounding work. Allow to cure.

**END OF SECTION**

# SECTION 04 0070
# CEMENT GROUT FOR REINFORCED MASONRY

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Grout for masonry.

### 1.02 RELATED SECTIONS

A. Section 01 4110 - Testing Laboratory Services.

B. Section 04 0090 - Masonry Accessories.

C. Section 04 2100 - Brick Masonry: Installation of mortar and grout.

D. Section 04 2200 - Concrete Unit Masonry: Installation of mortar and grout.

E. Section 04 7250 - Manufactured Masonry Veneer.

F. Section 08 3313 - COILING COUNTER SHUTTERS: Grouting steel door frames installed in masonry.

### 1.03 SUBMITTALS

A. See Section 01 3200 - Construction Progress Documentation, for submittal procedures.

B. Product Data: Include design mix and indicate whether the Proportion or Property specification of ASTM C 270 is to be used. Also include required environmental conditions and admixture limitations.

C. Shop Drawings: Show fabrication and installation details for the following:
   1. Reinforcing Steel: Detail bending and placement of unit masonry reinforcing bars. Comply with ACI 315, "Details and Detailing of Concrete Reinforcement."

D. Reports: Submit reports on grout indicating conformance of component grout materials to requirements of ASTM C 476 and test and evaluation reports to requirements of ASTM C 1019.

E. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

F. Manufacturer's Certificates: Signed by manufacturers certifying that each of the following items complies with requirements:
   1. Each cement product required for mortar and grout, including name of manufacturer, brand type, and weight slips at time of delivery.
   2. Each material and grade indicated for reinforcing bars.

### 1.04 QUALITY ASSURANCE

A. Comply with provisions of ACI 530/ASCE 5/TMS 402 and ACI 530.1/ASCE 6/TMS 602, except where exceeded by requirements of the contract documents.

B. For each type and color of cement specified, only one brand shall be used throughout project.

### 1.05 DELIVERY, STORAGE, AND HANDLING

A. Maintain packaged materials clean, dry, and protected against dampness, freezing, and foreign matter.

B. Deliver materials, except aggregate, in original unopened containers displaying product name, type, grade and mixing instructions.

### 1.06 ENVIRONMENTAL REQUIREMENTS

A. Maintain materials and surrounding air temperature to minimum 40 degrees F prior to, during, and 48 hours after completion of masonry work.

B. Maintain materials and surrounding air temperature to maximum 90 degrees F prior to, during, and 48 hours after completion of masonry work.

## PART 2 PRODUCTS

### 2.01 MATERIALS

A. Portland Cement: ASTM C 150, Type I - Normal; standard gray color.

B. Hydrated Lime: ASTM C 207, Type S.

C. Aggregate:
   1. Fine Grout: Meeting ASTM C404, fine aggregate, size #1.
   2. Course grout: Meeting ASTM C33, size #7, Maximum.

D. Superplasticizing admixture for cement grout:
   1. Acceptable products:
      a. Anti-Hydro Co., A-H Super P.
      b. The Euclid Chemical Co., Melment L10A Super.
      c. Master Builders, Inc., Rheobuild 1000.
      d. Sika Corp., Sikament 300.
   2. Characteristics: Meeting ASTM C494, Type F; free of chloride ions.

E. Water: Clean and potable.

### 2.02 PROPORTIONS

A. Proportion in accord with ASTM C476, except where more stringent requirements are specified herein.

B. Fine grout: Use for grouting where void to be filled has a minimum dimension of 2" or less. Proportion materials by volume to provide minimum 2500 psi compressive strength at 28 days in accord with ASTM C1019.

C. Coarse grout: Use for grouting where void to be filled has a dimension greater than 2". Proportion materials by volume to provide minimum 2500 psi compressive strength at 28 days in accord with ASTM C1019.

D. Provide superplasticizer in all cement grout mixes..

### 2.03 GROUT MIXING

A. Mix grout in accordance with ASTM C 94/C 94M.

B. Thoroughly mix grout ingredients in quantities needed for immediate use in accordance with ASTM C 476 for fine and coarse grout.

C. Add admixtures in accordance with manufacturer's instructions; mix uniformly.

D. Do not use anti-freeze compounds to lower the freezing point of grout.

### 2.04 PRECONSTRUCTION TESTING

A. Testing will be conducted by an independent test agency, in accordance with provisions of Division 01.

B. Grout Mixes: Test grout batches in accordance with ASTM C 1019 procedures.
   1. Test results will be used to establish optimum grout proportions and establish quality control values for construction testing.

## PART 3 EXECUTION

### 3.01 PREPARATION

A. Plug clean-out holes for grouted masonry with brick masonry units. Brace masonry to resist wet grout pressure.

### 3.02 INSTALLATION

A. Work grout into masonry cores and cavities to eliminate voids.

B. Do not install grout in lifts greater than 16 inches without consolidating grout by rodding.

C. Do not displace reinforcement while placing grout.

D. Remove excess mortar from grout spaces.

E. Discard grout not placed within 1-1/2 hours after water is added to mix, or sooner if grout begins to set.

**3.03 GROUTING**

A. Use either high-lift or low-lift grouting techniques, at Contractor's option, subject to other limitations of contract documents.

B. Place grout as directed in Section 04 2200 - Concrete Unit Masonry.

**3.04 FIELD QUALITY CONTROL**

A. An independent testing agency will perform field tests, in accordance with provisions of Division 01.

B. Test and evaluate grout in accordance with ASTM C 1019 procedures.
   1. Test with same frequency as specified for masonry units.

C. Evaluation of Quality Control Tests: In absence of other indications of noncompliance with requirements, cement grout for reinforced masonry will be considered satisfactory if results from construction quality control tests comply with minimum requirements indicated.

**END OF SECTION**

# SECTION 04 0090
# MASONRY ACCESSORIES

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Laminated metal flashings and counterflashings.

B. Self-adhering composite flexible flashing.

C. Miscellaneous accessories.

### 1.02 RELATED SECTIONS

A. Section 01 4000 - Quality Requirements: For coordination of Testing and Inspection agency and for mock-up requirements.

B. Section 03 3000 - Cast-In-Place Concrete.

C. Section 04 0070 - Cement Grout for Reinforced Masonry.

D. Section 04 0511 - Masonry Mortaring and Grouting.

E. Section 04 2100 - Brick Masonry.

F. Section 04 2200 - Concrete Unit Masonry.

G. Section 04 7200 - Cast Stone Masonry.

H. Section 04 7250 - Manufactured Masonry Veneer.

I. Section 06 1000 - Rough Carpentry: Flashing at openings and sills.

J. Section 07 2720 - Fluid-Applied Membrane Air & Vapor Barriers: Materials continuing the air barrier seal.

K. Section 07 9005 - Joint Sealers: Sealing joints indicated to be left open for sealant.

L. Section 09 2116 - Gypsum Board Assemblies: For requirement that backup sheathing.

M. Section 08 3313 - COILING COUNTER SHUTTERS: Masonry anchors.

### 1.03 SUBMITTALS

A. See Division 01 - Administrative Requirements, for submittal procedures.

B. Product Data: Manufacturer's data sheets showing product characteristics and including installation instructions.

C. Shop Drawings: Show fabrication and installation details for the following:
   1. Reinforcing Steel: Detail bending and placement of unit masonry reinforcing bars. Comply with ACI 315, "Details and Detailing of Concrete Reinforcement."
   2. Fabricated Flashing: Detail corner units, end-dam units, and other special applications.

D. Samples for Verification:
   1. Weep holes/vents in color to match mortar color.
   2. Accessories embedded in the masonry.

E. Mill tests:
   1. Submit for each heat of reinforcing steel, certifying mill tests conducted in accord with ASTM requirements.
   2. Cost for test shall be borne by Contractor.
   3. Unidentified bundles may be rejected or tested at the request of Gardner Spencer Smith Tench and Jarbeau, PC. Cost of test on unidentified bundles shall be borne by Contractor
   4. Submit three copies of each test report to Gardner Spencer Smith Tench and Jarbeau, PC

F. Manufacturer's Certificates: Signed by manufacturers certifying that each of the following items complies with requirements:
   1. Each type and size of joint reinforcement.
   2. Each type and size of anchor, tie, and metal accessory.

**1.04 QUALITY ASSURANCE**

A. Applicable standards; standards of the following as referenced herein:
   1. American Concrete Institute (ACI).
   2. American Society for Testing and Materials (ASTM).
   3. Steel structures Painting Council (SSPC).

B. Installer Qualifications: Company with at least five years of successful experience in weathertight installation of flashing.

C. Coordination: Interface flashing work with adjacent and adjoining work to ensure best possible weather resistance and durability of completed flashing.

**1.05 MOCK-UP PANEL**

A. Construct miscellaneous accessories as part of the brick mock-up panel. See Section 04 2100 - Brick Masonry for related items to be installed and coordinated.

**1.06 DELIVERY, STORAGE, AND HANDLING**

A. Deliver materials to project site in manufacturer's sealed packaging, bearing manufacturer's name and product identification.

B. Stack flashing materials to avoid twisting, bending, and abrasion. Protect materials from weather before installation.

C. Store mastics, cements, and joint sealers in manufacturer's sealed containers under cover.

D. Store masonry accessories, including metal items, to prevent corrosion and accumulation of dirt and oil.

**PART 2 PRODUCTS**

**2.01 REINFORCING STEEL**

A. Uncoated Steel Reinforcing Bars: ASTM A 615/A 615M; ASTM A 616/A 616M, including Supplement 1; or ASTM A 617/A 617M, Grade 60 (Grade 400).

**2.02 MASONRY JOINT REINFORCEMENT**

A. Acceptable Manufacturers; subject to compliance with specified requirements:
   1. Basis of design: Dur-O-Wal, Inc.: www.dur-o-wal.com.
   2. Heckmann Building Products Inc.
   3. Hohmann & Barnard, Company
   4. Wire-Bond.
   5. National Wire Products Industries, Inc.

B. Masonry joint reinforcement:
   1. Types:
      a. At single wythe masonry: Basis of design is Dur-O-Wall, DA 3100; Truss type.
      b. At double wythe masonry: Basis of design is Dur-O-Wal, Dur-O-Eye D/A 3700; Truss type with adjustable pintle ties; ties and cross wires spaced at 1'-4" o.c.
   2. Fabricate from cold-drawn wire meeting ASTM A82-95a.
   3. Longitudinal rods: Nine ga. galvanized deformed rods.
   4. Cross rods: Nine ga. galvanized rods, welded to longitudinal rods.
   5. Width of reinforcement shall be 2" less than the total wall width.
   6. Provide reinforcement in minimum 10'-0" lengths with prefabricated corners and tees at intersecting walls of same design, finish and joint reinforcement.
   7. Finishes:
      a. Reinforcement fully embedded in mortar at single wythe interior construction: Galvanized, meeting ASTM A641, Class 3 or A.
      b. Reinforcement fully embedded in mortar at single and double wythe exterior masonry: Hot-dipped galvanized, meeting ASTM A153, Class B-2.

## 2.03 ANCHORS FOR CONNECTING TO CONCRETE

A. Dovetail anchor characteristics:
   1. Material: Minimum 16 ga. hot-dipped galvanized steel, meeting ASTM A153, Class B-2.
   2. Type: Minimum 1" wide, corrugated type.
   3. Wall tie: Minimum 3/16" diameter hot-dipped galvanized steel, sized to extend to within 1" of exposed veneer face, meeting ASTM A153, Class B-3.

B. Dovetail slot characteristics:
   1. Material: Minimum 22 ga. galvanized steel.
   2. Size: 1: wide back by 1" deep with 5/8" throat.

## 2.04 MASONARY VENEER ANCHOR SYSTEM

A. Acceptable products; subject to compliance with specified characteristics:
   1. Basis of design: Dur-O-Wal, Inc., D/A 213 Assembly with anchor plate and pintle tie.
   2. Heckmann Building Products, Inc., No. 213 Wire Veneer Anchor System with No. 282 Double Pintle Wire Tie.
   3. Wire-Bond, RJ-711 Adjustable Veneer Anchor.

B. Characteristics:
   1. Description: Two-component tie assembly consisting of screw-attached back-up plate en capturing a wire tie.
   2. Back-up plate: Minimum 16 ga. grooved or punched plate assembly or minimum 14 ga. stiffened strap/plate assembly, punched for attachment to metal stud framing with two screws.
   3. Wire tie: Minimum 3/16" wire tie.
   4. Tie assembly: Size tie assembly to extend within 1" of exterior exposed face.
   5. Finish: Hot-dipped galvanized, meeting ASTM A153, Class B-3.
   6. Fasteners: Self-tapping steel screws, corrosive-resistant coated; passing Kesternich test chamber, DIN 50018 standard with no indications of red rust or corrosion after minimum 30 wet and dry acidic atmosphere cycles and minimum 1000 hours salt spray testing in accord with ASTM B117.

## 2.05 MASONRY PLUMBING CHASE WALL TIES

A. Material: Minimum 3/16" diameter hot-dipped galvanized steel wire meeting ASTM A82-95a. Coating shall comply with ASTM A153, Class B-1.

B. Size and configuration: "Z" type with 3" long 90 degree bends each end. Fabricate lengths 2" less than with of chase.

## 2.06 WELDED COLUMN AND BEAM ANCHOR SYSTEM

A. Acceptable products; subject to compliance with specified requirements:
   1. Heckmann Building Products Inc., 317 Anchor rod with 318 Series trapezoidal ties.
   2. Hohmann & Barnard, Inc., 359c Anchor rod with 301W Column Web Tie.
   3. Wirebond: Type 1-1000c with #1200 trapezoidal tie.

B. Column Characteristics:
   1. Type: Continuous weld-on rod type.
   2. Rod material: 1/4" diameter galvanized steel.
   3. Rod size and configuration: Continuous lengths as required with offsets 8" o.c.. Provide extended offsets at fireproofing conditions.
   4. Tie: Minimum 3/16" diameter steel wire, trapezoidal web shaped, sized to extend to within 1" of exposed veneer face.
   5. Finish: Hot-dipped galvanized, in accord with ASTM A153, Class B-3.

C. Beam Characteristics:
   1. Type: Two component, adjustable clip and tie assembly.
   2. Clip: Minimum 14 ga., 1" high x 1-1/4 wide steel strap with 3/16" offset for anchor, for welding onto steel. Provide extended offsets at fireproofing conditions.

3. Corrugated Tie: Minimum 14 ga., 3/4" wide with 4" adjustment bend sized to extend to within 1" of exposed veneer face.
4. Finish: Hot-dipped galvanized, in accord with ASTM A153, Class B-3.

**2.07 "Z" ANCHORS FOR CORNER CONDITIONS AND PLUMBING CHASES**

A. Type: Minimum size shall be 1/4" by 1-1/2" by 2'-0" including 2" long 90 degree bends at each end to form a "Z" shape.

B. Finish: Hot-dipped galvanized, in accord with ASTM A153, Class B-1.

**2.08 BAR REINFORCEMENT**

A. Bars: Meeting ASTM A615-96a, ACI 530-92 and ACI 530.1-92, deformed type for #3 and larger bars.
1. Ties and stirrups: Grade 40, unless otherwise indicated on the drawings.
2. All other bars: Grade 60, unless otherwise indicated on the drawings.

**2.09 VERTICAL REINFORCING BAR POSITIONERS**

A. Acceptable products; subject to compliance with specified requirements:
1. Dur-O-Wal, Inc., D/A 811.
2. Heckmann Building Products Inc., 377.
3. Wire-Bond: 3401.

B. Type: Minimum 9 ga. wire, spider shaped positioner allowing rebar to be placed at center of wall or on either side of cavity. Finish shall be hot-dipped galvanized, in accord with ASTM A153, Class B-3.

**2.10 HORIZONTAL REINFORCING BAR POSITIONERS**

A. Acceptable products; subject to compliance with specified requirements:
1. Dur-O-Wal, Inc., D/A 812.
2. Heckmann Building Products Inc., 379.
3. Wire-Bond, 3420.

B. Type: Minimum 9 ga. wire, spider shaped positioner allowing rebar to be placed at center of wall or on either side of cavity. Finish shall be hot-dipped galvanized, in accord with ASTM A153, Class B-3.

**2.11 PRESSURE RELIEVING PADS**

A. Acceptable products; subject to compliance with specified requirements:
1. Dur-O-Wal, Inc., Rapid Soft-Joint, D/A 2010.
2. Hohmann & Barnard, Inc., #NS.
3. Wire-Bond: Horizontal/Vertical Expansion Joint.

B. Type: Self-adhering, closed cell neoprene conforming to ASTM D1056-97a, Class RE41, for compression up to 35%.

C. Sizes:
1. Horizontal joints: 2-3/4" wide, 1/4" thickness.
2. Vertical joints: 3" wide, 3/8" thickness.

**2.12 CONTROL JOINT STABILIZATION ANCHORS**

A. Acceptable products; subject to compliance with specified requirements:
1. Dur-O-Wal, Inc., Joint Stabilization Anchors D/A 2200.
2. Hohmann & Barnard, Inc., Slip-set stabilizer.
3. Wire-Bond, #1700 Control Joint Anchors.

B. Type: Mill Galvanized Steel.

**2.13 RUBBER CONTROL JOINTS**

A. Acceptable products; subject to compliance with specified requirements:
1. Dur-O-Wal, Inc., Rapid Control Joint.

2. Hohmann & Barnard, Inc., RS Series, Rubber Control Joint..
3. Wire-Bond, Control Joint 2900 Series.

B. Type: Extruded rubber meeting ASTM D2000, Type 2AA, 805, minimum 80 durometer hardness.

**2.14 WIRE MESH HARDWARE CLOTH**

A. Type: 1/2" by 16 ga. galvanized steel mesh, 2" less than wall width by 1'-4" long minimum.

**2.15 FLASHING MATERIALS**

A. Metal Flashing: Subject to compliance with requirements, provide one of the following for the condition specified:
1. Acceptable manufacturers:
a. Cheney Flashing Company, Inc; Product - Dovetail; www.cheneyflashing.com.
b. Cheney Flashing Company, Inc; Product - Sawtooth: www.cheneyflashing.com.
c. Keystone Flashing Co; Product - Two-Piece Cap Flashing; www.keystoneflashing.com.
d. Keystone Flashing Co; Product - 3-Way Interlocking Thruwall Flashing; www.keystoneflashing.com.
e. LITSCO; Product - LIT-Loc Two-Piece Cap Flashing; www.litsco.com.
f. LITSCO; Product - Mortar-Tight Thru-wall Metal Flashing; www.litsco.com.
2. Fabricate metal drip edges from sheet metal indicated. Extend at least 3 inches (75 mm) into wall and 1/2 inch (13 mm) out from wall, with hemmed outer edge bent down 30 degrees.

B. Metal Reglet System: Subject to compliance with requirements, provide one of the following for the condition specified:
1. Acceptable products; generally in accord with the following:
a. Fry Reglet Corp., Springlok, Type MA-4 at masonry walls, Type SM at other locations.
b. W.P. Hickman, Masonry Type at masonry walls, Surface-Mounted Type at other locations.
c. MM Systems Corp., RC-3 Masonry at masonry walls, RC-1 Surface-Mounted at other locations.
2. Characteristics:
a. Material: Stainless steel reglet and counterflashing, minimum 0.020" thickness.
b. Finish: No further finish required.
c. Accessories: Prefabricated interior and exterior corners and splice plates.

C. Concealed Flashing: For flashing partly exposed to exterior, use metal flashing specified above. For flashing not exposed to exterior (through wall flashing), use the following unless otherwise indicated:
1. Laminated stainless steel fabric flashing, non-asphaltic:
a. Acceptable manufacturers:
1) York Manufacturing, Inc.; York Flash-Vent SS: www.yorkmfg.com.
2) Illinois Products, Inc.; IPCO Stainless Steel Fabric Flashing
3) Prosoco, Inc.; R-Guard SS ThruWall
4) STS Coatings, Inc.; Wall Guardian Stainless Steel TWF: www.stscoatings.com.
5) TK Products, Inc.; TK TWF
b. Characteristics:
1) Type: Stainless steel core with polymer fabric laminated to the bottom stainless steel face with non-asphalt adhesive. The top face (exposed side) must not be covered with a polymer fabric.
2) Stainless steel: type 304, ASTM A240. Domestically sourced per
3) Fabric: polymer fabric; laminated back face (non-exposed side) of stainless steel core.

4) Size: Manufacturer's standard width rolls.

c. Drip edge plate: Continuous stainless steel plate with a smooth, factory-formed hemmed edge for installation safety and uniform appearance.

d. Lap and bonding adhesives: Flashing manufacturer's adhesives recommended for use with flashing materials.

e. Mastic/Sealant: Product standard of quality is York Manufacturing, Inc.; UniverSeal US100.

f. Outside corner and inside corner material; manufacturer's standard available units using:

1) Stainless steel: 26 gauge stainless steel.

g. End dam: Product may be folded in line with the flashing material or utilize preformed end dams by manufacturer using:

1) Stainless steel: 26 gauge stainless steel

h. Splice material: Product standard of quality is York304 SS by York. Manufacturer's standard self-adhered metal material; material matching system material or use Multi-Flash Stainless Steel 6" lap piece and polyether sealant as a splice.

i. Termination bar: Product standard of quality is York T-96 termination bar. Manufacturer's standard 1" composite material bar or a 1" 26 gauge stainless steel termination bar with sealant lip.

D. Flexible Membrane Drainage Plane flashing and across all control and expansion joints, steel columns or steel beams inside a concrete masonry unit wall with or without sheathing backup:

1. Stainless steel core flexible flashing with drainage fabric:

a. Acceptable products, subject to compliance with specified requirements:

1) York Manufacturing, Inc.; York Flash-Vent SS: www.yorkmfg.com.

2) STS Coatings, Inc.; Wall Guardian Venting Stainless Steel TWF: www.stscoatings.com.

3) Building Materials West Company, Inc.; Evacu-Flash SS: www.evacu-flash.com.

b. Characteristics:

1) Type: Engineered system, with high resistant to damage, composite with a stainless steel with non-asphalt adhesive polymer fabric laminated to one stainless steel and non-woven drainage fabric laminated to opposing face with non-asphalt adhesive.

2) Stainless steel: type 304, ASTM A240. Domestically sourced per DFARS 252.225-7008 and/or DFARS 252.225-7009.

3) Fabrics:

(a) Polymer fabric; laminated back face to stainless steel core

(b) Non-woven drainage fabric: Fabric laminated to front face stainless steel core.

4) Recycled content: stainless steel is 60% recycled

5) Size: Manufacturer's standard width rolls.

c. Lap and bonding adhesives: Flashing manufacturer's adhesives recommended for use with flashing materials.

d. Mastic/Sealant: Product standard of quality is York Manufacturing, Inc.; UniverSeal US100.

e. Outside corner and inside corner material; manufacturer's standard available units using:

1) Stainless steel: 26 gauge stainless steel.

f. End dam: Product may be folded in line with the flashing material or utilize preformed end dams by manufacturer using:

1) Stainless steel: 26 gauge stainless steel

g. Splice material: Product standard of quality is York304 SS by York. Manufacturer's standard self-adhered metal material; material matching system material or use Multi-Flash Stainless Steel 6" lap piece and polyether sealant as a splice.

h. Termination bar: Product standard of quality is York T-96 termination bar. Manufacturer's standard 1" composite material bar or a 1” 26 gauge stainless steel termination bar with sealant lip.

**2.16 DRIP EDGE FLASHING**

A. Acceptable products; subject to compliance with specified requirements:
1. Dur-O-Wal, Inc., Drip Edge Flashing D/A 1525.
2. Hohmann & Barnard, Inc., DP Series, Drip Plates.
3. Wire-Bond, #4165 Drip Edge Flashing.

B. Type: Minimum Stainless Steel 26 ga. 1-1/2" wide continuous with 3/8" closed hem edge. Use at all through wall flashing locations.

**2.17 WEEP/CAVITY VENTS**

A. Acceptable Manufacturers; subject to compliance with specified requirements:
1. Dur-O-Wal; Product Cell-Vent D/A 1006: www.dur-o-wal.com.
2. Hohmann & Barnard, Inc; Product QV - Quadro-Vent: www.h-b.com.
3. Wire-Bond; Product Cell Vent: www.wirebond.com.
4. Substitutions: See Division 01 - Product Requirements.

**2.18 CAVITY MORTAR DIVERTER**

A. Cavity Mortar Diverter: Semi-rigid polyethylene or polyester mesh blocks, sized to fill bottom of wall cavity and suspend mortar droppings above weep/cavity vents to allow cavity drainage.
1. Match air space thickness.

B. Acceptable Manufacturers; subject to compliance with specified requirements:
1. CavClear; Product Masonry Mat: www.cavclear.com.
2. Dur-O-Wal; Product Mortar Net D/A 1008: www.dur-o-wal.com.
3. Hohmann & Barnard, Inc; Product Mortar Net: www.h-b.com.
4. Wire-Bond; Product Mortar Net: www.wirebond.com.
5. Mortar Net USA, Ltd; Product Mortar Net: www.mortarnet.com.
6. Polytite Manufacturing Corp; Product Mortar Stop: www.polytite.com.
7. Substitutions: See Section 01600 - Product Requirements.

**2.19 CAVITY-WALL INSULATION**

A. Extruded-Polystyrene Board Insulation: ASTM C 578, Type IV or X, closed-cell product extruded with an integral skin.

B. Adhesive: Type recommended by insulation board manufacturer for application indicated.

**2.20 GALVANIZING COMPOUND**

A. Cold galvanizing compound: Pre-mixed, organic zinc liquid or spray containing 95% zinc in dried film; Brite Products, Brite Zinc or similar of other manufacturers.

**2.21 FABRICATION**

A. Forming: Fabricate flashings true to shape and accurate in dimension. Form pieces in longest possible lengths to minimize joints. Fold flashing at corners and at ends of pans instead of cutting.

B. Joints: Provide not less than 4 inches of overlap at flashing joints.

**PART 3 EXECUTION**

**3.01 EXAMINATION**

A. Verify that surfaces to receive masonry accessories are thoroughly dry, free from loose materials, and reasonably smooth, with no sharp edges or projections.

B. Verify that locations to receive flashing are sloped so water that enters will drain to building exterior.

### 3.02 MASONRY JOINT REINFORCEMENT INSTALLATION

A. General:
   1. Install reinforcement and accessories in accord with manufacturer's product data. Provide sizes and methods of attachment as required by installation conditions. In addition to installation spacings specified, provide specified reinforcement and accessories at perimeter of windows, doors and other openings.
   2. Where galvanized components must be field-welded to supports, remove galvanizing prior to welding.
   3. Provide additional reinforcement and accessories at perimeter of windows, doors and other openings in addition to spacings specified.

B. Install masonry joint reinforcement in all masonry walls at 1'-4" o.c. vertically. Lap side rods 6" minimum at splices' greater as required by product data.
   1. Stop reinforcement 1" back from expansion and control joints and openings in masonry walls.
   2. Install reinforcement in first and second bed joint above and under openings, with non-continuous reinforcement extending 2'-0" beyond jamb, each side.
   3. Install ladder type joint reinforcement with cross wires aligned with head joints of concrete masonry units.
   4. Install pintle wall ties to eye sections of joint reinforcement and bed joint of masonry veneer wy1he as work progresses. Maximum misalignment of bed joints between masonry wy1he for tie placement shall not exceed manufacturer's recommended spacing.
   5. At splices, cross rods may be removed to facilitate placement.

C. Corners: Provide interlocking masonry unit bond in each wythe and course at corners, unless otherwise indicated.
   1. Provide continuity with masonry joint reinforcement at corners by using prefabricated "L" units as well as masonry bonding.

D. Intersecting and Abutting Walls: Unless vertical expansion or control joints are shown at juncture, bond walls together as follows:
   1. Provide continuity with masonry joint reinforcement by using prefabricated "T" units.

### 3.03 CAVITIES

A. Keep cavities clean of mortar droppings and other materials during construction. Strike joints facing cavities flush.

B. Installing Insulation: Place small dabs of adhesive, spaced approximately 12 inches (300 mm) 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.

### 3.04 ANCHORS FOR CONNECTING TO CONCRETE

A. Install dovetail anchor slots vertically in cast-in-place concrete surfaces 1'-4" o.c., maximum horizontally, adjacent to masonry walls. Install dovetail anchors at 1'-4" o.c., maximum, vertically.

### 3.05 MASONRY VENEER ANCHOR SYSTEM INSTALLATION

A. Attach masonry veneer anchor plates through sheathing to studs using specified fasteners.
   1. Install two fasteners per anchor plate assembly.
   2. Space anchor plates at 1'-4" o.c., each direction.
   3. Install one tie per plate, using specified fasteners.
   4. Additional ties shall be installed at 8" o.c. at jambs and near edges.

**3.06 MASONRY PLUMBING WALL CHASE INSTALLATION**

A. Install "Z" type galvanized steel plumbing chase wall ties with 90 degree bends embedded in each wythe of masonry chase walls in full bed of mortar. Space ties at 2'-0" o.c., vertically and 4'-0" o.c., horizontally.

**3.07 WELDED COLUMN AND BEAM ANCHOR SYSTEM**

A. Weld column anchors 2'-8" o.c. on flange of steel columns. Weld beam anchors 4'-0" o.c. at beams running adjacent to masonry. Attach ties and set in mortar bed.

**3.08 "Z" ANCHORS FOR CORNER CONDITIONS**

A. Install "Z" anchors at corners of intersecting walls at maximum 4'-0" o.c., vertically.

**3.09 BAR REINFORCEMENT INSTALLATION**

A. Bar reinforcement:
   1. Shop fabricate reinforcement to shape and dimensions indicated on approved shop drawings. Bent bars shall be bent cold. Fabricate in accord with ACI 315-92 and ACI 318-92.
   2. Reinforcement shall, at the time of placing, be free from rust scale, oil and other coatings reducing bond. Use no bar with kinks or bends not shown on shop drawings.
   3. Install reinforcement as specified in Section 04 2200 - Concrete Unit Masonry.

**3.10 VERTICAL REINFORCING BAR POSITIONERS**

A. Install vertical reinforcing bar positioners in reinforced masonry walls as specified in Section 04 2200 - Concrete Unit Masonry.

**3.11 PRESSURE RELIEVING PADS INSTALLATION**

A. Install vertical and horizontal pressure relieving pads in masonry construction at locations indicated.
   1. Joint sizes shall match masonry joint widths.
   2. Keep joints clean of masonry droppings.
   3. Install pressure relieving pads with lengths butted.
   4. Install horizontal pressure relieving pads under shelf angles.
   5. Caulk joints using sealant as specified in Section 07 9005 - Joint Sealers. Joints shall be watertight and free from voids after caulking.

**3.12 CONTROL JOINT STABILIZATION ANCHORS**

A. Install control joint stabilization anchors as specified in Section 04 2200 - Concrete Unit Masonry. Location of control stabilization anchors in unit masonry construction shall be indicated on the drawings.

**3.13 RUBBER CONTROL JOINT INSTALLATION**

A. Install rubber control joints as specified in Section 04 2200 - Concrete Unit Masonry. Location of control joints in masonry construction shall be indicated on the drawings.

**3.14 WIRE MESH CLOTH INSTALLATION**

A. Install wire mesh hardware cloth at concrete masonry units to prevent migration of grout from masonry units, where units are indicated to be grouted.

**3.15 FLASHING INSTALLATION**

A. General: Comply with recommendations of SMACNA ASMM.

B. Metal Flashing:
   1. Whether or not specifically indicated, install masonry flashing to divert water to exterior at all locations where downward flow of water will be interrupted.
      a. Clean surface of masonry smooth and free from projections which might puncture flashing material.

b. Extend flashings full width at such interruptions and at least 6 inches into adjacent masonry or turn up at least 4 inches to form watertight pan at non-masonry construction.
c. Remove or cover protrusions or sharp edges that could puncture flashings.
d. Seal lapped ends and penetrations of flashing before covering with mortar.
e. Extend laminated flashings to within 1/4 inch of exterior face of masonry.
f. Lap end joints of flashings at least 4 inches and seal watertight with mastic or elastic sealant.
g. Place flashings on sloped mortar bed; seal lapped ends and penetrations of flashing before covering with mortar.
    1) Extend metal flashings through exterior face of masonry and turn down to form drip.
h. Veneer Flashings: Turn flashings up not less than 4 inches at backup. Lap top of flashing with building paper, or otherwise seal to prevent moisture penetration between flashing and backup.
i. Heads and Sills: Turn up ends of flashing at least 2 inches at heads and sills to form a pan, and seal joints.
j. Sealing: Seal all joints in flashing to ensure watertight integrity.
    1) Lap end joints on non deformed metal flashings at least 4 inches; seal laps with elastic sealant or mastic.

2. Metal Reglet Flashing:
    a. Install reglets as directed by manufacturer, level and true to line. Verify that through-wall flashing occurs at or above reglet locations.
        1) Surface-mounted reglets: Install reglets as walls are built.
        2) Masonry reglets: Install reglets as walls are built.
        3) Install with top of reglet minimum of 8" above adjacent roof.
    b. Terminate reglet 2" from each side of expansion and control joints in substrates to which surface-applied reglets are installed. Provide 1'-0" wide cover plate of reglet material, overlapping adjacent reglet lengths 4". Attach cover plates to provide discontinuous joints.
    c. Provide factory-fabricated corners at changes in directions.
    d. Following installation of roofing, install counterflashing by snapping into reglet in accord with manufacturer's product data. Overlap adjacent lengths 6", minimum, to allow for expansion and contraction. Caulk top edge of reglet using exterior silicone sealant as specified in Joint Sealers section. Ensure that through-wall flashing joints and weeps terminate in joints just above top edge of reglets.
3. Flexible Membrane:
    a. Install as directed by manufacturer, level and true to line. Provide Flexible Membrane flashing across all steel columns or steel beams inside a concrete masonry unit wall with or without sheathing backup whether or not specifically indicated.
    b. Terminate membrane 4" minimum on each side of masonry substrates. Overlap adjacent lengths 6" over each subsequent lower membrane for a water-tight system.
    c. Provide termination bars for edges of membrane flashing terminating on concrete masonry unit faces. Minimum Stainless Steel 1/8" thick 1-1/2" wide continuous with holes 8" on center. Provide termination bars predrilled at spacing to match spacing of cold formed metal framing.
    d. Apply a bead or trowel coat of mastic along flashing vertical and horizontal edges, seams, cuts, and penetrations.
    e. Provide a full bed of sealant at outside edge of flexible flashing and termination bars. See Section 07 9005 - Joint Sealers.

**3.16 DRIP EDGE FLASHING**

A. Drip Edge Flashing: Use at all through wall flashing locations.

### 3.17 WEEP/CAVITY VENTS INSTALLATION

A. Weephole Vents:
   1. Provide weephole ventilators in exterior wythe of masonry at 2'-0" o.c. horizontally at heads and sills of openings, in walls at grade, at top and bottom of relief angles, at top of parapet and in other locations where flashing is indicated.
   2. Weephole ventilators:
      a. Provide weephole ventilators at grade level.
      b. Install weephole ventilators in open head joint and sill of openings, flush with low edge of adjacent brick.
      c. Install weephole ventilators at relief angles and at parapets alternating 2'-0" o.c. with weephole ventilators at bottom of relief and and at grade.
   3. Keep weepholes and area above flashing free of mortar droppings.

### 3.18 CAVITY MORTAR DIVERTER INSTALLATION

A. Cavity Mortar Diverter: After first one or two courses of masonry are laid, place continuous row of cavity mortar diverter in cavity on flashing against inside of outer wythe at the base of the wall. Assure that cavity wall drainage system is continuous by overlapping or butting ends.

B. Provide cavity mortar diverters in exterior wythe of masonry wall cavity above weep/cavity vents to allow cavity drainage.

### 3.19 REPAIR GALVANIZED SURFACES

A. After installation, clean surfaces from which galvanizing was removed during installation in accord with SSPC-SP3_1983, "Power Tool Cleaning." Coat surfaces with cold galvanizing compound, 3.0 mils minimum dry film thickness.

### 3.20 ADJUSTING

A. Remove mortar or other obstructions from weep holes at flashing locations.

**END OF SECTION**

# SECTION 04 0511
# MORTAR AND MASONRY GROUT

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Mortar for masonry.

B. Grout for masonry.

### 1.02 RELATED REQUIREMENTS

A. Section 01 4110 - Testing Laboratory Services.

B. Section 040070 - Cement Grout for Reinforced Masonry.

C. Section 040090 - Masonry Accessories.

D. Section 042200 - Concrete Unit Masonry: Installation of mortar and grout.

E. Section {\id\#1000025} - Manufactured Mosonry Veneer

F. Section 08 1113 - Hollow Metal Doors and Frames: Products and execution for grouting steel door frames installed in masonry.

### 1.03 REFERENCE STANDARDS

A. TMS 402/602 - Building Code Requirements and Specification for Masonry Structures 2022.

B. ACI 530.1/ASCE 6/TMS 602 - Specification for Masonry Structures; American Concrete Institute International; 2008.

C. ASTM C5 - Standard Specification for Quicklime for Structural Purposes 2018.

D. ASTM C91/C91M - Standard Specification for Masonry Cement 2023.

E. ASTM C94/C94M - Standard Specification for Ready-Mixed Concrete 2022a.

F. ASTM C144 - Standard Specification for Aggregate for Masonry Mortar 2018.

G. ASTM C150/C150M - Standard Specification for Portland Cement 2022.

H. ASTM C207 - Standard Specification for Hydrated Lime for Masonry Purposes 2018.

I. ASTM C270 - Standard Specification for Mortar for Unit Masonry 2019a, with Editorial Revision.

J. ASTM C476 - Standard Specification for Grout for Masonry 2023.

K. ASTM C780 - Standard Test Method for Preconstruction and Construction Evaluation of Mortars for Plain and Reinforced Unit Masonry 2020.

L. ASTM C979/C979M - Standard Specification for Pigments for Integrally Colored Concrete 2016.

M. ASTM C1019 - Standard Test Method for Sampling and Testing Grout for Masonry 2020.

N. ASTM C1072 - Standard Test Methods for Measurement of Masonry Flexural Bond Strength 2022.

O. ASTM C1142 - Standard Specification for Extended Life Mortar for Unit Masonry 1995 (Reapproved 2013).

P. IMIAWC (CW) - Recommended Practices & Guide Specifications for Cold Weather Masonry Construction; International Masonry Industry All-Weather Council; 1993.

Q. IMIAWC (HW) - Recommended Practices & Guide Specifications for Hot Weather Masonry Construction; International Masonry Industry All-Weather Council; current edition.

### 1.04 SUBMITTALS

A. See Division 01 - Administrative Requirements, for submittal procedures.

B. Product Data: Include design mix and indicate whether the Proportion or Property specification of {\rs\#1} is to be used. Also include required environmental conditions and admixture

limitations.

C. Samples for Verification: Submit five samples of mortar, illustrating mortar color and color range.
   1. Submit actual mortar samples for colored mortar, 3/8" wide by 8" long, indicating color range of each color selected. Samples shall be made using cement brand and type, proportions and sand source proposed for work on this project. Label Samples to indicate types and amounts of pigments and sand used.

D. Reports: Submit reports on mortar indicating compliance of mortar to property requirements of ASTM C270 and test and evaluation reports per ASTM C780.

E. Reports: Submit reports on grout indicating compliance of component grout materials to requirements of {\rs\#1} and test and evaluation reports to requirements of ASTM C1019.

F. Manufacturer's Certificates: Signed by manufacturers certifying that each of the following items complies with requirements:
   1. Each cement product required for mortar and grout, including name of manufacturer, brand type, and weight slips at time of delivery.

G. Manufacturer's Installation Instructions: Submit packaged dry mortar manufacturer's installation instructions.

**1.05 QUALITY ASSURANCE**

A. Comply with provisions of {\rs\#1}, except where exceeded by requirements of Contract Documents.

B. For each type and color of cement specified, only one brand shall be used throughout project.

C. Portland Cement: Obtain sample and test in accordance with ASTM C 150.

D. Mortar: Obtain sample and test in accordance with ASTM C 780.

E. Grout: Obtain sample and test in accordance with ASTM C 404.

F. Compressive Tests: Obtain sample and test to verify compliance with the following minimum values:
   1. Mortar: At least 900 psi at 7 days and 1,800 psi at 28 days.
   2. Grout: At least 1,200 psi at 7 days and 2,000 psi at 28 days.
   3. Do not test 28 day specimen when 7 day tests exceed 28 day requirements.

**1.06 DELIVERY, STORAGE, AND HANDLING**

A. Maintain packaged materials clean, dry, and protected against dampness, freezing, and foreign matter.

B. Deliver materials, except aggregate, in original unopened containers displaying product name, type, grade and mixing instructions.

**1.07 FIELD CONDITIONS**

A. Maintain materials and surrounding air temperature to minimum 40 degrees F prior to, during, and 48 hours after completion of masonry work.

B. Maintain materials and surrounding air temperature to maximum 90 degrees F prior to, during, and 48 hours after completion of masonry work.

**PART 2 PRODUCTS**

**2.01 MORTAR AND GROUT APPLICATIONS**

A. Use only factory premixed packaged dry materials for mortar and grout, with addition of water only at project site.

**2.02 MATERIALS**

A. Masonry Cement: ASTM C 91, Type S. Only one brand shall be used throughout the project.

B. Portland Cement: ASTM C 150, Type I - Normal; color as required to produce approved color sample. Only one brand shall be used throughout the project.

C. Hydrated Lime: Type S.

D. Pre-mixed, colored masonry cement:
   1. Acceptable product's; pending compliance with specified characteristics and acceptable color range to match specified color:
      a. Citadel Cement, Div. Lafarge Corp., Citadel Custom Color Masonry Cement.
      b. Coplay Cement Co., Brixment-In-Color.
      c. Holnam, Inc., Rainbow Motarmix Masonry Cement.
      d. Leigh Portland Cement Co., Custom Color Masonry Cement.
      e. National Cement Co., Coosa Masonry Cement.
      f. Riverton Corp., Flamingo Masonry Cement.
      g. U.S. Cement Co., Custom Color Masonry Cement.
   2. Characteristics Type S: Meeting ASTM C91-97, Type S non-staining, 22% maximum air content by volume, with inert, alkali-resistant, fade-resistant mineral pigments and complete with water-reducing and plasticizing admixtures, proportioned to comply with requirements of ASTM C270-97 for Type S mortar with minimum 28-day compressive strength of 1800 psi for Type S mortar.
   3. Characteristics Type N: Meeting ASTM C91-97, Type N non-staining, 22% maximum air content by volume, with inert, alkali-resistant, fade-resistant mineral pigments and complete with water-reducing and plasticizing admixtures, proportioned to comply with requirements of ASTM C270-97 for Type N mortar with minimum 28-day compressive strength of 750 psi for Type N mortar.
   4. Colors: Basis of design is Blue Circle Color Putty Portland.

E. Color Additives for Cast Stone Pointing Mortar: Natural or synthetic mineral oxides meet ASTM C979-97; sun-fast, lime-proof and alkali-resistant.
   1. Additive shall not exceed 10% of the weight of the cement used.
   2. Color shall be selected by Gardner Spencer Smith Tench and Jarbeau, PC to match existing.

F. Aggregate:
   1. For mortar: Clean, hard, natural washed sand meeting ASTM C144-93. Provide aggregate from single source for colored mortar.
   2. For cement grout: Refer to Section 040070 - Cement Grout for Reinforced Masonry.

G. Water-reducing and plasticizing admixture:
   1. Acceptable products:
      a. Anti-Hydro Co., Ahco WR.
      b. Chem-Masters Corp., Hydrolox 400.
      c. Sonneborn Building Products, Div. of ChemRex, Inc., Trimix NCA.
   2. Characteristics: Non-chloride admixture meeting ASTM C494-99a, Type E. Admixtures containing calcium chloride shall not be permitted.

H. Non-shrink grout:
   1. Acceptable products:
      a. Anti-Hydro, Axpandcrete-S Hi-Flow.
      b. Bostik Construction Products, Upcon Super Flow 263.
      c. The Burke Company, Non-Ferrous, Non-Shrink Grout.
      d. Lambert Corporation, Vibropruf #11.
      e. L&M Construction Chemicals Co., Crystex.
      f. Master Builders Co., Master Flow 713.
      g. Sonneborn Building Products, Sonogrout.
      h. U.S. Grout Corp., Five Star Grout.
      i. W.R. Bonsal Co., Type A Construction Grout.
      j. W.R. Meadows, Inc., 588
   2. Characteristics: Flowable, non-metallic, controlled expansive type grout.

I. Anchoring cement for railings:
   1. Acceptable products:
      a. BASF, MasterSeal 590.
      b. Damtite, Waterproofing Hydraulic Cement.
      c. Drylok Masonry Products, Fast Plug.
      d. Sakrete, Leak Stopper Hydraulic Cement.
      e. Quikrete, Hydraulic Cement.
   2. Characteristics: Quick-setting, self-leveling, pourable cement base; waterproof, non-shrinking hydraulic compound.

J. Pigments for Colored Mortar: Pure, concentrated mineral pigments specifically intended for mixing into mortar and complying with manufacturers recommendations.

K. Water: Clean and potable, free from deleterious amounts of alkalis, acids and organic materials.

**2.03 PROPORTIONS**

A. Type S job-mixed or bag -mixed mortar: Proportion materials by volume in accord with ASTM C270-97, as follows:
   1. One part masonry cement to 1/2 part Portland cement to aggregate proportioned at not less than 2-1/4 nor more than three times the volumes of cements used, or;
   2. One part Portland cement and 1/4 to 1/2 part hydrated lime to aggregate proportioned at not less than 2-1/4 nor more than three times the combined volume of cement and lime used, or;
   3. One part pre-mixed Type S masonry cement to aggregate proportioned not less than 2-1/4 nor more than three times the volume of masonry cement used, and as directed by masonry cement manufacturer's product data to produce Type S mortar. This method is required for pre-mixed colored masonry cement.

B. Type N job-mixed or bag -mixed mortar: Proportion materials by volume in accord with ASTM C270-97, as follows:
   1. One part pre-mixed Type N masonry cement to aggregate proportioned at not less than 2-1/4 nor more than three times the volume of masonry cement used, and as directed by masonry cement manufacturer's product data to produce Type N mortar. This method is required for pre-mixed colored masonry cement.

C. For cement grout: Refer to Section 040070 - Cement Grout for Reinforced Masonry.

D. Non-shrink grout: Mix prepared non-shrink grout product with water as directed by manufacturer's product data to achieve a minimum compressive strength of 7000 psi at 28 days.

E. Anchoring cement for railings: Mix prepared anchoring cement product with water as directed by manufacturer's product data for immediate use.

**2.04 MORTAR MIXING**

A. Thoroughly mix mortar ingredients using mechanical batch mixer, in accordance with {\rs\#1} and in quantities needed for immediate use.

B. Maintain sand uniformly damp immediately before the mixing process.

C. Colored Mortar: Proportion selected pigments and other ingredients to match Gardner Spencer Smith Tench and Jarbeau, PC's sample, without exceeding manufacturer's recommended pigment-to-cement ratio; mix in accordance with manufacturer's instructions, uniform in coloration.

D. Add mortar color in accordance with manufacturer's instructions. Provide uniformity of mix and coloration.

E. Do not use anti-freeze compounds to lower the freezing point of mortar.

F. Measure materials for job mixed mortars in a one cubic foot container. Do not measure by shovels.

G. If water is lost by evaporation, re-temper only within two hours of mixing.

H. Use mortar within two hours after mixing at temperatures of 90 degrees F, or two-and-one-half hours at temperatures under 40 degrees F.

**2.05 GROUT MIXES**

A. Mortar: Dry, loose volumes. Mix proportions shall be verified by material testing laboratory.
   1. Portland cement: 1 part.
   2. Hydrated lime: 1/4 to 1/2 part.
   3. Mortar sand: 2-1/4 to 3 parts.
   4. Water: to provide required consistency.
   5. Mixing time for Silotec Mortar System shall be in accordance with Silotec Mortar System recommendations instead of those indicated in Section 01420: Testing and Inspection.

B. Grout: Shall provide a minimum strength of 2000 psi unless noted otherwise. Grout strengths in excess of more than 2000 psi shall be verified by a material testing laboratory.
   1. Fine Grout: Portland cement 1 part; sand 2 1/4 to 3 parts; water to attain a slump of 8 to 10 inches
   2. Coarse Grout: Portland cement 1 part; pea gravel 2 1/4 to 3 parts; water to attain a slump of 8 to 10 inches.

C. Measurements: Proportion by accurate volume measurements. Measure in calibrated devices that can be verified at any time.
   1. Add water for workable consistency.
   2. Shovel measurements are not permitted.

D. Mixing: Place sand, cement, and water in mixer in that order, while mixer is running; mix for 3 minutes, add lime, and admixture (for grout), and continue mixing until a uniform mass is provided, but in no case less than 10 minutes.
   1. Equipment for mixing and handling mortar and grout shall be acceptable to the owner's testing consultant.
   2. Batches of less than one sack of cement, and fractional sack batches are not permitted.

E. Re-tempering Time Limit: Re-temper on mortar boards, for at least 3 minutes, but not more than 10 minutes when required, by adding water into a basin formed by mortar, and installing mortar into it. Dashing, or pouring of water over mortar is not permitted.
   1. Do not re-temper mortar which has become hard or non-plastic.
   2. Discard mortar, which has not been installed within one hour after original mixing.

F. Ready-Mix Grout: Grout batched off the Project site and delivered by mixer truck shall be subject to same procedures and controls as prescribed by building code requirements. Refer to Division 01: Testing and Inspection.

**2.06 PRECONSTRUCTION TESTING**

A. Testing will be conducted by an independent test agency, in accordance with provisions of Division 01.

B. Mortar Mixes: Test mortars prebatched by weight in accordance with ASTM C780 recommendations for preconstruction testing.
   1. Test results will be used to establish optimum mortar proportions and establish quality control values for construction testing.

C. Grout Mixes: Test grout batches in accordance with ASTM C1019 procedures.
   1. Test results will be used to establish optimum grout proportions and establish quality control values for construction testing.

## PART 3 EXECUTION

### 3.01 PREPARATION

A. Plug clean-out holes for grouted masonry with brick masonry units. Brace masonry to resist wet grout pressure.

### 3.02 INSTALLATION

A. Install mortar and grout to requirements of section(s) in which masonry is specified.

B. Work grout into masonry cores and cavities to eliminate voids.

C. Do not install grout in lifts greater than 16 inches without consolidating grout by rodding.

D. Do not displace reinforcement while placing grout.

E. Remove excess mortar from grout spaces.

F. Discard grout not placed within 1-1/2 hours after water is added to mix, or sooner as indicated by grout manufacturer.

### 3.03 PLACING MORTAR

A. Place mortar as directed in the 042100 - Brick Masonry, {\ch\#2} and {\ch\#3} Sections.

### 3.04 PLACING GROUT

A. Use either high-lift or low-lift grouting techniques, at Contractor's option, subject to other limitations of Contract Documents.

B. Perform grouting by means of high-lift technique, except in locations that mandate use of low-lift grouting technique.
   1. Do not use high-lift grouting where size of cavities mandates use of fine grout.

C. Steel Door Frames:
   1. Locate door frames accurately, install plumb, "Ram-set" or "Rawlplug" to floor surface and brace in position before start of masonry installation.
      a. Frames are specified to be furnished with adjustable anchors.
      b. Fill interior of frames solid with mortar or grout as walls are constructed.
   2. Provide temporary wood spreaders from jamb to jamb and from head to floor to ensure that jambs do not bow-in, distort from a straight line, or deflect from superimposed loads during construction.

D. Low-Lift Grouting:
   1. Limit height of pours to 24 inches.
   2. Limit height of masonry to 16 inches above each pour.
   3. Pour grout only after vertical reinforcing is in place; place horizontal reinforcing as grout is poured. Prevent displacement of bars as grout is poured.
   4. Place grout for each pour continuously and consolidate immediately; do not interrupt pours for more than 1-1/2 hours.
   5. Grouted walls shall be solid and without voids.
   6. Grout may be installed by pump, tremie or bucket, using hoppers to avoid spilling on exposed surfaces.
   7. Place an initial 2 feet high lift around, thoroughly compact, then place balance of each lift, compacting again through total lift, with hardwood spading sticks or pencil vibrators.
   8. Stop grout pours 1-1/2 inches below top of each lift.
   9. Remove and discard spilled grout from upper units before grout can harden.
   10. Bracing: Adequately brace walls against wind and other forces during and after construction.
   11. Re-puddle top of grout after initial set.

E. High-Lift Grouting:
   1. Verify that horizontal and vertical reinforcement is in proper position and adequately secured before beginning pours.

2. Hollow Masonry: Limit lifts to maximum 4 feet and pours to maximum height of 24 feet.
3. Place grout for spanning elements in single, continuous pour.
4. High-lift grouting method is permitted provided following qualifications and requirements are met. High-lift grouting shall apply only to cell sizes available with 8 inch and wider block units. This method is subject to specific approval of Gardner Spencer Smith Tench and Jarbeau, PC and Union County Commissioner's Office.
5. Provide bond beam units, inverted for start course, and omit alternate blocks or cut openings in alternate face shell on bottom course for cleanouts.
6. Remove projecting mortar fins. Wash out every cell thoroughly using a water jet, which has sufficient force to remove mortar from the interior of the cells, and from reinforcing steel.
7. Plug each cleanout by setting a "soap" in mortar into opening and securely bracing it in place to prevent displacement. If masonry is not exposed in finish Work, cleanouts may be formed.
8. Grouting:
   a. Grout masonry cells solid, free from voids.
   b. Do not install grout until masonry has set a minimum of 3 days in warm weather (50 degrees to 85 degrees F.) or 5 days in cool, damp weather (35 degrees to 50 degrees F.).
   c. Pump grout into grout cell space as rapidly as practical. Discard grout not in place within one hour after water was first added to batch.
   d. Install grout with maximum slump without segregation. Place in a continuous pour, in maximum lifts of 4 feet, with approximately 20 minutes elapsed time between any 2 successive lifts.
9. Consolidating:
   a. Consolidate and reconsolidate grout using 3/4 inch lightweight flexible cable vibrators.
   b. First consolidation shall be performed to bottom of lift immediately after placement, and in case of subsequent lifts, through previously placed lift.
   c. Top lift shall be reconsolidated no sooner than 30 minutes after grout has been installed.
   d. Vibrating of reinforcing steel is not permitted.
10. Bracing: Adequately brace walls against wind and other forces during and after construction.

**3.05 FIELD QUALITY CONTROL**

A. An independent testing agency will perform field tests, in accordance with provisions of Division 01.

B. Test and evaluate mortar in accordance with {\rs\#1} procedures.
   1. Test with same frequency as specified for masonry units.

C. Test and evaluate grout in accordance with {\rs\#1} procedures.
   1. Test with same frequency as specified for masonry units.

D. Evaluation of Quality Control Tests: In absence of other indications of noncompliance with requirements, mortar and masonry grout will be considered satisfactory if results from construction quality control tests comply with minimum requirements indicated.

**3.06 SCHEDULES**

A. Concrete Unit Masonry mortar shall be Type S.

B. Brick Masonry mortar shall be Type S, colored mortar.

C. Cast Stone mortar shall be Type N, colored mortar.

**END OF SECTION**

# SECTION 04 2200
# CONCRETE UNIT MASONRY

## PART 1 GENERAL

### 1.01 SUMMARY

A. Work of this section includes providing concrete masonry units and building in the work of other trades.

### 1.02 SECTION INCLUDES

A. Concrete Masonry Units.

B. Concrete Brick.

C. Accessories.

### 1.03 RELATED SECTIONS

A. Section 03 2000 - Concrete Reinforcing: Reinforcing steel for grouted masonry.

B. Section 04 0070 - Cement Grout for Reinforced Masonry.

C. Section 04 0090 - Masonry Accessories.

D. Section 04 0511 - Masonry Mortaring and Grouting.

E. Section 04 2100 - Brick Masonry.

F. Section 04 7200 - Cast Stone Masonry.

G. Section 04 7250 - Manufactured Masonry Veneer.

H. Section 05 5000 - Metal Fabrications: Loose steel lintels.

I. Section 05 8000 - Expansion Joint Cover Assemblies: Building expansion joints.

J. Section 06 1000 - Rough Carpentry: Nailing strips built into masonry.

K. Section 07 2720 - FLUID-APPLIED MEMBRANE AIR & VAPOR BARRIERS.

L. Section 07 2100 - Thermal Insulation: Insulation for cavity spaces.

M. Section 07 2736 - Sprayed Foam Insulating Air Barrier System. Insulation and air barrier for cavity spaces.

N. Section 07 6200 - Sheet Metal Flashing and Trim: Through-wall masonry flashings.

O. Section 07 8400 - Firestopping: Firestopping at penetrations of masonry work.

P. Section 07 9005 - Joint Sealers: Backing rod and sealant at control joints.

Q. Section 08 3313 - COILING COUNTER SHUTTERS: Masonry anchors.

### 1.04 REFERENCES

A. ACI 530/ASCE 5/TMS 402 - Building Code Requirements for Masonry Structures; American Concrete Institute International; 1995.

B. ACI 530.1/ASCE 6/TMS 602 - Specification For Masonry Structures; American Concrete Institute International; 1995.

C. ASTM C 90 - Standard Specification for Load-Bearing Concrete Masonry Units; 1996a.

D. ASTM C 91 - Standard Specification for Masonry Cement; 1995c.

E. ASTM C 129 - Standard Specification for Nonloadbearing Concrete Masonry Units; 1996a.

F. ASTM C 140 - Standard Test Methods of Sampling and Testing Concrete Masonry Units; 1996b.

G. IMIAWC (CW) - Recommended Practices & Guide Specifications for Cold Weather Masonry Construction; International Masonry Industry All-Weather Council; 1993.

H. IMIAWC (HW) - Recommended Practices & Guide Specifications for Hot Weather Masonry Construction; International Masonry Industry All-Weather Council; current edition.

I. UL (FRD) - Fire Resistance Directory; Underwriters Laboratories Inc.; current edition.

J. Portland Cement Association (PCA) - Concrete Masonry Handbook, latest edition.

**1.05 SUBMITTALS**

A. See Division 01 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data for masonry units.

C. Samples for Verification: Submit two samples of concrete units to illustrate color, texture, and extremes of color range.
   1. Full-size units for each different exposed masonry unit required, showing the full range of exposed colors, textures, and dimensions to be expected in completed construction.
   2. Submit one sample of fire-resistant-rated bull nosed concrete masonry unit to illustrate color, texture.

D. Qualification Data: For firms and persons specified in "Quality Assurance" Article.

E. Manufacturer's Certificates:
   1. Submit certificates from masonry manufacturer prior to delivery of concrete masonry units to project site. Each certificate shall be signed by an authorized officer of the manufacturing company and shall contain the name and address of the Contractor, the project location, and the quantities and date or dates of shipment or delivery to which the certificate applies.
   2. Units shall be certified for compliance with specification requirements, including compressive strength, moisture content, and linear drying shrinkage.
   3. Time-rated, fire resistant masonry units shall be certified by manufacturer to comply with mix design and equivalent thickness requirements of Underwriters' Laboratories, Inc (U.L.) for time ratings indicated. Certification shall include evidence of manufacturer's qualification to manufacture fire-rated units.

**1.06 QUALITY ASSURANCE**

A. Comply with provisions of ACI 530/ASCE 5/TMS 402 and ACI 530.1/ASCE 6/TMS 602, except where exceeded by requirements of the contract documents.
   1. Source Control: Obtain exposed masonry units from one manufacturer, with texture and color uniform or of a uniform blend acceptable to the Architect.

B. Fire-Resistance Ratings: Where indicated, provide materials and construction identical to those of assemblies with fire-resistance ratings determined per ASTM E 119 by a testing and inspecting agency, by equivalent concrete masonry thickness, or by other means, as acceptable to authorities having jurisdiction.

C. Remove and replace masonry where appearance is unacceptable.

D. Concrete Masonry Units: Sample and test in accordance with ASTM C 140.
   1. Notify the material testing laboratory a minimum of 45 days in advance of installing concrete unit masonry, to allow for testing of the units for compression, shrinkage, and absorption. Absorption test requires 40 days.
   2. The material testing laboratory shall receive five concrete masonry units per test from masonry unit manufacturer, as designed or specified by Gardner Spencer Smith Tench and Jarbeau, PC, and shall perform and send required test results to Gardner Spencer Smith Tench and Jarbeau, PCand Union County Commissioner's Office's Owners Representative.

E. Inspection During Installation: A special inspector will continuously observe the installation of reinforced masonry. The Union County Commissioner's Office's OR shall be responsible for monitoring the work of the special inspector and testing laboratories to ensure that the testing program is satisfactorily completed.

F. The Union County Commissioner's Office will be responsible for the costs of original tests and inspection.

G. If core testing is required by Union County Commissioner's Office, masonry removed by coring operations shall be replaced to match adjoining Work. Core testing shall conform with SBC, Chapter 21.

**1.07 MOCK-UP PANEL**

A. Construct a masonry wall as part of the brick mock-up panel. See Section 04 2100 - Brick Masonry for related items to be installed and coordinated.

**1.08 PRE-INSTALLATION MEETING**

A. Convene 2 weeks before starting work of this section. Meeting shall be attended by Gardner Spencer Smith Tench and Jarbeau, PC, General Contractor, Subcontractor, and supervising mason.

B. Review all masonry detailing, project conditions, supervision of trades, coordination of related construction, and continuity of workmanship.

**1.09 DELIVERY, STORAGE, AND HANDLING**

A. Deliver, handle, and store masonry units by means that will prevent mechanical damage and contamination by other materials.

B. Keep units dry. Allow air circulation around stacked units. Wet concrete masonry units shall not be installed.

**1.10 ENVIRONMENTAL REQUIREMENTS**

A. Lay no masonry units when temperature of surrounding air has dropped below 45 degrees F., unless it is rising, and at no time when it has dropped below 40 degrees F., unless authorized in writing by Gardner Spencer Smith Tench and Jarbeau, PC.

B. When masonry work is authorized at temperatures below 40 degree F., but above freezing, provide mortar at temperature between 70 degrees F. and 100 degrees F. Maintain air temperature above 40 degrees F. on both sides of masonry for 72 hours after laying.

C. Protect masonry construction from direct exposure to wind and sun when erected in ambient air temperatures of 95 degrees in the shade and 50% humidity.

D. Keep walls dry during erection by covering at end of each day or work period with a waterproof membrane. Similarly protect partially completed walls not being worked on. Covering shall overhang at least 2'-0" on each side of wall and shall be anchored on each side of wall.

E. 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 freezing conditions. Comply with cold-weather construction requirements contained in ACI 530.1/ASCE 6/TMS 602.
   1. Cold-Weather Cleaning: Use liquid cleaning methods only when air temperature is 40 deg F (4 deg C) and above and will remain so until masonry has dried, but not less than 7 days after completing cleaning.

F. Hot-Weather Requirements: Protect unit masonry work when temperature and humidity conditions produce excessive evaporation of water from mortar and grout. Provide artificial shade and wind breaks and use cooled materials as required.
   1. When ambient temperature exceeds 100 deg F (38 deg C), or 90 deg F (32 deg C) with wind velocity greater than 8 mph (13 km/h), do not spread mortar beds more than 48 inches (1200 mm) ahead of masonry. Set masonry units within one minute of spreading mortar.

**1.11 JOB CONDITIONS**

A. Protection of Work:
   1. Keep walls dry during erection by covering at end of each work period with a waterproof membrane. Protect partially completed walls not under construction in a similar manner. Covering shall overhang at least 2'-0" on each side of wall and shall be anchored on each side of wall.

2. Protect finish exposed work from staining.
3. Allow mortar droppings sticking to the unit face to dry, then remove with a trowel and lightly brush the wall surface with a bristled brush.
4. Particular care shall be given to keeping masonry units clean in areas not to be painted.

B. Install and inspect mechanical and electrical work prior to enclosing or covering with masonry. Where runs of piping or conduit are required, cut away web of masonry unit without disturbing face or bond.

C. Coordinate installation of masonry anchors with structural system to which masonry is attached.

**1.12 QUALITY ASSURANCE**

A. Manufacturer's Qualification:
1. Manufacturer of time rated fire-resistant masonry units shall be qualified in writing by Underwriters' Laboratories (UL) for manufacture of fire-rated units.

**PART 2 PRODUCTS**

**2.01 CONCRETE MASONRY UNITS**

A. Concrete Block: Comply with referenced standards and as follows:
1. Size: Standard units with nominal face dimensions of 16 x 4 inches (actual 15-5/8" by 3-5/8"), 16 x 8 inches (actual 15-5/8" by 7-5/8"), 16 x 12 inches (actual 15-5/8" by 11-5/8"), and nominal depths as indicated on the drawings for specific locations.
2. Special Shapes: Provide non-standard blocks configured for corners, lintels, headers, control joint edges, and other detailed conditions, whether or not specifically indicated on the drawings as special.
3. Outside Corners: Provide rounded or bull-nosed units.
4. Units for use in reinforced masonry construction with exposed external corners, that cannot be provided with an integral bull-nosed unit shall be plain (square) end types with a 1" radius field-ground onto the exposed external corner to match the non-rated bull-nosed units where shown on the drawings.
5. Fire Ratings: Provide fire rated units at locations where indicated on the drawings.
   a. Manufacture of time-rated, fire-resistant masonry units shall be qualified in writing by Underwriters Laboratories, Inc., (UL) for manufacture of fire-rated units. Exposed external corners shall be bullnose type. Provide two-hour UL-rated concrete masonry at one-hour rated concrete unit masonry assemblies indicated on drawings.
   b. Units for use rated masonry construction with exposed external corners, that cannot be provided with an integral bull-nosed unit shall be plain (square) end types with a 1" radius field-ground onto the exposed external corner to match the non-rated bull-nosed units. The cells of the unit with the field-ground external corner shall be filled with concrete.
6. Load-Bearing Units: ASTM C 90, lightweight, Type II.
   a. Hollow block, as indicated.
   b. Exposed faces: Manufacturer's standard color and texture where indicated.
7. Load-Bearing Units: ASTM C 145, lightweight, Type II.
   a. Solid block, as indicated.
   b. Exposed faces: Manufacturer's standard color and texture where indicated.
8. Non-Loadbearing Units: ASTM C 129, lightweight, Type II.
   a. Hollow block, as indicated.
   b. Exposed faces: Manufacturer's standard color and texture where indicated.

B. Concrete Brick: ASTM C 55.
1. Grade N, solid, lightweight.
2. Size: As indicated on drawings.
3. Special Shapes: Provide non-standard brick configured for corners.

C. Split Face Concrete Masonry Units (SFCMU): ASTM C-90.

1. Description: Integrally colored pre-finished architectural concrete blocks with, rough-hewn texture on one or more faces of the unit.
2. Location: Auditorium.
3. Manufacturers:
   a. Basis of design: Trenwyth Industries; Product, Split-Face: www.trenwyth.com.
   b. County Materials Corporation; Product, SplitFace: www.countymaterials.com.
   c. Domine Builders Supply; Product, Split Face: www.domineblock.com.
   d. Johnson Concrete Co; Product, Prestige Split Face: www.johnsoncmu.com.
   e. Westbrook Concrete Block Co., Inc; Product, Split Face: www.westbrookblock.com.
4. Color: Provide integrally colored concrete masonry units from manufacturer's standard colors as selected Gardner Spencer Smith Tench and Jarbeau, PC.
5. Texture: Manufacturer's standard rough-hewn texture where indicated.
6. Size: As indicated on drawings.
7. Mortar Color: As selected by Gardner Spencer Smith Tench and Jarbeau, PC.
8. Fire Ratings: Provide fire rated units at locations where indicated on the drawings.

**2.02 ACCESSORIES**

A. Accessories: As specified in Section 04 0090 - Masonry Accessories.

**2.03 MASONRY CLEANING COMPOUND**

A. Masonry Cleaning Compound:
   1. Acceptable Products:
      a. Diedrich Technologies, Inc., Product: Architectural & Specialty Masonry Cleaner: www.diedrichtechnologies.com.
      b. Dumond Chemicals, Product: Architectural Cleaner and Restorer: www.dumondchemicals.com.
      c. ProSoCo, Inc., Product: Sure Klean #101 Lime Solvent and Sure Klean #600 Detergent: www.prosoco.com.
   2. Product Requirements:
      a. Compound shall be certified as acceptable by masonry manufacturer, meeting specified requirements, and as recommended by the compound manufacturer for selected masonry, to ensure that proposed masonry cleaning compound causes no staining or discoloration.
      b. Products shall be specifically formulated for masonry type, color, and material content. Product data shall state whether particular compound is acceptable for dark-colored, light colored, masonry subject to non-metallic staining or masonry subject to metallic staining.
   3. Test Panel: Test each type and dilution of cleaning compound on sample panel.
   4. Formulation: Dilutable formula comprised of inorganic acids, wetting agents and inhibitors.
   5. Characteristics:
      a. Compound shall be able to cling to masonry for an average dwell period of two minutes, able to loosen mortar residue for complete removal, and shall be water-washable upon completion.
      b. Compound shall not cause acid burns or streaks.
      c. Compound shall be able to be applied, based on dilution amount, by using a soft masonry brush or low pressure (40psi-50psi) airless sprayer.

B. Pine Straw shall be free of trash and debris.

**PART 3 EXECUTION**

**3.01 GENERAL**

A. Layout: Lay out masonry for accurate pattern bond, for uniform joint widths, and for accurate location of specific features before beginning actual construction. Avoid use of masonry units of less than 1/2 size. Do not use units with less than nominal 4 inch horizontal face dimensions at corners and jambs.

B. Chases and Recesses: Build masonry to accommodate the work of other trades, including chases and recesses as shown or required. Provide not less than 8 inches of masonry between jambs of openings and chases and recesses.

C. Openings for Equipment and Services: Leave openings in masonry as required for subsequent installation of equipment and services. Make openings in designated locations and in exact size required, if known; otherwise, leave rough openings in approximate size required and complete masonry work after installation of equipment, matching adjoining masonry.

D. Workmanship: Install masonry plumb and true to line with straight level joints of uniform thickness. Maintain masonry clean during and after installation.
   1. Lay-out and incorporate embedded hardware items.
   2. Assist other trades with built-in items, which require cutting and fitting of masonry.
   3. Cut block units with a diamond saw or carborundum wheel. Trowel or chisel cutting is not permitted.
   4. Keep cavities clear of droppings and debris. Remove promptly.

E. Reinforcing Steel: Install as indicated on Drawings. Except as otherwise indicated, install reinforcement in accordance with standards of Concrete Reinforcing Steel Institute and to requirements specified. Do not splice vertical reinforcing except where indicated on the Drawings.

F. Shoring: Provide temporary shoring for lintels with sufficient strength to carry load without deflecting. Remove temporary shoring 28 days after masonry has been installed.

G. Structural Framing Anchorage: Anchor masonry to structural framework at points of adjacency, and as follows:
   1. Maintain open space of 1 inch or more between face of framing member and masonry elements.
   2. Fasten anchors to structure and embed in mortar joints as masonry is laid.
   3. Space anchors at maximum of 36 inches on center horizontally and 24 inches on center vertically.

H. Veneer Anchorage: Anchor masonry veneer to structural backup with anchors specified, and as follows:
   1. Fasten to backup with self -tapping , non corrosive fasteners as recommended by the manufacturer of anchors for substrate conditions.
   2. Space plates of two-piece anchors so they will be centered on horizontal movement of ties due to differential movement of veneer and backup.
   3. Embed tie sections of two-piece anchors in mortar as masonry is being laid, providing clear air space of at least 2 inches behind veneer wythe.
   4. Space anchors at not more than 1.77 square feet per anchor, nor more than 16 inches on center horizontally and vertically. At openings and ends of veneer panels, provide additional anchors so that maximum spacing at perimeter is 8 inches on center.

**3.02 EXAMINATION**

A. Examine conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance.
   1. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance.
   2. Verify that field conditions are acceptable and are ready to receive masonry.
   3. Verify that related items provided under other sections are properly sized and located.
   4. Verify that reinforcing dowels are properly placed. Adjust projected vertical reinforcing dowels to be plumb in all directions prior to start of masonry work.
   5. Proceed with installation only after unsatisfactory conditions have been corrected.

B. Before Installation, examine that built-in items are in proper location, and ready for roughing into masonry work.

**3.03 PREPARATION**

A. Direct and coordinate placement of metal anchors supplied for installation under other sections.

B. Provide temporary bracing during installation of masonry work. Maintain in place until building structure provides permanent bracing.

**3.04 COURSING**

A. Establish lines, levels, and coursing indicated. Protect from displacement.

B. Maintain masonry courses to uniform dimension. Form vertical and horizontal joints of uniform thickness.

C. Concrete Masonry Units:
   1. Bond: Match Existing.
   2. Coursing: One unit and one mortar joint to equal 8 inches.
   3. Mortar Joints: Concave.

**3.05 INSTALLATION, GENERAL**

A. Thickness: Build cavity and composite walls and other masonry construction to the full thickness shown. Build single-wythe walls to the actual widths of masonry units, using units of widths indicated.

B. Build chases and recesses to accommodate items specified in this Section and in other Sections of the Specifications.

C. Leave openings for equipment to be installed before completing masonry. After installing equipment, complete masonry to match the construction immediately adjacent to the opening.

D. Cut masonry units with motor-driven saws to provide clean, sharp, unchipped edges. Cut units as required to provide a continuous pattern and to fit adjoining construction. Where possible, use full-size units without cutting. Allow units cut with water-cooled saws to dry before placing, unless wetting of units is specified. Install cut units with cut surface and, where possible, cut edges concealed.

E. Install only quality units; reject all defective units. No broken, chipped or cracked units shall be used.

**3.06 PLACING AND BONDING**

A. Concrete Masonry Units: Do not wet concrete masonry units prior to laying.

B. Foundation preparation: Sandblast tops of concrete starting surfaces, wash-off by high pressure water jet, and slurry coat surfaces with neat cement grout for bond to masonry.

C. Lay solid masonry units in full bed of mortar, with full head joints, uniformly jointed with other work.

D. Lay hollow masonry units with face shell bedding on head and bed joints.
   1. Install concrete masonry unit insulation in accordance with manufacturer's recommendations.

E. Install masonry with mortar to required joint thickness. Install blocks with 3/8-inch mortar bed on entire horizontal surface. Fill head joints solid, install tightly to adjoining units. Provide 3/8-inch joint thickness.
   1. Hold racking to a minimum.
   2. No toothing is permitted.
   3. If it becomes necessary to move a unit after it has been installed, remove the unit, discard the mortar, and install the unit in fresh mortar.

F. Buttering corners of joints or excessive furrowing of mortar joints is not permitted.

G. Remove excess mortar as work progresses. Keep cavities clear of mortar droppings and strike flush mortar joints facing cavity.

H. Interlock intersections and external corners.

I. Do not shift or tap masonry units after mortar has achieved initial set. Where adjustment must be made, remove mortar and replace.

J. Perform job site cutting of masonry units with proper tools to provide straight, clean, unchipped edges. Prevent broken masonry unit corners or edges.

K. Cut mortar joints flush where wall tile is scheduled or resilient base is scheduled.

L. Isolate masonry partitions from vertical structural framing members with a control joint or as indicated.

M. Isolate top joint of masonry partitions from horizontal structural framing members and slabs or decks with sealant and backer rod.

N. Stopping Work: Lay masonry in proper sequence to avoid toothing. Rack walls back in each course at end of each work day. Before resuming, clean exposed surfaces and remove loose masonry units and mortar.
   1. Lightly wet previously laid clay masonry units which have a rate of absorption of more than 1 gram per square inch per minute (ASTM C 67), before laying fresh masonry.

O. Lay concealed masonry with all units in wythe in running bond or bonded by lapping not less than 2 inches (50 mm). Bond and interlock each course of each wythe at corners. Do not use units with less than nominal 4-inch (100-mm) horizontal face dimensions at corners or jambs.

P. Fill space between hollow-metal frames and masonry solidly with mortar, unless otherwise indicated.

Q. Where built-in items are to be embedded in cores of hollow masonry units, place a layer of metal lath in the joint below and rod mortar or grout into core. All built-in work shall be set plumb, level and square, to depth required for subsequent finish and trim applications.

R. Fill cores in hollow concrete masonry units with grout 24 inches (600 mm) under bearing plates, beams, lintels, post, and similar items, unless otherwise indicated.

S. Build non-load-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.
   2. At fire-rated partitions, install firestopping in joint between top of partition and underside of structure above to comply with Division 7 Section "Firestopping."

**3.07 WEEPS**

A. Install weeps in exterior veneer and cavity walls at 24 inches on center horizontally in head joint of first course of masonry immediately above through-wall flashing.

**3.08 CAVITY WALL**

A. Do not permit mortar to drop or accumulate into cavity air space or to plug weeps.

B. Build inner wythe ahead of outer wythe to receive cavity insulation and air/vapor barrier adhesive.

**3.09 REINFORCEMENT AND ANCHORAGE - SINGLE WYTHE MASONRY**

A. General: Before placing metal masonry accessories, remove loose rust, dirt, and other non-conforming coatings

B. Install horizontal joint reinforcement 8 inches on center.

C. Place masonry joint reinforcement in first and second horizontal joints above and below openings. Extend minimum 16 inches each side of opening.

D. Place continuous joint reinforcement in first and second joint below top of walls.

E. Lap joint reinforcement ends minimum 6 inches.

F. Reinforce joint corners and intersections with strap anchors 16 inches on center.

G. Do not span movement joints with reinforcement.

**3.10 REINFORCEMENT AND ANCHORAGES - CAVITY WALL MASONRY**

A. General: Before placing metal masonry accessories, remove loose rust, dirt, and other non-conforming coatings

B. Install horizontal joint reinforcement 16 inches on center.

C. Place masonry joint reinforcement in first and second horizontal joints above and below openings. Extend minimum 16 inches each side of openings.

D. Place continuous joint reinforcement in first and second joint below top of walls.

E. Lap joint reinforcement ends minimum 6 inches.

F. Fasten anchors to structural framing and embed in masonry joints as masonry is laid. Space anchors at maximum of 24 inches horizontally and 24 inches vertically.

G. Reinforce joint corners and intersections with strap anchors 16 inches on center.

**3.11 MASONRY FLASHINGS**

A. Whether or not specifically indicated, install masonry flashing to divert water to exterior at all locations where downward flow of water will be interrupted.
   1. Extend flashings full width at such interruptions and at least 6 inches into adjacent masonry or turn up at least 4 inches to form watertight pan at non-masonry construction.
   2. Remove or cover protrusions or sharp edges that could puncture flashings.
   3. Seal lapped ends and penetrations of flashing before covering with mortar.

B. Lap end joints of flashings at least 4 inches and seal watertight with mastic or elastic sealant.

C. Place flashings on sloped mortar bed; seal lapped ends and penetrations of flashing before covering with mortar.
   1. Extend metal flashings through exterior face of masonry and turn down to form drip.

D. Veneer Flashings: Turn flashings up not less than 4 inches at backup. Lap top of flashing with building paper, or otherwise seal to prevent moisture penetration between flashing and backup.

E. Heads and Sills: Turn up ends of flashing at least 2 inches at heads and sills to form a pan, and seal joints.

F. Sealing: Seal all joints in flashing to ensure watertight integrity.
   1. Lap end joints on nondeformed metal flashings at least 4 inches; seal laps with elastic sealant or mastic.

**3.12 LINTELS**

A. Install loose steel lintels over openings.

B. Install reinforced unit masonry lintels over openings where steel or precast concrete lintels are not scheduled.
   1. Openings to 42 inches: Place two, No. 3 reinforcing bars 1 inch from bottom web.
   2. Openings from 42 inches to 78 inches: Place two, No. 5 reinforcing bars 1 inch from bottom web.
   3. Openings over 78 inches: Reinforce openings as detailed.
   4. Do not splice reinforcing bars.
   5. Support and secure reinforcing bars from displacement. Maintain position within 1/2 inch of dimensioned position.
   6. Place and consolidate grout fill without displacing reinforcing.
   7. Allow masonry lintels to attain specified strength before removing temporary supports.
   8. Contractor's option: Install precast or prestressed lintels as specified and as recommended by the lintel manufacturer.

C. Maintain minimum 12 inch bearing on each side of opening.

**3.13 GROUTED COMPONENTS**

A. Grouting Technique: See Section 04 0070 - Cement Grout for Reinforced Masonry for additional information.

B. Lap splices minimum 24 bar diameters.

C. Support and secure reinforcing bars from displacement. Maintain position within 1/2 inch of dimensioned position.

D. Place and consolidate grout fill without displacing reinforcing.

E. At bearing locations, fill masonry cores with grout for a minimum 12 inches either side of opening.

**3.14 BUILDING EXPANSION JOINTS**

A. Make joints 1-inch wide, unless otherwise indicated.

B. Keep joint clear of mortar by temporarily filling with polystyrene as wall is laid.

C. Stop horizontal joint reinforcement 1-inch from expansion joint.

D. Keep clean of mortar and debris.

E. Leave joint open and clean for installation of expansion joint as specified in Expansion Joint Cover Assemblies section.

**3.15 CMU CONTROL JOINTS**

A. Make joint 3/8" wide, unless otherwise indicated. Where indicated, align joints in concrete unit masonry backup with brick expansion joints.

B. Stop horizontal joint reinforcement 1-inch from control joint.

C. Control joints may be build in or sawcut, in accord with PCA Handbook.

D. Build in movement joints where indicated or recommended by the PCA Handbook and field located by Gardner Spencer Smith Tench and Jarbeau, PC, or as a minimum as follows:
   1. In running walls spaced maximum 30'-0" o.c.
   2. At corners, joint located one header or stretcher unit from corner.
   3. At intersecting walls, either of which is more than 10'-0" long.
   4. Above joints in foundations and floors and below joints in roofs and floors that bear on masonry walls.
   5. At all abrupt changes in wall height.
   6. At all changes in wall thickness, such as those at pipe or duct chases and those adjacent to columns or pilasters.
   7. At a distance of not over one-half of the allowable joint spacing from bonded intersections or corners.
   8. At door and window openings unless other crack control measures are used, such as joint reinforcement or bond beams.
      a. At one side of openings less than 6'-0" wide.
      b. At both sides of openings greater than 6'-0" wide.
   9. Where control joints occur in running walls, provide sash block with rubber control joint filler.
   10. Leave control joint open and clean for backer rod and caulking in accord with Joint Sealers section. Caulk joints exterior and interior.

E. Install preformed control joint device in continuous lengths. Seal butt and corner joints in accordance with manufacturer's instructions.

F. Size control joint in accordance with Section 07 9005 - Joint Sealers for sealant performance.

G. Form joint as detailed.

**3.16 BUILT-IN WORK**

A. As work progresses, install built-in metal door frames, fabricated metal frames, anchor bolts, and plates and other items to be built into the work and furnished under other sections.

B. Install built-in items plumb, level, and true to line.

C. Bed anchors of metal door and glazed frames in adjacent mortar joints. Fill frame voids solid with grout.
   1. Fill adjacent masonry cores with grout minimum 12 inches from framed openings.

D. Do not build into masonry construction organic materials that are subject to deterioration.

E. Install accessory materials in accord with Masonry Accessories section.
   1. Space pressure-relieving pads at control joints indicated on the drawings.
   2. Coordinate location of control joints in unit masonry backup.

F. Provide lintels and bond beams where indicated using lintel blocks laid with joints matching adjacent work. Reinforcement shall be as indicated and block filled with concrete.

**3.17 REINFORCED AND GROUTED UNIT MASONRY**

A. Align vertical unit masonry cells to be filled to maintain unobstructed vertical cell, continuous to foundation, equal to the cell void of an individual masonry unit. Remove mortar droppings and debris from cells.

B. Provide cleanouts at bottom of each vertical cell, at each pour of grout. Seal cleanouts after inspection of reinforcement, before grouting begins with concrete unit masonry face shell.

C. Fabricate in accord with approved shop drawings.

D. Install vertical reinforcing bar positioners at top of first course, at course below top of wall, and at maximum space of 192 vertical bar diameters between top and bottom bar positioner.

E. Provide dowels of same size as reinforcement at foundations at each vertical bar, as indicated on the drawings.

F. Install vertical reinforcement and horizontal bond beam reinforcement as indicated on drawings. Extend tops of vertical bars through openings made in bottom of bond beam units and bend horizontally into bond beam. Set anchor bolts and other devices indicated into bond beams prior to grouting.
   1. Placing tolerance for detailed position of vertical wall reinforcement: +/- 1/2".
   2. Minimum distance between masonry unit faces and reinforcing bars:
      a. Fine grout: 1/4".
      b. Coarse grout: 1/2".

G. Lap vertical bars not less than 2'-0". Extend bars into bond beams and foundation as indicated on drawings.

H. Stop horizontal bond beam reinforcement 3" back from both side of expansion and control joints.

I. At specified reinforced cells, bond beams and open cells indicated to receive grout, fill solid with grout as specified in Cement Grout For Reinforced Masonry section.

J. Wet masonry prior to placement of grout. Wet no masonry until mortar has set and wetting will not damage mortar or mortar bond.

K. Consolidate grout by working reinforcement bars and rodding non-reinforced cells.

L. Prevent grout seepage or spillage onto exposed masonry unit faces.

**3.18 TOLERANCES**

A. Maximum Variation from Alignment of Columns: 1/4 inch.

B. Maximum Variation From Unit to Adjacent Unit: 1/16 inch.

C. Maximum Variation from Plane of Wall: 1/4 inch in 10 ft and 1/2 inch in 20 ft or more.

D. Maximum Variation from Plumb: 1/4 inch per story non-cumulative; 1/2 inch in two stories or more.

E. Maximum Variation from Level Coursing: 1/8 inch in 3 ft and 1/4 inch in 10 ft; 1/2 inch in 30 ft.

F. Maximum Variation of Joint Thickness: 1/8 inch in 3 ft.

G. Maximum Variation from Cross Sectional Thickness of Walls: 1/4 inch.

**3.19 CUTTING AND FITTING**

A. Where cutting is required, use power saws to provide clean, sharp, unchipped edges.

B. Cut and fit for chases. Coordinate with other sections of work to provide correct size, shape,and location.

C. Obtain approval prior to cutting or fitting masonry work not indicated or where appearance or strength of masonry work may be impaired.

D. Remove and replace masonry where appearance is unacceptable.

**3.20 FIELD QUALITY CONTROL**

A. An independent testing agency will perform field quality control tests, as specified in Division 01.

B. Concrete Masonry Unit Tests: Test each variety of concrete unit masonry in accordance with ASTM C 140.

C. Evaluation of Quality Control Tests: In absence of other indications of noncompliance with requirements, concrete unit masonry will be considered satisfactory if results from construction quality control tests comply with minimum requirements indicated.

**3.21 REPAIRING MASONRY**

A. Replacement: Carefully remove areas of damaged masonry and replace with matching, undamaged units using mortar which matches original work.

B. Pointing: As joints are tooled, remove mortar with visible holes or mortar which cannot be compacted properly because of hidden voids, and replace with fresh mortar , filling each joint completely and tooling to match adjacent work.

**3.22 CLEANING**

A. Clean concrete masonry units as follows and as directed by the concrete masonry unit manufacturer:
   1. Clean masonry after mortar is thoroughly set and cured.
   2. Scrape off adhered mortar particles by hand, using non-metallic tools.
   3. Comply with directions of concrete unit masonry manufacturer and NCMA Tek Bulletin No. 45 for cleaning CMU.

B. Remove excess mortar and mortar smears on clay masonry as work progresses.

C. Replace defective mortar. Match adjacent work.

D. Clean soiled surfaces with cleaning solution and as recommended by the material manufacturer for the surface to be cleaned.

E. Use non-metallic tools in cleaning operations.

**3.23 PROTECTION OF FINISHED WORK**

A. Without damaging completed work, provide protective boards at exposed external corners which are subject to damage by construction activities.

B. Place pine straw adjacent to walls, thickness and width sufficient to prevent mud staining before and after cleaning.

C. Provide other protective measures as necessary to ensure that unit masonry work will be clean, free of staining from adjacent soils, and undamaged at substantial completion.

### 3.24 MASONRY WASTE DISPOSAL

A. Recycling: Unless otherwise indicated, excess masonry materials are Contractor's property. At completion of unit masonry work, remove from Project site.

B. Excess Masonry Waste: Remove excess, clean masonry waste that cannot be used as fill, as described above, and other masonry waste, and legally dispose of off Union County Commissioner's Office's property.

**END OF SECTION**

# SECTION 04 4313
# STONE MASONRY VENEER

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Anchored cut stone veneer at exterior walls.

B. Metal anchors and accessories for anchored veneer.

C. Setting mortar.

### 1.02 RELATED REQUIREMENTS

A. Section 04 0511 - Masonry Mortaring and Grouting: Setting and pointing mortar.

B. Section 07 2500 - Weather Barriers: Water-resistive barrier over sheathing.

C. Section 07 6200 - Sheet Metal Flashing and Trim: Flashings.

D. Section 07 9200 - Joint Sealants: Sealing joints indicated to be left open for sealant.

### 1.03 REFERENCE STANDARDS

A. ANSI A108/A118/A136 - American National Standard Specifications for the Installation of Ceramic Tile (Compendium) 2019.

B. ANSI A118.4 - American National Standard Specifications for Modified Dry-Set Cement Mortar 2019.

C. ANSI A118.12 - American National Standard Specifications for Crack Isolation Membranes for Thin-Set Ceramic Tile and Dimension Stone Installation 2014 (Reaffirmed 2019).

D. ANSI A118.15 - American National Standard Specifications for Improved Modified Dry-Set Cement Mortar 2019.

E. ASTM A36/A36M - Standard Specification for Carbon Structural Steel 2019.

F. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products 2017.

G. ASTM A580/A580M - Standard Specification for Stainless Steel Wire 2018.

H. ASTM A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar 2015.

I. ASTM C119 - Standard Terminology Relating to Dimension Stone 2020.

J. ASTM C270 - Standard Specification for Mortar for Unit Masonry 2019a, with Editorial Revision.

K. ASTM C503/C503M - Standard Specification for Marble Dimension Stone 2022.

L. ASTM C615/C615M - Standard Specification for Granite Dimension Stone 2018, with Editorial Revision.

M. ASTM C1242 - Standard Guide for Selection, Design, and Installation of Dimension Stone Attachment Systems 2022a.

N. ASTM C1515 - Standard Guide for Cleaning of Exterior Dimension Stone, Vertical And Horizontal Surfaces, New or Existing 2020.

O. ASTM C1528/C1528M - Standard Guide for Selection of Dimension Stone 2020.

P. ASTM C1714/C1714M - Standard Specification for Preblended Dry Mortar Mix for Unit Masonry 2019a.

Q. ICC (IBC) - International Building Code Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

R. TMS 402/602 - Building Code Requirements and Specification for Masonry Structures 2022.

### 1.04 ADMINISTRATIVE REQUIREMENTS

A. Preinstallation Meeting: Convene one week before starting work of this section.

**1.05 SUBMITTALS**

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data on stone units, mortar, and reinforcement.

C. Samples: Submit two stone samples illustrating minimum and maximum stone sizes, color range, texture, and markings.

D. Samples: Submit mortar color samples.

E. Stone Fabricator's Qualification Statement.

F. Installer's Qualification Statement.

**1.06 QUALITY ASSURANCE**

A. Stone Fabricator Qualifications: Company specializing in fabricating cut stone with minimum ten years of documented experience.

B. Installer Qualifications: Company specializing in performing work of the type required by this section, with minimum five years of documented experience.

**1.07 MOCK-UP**

A. Construct stone wall mock-up, eight feet long by eight feet wide; include stone anchor accessories, corner condition, and typical control joint in mock-up.

B. See Section 01 4000 - Quality Requirements for additional requirements.

C. Locate where directed.

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

**1.08 DELIVERY, STORAGE, AND HANDLING**

A. Protect stone from discoloration during storage on site.

B. Provide ventilation to prevent condensation from forming on stone.

**1.09 FIELD CONDITIONS**

A. Cold Weather Requirements: Comply with requirements of TMS 402/602 or applicable building code, whichever is more stringent.

B. Maintain materials and ambient air at minimum of 40 degrees F (5 degrees C) prior to, during, and for 48 hours after completion of work.

**PART 2 PRODUCTS**

**2.01 STONE**

A. Stone, General: See recommendations in ASTM C1528/C1528M.

B. Granite: Ashlar Building Stone Veneer variety; complying with ASTM C615/C615M.
   1. Surface Finish: Natural cleft; as described in ASTM C119 and ASTM C1528/C1528M
   2. Acceptable Producers:
      a. Champlain Stone, Ltd: www.champlainstone.com/#sle.
      b. Cold Spring Granite Company: www.coldspringusa.com/#sle.
      c. North Carolina Granite Corporation: www.ncgranite.com/#sle.
      d. Substitutions: See Section 01 6000 - Product Requirements.

**2.02 MORTAR APPLICATIONS**

A. Use only factory premixed packaged dry materials for mortar, with addition of water only at project site.

B. Mortar Color: Selected by Gardner Spencer Smith Tench and Jarbeau, PC from manufacturer's full range.

C. Setting Bed Mortars: Setting bed used to adhere stone veneer units to scratch coat mortar or to bondable concrete or concrete masonry.

1. Site-Mixed: ASTM C270, Type S, using the Proportion Method as specified in Section 04 0511.

D. Pointing Mortars: Pointing or grouting mortars used to fill the joints between individual stone veneer units once the setting bed mortar has sufficiently cured.
   1. Site-Mixed: ASTM C270, Type N or Type S, using the Proportion Method as specified in Section 04 0511.
   2. Prepackaged/Preblended: ASTM C1714/C1714M, Type N or Type S.
   3. Prepackaged/Preblended Latex Modified: ANSI A118.4 or ANSI A118.15.

**2.03 MORTAR MIXES**

A. Packaged Dry Material for Mortar for Unit Masonry: Premixed Portland cement, hydrated lime, and sand; complying with ASTM C1714/C1714M and capable of producing mortar of the specified strength in accordance with ASTM C270 with the addition of water only.
   1. Color: Mineral pigments added as required to produce approved color sample.
   2. Manufacturers:
      a. Amerimix, an Oldcastle brand: www.amerimix.com/#sle.
      b. The QUIKRETE Companies: www.quikrete.com/#sle.
      c. Substitutions: See Section 01 6000 - Product Requirements.

B. Colored Mortar: Proportion selected pigments and other ingredients to match Gardner Spencer Smith Tench and Jarbeau, PC's sample, without exceeding manufacturer's recommended pigment-to-cement ratio.

C. Mixing: Use mechanical batch mixer and comply with referenced standards.

**2.04 ACCESSORIES - ANCHORED VENEER**

A. Wall Tiest: As specified in Section 04 0090.

B. Other Anchors in Direct Contact with Stone: ASTM A666 Type 304, stainless steel, of sizes and configurations required for support of stone and applicable superimposed loads.

C. Weep/Cavity Vents: Polyethylene tubing.

D. Cleaning Solution: Type that will not harm stone, joint materials, or adjacent surfaces.

**2.05 STONE FABRICATION - ANCHORED VENEER**

A. Nominal Thickness: 3 - 4 inch.

B. Nominal Face Size: 1/4 SF to 2 SF..

C. Pattern and Coursing: Match Architect's sample pattern and layout.

D. Fabricate for 3/8 inch beds and joints.

E. Bed and Joint Surfaces:
   1. Cut or sawn full square for full thickness of unit.
   2. Sawn or cut full square at least two-thirds of unit thickness; from that point back under square not more than 1 inch in 12 inches.

F. Form stone corners to irregular joint profile. Clean jagged corners from stone in preparation for setting.

G. Slope exposed top surfaces of stone and horizontal sill surfaces for shedding water.

**PART 3 EXECUTION**

**3.01 EXAMINATION**

A. Verify that support work and site conditions are ready to receive work of this section.
   1. Per ASTM C1242, exterior walls to receive thin natural stone veneers should be designed with a stiffness ratio of L/1000 minimum.

B. Verify that items built-in under other sections are properly located and sized.

**3.02 PREPARATION - ANCHORED VENEER**

A. Establish lines, levels, and coursing. Protect from disturbance.

B. Clean stone prior to installation. Do not use wire brushes or implements that mark or damage exposed surfaces.

C. Clean sawn surfaces of rust stains and iron particles.

D. Coat back surfaces not to be in contact with setting mortar with back coating material. Allow coating to cure.

**3.03 INSTALLATION - ANCHORED VENEER**

A. Install flashings of longest practical length and seal watertight to back-up. Lap end joints minimum 6 inches and seal watertight.

B. Cut stone at site to produce clean faces.

C. Size stone units to fit opening dimensions and perimeter conditions.

D. Wet absorptive stone in preparation for placement to minimize moisture suction from mortar.

E. Arrange stone pattern to provide color uniformity and minimize visual variations , and provide a uniform blend of stone unit sizes.

F. Provide setting and pointing mortar in accordance with Section 04 0511.
   1. If water is lost by evaporation, re-temper mortar only within two hours after mixing.
   2. At ambient air temperature 80 degrees F and above, use mortar within two hours after mixing; at ambient air temperature below 50 degrees F, use mortar within two-and-one-half hours after mixing.

G. Arrange stone coursing in ashlar bond with consistent joint width.

H. Set stone in full mortar setting bed to fully support stone over bearing surface. Use setting buttons or shims to maintain correct joint width.

I. Install weep/cavity vents in vertical stone joints at 32 inches on center horizontally; immediately above horizontal flashings, above shelf angles and supports, and at top of each cavity space; do not permit mortar accumulation in cavity space.

**3.04 JOINTS - ANCHORED VENEER**

A. Leave the following joints open for sealant specified in Section 07 9200:
   1. Head joints in top courses, including copings, parapets, cornices, sills, and steps.
   2. Joints below ledge and relieving angles.
   3. Joints labeled "expansion joint".

B. Pack mortar into joints and work into voids. Neatly tool surface to concave joint.

C. At joints to be sealed, clean mortar out of joint before it sets. Brush joints clean.

**3.05 INSTALLATION - WATER-RESISTIVE BARRIER**

A. Where required by thin stone veneer fabricator's instructions or by local codes, install two layers of water-resistive barrier in accordance with water-resistive barrier manufacturer's instructions. Integrate water-resistive barrier with all flashing accessories, adjacent water-resistive barriers, doors, windows, penetrations, and cladding transitions.

B. Apply water-resistive barrier horizontally with upper layer lapped over lower layer minimum 2 inches.

C. Lap water-resistive barrier minimum 6 inches at vertical joints.

D. Lap water-resistive barrier minimum 16 inches past the corner in both directions at inside and outside corners.

E. In two layer applications, start with two horizontal layers at bottom of exterior wall or structure.

**3.06 INSTALLATION - ADHERED VENEER**

A. Install thin stone veneer with a cementitious mortar setting bed to a scratch coat backing surface, in accordance with stone fabricator's instructions and applicable sections of the ICC (IBC), TMS 402/602 and ASTM C1242 that apply to adhered masonry veneer.

B. Mortar Joints: Concave.
   1. Style: Tight fit joints.

C. Pattern Bond:
   1. Lay out work in advance and distribute color range of stone uniformly over total work area.
   2. Lay stone with face exposed.
   3. Take care to avoid concentration of any one color to any one wall surface.
   4. Maintain approximate 3/8 inch joint, as stone allows.
   5. Do not use stacked vertical joints.

D. Windows, Doors and Wall Openings: Extend field stone units to edges of wall openings.

E. Sills: Install sills where located on drawings.

F. Caps: Install capstones where located on drawings.

G. Seal all joints at wall openings and penetrations with sealant approved for use with adhered stone veneer.

H. Weep Screed and Stone Clearances for Exterior Stud Wall Installations:
   1. Above Finished Grade: Terminate a minimum of 4 inches or as per local code and building practices.
   2. Above Paved Surfaces: Terminate a minimum of 2 inches or as per local code.
   3. Above Paved Walking Surface Supported by Same Foundation Supporting the Wall: Terminate a minimum of 1/2 inch or as per local code.

**3.07 INSTALLATION - MASONRY FLASHINGS**

A. Whether or not specifically indicated, install masonry flashing to divert water to exterior at all locations where downward flow of water will be interrupted.

B. Extend metal flashings through exterior face of stone and terminate in an angled drip with hemmed edge.

C. Extend plastic flashings to within 1/2 inch of exterior face of stone and adhere to top of stainless steel angled drip with hemmed edge.

D. Lap end joints of flashings at least 6 inches, minimum, and seal watertight with flashing sealant/adhesive.

**3.08 CONTROL AND EXPANSION JOINTS**

A. Form joints as detailed on drawings.

**3.09 TOLERANCES**

A. Install masonry within the site tolerances found in TMS 402/602.

B. Maximum Variation From Unit to Adjacent Unit: 1/16 inch.

C. Maximum Variation from Plumb: 1/4 inch per story non-cumulative; 1/2 inch in two stories or more.

D. Maximum Variation from Level Coursing: 1/8 inch in 3 feet and 1/4 inch in 10 feet; 1/2 inch in 30 feet.

E. Maximum Variation of Joint Thickness: 1/8 inch in 3 feet.

**3.10 CLEANING**

A. Remove excess mortar as work progresses, and upon completion of work.

B. Replace defective mortar. Match adjacent work.

C. Clean soiled surfaces with cleaning solution.

D. Clean exterior stone per ASTM C1515.

E. Use non-metallic tools in cleaning operations.

**3.11 PROTECTION**

A. During temporary storage on site, at the end of working day, and during rainy weather, cover stone work exposed to weather with non-staining waterproof coverings, securely anchored.

**END OF SECTION**

# SECTION 05 5000
# METAL FABRICATIONS

## PART 1 GENERAL

### 1.01 GENERAL

A. Provisions of Division 01 apply to this section.

### 1.02 SECTION INCLUDES

A. This section includes the following shop fabricated steel and aluminum items.
   1. Rough hardware.
   2. Ladders.
   3. Loose bearing and leveling plates.
   4. Loose steel lintels.
   5. Miscellaneous framing and supports for the following:
      a. Overhead doors.
      b. Applications where framing and supports are not specified in other sections.
   6. Miscellaneous steel trim.
   7. Pipe bollards.

### 1.03 RELATED REQUIREMENTS

A. Section 01 4110 - Testing Laboratory Services.

B. Section 03 3000 - Cast-In-Place Concrete: Placement of metal fabrications in concrete.

C. Section 04 2100 - Brick Masonry: Placement of metal fabrications in masonry.

D. Section 04 2200 - Concrete Unit Masonry: Placement of metal fabrications in masonry.

E. Division 05: Structural Steel; Structural steel column and anchor bolts.

F. Division 05: Steel Joist Framing; Structural joist bearing plates, including anchorage.

G. Division 05: Steel Decking; Bearing plates for metal deck bearing, including anchorage.

H. Section 05 5100 - Metal Stairs, Ladders and Railings.

I. Section 09 9000 - Painting and Coating: Paint finish.

### 1.04 REFERENCES

A. "Specification for the Design, Fabrication and Erection of Structural steel for Buildings, November 1, 1978," by the American institute of Steel Construction (AISC Specification).

B. "Specification for the Design of Cold-Formed Steel Structural Members," by the American Iron and Steel Institute (AISI Specification).

C. "Structural Welding Code - Steel, AWS Dl.l," or "Structural Welding Code -- Sheet Steel, AWS D1.3, by the American Welding Society (AWS Codes).

D. "Specification for Structural Joints Using ASTM A325 or A490 Bolts, August 14, 1980," by the Engineering Foundations' Research Council on Riveted and Bolted Structural Joints (Specification for Structural Joints).

E. AAMA 611 - Voluntary Specification for Anodized Architectural Aluminum 2020.

F. ASTM A36/A36M - Standard Specification for Carbon Structural Steel 2019.

G. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless 2022.

H. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products 2017.

I. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware 2016a.

J. ASTM A283/A283M - Standard Specification for Low and Intermediate Tensile Strength Carbon Steel Plates 2018.

K. ASTM A307 - Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60 000 PSI Tensile Strength 2021.

L. ASTM A325 - Standard Specification for Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength 2014.

M. ASTM A325M - Standard Specification for Structural Bolts, Steel, Heat Treated 830 MPa Minimum Tensile Strength (Metric) 2014.

N. ASTM A500/A500M - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes 2021a.

O. ASTM A501/A501M - Standard Specification for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing 2021.

P. AWS A2.4 - Standard Symbols for Welding, Brazing, and Nondestructive Examination 2020.

Q. AWS D1.1/D1.1M - Structural Welding Code - Steel 2020, with Errata (2022).

R. SSPC-Paint 15 - Steel Joist Shop Primer/Metal Building Primer 2004.

S. SSPC-Paint 20 - Zinc-Rich Coating (Type I - Inorganic, and Type II - Organic) 2019.

T. SSPC-SP 2 - Hand Tool Cleaning 2018.

**1.05 SUBMITTALS**

A. See Division 01 - Administrative Requirements, for submittal procedures.

B. Shop Drawings: Indicate profiles, sizes, connection attachments, reinforcing, anchorage, size and type of fasteners, and accessories. Include erection drawings, elevations, and details where applicable.
   1. Indicate welded connections using standard AWS A2.4 welding symbols. Indicate net weld lengths.
   2. Where installed metal fabrications are indicated to comply with certain design loadings, include structural computations, material properties, and other information needed for structural analysis that has been signed and sealed by the qualified professional engineer who was responsible for their preparation.

C. Product Data: Submit Product Data for manufactured items.
   1. Submit Product Data for primers, finishes, and grout.

D. Material Samples: Submit samples of primers and finishes on fabricated items.

E. Installation Instructions: Submit installation instructions for manufactured items.

F. Welders' Certificates: Submit certification for welders employed on the project, verifying AWS qualification within the previous 12 months.

**1.06 QUALITY ASSURANCE**

A. Fabricator Qualifications: Firm experienced in successfully producing metal fabrications similar to that indicated for this Project, with sufficient production capacity to produce required units without causing delay in the Work.

B. Installer Qualifications: Arrange for installation of metal fabrications specified in this section by same firm that fabricated them.

C. Qualify welding processes and welding operators in accordance with AWS Dl.l "Structural Welding Code - Steel," D1.3 "Structural Welding Code - Sheet Steel," and D1.2 "Structural Welding Code - Aluminum."
   1. Certify that each welder has satisfactorily passed AWS qualification tests for welding processes involved and, if pertinent, has undergone recertification.

D. Comply with the following as a minimum requirement:

1. Design, fabricate, and install miscellaneous metals in accordance with AISC - Design, Fabrication, and Erection of Structural Steel for Buildings.
2. AWS D-1.1 Code - Welding in Building Construction.
3. Inspection of Welding: Refer to Section 01 4110 - Testing Laboratory Services.
4. Welding: Refer to Section 01 3100 - Special Inspections and 01 4110 - Testing Laboratory Services.

E. Coordinate installation of accessory items required for metal fabrications.

**1.07 DELIVERY, STORAGE AND HANDLING**

A. Store miscellaneous metal items above grade on platforms, skids, or other required supports.

B. Protect from corrosion or damage.

**1.08 PROJECT CONDITIONS**

A. Field Measurements: Check actual locations of walls and other construction to which metal fabrications must fit, by accurate field measurements before fabrication; show recorded measurements on final shop drawings. Coordinate fabrication schedule with construction progress to avoid delay of Work.
1. Where field measurements cannot be made without delaying the Work, guarantee dimensions and proceed with fabrication of products without field measurements. Coordinate construction to ensure that actual opening dimensions correspond to guaranteed dimensions. Allow for trimming and fitting.

**1.09 SEQUENCING AND SCHEDULING**

A. Sequence and coordinate installation of wall handrails as follows:
1. Mount handrails only on completed walls. Do not support handrails temporarily by any means not satisfying structural performance requirements.
2. Mount handrails only on gypsum board assemblies reinforced to receive anchors, and where the location of concealed anchor plates has been clearly marked for benefit of Installer.

**PART 2 PRODUCTS**

**2.01 FERROUS METALS**

A. Metal Surfaces, General: For metal fabrications exposed to view upon completion of the Work, provide materials selected for their surface flatness, smoothness, and freedom from surface blemishes. Do not use materials whose exposed surfaces exhibit pitting, seam marks, roller marks, rolled trade names, roughness, and, for steel sheet, variations in flatness exceeding those permitted by reference standards for stretcher-leveled sheet.

B. Steel Plates, Shapes, and Bars: ASTM A 36.

C. Rolled Steel Floor Plates: ASTM A 786.

D. Steel Bars for Gratings: ASTM A 569 or ASTM A 36.

E. Wire Rod for Grating Cross Bars: ASTM A 510.

F. Steel Tubing: Product type (manufacturing method) and as follows:
1. Cold-Formed Steel Tubing: ASTM A 500, grade as indicated below:-
a. Grade A, unless otherwise indicated or required for design loading.
2. Hot-Formed Steel Tubing: ASTM A 501.
a. For exterior installations and where indicated, provide tubing with hot-dip galvanized coating per ASTM A 53.

G. Uncoated Structural Steel Sheet: Product type (manufacturing method), quality, and grade, as follows:
1. Cold-Rolled Structural Steel Sheet: ASTM A 611, grade as follows:
a. Grade A, unless otherwise indicated or required by-design loading.
2. Hot-Rolled Structural Steel Sheet: ASTM A 570, grade as follows:
a. Grade 30, unless otherwise indicated or required by design loading.

H. Uncoated Steel Sheet: Commercial quality, product type (method of manufacture), as follows:
   1. Cold-Rolled Steel Sheet: ASTM A-366.
   2. Hot-Rolled Steel Sheet: ASTM A 569.

I. Galvanized Steel Sheet: Quality as follows:
   1. Structural Quality: ASTM A 446; Grade A, unless another grade required-for design-loading, and G90 coating-designation unless otherwise indicated:
   2. Commercial Quality: ASTM A 526, G90 coating designation unless otherwise indicated.

J. Steel Pipe unless indicated otherwise in structural drawings: ASTM A 53; finish, type, and weight class as follows:
   1. Black finish, unless otherwise indicated.
   2. Galvanized finish for exterior installations and where indicated.
   3. Type F, standard weight (schedule 40), unless otherwise indicated, or another weight, type, and grade required by structural loads.
   4. Type S, Grade A, standard weight (schedule 40), unless otherwise indicated, or another grade or weight or both required by structural loads.
   5. Type S, Grade B, standard weight (schedule 40), unless otherwise indicated, or another weight required by structural loads.

K. Gray Iron Castings: ASTM-A 48, Class 30.

L. Malleable Iron Castings: ASTM A 47, grade 32510.

M. Brackets, Flanges and Anchors: Cast or formed metal of the same type material and finish as supported rails, unless otherwise indicated.

N. Concrete Inserts: Threaded or wedge type; galvanized ferrous castings, either malleable iron, ASTM A 47, or cast steel, ASTM A 27. Provide bolts, washers, and shims as required, hot-dip galvanized per ASTM A 153.

O. Welding Rods and Bare Electrodes: Select in accordance with AWS specifications for the metal alloy to be welded.

**2.02 STAINLESS STEEL**

A. Bar Stock: ASTM A 276, Type 302 or 304.

B. Tubing: ASTM A 554, Grade MT 304.

C. Pipe: ASTM A 312/A 312M, Grade TP 304.

D. Casting: ASTM A 743/A 743M, Grade CF 8 or CF 20.

E. Plate and Sheet: ASTM A 666, Type 304.

**2.03 ALUMINUM**

A. Extruded Bars and Shapes: ASTM B 221, alloys as follows:
   1. 6061-T6 or 6063-T6 for bearing bars of gratings and shapes.
   2. 6061-T1 for grating cross bars.

B. Aluminum-Alloy Rolled Tread Plate: ASTM B 632, alloys as follows:
   1. 6061-T6 for platforms.
   2. 6061-T4 for treads.

C. Aluminum Rivets: ASTM B 316, alloy 6053-T4 or 6061-T6.

D. Aluminum Sheet for Expanded Aluminum Grating: ASTM B 209, alloy 5052-H32.

E. Fasteners for Aluminum Gratings: Use fasteners made of same basic metal as fastened metal except use galvanized fasteners complying with ASTM A 153 for exterior aluminum units, unless otherwise indicated. Do not use metals that are corrosive or incompatible with metals joined.

## 2.04 GROUT AND ANCHORING CEMENT

A. Nonshrink Metallic Grout: Premixed, factory-packaged, ferrous aggregate grout complying with CE CRD-C 621, specifically recommended by manufacturer for heavy duty loading applications of type specified in this section.

B. Nonshrink Nonmetallic Grout: Premixed, factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with CE CRD-C 621. Provide grout specifically recommended by manufacturer for interior and exterior applications of type specified in this section.

C. Interior Anchoring Cement: Factory-prepackaged, nonshrink, nonstaining, hydraulic controlled expansion cement formulation for mixing with water at Project site to create pourable anchoring, patching, and grouting compound. Use for interior applications only.

D. Erosion-Resistant Anchoring Cement: Factory-prepackaged, nonshrink, nonstaining, hydraulic controlled expansion cement formulation for mixing with water at Project site to create pourable anchoring, patching, and grouting compound. Provide formulation that is resistant to erosion from water exposure without need for protection by a sealer or waterproof coating and is recommended for exterior use by manufacturer.

E. Available Products: Subject to compliance with requirements, products that may be incorporated in the Work include but are not limited to the following:

F. Products: Subject to compliance with requirements, provide one of the following:
   1. Nonshrink Metallic Grouts:
      a. "Metox RM"; Chem-Masters Corp.
      b. "Hi Mod Grout"; Euclid Chemical Co.
      c. "Embeco 885 and 636"; Master Builders.
      d. "Ferrolith G Redi-Mix and G-NC"; Sonneborn Building Products Div., Rexnord Chemical Products, Inc.
      e. "Stoncrete MG1"; Stonhard, Inc.
   2. Nonshrink Nonmetallic Grouts:
      a. "Bonsai Construction Grout"; W. R. Bonsai Co.
      b. "Diamond-Crete Grout"; Concrete Service Materials Co.
      c. "Euco N-S Grout"; Euclid Chemical Co.
      d. "Kemset"; Chem-Masters Corp.
      e. "Crystex"; L & M Construction Chemicals, Inc.
      f. "Masterflow 713"; Master Builders.
      g. "Sealtight 588 Grout"; W. R. Meadows, Inc.
      h. "Sonogrout"; Sonneborn Building Products Div., Rexnord Chemical Products, Inc.
      i. "Stoncrete MM 1"; Stonhard, Inc.
      j. "Five Star Grout"; U. S. Grout Corp.
      k. "Vibropruf #11"; Lambert Corp.
   3. Interior Anchoring Cement:
      a. "Bonsai Anchor Cement"; W. R. Bonsai Co.
      b. "Por-Rok"; Minwax Construction Products Division.
   4. Erosion-Resistant Anchoring Cement:
      a. "Super Por-Rok"; Minwax Construction Products Division.

## 2.05 FASTENERS

A. General: Provide zinc-coated fasteners for exterior use or where built into exterior walls. Select fasteners for the type, grade, and class required.

B. Bolts and Nuts: Regular hexagon head type, ASTM A 307, Grade A.

C. Lag Bolts: Square head type, FS FF-B-61.

D. Machine Screws: Cadmium plated steel, FS FF-S-92.

E. Wood Screws: Flat head carbon steel, FS FF-S-11.

F. Plain Washers: Round, carbon steel, FS FF-W-92.

G. Drilled-In Expansion Anchors: Expansion anchors complying with FS FF-S-325, Group VIII (anchors, expansion, nondrilling), Type I (internally threaded tubular expansion anchor); and machine bolts complying with FS FF-B-575, Grade 5.

H. Toggle Bolts: Tumble-wing type, FS FF-B-88, type, class, and style as required.

I. Lock Washers: Helical spring type carbon steel, FS FF-W-84.

**2.06 FABRICATION**

A. Form metal fabrications from materials of size, thickness, and shapes indicated but not less than that needed to comply with performance requirements indicated. Work to dimensions indicated or accepted on shop drawings, using proven details of fabrication and support. Use type of materials indicated or specified for various components of each metal fabrication.

B. Allow for thermal movement resulting from the following maximum change (range) in ambient temperature in the design, fabrication, and installation of installed metal assemblies to prevent buckling, opening up of joints, and over-stressing of welds and fasteners. Base design calculations on actual surface temperatures of metals due to both solar heat gain and nighttime sky heat loss.

C. Fit and shop assemble items in largest practical sections, for delivery to site.

D. Fabricate items with joints tightly fitted and secured.

E. Grind exposed joints flush and smooth with adjacent finish surface. Make exposed joints butt tight, flush, and hairline. Ease exposed edges to small uniform radius.
   1. Radius approximately 1/32 inch, unless otherwise indicated. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing work.

F. Supply components required for anchorage of fabrications. Fabricate anchors and related components of same material and finish as fabrication, except where specifically noted otherwise.

G. For fabrication of Work exposed to view, provide only materials smooth and free of blemishes. Remove blemishes by grinding or by welding and grinding, before cleaning, treating, and installation of surface finishes including zinc coatings.

H. Form exposed Work true to line and level with accurate angles, surfaces, and straight sharp edges.

I. Form bent metal corners to the smallest radius possible without causing grain separation or otherwise damaging Work.

J. Form exposed connections with hairline joints, flush and smooth. Provide concealed fasteners wherever possible.

K. Remove loose rust, mill scale, cutting, and punching burrs.

L. Fabricate items in as large sections as practical to minimize assembly at the Project site.

M. Fabricate joints that will be exposed to weather in a manner to exclude water, or provide weep holes where water may accumulate.

**2.07 ROUGH HARDWARE**

A. Furnish bent or otherwise custom fabricated bolts, plates, anchors, hangers, dowels, and other miscellaneous steel and iron shapes as required for framing and supporting woodwork, and for anchoring or securing woodwork to concrete or other structures. Straight bolts and other stock rough hardware items are specified in Division 6 sections.

B. Fabricate items to sizes, shapes, and dimensions required. Furnish malleable-iron washers for heads and nuts which bear on wood structural connections; elsewhere, furnish steel washers.

**2.08 STEEL LADDERS**

A. General: Fabricate ladders for the locations shown, with dimensions, spacings, details and anchorages as indicated. Comply with requirements of ANSI A14.3.

B. Siderails: Continuous steel flat bars, 1/2 inch x 2-1/2 inches, with eased edges, spaced 18 inches apart.

C. Bar Rungs: Round steel bars, 3/4 inch diameter, spaced 12 inches o.c.

D. Fit rungs in centerline of side rails, plug weld and grind smooth on outer rail faces.

E. Support each ladder at top and bottom and at intermediate points spaced not more than 5'-0" o.c. by means of welded or bolted steel brackets.
   1. Size brackets to support design dead and live loads indicated and to hold centerline of ladder rungs clear of the wall surface by not less than 7 inches.
   2. Extend side rails 42 inches above top rung, and return rails to wall or structure unless other secure handholds are provided. If the adjacent structure does not extend above the top rung, goose-neck the extended rails back to the structure to provide secure ladder access.

F. Provide non-slip surface on top of each rung, either by coating the rung with aluminum oxide granules set in epoxy resin adhesive, or by using a type of manufactured rung which is filled with aluminum oxide grout.

**2.09 LOOSE BEARING AND LEVELING PLATES**

A. Provide loose bearing and leveling plates for steel items bearing on masonry or concrete construction, made flat, free from warps or twists, and of required thickness and bearing area. Drill plates to receive anchor bolts and for grouting as required. Galvanize after fabrication.

**2.10 LOOSE STEEL LINTELS**

A. Fabricate loose structural steel lintels from steel angles and shapes of size indicated for openings and recesses in masonry walls and partitions at locations indicated.

B. Weld adjoining members together to form a single unit where indicated.

C. Size loose lintels for equal bearing of one inch per foot of clear span but not less than 8 inches bearing at each side of openings, unless otherwise indicated.

D. Hot Dip Galvanize loose steel lintels located in exterior walls.

**2.11 MISCELLANEOUS FRAMING AND SUPPORTS**

A. General: Provide steel framing and supports for applications indicated or which are not a part of structural steel framework, as required to complete work.

B. Fabricate units to sizes, shapes, and profiles indicated and required to receive adjacent other construction retained by framing and supports. Fabricate from structural steel shapes, plates, and steel bars of welded construction using mitered joints for field connection. Cut, drill, and tap units to receive hardware, hangers, and similar items.
   1. Equip units with integrally welded anchors for casting into concrete or building into masonry. Furnish inserts if units must be installed after concrete is placed.
      a. Except as otherwise indicated, space anchors 24 inches o.c. and provide minimum anchor units in the form of steel straps 1-1/4 inches wide x 1/4 inch x 8 inches long.

C. Galvanize miscellaneous framing and supports in the following locations:
   1. Exterior locations.
   2. Interior locations where indicated.

**2.12 MISCELLANEOUS STEEL TRIM**

A. Provide shapes and sizes indicated for profiles shown. Unless otherwise indicated, fabricate units from structural steel shapes, plates, and steel bars, with continuously welded joints and smooth exposed edges. Use concealed field splices wherever possible. Provide cutouts, fittings, and anchorages as required for coordination of assembly and installation with other

work.

B. Galvanize miscellaneous framing and supports in the following locations:
   1. Exterior locations.
   2. Interior locations where indicated.

**2.13 SHELF AND RELIEVING ANGLES**

A. Fabricate shelf and relieving angles from steel angles of sizes indicated and for attachment to concrete framing. Provide slotted holes to receive 3/4 inch bolts, spaced not more than 6 inches from ends and not more than 24 inches o.c., unless otherwise indicated.

B. For cavity walls, provide vertical channel brackets to support shelf/relieving angles from back-up masonry and concrete. Align expansion joints in angles with indicated expansion joints in cavity wall exterior wythe.

C. Galvanize shelf angles to be installed on exterior concrete framing.

D. Furnish wedge-type concrete inserts, complete with fasteners, for attachment of shelf angles to cast-in-place concrete.

**2.14 STRUCTURAL STEEL DOOR FRAMES FOR OVERHEAD DOORS**

A. Fabricate steel door frames from structural shapes and bars of size and to dimensions indicated, fully welded together, with 5/8 inch x 1-1/2 inch steel bar stops, unless otherwise indicated. Plug weld built-up members and continuously weld exposed joints. Secure removable stops to frame with countersunk machine screws, uniformly spaced at not more than 10 inches o.c. Reinforce frames and drill and tap as required to accept finish hardware.

B. Provide steel strap anchors for securing door frames into adjoining concrete or masonry, using 1/8 inch x 2 inch straps of the length required for a minimum 8 inch embedment, unless otherwise indicated. Weld anchors to frame jambs no more than 12 inches from both bottom and head of frame and space anchors not more than 30 inches apart.

C. Extend bottom of frames to floor elevation indicated with steel angle clips welded to frames for anchoring frame to floor with expansion shields and bolts.

D. Galvanize frames and anchors in the following locations:
   1. Exterior locations.
   2. Interior locations where indicated.

**2.15 CAST TREADS AND THRESHOLDS**

A. Fabricate units of material, sizes, and configurations indicated. If not indicated, provide cast-iron units with integral abrasive finish. Furnish in lengths as required to accurately fit each opening or conditions.
   1. Cast units with an integral abrasive grit consisting of aluminum oxide, silicone carbide, or a combination of both.
   2. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the Work include, but are not limited to, the following:
      a. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
         1) American Safety Tread Co., Inc; www.americansafetytread.com.
         2) Balco; www.balcousa.com.
         3) Nystrom; www.nystrom.com.
         4) Safe-T-Metal Co., Inc; www.safemetal.com.
         5) Wooster Products Inc; www.woosterproducts.com.

B. Provide anchors for embedding units in concrete, either integral or applied to units, as standard with the manufacturer.

C. Drill for mechanical anchors with countersunk holes located not more than 4 inches from ends and not more than 12 inches o.c., evenly spaced between ends, unless otherwise indicated. Provide closer spacing if recommended by the manufacturer.

1. Provide 2 rows of holes for units over 5 inches wide, with 2 holes aligned at ends and staggered intermediate holes.

D. Apply black asphaltic coating to concealed bottoms, sides, and edges of cast-iron units set into concrete.

E. Provide a plain surface texture, except where fluted or cross-hatched surfaces are indicated.

**2.16 PIPE BOLLARDS**

A. Fabricate pipe bollards from Schedule 80 steel pipe. Cap bollards with 1/4 inch minimum thickness steel base plate.

B. Fabricate sleeves for bollard anchorage from steel pipe with 1/4 inch thick steel plate welded to bottom of sleeve.

**2.17 FINISHES - STEEL**

A. Prime paint steel items.
1. Exceptions: Galvanize items to be embedded in concrete or masonry and items specified for painted finish.
2. Exceptions: Do not prime surfaces in direct contact with concrete, where field welding is required, and items to be covered with sprayed fireproofing.

B. Prepare surfaces to be primed in accordance with SSPC-SP2.

C. Clean surfaces of rust, scale, grease, and foreign matter prior to finishing.

D. Prime Painting: One coat.

E. Galvanizing of Structural Steel Members: Galvanize after fabrication to ASTM A123/A123M requirements. Provide minimum 1.7 oz/sq ft galvanized coating.

F. Galvanizing of Non-structural Items: Galvanize after fabrication to ASTM A123/A123M requirements.

**2.18 SHOP FINISH**

A. Metal fabrications shall be provided with a coat of primer, except those indicated to be completed with exposed galvanized finish.

B. Primer: Lead-free red metal primer complying with Fed Spec TT-P-86G, Type I, II, or III; zinc molybdate complying with Fed Spec TT-P-645A. Minimum dry film thickness of primer shall be 2.0 mils.

C. Preparation for Primer Painting: Miscellaneous ferrous metal, except items specified galvanized, shall be thoroughly cleaned and prepared for painting, including removal of shipping oils or protective coatings, mill scale, grease, dirt and rust. Deliver to Project site primed or galvanized as indicated, and ready to receive Project site applied finishes.

D. Galvanized Metal Work to receive Paint: Clean oil, grease and other foreign materials from surfaces. Apply vinyl wash pretreatment coating. Follow manufacturer's instructions for drying time, and then prime with one coat of metal primer.

**2.19 FINISHES - ALUMINUM**

A. Finish designations prefixed by "AA" conform to the system established by the Aluminum Association for designating aluminum finishes.

B. As Fabricated Finish: AA-M10 (Mechanical Finish: as fabricated, unspecified).

C. Class I Natural Anodized Finish: AAMA 611 AA-M12C22A41 Clear anodic coating not less than 0.7 mils thick.

**2.20 FABRICATION TOLERANCES**

A. Squareness: 1/8 inch maximum difference in diagonal measurements.

B. Maximum Offset Between Faces: 1/16 inch.

C. Maximum Misalignment of Adjacent Members: 1/16 inch.

D. Maximum Bow: 1/8 inch in 48 inches.

E. Maximum Deviation From Plane: 1/16 inch in 48 inches.

## PART 3 EXECUTION

### 3.01 EXAMINATION

A. Verify that field conditions are acceptable and are ready to receive work.

### 3.02 PREPARATION

A. Coordinate and furnish anchorages, setting drawings, diagrams, templates, instructions, and directions for installation of anchorages, including concrete inserts, sleeves, anchor bolts, and miscellaneous items having integral anchors that are to be embedded in concrete or masonry construction. Coordinate delivery of such items to project site.

B. Set sleeves in concrete with tops flush with finish surface elevations; protect sleeves from water and concrete entry.

C. Clean and strip primed steel items to bare metal where site welding is required.

D. Supply setting templates to the appropriate entities for steel items required to be cast into concrete or embedded in masonry.

### 3.03 INSTALLATION, GENERAL

A. Install items plumb and level, accurately fitted, free from distortion or defects.

B. Provide for erection loads, and for sufficient temporary bracing to maintain true alignment until completion of erection and installation of permanent attachments.

C. Fastening to In-Place Construction: Provide anchorage devices and fasteners where necessary for securing miscellaneous metal fabrications to in-place construction; include threaded fasteners for concrete and masonry inserts, toggle bolts, through-bolts, lag bolts, wood screws, and other connectors as required.

D. Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required for installation of miscellaneous metal fabrications. Set metal fabrication accurately in location, alignment, and elevation; with edges and surfaces level, plumb, true, and free of rack; and measured from established lines and levels.

E. Provide temporary bracing or anchors in formwork for items that are to be built into concrete masonry or similar construction.

F. 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 the surfaces of exterior units which have been hot-dip galvanized after fabrication, and are intended for bolted or screwed field connections.

G. Field Welding: Comply with AWS Code for procedures of manual shielded metal-arc welding, appearance and quality of welds made, methods used in correcting welding work, 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 that no roughness shows after finishing and contour of welded surface matches those adjacent.

H. Corrosion Protection: Coat concealed surfaces of aluminum that will come into contact with grout, concrete, masonry, wood, or dissimilar metals with a heavy coat of bituminous paint or zinc chromate primer.

I. Perform field welding in accordance with AWS D1.1/D1.1M.

J. Obtain approval prior to site cutting or making adjustments not scheduled.

K. After erection, prime welds, abrasions, and surfaces not shop primed or galvanized , except surfaces to be in contact with concrete.

**3.04 SETTING LOOSE PLATES**

A. Clean concrete and masonry bearing surfaces of any bond-reducing materials, and roughen to improve bond to surfaces. Clean bottom surface of bearing plates.

B. Set loose leveling and bearing plates on wedges, or other adjustable devices. After the bearing members have been positioned and plumbed, tighten the anchor bolts. Do not remove wedges or shims, but if protruding, cut off flush with the edge of the bearing plate before packing with grout.
   1. Use metallic nonshrink grout in concealed locations where not exposed to moisture; use nonmetallic nonshrink grout in exposed locations, unless otherwise indicated.
   2. Pack grout solidly between bearing surfaces and plates to ensure that no voids remain.

**3.05 INSTALLATION OF BOLLARDS**

A. Anchor bollards in concrete by means of pipe sleeves preset and anchored into concrete. After bollards have been inserted into sleeves, fill annular space between bollard and sleeve solid with nonshrink, nonmetallic grout, mixed and placed to comply with grout manufacturer's directions.

**3.06 TOLERANCES**

A. Maximum Variation From Plumb: 1/4 inch per story, non-cumulative.

B. Maximum Offset From True Alignment: 1/4 inch.

C. Maximum Out-of-Position: 1/4 inch.

**3.07 ADJUSTING**

A. Touch Up Damaged Surfaces:
   1. Shop Painted Finishes: Apply with brush to produce a minimum 2.0 mil dry film thickness.
   2. Galvanized Surfaces: Clean field welds, connections and damaged areas. Repair galvanized finishes in accord with ASTM A 780.

**3.08 CLEAN UP**

A. Remove rubbish, debris, and waste materials and legally dispose of off the Project site.

**3.09 PROTECTION**

A. Protect the Work of this section until Substantial Completion.

**END OF SECTION**

# SECTION 05 5600
# CONSTRUCTION CASTINGS

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Downspout Boots.

### 1.02 RELATED SECTIONS

A. Section 03 3000 - Cast-In-Place Concrete: Placement of metal fabrications in concrete.

B. Section 04 2200 - Concrete Unit Masonry: Placement of metal fabrications in masonry.

C. Section 07 6200 - Sheet Metal Flashing and Trim.

D. Section 07 9005 - Joint Sealers.

E. Section 09 9000 - Painting and Coating: Field painting.

### 1.03 REFERENCES

A. ASTM A 36/A 36M - Standard Specification for Carbon Structural Steel; 2001.

B. ASTM A 53/A 53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless; 2002.

C. ASTM A 307 - Standard Specification for Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength; 2002.

D. ASTM A 500 - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes; 2001a.

E. ASTM A 501 - Standard Specification for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing; 2001.

F. ASTM B 26/B 26M - Standard Specification for Aluminum-Alloy Sand Castings; 2002.

G. ASTM B 85 - Standard Specification for Aluminum-Alloy Die Castings; 2002.

H. AWS A2.4 - Standard Symbols for Welding, Brazing, and Nondestructive Examination; American Welding Society; 1998.

I. AWS D1.1 - Structural Welding Code - Steel; American Welding Society; 2004.

J. SSPC-Paint 15 - Steel Joist Shop Primer; Society for Protective Coatings; 1999 (Ed. 2000).

K. SSPC-Paint 20 - Zinc-Rich Primers (Type I, "Inorganic," and Type II, "Organic"); Society for Protective Coatings; 2002.

L. SSPC-SP 2 - Hand Tool Cleaning; Society for Protective Coatings; 1982 (Ed. 2000).

### 1.04 SUBMITTALS

A. See Division 01 - Administrative Requirements, for submittal procedures.

B. Shop Drawings: Indicate profiles, sizes, connection attachments, reinforcing, anchorage, size and type of fasteners, and accessories. Include erection drawings, elevations, and details where applicable.

### 1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than three years of documented experience.

B. Installer Qualifications: Company specializing in performing the work of this section with minimum three years of experience.

### 1.06 MOCK-UP

A. Locate where directed.

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

**1.07 PROJECT CONDITIONS**

A. Coordinate downspout boot installation with size, location and installation of service utilities.

B. Sequence installation to ensure utility connections are achieved in an orderly and expeditious manner.

**1.08 WARRANTY**

A. See Division 01 - Closeout Submittals, for additional warranty requirements.

**PART 2 PRODUCTS**

**2.01 MANUFACTURERS**

A. Basis of Design: Barry Pattern & Foundry Company, Inc.; Product Cast Iron B25A - 3'-0" x 4" x 6".

B. East Jordan Iron Works, Inc.

C. McKinley Iron Works, Inc.

D. Neenah Foundry Company.

E. Substitutions: See Division 01 - Product Requirements.

**2.02 METALS, GENERAL**

A. Metal Surfaces, General: Provide material with smooth surfaces, without seam marks, roller marks, rolled trade names, stains, discolorations, or blemishes.

B. Brackets, Flanges, and Anchors: Cast or framed metal of same type of material and finish as supported rails, unless otherwise indicated.

C. Cast iron downspout boots to be painted primer gray.

**PART 3 EXECUTION**

**3.01 EXAMINATION**

A. Verify that site drainage and downspout locations are coordinated.

B. Verify that field conditions are acceptable and are ready to receive work.

**3.02 PREPARATION**

A. Supply setting templates to the appropriate entities for steel items required to be cast into concrete or embedded in masonry.

**3.03 INSTALLATION**

A. Install in accordance with manufacturer's instructions.

B. Install items plumb and level, accurately fitted, free from distortion or defects.

**3.04 ERECTION TOLERANCES**

A. Maximum Variation From Plumb: 1/4 inch per story, non-cumulative.

B. Maximum Offset From True Alignment: 1/4 inch.

C. Maximum Out-of-Position: 1/4 inch.

**3.05 CLEANING**

A. Protect installed downspout boot from subsequent construction operations.

**END OF SECTION**

# SECTION 05 8000
# EXPANSION JOINT COVER ASSEMBLIES

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Expansion joint assemblies for floor, wall, ceiling and soffit surfaces.

### 1.02 RELATED SECTIONS

A. Section 03 1000 - Concrete Forming and Accessories: Placement of joint assembly frames in formwork.

B. Section 03 3000 - Cast-In-Place Concrete: Expansion and contraction joints in exterior concrete joints.

C. Section 04 2100 - Brick Masonry: Building expansion joints.

D. Section 04 2200 - Concrete Unit Masonry: Building expansion joints.

E. Section 05 5000 - Metal Fabrications: Custom fabricated steel expansion and control joint devices.

F. Section 07 7160 - Roof Expansion Assemblies: Roof expansion joints.

G. Section 07 9005 - Joint Sealers: Expansion and control joint finishing utilizing a sealant and bond breaker.

H. Section 09 2116 - Gypsum Board Assemblies: Soffit and wall expansion joints.

I. Section 09 5100 - Acoustical Ceilings: Acoustical ceiling expansion joints.

### 1.03 REFERENCES

A. ASTM B 221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes; 1996.

B. ASTM B 308/B 308M - Standard Specification for Aluminum-Alloy 6061-T6 Standard Structural Profiles; 1996.

### 1.04 SUBMITTALS

A. See Division 01 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide joint assembly profiles, profile dimensions, anchorage devices, available colors and finish .

C. Shop Drawings: Indicate joint and splice locations, miters, layout of the work, affected adjacent construction, anchorage locations .

1. Placement Drawings: Include line diagrams showing entire route of each joint system, plans, elevations, sections, details, joints, splices, locations of joints and splices, planes, provide Isometric Drawings depicting how components interconnect to achieve continuity of joint covers and fillers.

D. Samples: Submit two samples minimum 8 inch long, illustrating profile, dimension, color, and finish selected.

E. Samples for Verification: Full-size units 6 inches long of each type of joint system indicated; in sets for each finish, color, texture, and pattern specified, showing the full range of variations expected in these characteristics.

F. Product Test Reports: From a qualified testing agency indicating architectural joint systems comply with requirements, based on comprehensive testing of current products.

G. Research/Evaluation Reports: Evidence of architectural joint system’s compliance with building code in effect for Project, from a model code organization acceptable to authorities having jurisdiction.

H. Manufacturer's Installation Instructions: Indicate rough-in sizes; provide templates for cast-in or placed frames or anchors; required tolerances for item placement.

**1.05 ENVIRONMENTAL REQUIREMENTS**

A. Weather conditions:
   1. Install no materials under adverse weather conditions, or when temperatures are below or above those recommended by manufacturer.
   2. Proceed with work only when forecasted weather conditions are favorable for curing and development of high early bond strength.
   3. Wherever joint width is affected by ambient temperature variations, install materials only when temperatures are in lower third of manufacturer's recommended installation temperature.
   4. Protect joints from water, damage and debris due to traffic or environmental conditions.

**1.06 DELIVERY, STORAGE, AND HANDLING**

A. Deliver, handle, and store expansion control assemblies and materials by means that will prevent mechanical damage and contamination by other materials.

B. Store materials in original containers in dry location.

**1.07 QUALITY ASSURANCE**

A. Field Measurements: Verify compliance with manufacturer's requirements.

B. Qualifications:
   1. Manufacturer: Furnish assemblies from a single manufacturer with a minimum of five years experience with fabricating joint assemblies.
   2. Installer: Firm with a minimum of five years experience in installation of systems similar to those required by this project; installer shall be acceptable to manufacturer.

C. Joint cover system shall allow unrestricted movement of joint without disengagement of cover.

D. Design criteria; fire-rated assemblies:
   1. Fire-rated expansion joint assemblies shall equal or exceed time rating indicated when tested in accordance with ASTM E119-05a and UL 263. Testing shall have been conducted by an independent testing agency acceptable to authorities having jurisdiction.

**PART 2 PRODUCTS**

**2.01 MANUFACTURERS**

A. Basis of Design Products: The design for each architectural joint system specified in Part 2 "Architectural Joint Systems" Article below is based on the product named. Subject to compliance with requirements, provide either the named products or comparable products by one of the other manufacturers listed.

B. Aluminum: ASTM B 221 (ASTM B 221M) , alloy 6063-T5 for extrusions; ASTM B 209 (ASTM B 209M), alloy 6061-T6 for sheet and plate.
   1. Apply manufacturer's standard anchors, clips , fasteners, set screws, spacers, flexible moisture barrier and filler materials, drain tubes, lubricants, adhesives, and other accessories for complete installations.

C. Accessories: Manufacturer's standard anchors, clips, fasteners, set screws, spacers, flexible moisture barrier and filler materials, drain tubes, lubricants, adhesives, and other accessories compatible with material in contact, as indicated or required for complete installations.

**2.02 ARCHITECTURAL JOINT SYSTEMS**

A. General: Provide joint systems of design, basic profile, materials, and operation indicated. Provide units with the capability to accommodate joint widths indicated and variations in adjacent surfaces.
   1. Furnish units in longest practicable lengths to minimize number of end joints. Provide hairline mitered corners where joint changes directions or abuts other materials.
   2. Include closure materials and transition pieces, tee-joints, corner, curbs, cross-connections, and other accessories as required to provide continuous joint systems.

3. Frame for Strip Seals: Designed with semi-closed cavity that provides a mechanical lock for seals of type indicated.
4. Public Arena Seals: Non-slip deals designed for installation on treads and risers and to lie flat with adjacent surfaces, and complying with ADA guidelines for public areas.
5. Fire-resistant assemblies:
   a. Assembles shall meet hourly ratings indicated on drawings; tested in accord with ASTM E119-95a.
   b. Fire rated joint covers shall have been tested by an independent, nationally recognized testing and listing entity in accordance with ANSI/UL No. 263, ASTM E 119, UL 2079, or ASTM E 1966, including hose stream test, where applicable, at the full rated period. Covers shall be listed with an independent, nationally recognized testing and listing entity. Fire rating shall be not less than the fire rating of adjacent construction.
   c. Fire barrier and seal for interior horizontal pedestrian traffic and roof joints.
      1) Basis of Design Product: FF2H02 (or FV2H02 at corners) by Balco Inc. or a comparable product of one of the following:
         (a) Conspec Systems
         (b) MM Systems Corp.
         (c) Watson Bowman Acme
   d. Fire barrier and seal for interior vertical wall joints.
      1) Basis of Design Product: 2WFB-2 by Balco Inc. or a comparable product of one of the following:
         (a) Conspec Systems
         (b) MM Systems Corp.
         (c) Watson Bowman Acme

B. Metal frames and compression seals for exterior joints on walls.
   1. Basis of Design Product: 9W-2 (or 9WC at corners) by Balco Inc. or a comparable product of one of the following:
      a. Conspec Systems.
      b. MM Systems Corp.
      c. Watson Bowman Acme.
   2. Movement Capability: 100%
   3. Type of Movement Capability: Expansion and contraction.
   4. Cyclic-Movement-Test-Response Characteristics: No evidence of visual fatigue, inability to cycle between designated joint widths, or other types of failure as determined by testing products identical to those indicated per ASTM E 1399 including Appendix X3.
   5. Exposed Cover Material: Anodized aluminum, color to be selected.
   6. Exposed Frame Material: Same material and finish as exposed cover material.
   7. Secondary Seal: BBSW Pre--compressed Secondary Seal or equal.

C. Metal frames and covers for interior joints on walls.
   1. Basis of Design Product: 6TW-2 (or 6TWC-2 at corners) by Balco, Inc. or a comparable product of one of the following:
      a. Conspec Systems.
      b. MM Systems Corp.
      c. Watson Bowman Acme.
   2. Movement Capability: 100%
   3. Type of Movement Capability: Expansion and contraction.
   4. Cyclic-Movement-Test-Response Characteristics: No evidence of visual fatigue, inability to cycle between designated joint widths, or other types of failure as determined by testing products identical to those indicated per ASTM E 1399 including Appendix X3.
   5. Exposed Cover Material: Anodized aluminum, color to be selected.
   6. Exposed Frame Material: Same material and finish as exposed cover material.
   7. Secondary Seal: BBSW Pre--compressed Secondary Seal or equal.

D. Metal frames and covers for interior pedestrian traffic joints.
   1. Basis of Design Product: NBA-2 (or NBAL-2 at corners) by Balco, Inc. or a comparable product of one of the following:
      a. Conspec Systems.
      b. MM Systems Corp.
      c. Watson Bowman Acme.
   2. Movement Capability: 50%
   3. Type of Movement Capability: Expansion and contraction.
   4. Cyclic-Movement-Test-Response Characteristics: No evidence of visual fatigue, inability to cycle between designated joint widths, or other types of failure as determined by testing products identical to those indicated per ASTM E 1399 including Appendix X3.
   5. Exposed Cover Material: Mill aluminum.
   6. Exposed Frame Material: Same material and finish as exposed cover material.
   7. Moisture Barrier: Provide manufacturer's standard unit.

E. Metal frames and covers for exterior pedestrian traffic joints.
   1. Basis of Design Product: XH4FS-2g (floor to floor joint) or XH4VS-2g (floor to wall joint) by Balco, Inc. or a comparable product of one of the following:
      a. Conspec Systems.
      b. MM Systems Corp.
      c. Watson Bowman Acme.
   2. Movement Capability: 50%
   3. Type of Movement Capability: Expansion and contraction.
   4. Cyclic-Movement-Test-Response Characteristics: No evidence of visual fatigue, inability to cycle between designated joint widths, or other types of failure as determined by testing products identical to those indicated per ASTM E 1399 including Appendix X3.
   5. Exposed Cover Material: Mill aluminum.
   6. Exposed Frame Material: Same material and finish as exposed cover material.
   7. Moisture Barrier: Provide manufacturer's standard unit.

F. Metal frames and covers for interior joints on gypsum board ceilings.
   1. Basis of Design Product: 75FWG-2 (or 75FWGC-2 at corners) by Balco, Inc. or a comparable product of one of the following:
      a. Conspec Systems.
      b. MM Systems Corp.
      c. Watson Bowman Acme.
   2. Movement Capability: 100%
   3. Type of Movement Capability: Expansion and contraction.
   4. Cyclic-Movement-Test-Response Characteristics: No evidence of visual fatigue, inability to cycle between designated joint widths, or other types of failure as determined by testing products identical to those indicated per ASTM E 1399 including Appendix X3.
   5. Exposed Cover Material: White elastomeric.
   6. Exposed Frame Material: Aluminum.
   7. Moisture Barrier: Provide manufacturer's standard unit.

G. Metal frames and covers for interior joints on suspended acoustical ceilings.
   1. Basis of Design Product: AC-2 (or ACL-2 at corners) by Balco, Inc. or a comparable product of one of the following:
      a. Conspec Systems.
      b. MM Systems Corp.
      c. Watson Bowman Acme.
   2. Movement Capability: 100%
   3. Type of Movement Capability: Expansion and contraction.
   4. Cyclic-Movement-Test-Response Characteristics: No evidence of visual fatigue, inability to cycle between designated joint widths, or other types of failure as determined by testing

products identical to those indicated per ASTM E 1399 including Appendix X3.
5. Exposed Cover Material: White elastomeric.
6. Exposed Frame Material: Aluminum.
7. Moisture Barrier: Provide manufacturer's standard unit.

**2.03 FABRICATION**

A. Joint Covers: Aluminum cover plate, aluminum frame construction, retainers with resilient elastomeric filler strip, designed to permit plus or minus 50 percent joint movement with full recovery, flush mounted.

B. Back paint components in contact with cementitious materials.

C. Galvanize embedded ferrous metal anchors and fastening devices.

D. Shop assemble components and package with anchors and fittings.

E. Provide joint components in single length wherever practical. Minimize site splicing.

**2.04 FINISHES, GENERAL**

A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

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

**2.05 ALUMINUM FINISHES**

A. Finish designations prefixed by AA comply with the system established by the Aluminum Association for designating aluminum finishes.

B. Class II, Clear Anodic Finish: AA-M12C22A31 (Mechanical Finish; non-specular as fabricated ; Chemical Finish: etched, medium matte; Anodic Coating: Architectural Class II, clear coating 0.010 mm or thicker) comply with AAMA 607.1.

**PART 3 EXECUTION**

**3.01 EXAMINATION**

A. Verify that joint preparation and affected dimensions are acceptable.

**3.02 PREPARATION**

A. Provide anchoring devices for installation and embedding under Section 03 1000 - Concrete Forming and Accessories.
   1. Provide templates and rough-in measurements.

B. Prepare surfaces to receive expansion joint systems in accord with manufacturer's written product data and approved shop drawings.

C. Clean surfaces adjacent to and including joints prior to application of adhesives. Repair surfaces as required to provide a smooth, even sound surface. Surfaces shall be free of debris, oils, dust or other deleterious materials.

D. Coordinate and furnish anchorages, Placement Drawings, and instructions for installing joint systems to be embedded in or anchored to concrete or to have recesses formed onto edges of concrete slab for later placement and grouting-in of frames

E. Fastening to In-Place Construction: Provide anchorage devices and fasteners where necessary to secure joint systems to in-place construction, including threaded fasteners with drilled-in expansion shields for masonry and concrete where anchoring members are not embedded in concrete. Provide fasteners of metal, type and size to suit type of construction indicated and to provide for secure attachment of joint system.

**3.03 INSTALLATION**

A. Install components and accessories in accordance with manufacturer's written instructions.

B. Align work plumb and level, flush with adjacent surfaces.

C. Rigidly anchor to substrate to prevent misalignment.

D. Coordinate installation of architectural joint assembly materials and associated work so complete assemblies comply with assembly performance requirements.

E. Terminate exposed ends of exterior architectural joint assemblies with factory-fabricated termination devices to maintain waterproof system.

F. Install factory-fabricated transitions between building expansion-joint cover assemblies and roof expansion-joint assemblies, specified in Division 07 Section “Roof Expansion Assemblies,” to provide continuous, uninterrupted, watertight construction.

G. Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required to install joint systems.
   1. Install joint cover assemblies in true alignment and proper relationship to joints and adjoining finished surfaces measured from established lines and levels.
   2. Allow adequate free movement for thermal expansion and contraction of metal to avoid buckling.
   3. Set covers in horizontal surfaces at elevations that place exposed surfaces flush with adjoining finishes.
   4. Locate wall, ceiling, and soffit covers in continuous contact with adjacent surfaces.
   5. Securely attach in place with required accessories.
   6. Locate anchors at interval recommended by manufacturer, but not less than 3 inches from each end and not more than 24 inches o.c.

H. Fire-rated systems: Install fire-resistant barriers in conjunction with expansion joint covers to achieve the specified fire rated system. In accord with manufacturer's fire barrier product data as required for installation.

I. Preassembled interior joints: Secure joint assembly in place with anchors spaced at minimum 2'-0" o.c.

J. Continuity: Maintain continuity of joint systems with minimum number of end joints that will accommodate thermal expansion and contraction of metal to avoid buckling of frames. Adhere flexible filler materials, if any, to frames with adhesive or pressure-sensitive tape as recommended by manufacturer.

K. Joint Systems with Seals: Seal end joints within continuous runs and joints at transitions according to manufacturer’s written instructions to provide a watertight installation.

L. Remove excess and misplaced sealants as work progresses.

**3.04 PROTECTION OF FINISHED WORK**

A. Do not permit traffic over unprotected floor joint surfaces.

B. Protect aluminum surfaces from contact with lime, mortar, cement, acids and other harmful substances as well as from careless handling, storage or machining.

C. Do not remove protective covering until finish work in adjacent areas is complete. When protective covering is removed, clean exposed metal surfaces to comply with manufacturer's written instructions.

**END OF SECTION**

# SECTION 06 1000
# ROUGH CARPENTRY

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Structural dimension lumber framing.

B. Preservative treated wood materials.

C. Fire retardant treated wood materials.

D. Concealed wood blocking, nailers, and supports.

### 1.02 RELATED REQUIREMENTS

A. Section 03 3000 - Cast-In-Place Concrete: Setting anchors in concrete.

B. Division 05: Structural Steel.

C. Section 07 1400 - Fluid-Applied Waterproofing: Miscellaneous blocking.

D. Section 06 4100 - Architectural Wood Casework: Miscellaneous blocking.

E. Section 07 2100 - Thermal Insulation: Extruded polystyrene board insulation.

F. Section 07 5400 - MA Thermoplastic Membrane Roofing: Miscellaneous blocking.

G. Section 08 4313 - Aluminum-Framed Storefronts.

H. Section 12 3450 - Wood Laboratory Casework: Miscellaneous blocking.

I. Section 12 3530 - Musical Instrument Storage System: Miscellaneous blocking.

J. Section 12 3550 - Manufactured Casework: Miscellaneous blocking.

### 1.03 REFERENCE STANDARDS

A. AWC (WFCM) - Wood Frame Construction Manual for One- and Two-Family Dwellings 2018, with Errata (2019).

B. AFPA (WFCM) - Wood Frame Construction Manual for One- and Two-Family Dwellings 2012.

C. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware 2016a.

D. ASTM D2898 - Standard Practice for Accelerated Weathering of Fire-Retardant-Treated Wood for Fire Testing 2010 (Reapproved 2017).

E. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials 2023.

F. AWPA C9 - Plywood -- Preservative Treatment by Pressure Processes; American Wood Protection Association; 2003.

G. AWPA C20 - Structural Lumber -- Fire Retardant Treatment by Pressure Processes; American Wood-Protection Association; 2003.

H. AWPA C27 - Plywood -- Fire-Retardant Treatment by Pressure Processes; American Wood-Protection Association; 2002.

I. AWPA U1 - Use Category System: User Specification for Treated Wood 2022.

J. PS 1 - Structural Plywood 2019.

K. PS 20 - American Softwood Lumber Standard 2021.

L. NLGA - National Lumber Grades Authority.

M. SPIB (GR) - Standard Grading Rules 2021.

N. WCLIB (GR) - Standard Grading Rules for West Coast Lumber No. 17 2018.

O. WWPA G-5 - Western Lumber Grading Rules 2021.

**1.04 DEFINITIONS**

A. Rough Carpentry: Carpentry work not specified in other Sections and not exposed.

B. SPIB - Southern Pine Inspection Bureau.

**1.05 SUBMITTALS**

A. See Division 01 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide technical data on wood preservative materials, application instructions, and fire-retardant treatment.

C. Preservative-treated wood certification: Submit for Gardner Spencer Smith Tench and Jarbeau, PC's information only. Submit certification by treating plant, stating chemicals and process used, net amount of salts retained, conformance with applicable standards and moisture content after treatment.

D. Fire-retardant treatment certification: Submit for Gardner Spencer Smith Tench and Jarbeau, PC's information only. Submit certification by treating plant that fire-retardant treatment materials comply with governing ordinances and that treatment will not bleed through finished surfaces.

E. Manufacturer's Certificate: Certify that wood products supplied for rough carpentry meet or exceed specified requirements.

F. Warranty: Submit manufacturer warranty and ensure that forms have been completed in Union County Commissioner's Office's name and registered with manufacturer.

**1.06 QUALITY ASSURANCE**

A. Lumber: Comply with PS 20 for lumber and PS 1-95 for construction and industrial plywood and approved grading rules and inspection agencies.
   1. Lumber of other species or grades, or graded by other agencies, is acceptable provided structural and appearance characteristics are equivalent to or better than products specified.

B. Design standards; spans, connections and design criteria for members not otherwise indicated shall comply with the following:
   1. American Institute of Timber Construction (AITC), "Timber Construction Manual."
   2. National Forest Products Association (NFPA):
      a. "National Design Specifications for Wood Construction," 1986 Edition, with Supplements.
      b. "Design Values for Wood Construction," July, 1986 Edition, with Supplements.
      c. "Span Tables for Joist and Rafters," 1977 Edition, with Supplements.

C. Product Identification:
   1. Lumber: Lumber shall bear the grade stamp of a listed grading rules association certified by the Board of Review of American Lumber Standards Committee (ALSC), identifying species or species combination, grade, moisture condition at time of surfacing, mill of origin and grading agency.
   2. Plywood: Plywood shall bear the stamp of the American Plywood Association (APA), indicating type, grade, thickness, exposure durability, span rating, agency compliance, species group, edging, finish and glue type.
   3. Preservative-treated wood products: Preservative-treated lumber and plywood shall bear the quality standard stamp of the applicator, indicating preservative type, exposure conditions, year of treatment, treatment plant and treatment supervising agency.
   4. Fire-retardant-treated wood products: Fire-retardant-treated lumber and plywood shall bear the stamp of Underwriters Laboratories, Inc., (UL) or other approved independent inspection agency, indicating treatment type or name, flame spread and treatment plant.

D. Fire-Retardant Treated Wood: Mark each piece of wood with producer's stamp indicating compliance with specified requirements.

1. Obtain each type of fire-retardant-treated wood product through one source from a single producer.

E. Preservative-Treated Wood: Provide lumber and plywood marked or stamped by an ALSC-accredited testing agency, certifying level and type of treatment in accordance with AWPA standards.

**1.07 DELIVERY, STORAGE, AND HANDLING**

A. General: Cover wood products to protect against moisture. Support stacked products to prevent deformation and to allow air circulation.

B. Fire Retardant Treated Wood: Prevent exposure to precipitation during shipping, storage, or installation.

C. Stack lumber, plywood, and other panels; place spacers between each bundle to provide air circulation. Provide for air circulation around stacks and under coverings.

D. Store no seasoned materials in wet or damp portions of building.

E. Protect sheet materials from breaking corners and damaging surfaces.

**1.08 WARRANTY**

A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.

**PART 2 PRODUCTS**

**2.01 GENERAL REQUIREMENTS**

A. Dimension Lumber: Comply with PS 20 and requirements of specified grading agencies.
   1. If no species is specified, provide any species graded by the agency specified; if no grading agency is specified, provide lumber graded by any grading agency meeting the specified requirements.
   2. Grading Agency: Any grading agency whose rules are approved by the Board of Review, American Lumber Standard Committee (www.alsc.org) and who provides grading service for the species and grade specified; provide lumber stamped with grade mark unless otherwise indicated.

B. Lumber fabricated from old growth timber is not permitted.

**2.02 DIMENSION LUMBER FOR CONCEALED APPLICATIONS**

A. Grading Agency: Southern Pine Inspection Bureau, Inc; SPIB (GR).
   1. Grade-stamped commercial softwood conforming to PS 20-70 and referenced grading rules, unless otherwise indicated.

B. Sizes: Nominal sizes as indicated on drawings, S4S.

C. Moisture Content: S-dry or MC19.

D. Stud Framing (2 by 2 through 2 by 6):
   1. Species: Southern Pine.
   2. Grade: No. 2.

E. Joist, Rafter, and Small Beam Framing (2 by 6 through 4 by 16):
   1. Machine stress-rated (MSR) as follows:
      a. Fb-single (minimum extreme fiber stress in bending): 1350 psi.
      b. E (minimum modulus of elasticity): 1,300,000 psi.
   2. Species: Southern Pine.

F. Miscellaneous Framing, Blocking, Nailers, Grounds, and Furring:
   1. Lumber: S4S, No. 2 or Standard Grade.
   2. Boards: Standard or No. 3.

G. Miscellaneous Blocking, Furring, Nailers, and Framing: Pressure-preservative-treated or fire-retardant-treated as specified here-in:
   1. Lumber: S4S, No. 2 or Standard Grade.

2. Boards and general utility purposes: Standard or No. 3.

**2.03 CONSTRUCTION PANELS**

A. Communications and Electrical Room Mounting Boards: PS 1 A-D plywood, or medium density fiberboard; 3/4 inch thick; flame spread index of 25 or less, smoke developed index of 450 or less, when tested in accordance with ASTM E84.

B. Plywood wall sheathing: APA Rated Sheathing, Exposure 1, Group I, thickness indicated; pressure-preservative-treated or fire-retardant-treated as specified herein. Span ratings and load capacities shall be in accordance with fire-retardant-treatment manufacturer's design values for thickness required.

C. Other Applications:
1. Plywood Concealed From View But Located Within Exterior Enclosure: PS 1, C-C Plugged or better, Exterior grade.
2. Plywood Exposed to View But Not Exposed to Weather: PS 1, A-D, or better.
3. Other Locations: PS 1, C-D Plugged or better.

**2.04 ACCESSORIES**

A. Fasteners and Anchors: Provide fasteners of size and type indicated that comply with requirements specified in this Article for material and manufacture.
1. Metal and Finish: Hot-dipped galvanized steel complying with ASTM A153/A153M for high humidity and preservative-treated wood locations, unfinished steel elsewhere.
2. Nails, Brads, and Staples: ASTM F 1667.
3. Power-Driven Fasteners: CABO NER-272.
4. Wood Screws: ASMEB18.6.1.
5. Screws for Fastening to Cold-Formed Metal Framing: ASTM C 954, except with wafer heads and reamer wings, length as recommended by screw manufacturer for material being fastened.
6. Lag Bolts: ASME B18.2.L.
7. Bolts: Steel bolts complying with ASTM A 307, Grade A; with ASTM A 563 hex nuts and, where indicated, flat washers.
8. Expansion Anchors: Anchor bolt and sleeve assembly of material indicated below with capability to sustain, without failure, a load equal to 6 times the load imposed when installed in unit masonry assemblies and equal to 4 times the load imposed when installed in concrete as determined by testing per ASTM E 488 conducted by a qualified independent testing and inspecting agency.
   a. Material: Carbon-steel components, zinc plated to comply with ASTM B 633, Class Fe/Zn 5.
9. Anchors: Toggle bolt type for anchorage to hollow masonry.

B. Adhesives for Field Gluing Panels to Framing: Formulation complying with APAAFG-01 that is approved for use with type of construction panel indicated by both adhesive and panel manufacturers.

**2.05 FACTORY WOOD TREATMENT**

A. General: Unless specifically indicated to be preservative-treated, provide fire-retardant-treated materials.

B. Treated Lumber and Plywood: Comply with requirements of AWPA U1 - Use Category System for wood treatments determined by use categories, expected service conditions, and specific applications.
1. Fire-Retardant Treated Wood: Mark each piece of wood with producer's stamp indicating compliance with specified requirements.
2. Preservative-Treated Wood: Provide lumber and plywood marked or stamped by an ALSC-accredited testing agency, certifying level and type of treatment in accordance with AWPA standards.

C. Fire Retardant Treatment:

1. Manufacturers:
   a. Basis of Design: Lonza Wood Protection; Product Dricon: www.wolmanizedwood.com.
   b. Chemical Specialties, Inc: www.rockwoodspecialties.com.
   c. Hoover Treated Wood Products, Inc: www.frtw.com.
   d. Substitutions: See 01 6000 - Product Requirements.
2. Exterior Type: AWPA U1, Category UCFB, Commodity Specification H, chemically treated and pressure impregnated; capable of providing a maximum flame spread index of 25 when tested in accordance with ASTM E84, with no evidence of significant combustion when test is extended for an additional 20 minutes both before and after accelerated weathering test performed in accordance with ASTM D2898.
   a. Kiln dry wood after treatment to a maximum moisture content of 19 percent for lumber and 15 percent for plywood.
   b. Do not use treated wood in direct contact with the ground.
3. Interior Type A: AWPA U1, Use Category UCFA, Commodity Specification H, low temperature (low hygroscopic) type, chemically treated and pressure impregnated; capable of providing a maximum flame spread index of 25 when tested in accordance with ASTM E84, with no evidence of significant combustion when test is extended for an additional 20 minutes.
   a. Kiln dry wood after treatment to a maximum moisture content of 19 percent for lumber and 15 percent for plywood.
   b. Treat rough carpentry items as indicated .
   c. Do not use treated wood in applications exposed to weather or where the wood may become wet.

D. General clarification, all drawings: All wood blocking within the building enclosure is to be fire-retardant treated.

E. Use treatment that does not promote corrosion of metal fasteners.

F. Exterior grade plywood sheathing detailed as support for exterior signage in parapet walls is to be fire-retardant treated.

G. Preservative Treatment:
1. Manufacturers:
   a. Basis of Design: Lonza Wood Protection; Product Wolman E; www.wolmanizedwood.com.
   b. Viance, LLC: www.treatedwood.com.
   c. Osmose Wood Oreserving, Inc: www.osmose.com.
   d. Substitutions: See Division 01 - Product Requirements.

H. Preservative Pressure Treatment of Lumber Above Grade: AWPA U1, Use Category UC3B, Commodity Specification A using waterborne preservative.
1. Kiln dry lumber after treatment to maximum moisture content of 19 percent.
2. Treat lumber in contact with roofing, flashing, or waterproofing.
3. Treat lumber in contact with masonry or concrete.
4. Treat lumber less than 18 inches above grade.
   a. Treat lumber in other locations as indicated.
5. Preservative Pressure Treatment of Plywood Above Grade: AWPA U1, Use Category UC2 and UC3B, Commodity Specification F using waterborne preservative.
   a. Kiln dry plywood after treatment to maximum moisture content of 19 percent.
   b. Treat plywood in contact with roofing, flashing, or waterproofing.
   c. Treat plywood in contact with masonry or concrete.
   d. Treat plywood less than 18 inches above grade.
   e. Treat plywood in other locations as indicated.

I. Preservative Pressure Treatment of Lumber in Contact with Soil: AWPA U1, Use Category UC4A, Commodity Specification A using waterborne preservative.

1. Preservative for Field Application to Cut Surfaces: As recommended by manufacturer of factory treatment chemicals for brush-application in the field.
2. Restrictions: Do not use lumber or plywood treated with chromated copper arsenate (CCA) in exposed exterior applications subject to leaching.

J. General clarification, all drawings: All wood blocking outside the building enclosure is to be preservative pressure treated.

K. Exterior grade plywood sheathing detailed as back-up in parapet walls is to be preservative pressure treated.

**PART 3 EXECUTION**

**3.01 PREPARATION**

A. Coordinate installation of rough carpentry members specified in other sections.

**3.02 INSTALLATION - GENERAL**

A. Select material sizes to minimize waste.

B. Reuse scrap to the greatest extent possible; clearly separate scrap for use on site as accessory components, including: shims, bracing, and blocking.

C. Where treated wood is used on interior, provide temporary ventilation during and immediately after installation sufficient to remove indoor air contaminants.

D. Set rough carpentry to required levels and lines, with members plumb, true to line, cut, and fitted. Fit rough carpentry to other construction; scribe and cope as needed for accurate fit. Locate nailers, blocking and similar supports to comply with requirements for attaching other construction.

E. Do not use materials with defects that impair quality of rough carpentry or pieces that are too small to use with minimum number of joints or optimum joint arrangement.

F. Apply field treatment complying with AWPA M4 to cut surfaces of preservative-treated lumber and plywood.

G. Securely attach rough carpentry work to substrate by anchoring and fastening as indicated, complying with the following:
1. CABO NER-272 for power-driven fasteners.
2. Published requirements of metal framing anchor manufacturer.
3. Table 602.3(1), "Fastener Schedule for Structural Members," and Table 602.3(2), "Alternate Attachments," in the International One- and Two-Family Dwelling Code.

H. Select fasteners of size that will not fully penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections between members. Install fasteners without splitting wood; predrill as required.

**3.03 WORKMANSHIP**

A. Install wood framing and carpentry work cut square on bearings, fitted and set to required lines and levels, and secured in place.

B. Lay out the work to provide correct openings to receive work of other trades.

C. Plates, blocking, nailers and miscellaneous framing:
1. Provide 2" nominal thickness members (concealed within metal stud assemblies) to support and secure finishing materials, fixtures, accessories, partitions, specialty items and trim (i.e. shelving, wall mounted coat hook units, marker/chalk/tack boards, toilet accessories, etc.) Provide fire-retardant-treated wood at rated wall assemblies.

D. Bolt to structural steel or metal framing at 4'-0" o.c., maximum.

E. Secure to concrete and masonry using cast-in bolts, powder-activated stud, sleeve or wedge type anchors spaced 4'-0" o.c., maximum.

F. Provide anchors within 3" of ends of members.

G. Provide linear runs in maximum practicable lengths, with joints in multiple members offset 3'-0", minimum.

H. Around roof perimeter and at roof penetrations, provide blocking equal to roof insulation thickness. Attach through decking into structural members at 2'-0" o.c., maximum, starting within 3" of each end. Space ends 1/2" for venting.

**3.04 SHEET MATERIAL INSTALLATION**

A. Plywood wall sheathing: Install with face grain perpendicular or parallel to supports. Terminate panels over supports. Stagger end joints of adjacent panels.
   1. Allow 1/8" gap between end and edge joints for expansion and contraction.
   2. Space fasteners at 6" o.c. maximum along supported panel edges and at 1'-0" o.c. maximum at intermediate supports.
   3. Attach plywood to cold formed metal framing using self-tapping screws, as specified in Gypsum Board Assemblies Section.

**3.05 FRAMING INSTALLATION**

A. Set structural members level, plumb, and true to line. Discard pieces with defects that would lower required strength or result in unacceptable appearance of exposed members.

B. Make provisions for temporary construction loads, and provide temporary bracing sufficient to maintain structure in true alignment and safe condition until completion of erection and installation of permanent bracing.

C. Install structural members full length without splices unless otherwise specifically detailed.

D. Comply with member sizes, spacing, and configurations indicated, and fastener size and spacing indicated, but not less than required by applicable codes and AWC (WFCM) Wood Frame Construction Manual.

E. Construct double joist headers at floor and ceiling openings and under wall stud partitions that are parallel to floor joists; use metal joist hangers unless otherwise detailed.

F. Frame wall openings with two or more studs at each jamb; support headers on cripple studs.

G. Construct corners and intersections with three or more studs. Provide blocking and framing as indicated and as required to support facing materials, fixtures, specialty items, and trim.

H. Do not splice structural members between supports.

**3.06 FLOOR JOIST FRAMING INSTALLATION**

A. General: Install floor joists with crown edge up and support ends of each member with not less than 1-1/2 inches of bearing. Attach floor joists as follows:
   1. Where supported on wood members, by toe nailing or by using metal framing anchors.
   2. Where framed into wood supporting members, by using wood ledgers as indicated or, if not indicated, by using metal joist hangers.

B. Do not notch in middle third of joists; limit notches to one-sixth depth of joist, one-third at ends. Do not bore holes larger than 1/3 depth of joist; do not locate closer than 2 inches from top or bottom.

C. Provide solid blocking of 2-inch nominal thickness by depth of joist at ends of joists unless nailed to header or band.

D. Lap members framing from opposite sides of beams, girders, or partitions not less than 4 inches or securely tie opposing members together. Provide solid blocking of 2-inch nominal thickness by depth of joist over supports.

E. Provide solid blocking between joists under jamb studs for openings.

F. Provide double joists separated by solid blocking equal to depth of studs above.

G. Provide bridging of type indicated below, at intervals of 96 inches o.c., between joists.
   1. Diagonal wood bridging formed from bevel-cut, l-by-3-inch nominal- size lumber, double-crossed and nailed at both ends to joists.

2. Steel bridging installed to comply with bridging manufacturer's written instructions.

**3.07 BLOCKING, NAILERS, AND SUPPORTS**

A. Provide framing and blocking members as indicated or as required to support finishes, fixtures, specialty items, and trim.
   1. Coordinate locations with other work involved.

B. Attach items to substrates to support applied loading. Recess bolts and nuts flush with surfaces, unless otherwise indicated. Build anchor bolts into masonry during installation of masonry work. Where possible, secure anchor bolts to formwork before concrete placement.

**3.08 INSTALLATION OF CONSTRUCTION PANELS**

A. Communications and Electrical Room Mounting Boards: Secure with screws to studs with edges over firm bearing; space fasteners at maximum 24 inches on center on all edges and into studs in field of board.
   1. At fire-rated walls, install board over wall board indicated as part of the fire-rated assembly.
   2. Where boards are indicated as full floor-to-ceiling height, install with long edge of board parallel to studs.
   3. Install adjacent boards without gaps.

**3.09 SITE APPLIED WOOD TREATMENT**

A. Apply preservative treatment compatible with factory applied treatment at site-sawn cuts, complying with manufacturer's instructions.

B. Allow preservative to dry prior to erecting members.

**3.10 TOLERANCES**

A. Framing Members: 1/4 inch from true position, maximum.

B. Surface Flatness of Floor: 1/8 inch in 10 feet maximum, and 1/4 inch in 30 feet maximum.

C. Variation from Plane (Other than Floors): 1/4 inch in 10 feet maximum, and 1/4 inch in 30 feet maximum.

**3.11 FIELD QUALITY CONTROL**

A. See Section 01 4000 - Quality Requirements, for additional requirements.

**3.12 CLEANING**

A. Waste Disposal: Comply with the requirements of Division 01.
   1. Comply with applicable regulations.
   2. Do not burn scrap on project site.
   3. Do not burn scraps that have been pressure treated.
   4. Do not send materials treated with pentachlorophenol, CCA, or ACA to co-generation facilities or “waste-to-energy” facilities.

B. Do not leave any wood, shavings, sawdust, etc. on the ground or buried in fill.

C. Prevent sawdust and wood shavings from entering the storm drainage system.

**END OF SECTION**

# SECTION 06 2000
# FINISH CARPENTRY

## PART 1 GENERAL

### 1.01 RELATED REQUIREMENTS

A. Section 06 1000 - Rough Carpentry: Support framing, grounds, and concealed blocking.

B. Section 06 4216 - Wood-Veneer Paneling: Shop fabricated custom paneling.

C. Section 09 8450 - Acoustical Specialties: Shop fabricated custom paneling.

D. Section 12 3450 - Wood Laboratory Casework: Miscellaneous blocking.

E. Section 12 3530 - Musical Instrument Storage System: Miscellaneous blocking.

F. Section 12 3550 - Manufactured Casework: Miscellaneous blocking.

### 1.02 REFERENCE STANDARDS

A. APA - Standards of the American Plywood Association.

B. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials 2023.

C. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards, 2nd Edition 2014, with Errata (2016).

D. AWMAC/WI (NAAWS) - North American Architectural Woodwork Standards 2021, with Errata.

E. AWI/AWMAC (QSI) - Architectural Woodwork Quality Standards Illustrated; Architectural Woodwork Institute and Architectural Woodwork Manufacturers Association of Canada; 2005, 8th Ed., Version 2.0.

F. AWPA C2 - Lumber, Timber, Bridge Ties and Mine Ties -- Preservative Treatment by Pressure Processes; American Wood-Preservers' Association; 2003.

G. NFPA - National Fire Protection Association.

H. NHLA G-101 - Rules for the Measurement and Inspection of Hardwood and Cypress 2019.

I. PS 1 - Structural Plywood 2019.

J. UL - Underwriters Laboratories, Inc.

K. WI (MAN) - Manual of Millwork; Woodwork Institute; 2003.

### 1.03 ADMINISTRATIVE REQUIREMENTS

A. Preinstallation Meeting: Convene a preinstallation meeting not less than one week before starting work of this section; require attendance by all affected installers.

B. Sequence installation to ensure utility connections are achieved in an orderly and expeditious manner.

### 1.04 SUBMITTALS

A. See Division 01 - Administrative Requirements for submittal procedures.

B. Product Data:
   1. Provide data on fire retardant treatment materials and application instructions.
   2. Provide instructions for attachment.

C. Shop Drawings: Indicate materials, component profiles, fastening methods, jointing details, accessories, to a minimum scale of 1-1/2 inch to 1 ft.

D. Samples for Verification: For each species and cut of lumber and panel products with nonfactory-applied finish, with 1/2 of exposed surface finished, 50 sq. in. for lumber and 12 inches square for panels.

E. Certificate: Submit labels and certificates required by quality assurance and quality control programs.

**1.05 QUALITY ASSURANCE**

A. Perform work in accordance with AWI Architectural Woodwork Quality Standards Illustrated, Custom grade.

B. Fabricator Qualifications: Shop that employs skilled workers who custom-fabricate products similar to those required for this Project with a minimum of three years documented experience and whose products have a record of successful in-service performance. Shop is certified in AWI's Quality Certification Program.

C. Installers Qualifications: Member in good standing of the Architectural Woodwork Institute (AWI), or the Architectural Woodwork Manufacturers Association of Canada (AWMAC) and familiar with the AWI/AWMAC QSI.

D. Quality Certification: Provide inspection and quality certification of completed custom cabinets in accordance with AWI/AWMAC Quality Certification Program.

E. Source Limitation: Engage a qualified woodworking firm to assume undivided responsibility for production of finish carpentry with sequenced-matched wood veneers.

F. Comply with the following as a minimum requirement:
   1. Douglas fir finish lumber shall be manufactured and graded in accordance with WCLIB - Standard Grading and Dressing Rule No. 17.
   2. Hardwood finish lumber shall be manufactured and graded in accordance with NHLA - Rules for the Measurement and Inspection of Hardwood and Cypress Lumber.
   3. Softwood Plywood: Plywood shall comply with APA - Product Standard PS 1-95. Plywood shall be grade marked by APA.
   4. Finish lumber shall be kiln-dried according to recognized methods for the thickness and species. Lumber one inch thick or less shall be dried to an average moisture content of not more than 15 percent. Lumber 1-1/4 inches to 2 inches in thickness shall be dried to an average moisture content of not more than 19 percent.

G. Fire Test Response Characteristics: Where fire-retardant materials or products are indicated, provide materials and products with specified fire-test-response characteristics as determined by testing identical products per test method indicated by UL, ITS or another testing and inspection agency acceptable to authorities having jurisdiction. Identify with appropriate markings of applicable testing and inspecting agency in the form of separable paper label or, where required by authorities having jurisdiction, imprint on surfaces of material that will be concealed from view after installation.

H. Fabricator Qualifications: Company specializing in fabricating the products specified in this section with minimum five years of documented experience.
   1. Accredited participant in the specified certification program prior to the commencement of fabrication and throughout the duration of the project.

I. Quality Certification:
   1. Provide labels or certificates indicating that the work complies with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS) requirements for grade or grades specified.
   2. Provide designated labels on shop drawings as required by certification program.
   3. Provide designated labels on installed products as required by certification program.
   4. Submit certifications upon completion of installation that verifies this work is in compliance with specified requirements.
   5. Arrange and pay for inspections required for certification.
   6. Replace, repair, or rework all work for which certification is refused.

**1.06 REGULATORY REQUIREMENTS**

A. Conform to applicable code for fire retardant requirements.

**1.07 MOCK-UP**

A. Before fabricating and installing finish carpentry, build mock-ups for each form of construction and finish required to verify selections made under sample Submittals and to demonstrate

aesthetic effects and qualities of materials and execution. Build mock-ups to comply with the following:

1. Build mock-ups in the location and of the size indicated or, if not indicated, as directed by Gardner Spencer Smith Tench and Jarbeau, PC.
2. Notify Gardner Spencer Smith Tench and Jarbeau, PC seven days in advance of dates and times when mock-ups will be installed.
3. Locate where directed.
4. Demonstrate the proposed range of aesthetic effects and workmanship.
5. Obtain Gardner Spencer Smith Tench and Jarbeau, PC's approval of mock-ups before starting interior finish carpentry fabrication.
6. Maintain mock-ups during construction in an undisturbed condition as a standard for judging the completed Work.
7. Mock-up may remain as part of the Work.

**1.08 DELIVERY, STORAGE, AND HANDLING**

A. Protect work from moisture damage.

B. Materials shall be delivered to the Project site in undamaged condition, stored in fully covered, well ventilated areas, and protected from extreme changes in temperature and humidity.

C. Interior millwork and finish carpentry shall not be installed unless interior building temperature and humidity levels are within the ranges recommended by the manufacturer and/or recognized standards.

**1.09 PROJECT CONDITIONS**

A. Environmental Limitations: Do not deliver or install interior finish carpentry until building is enclosed and weatherproof, wet work in space is completed and nominally dry, and HVAC system is operating and maintaining temperature and relative humidity at occupancy levels during the remainder of the construction period.

B. Sequence installation to ensure utility connections are achieved in an orderly and expeditious manner.

C. Coordinate the work with installation of associated and adjacent components.

D. Field measurements: Take field measurements to ascertain exact sizes for millwork fabrication. Indicate exact dimensions on shop drawings.

**PART 2 PRODUCTS**

**2.01 FINISH CARPENTRY ITEMS**

A. Quality Standard: Custom Grade, in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS), unless noted otherwise.

B. Lumber: DOC PS 20 and applicable grading rules of inspection agencies certified by the American Lumber Standards' Committee Board of Review.

C. Hardwood Plywood: HPVA HP-1.

D. Hardboard: AHA A135.4

E. Medium Density Fiberboard: ANSI A208.2, Grade MD.

F. Particleboard: ANSI A208.1, Grade M-2.

G. Moisture content: 19% maximum moisture content at time of permanent closing in of building, except as otherwise specified.

H. Surfacing: Surface four sides (S4S), unless otherwise noted.

I. Grades for exposed and semi-exposed finish carpentry and millwork lumber and plywood are based on AWI Quality Standards, unless otherwise specified. Grades for unexposed work are based on referenced grading rules.

**2.02 INTERIOR STANDING AND RUNNING TRIM**

A. Hardwood Lumber Trim for Transparent Finish (Stain or Clear Finish): Clear, kiln-dried, Finished lumber (S4S).

B. Lumber Trim for Opaque Finish (Painted): Finished lumber (S4S), either finger-jointed or solid lumber, fabricated from any closed grain hardwood.

C. Mouldings: Provide in profiles indicated.

**2.03 LUMBER MATERIALS**

A. Species and grades:
   1. Unexposed millwork framing and blocking: Standard Grade Lumber.

B. Exposed and semi-exposed painted millwork and trim:
   1. Species: Poplar, FAS grade, or White Pine, B and Better grade; kiln-dried.
   2. Cut: Plain sawn.
   3. AWI Lumber Grade: II.

C. Exposed and semi-exposed stained millwork and trim:
   1. Species: Red Oak, FAS grade, kiln-dried.
   2. Cut: Plain sliced.
   3. AWI Lumber Grade: II.

D. Hardwood Lumber: Red Oak species, Rotary Cut sawn, maximum moisture content of 6 percent ; with vertical grain , of quality suitable for transparent finish.
   1. Pencil Sharpener's Size: 3-inch by 5-inch by 3/4-inch.

**2.04 SHEET MATERIALS**

A. Wood Veneer Facing for Shop Applied Transparent Finish: Natural birch, veneer grade as specified by quality standard, plain sliced, book veneer match, running assembly match; unless otherwise indicated.
   1. Exposed Vertical Edges: Same species as face veneer.
   2. Construction: Veneer core.
      a. Veneer to be mounted to fire retardant backing.
   3. Glue Bond: Type II (interior).

**2.05 FACTORY WOOD TREATMENT**

A. Treated Lumber and Plywood: Comply with requirements of AWPA U1 - Use Category System for wood treatments determined by use categories, expected service conditions, and specific applications.
   1. Fire-Retardant Treated Wood: Mark each piece of wood with producer's stamp indicating compliance with specified requirements.

B. Fire Retardant Treatment:
   1. Manufacturers:
      a. Basis of Design: Arch Wood Protection, Inc; Product Dricon: www.wolmanizedwood.com.
      b. Chemical Specialties, Inc: www.rockwoodspecialties.com.
      c. Hoover Treated Wood Products, Inc: www.frtw.com.
      d. Osmose, Inc: www.osmose.com.
      e. Substitutions: See 01 6000 - Product Requirements.
   2. Interior Type A: AWPA U1, Use Category UCFA, Commodity Specification H, low temperature (low hygroscopic) type, chemically treated and pressure impregnated; capable of providing a maximum flame spread rating of 25 when tested in accordance with ASTM E 84, with no evidence of significant combustion when test is extended for an additional 20 minutes.
      a. Kiln dry wood after treatment to a maximum moisture content of 19 percent for lumber and 15 percent for plywood.

b. All interior rough carpentry items are to be fire retardant treated.
c. Treat rough carpentry items as indicated .
d. Do not use treated wood in applications exposed to weather or where the wood may become wet.

**2.06 SHELVING AND CLOTHES RODS**

A. Shelving: 3/4 inch boards of same species and grade indicated above for lumber trim for opaque finish.
1. Shelf Cleats: 3/4 by 3-1/2 inch boards or where indicated, 3/4 by 5-1/2 inch boards with holes to receive clothes rods, of same species and grade indicated above for interior lumber trim for opaque finish.
2. Shelf Brackets: Prime painted formed steel with provision to support clothes rod where rod is indicated.
3. Clothes Rods: 1-1/2-inch- diameter, clew-, kiln-dried softwood rods; either douglas fir or southern pine.

**2.07 ADHESIVE**

A. Adhesive: Type recommended by laminate manufacturer to suit application .

**2.08 FASTENINGS**

A. Fasteners: Concealed of size and type to suit application.

B. Concealed Joint Fasteners: Threaded steel.

**2.09 ACCESSORIES**

A. Wood Filler: Solvent base, tinted to match surface finish color.

**2.10 WOOD TREATMENT**

A. Fire Retardant Treatment (FR-S Type): Chemically treated and pressure impregnated; capable of providing flame spread index of 25, maximum, and smoke developed index of 450, maximum, when tested in accordance with ASTM E84; _____ manufactured by _____.

B. Wood Preservative by Pressure Treatment (PT Type): AWPA Treatment C2 using water borne preservative with 0.25 percent retainage.

C. Provide identification on fire retardant treated material.

D. Redry wood after pressure treatment to maximum 15 percent moisture content.

**2.11 FABRICATION**

A. General:
1. The means of fastening various parts together shall be concealed in finished Work. Work, which is curved, shall be fabricated from solid stock, or if veneered, shall be bent to a uniform radius.

B. Shop assemble work for delivery to site.

C. When necessary to cut and fit on site, provide materials with ample allowance for cutting. Provide trim for scribing and site cutting.

D. Wood Moisture Content: Comply with requirements of specified inspection agencies and with manufacturer's written recommendations for moisture content of finish carpentry at relative humidity conditions existing during time of fabrication and in installation areas.

E. Back out or kerf backs of the following members, except members with ends exposed in finished work:
1. Interior standing and running trim, except shoe molds.
2. Wood board paneling.

F. Ease edges of lumber less than 1 inch in nominal thickness to 1/16 inch radius and edges of lumber 1 inch or more in nominal thickness to 1/8 inch radius.

**2.12 SHOP FINISHING**

A. Shop finish sheet materials in accordance with specified quality standard:
   1. Transparent Finish: Transparent conversion varnish, Premium quality, satin gloss sheen.

B. Sand work smooth and set exposed nails and screws.

C. Apply wood filler in exposed and screw indentations.

D. On items to receive transparent finishes, use wood filler that matches surrounding surfaces and is of type recommended for the applicable finish.

E. Finish work in accordance with AWI Architectural Woodwork Quality Standards Illustrated, Section 1500, System TR-2 (Transparent).

F. Back prime woodwork items to be field finished, prior to installation.

**PART 3 EXECUTION**

**3.01 EXAMINATION**

A. Verify adequacy of backing and support framing.

B. Verify mechanical, electrical, and building items affecting work of this section are placed and ready to receive this work.

C. With Installer present, examine substrates, for compliance with requirements for installation tolerances and other conditions affecting performance. Proceed with installation only after unsatisfactory conditions have been corrected.

**3.02 PREPARATION**

A. Clean substrates of projections and substances detrimental to application.

B. Before installing finish carpentry, condition materials to average prevailing humidity in installation areas for a minimum of 24 hours, unless longer conditioning is recommended by the manufacturer.

**3.03 INSTALLATION**

A. Install work in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS) requirements for grade indicated.

B. Set and secure materials and components in place, plumb and level.

C. Carefully scribe work abutting other components, with maximum gaps of 1/32 inch. Do not use additional overlay trim to conceal larger gaps.

D. Anchor work secured to supports and substrates using concealed fasteners and blind nailing where possible. Where exposed nailing is required use fine finishing nails; deep set below wood surfaces and filled flush with wood putty matching wood species and finish. Sand putty filled holes smooth with adjacent surfaces.

E. Distribute visual defects allowed in the quality grade specified to the best overall advantage when installing job assembled work to provide for uniform and consistent appearance.

F. Finish work shall be smooth, free from abrasion, tool marks, raised grain, grade markings or similar defects on exposed surfaces.

G. Do not use materials that are unsound, warped, improperly treated or finished, inadequately seasoned, or too small to fabricate with proper jointing arrangements.

H. Install finish carpentry level, plumb, true, and aligned with adjacent materials. Use concealed shims where necessary for alignment.
   1. Scribe and cut finish carpentry to fit adjoining work. Refinish and seal cuts as recommended by manufacturer.
   2. Countersink fasteners, fill surface flush, and sand where face fastening is unavoidable.
   3. Install to tolerance of 1/8 inch in 96 inches for level and plumb. Install adjoining finish carpentry with 1/32-inch maximum offset for flush installation and 1/16-inch maximum offset for reveal installation.

4. Coordinate finish carpentry with materials and systems in or adjacent to it. Provide cutouts for mechanical and electrical items that penetrate finish carpentry.

**3.04 INSTALLATION OF STANDING AND RUNNING TRIM**

A. Install trim and molding in single, continuous, unjointed lengths for openings and runs less than 10'-0". For longer runs, provide in minimum 10'-0" lengths in straight runs with minimum number of joints and limiting one piece in the overall run to be less than 10'-0". Cope at returns and miter at corners to provide tight fitting joints.
   1. Match color and grain pattern across joints.
   2. Install trim after gypsum board joint finishing operations are completed.
   3. Drill pilot holes in hardwood before fastening to prevent splitting. Fasten to prevent movement or warping. Countersink fastener heads on exposed carpentry work and fill holes.

B. Avoid field splices in trim and moldings where practicable. If required, make with scarfed (diagonal) joints; glued and nailed. Stagger joints in adjacent members of multi-component trim and molding.

C. Provide back blocking for attachment and support for large single piece or multi-membered moldings.

D. Install work with adequate provisions to allow for thermal and differential movement of building.

E. Attach and secure work in place with uniform joints. Secure to anchors or blocking built-in to construction or attach directly to compatible substrates.

F. Blind nail trim and moldings where possible; use fine finishing nails where exposed. Set exposed nail heads below surfaces for filling with wood putty.

**3.05 ADJUSTING**

A. Replace finish carpentry that is damaged or does not comply with requirements. Finish carpentry may be repaired or refinished if work complies with requirements and shows no evidence of repair or refinishing. Adjust joinery for uniform appearance.

**3.06 TOLERANCES**

A. Maximum Variation from True Position: 1/16 inch.

B. Maximum Offset from True Alignment with Abutting Materials: 1/32 inch.

**3.07 CLEANING**

A. Clean wood, metal and accessory items using a neutral cleaner.

B. Touch up shop-applied finishes to restore damaged or soiled areas.

**3.08 PROTECTION**

A. Protect installation including factory finished surfaces from the work

B. Touch-up, repair or replace damaged products before Substantial Completion. of other trades. Provide protective coverings as required to prevent damages to surfaces.

**END OF SECTION**

# SECTION 06 4000
# ARCHITECTURAL WOODWORK

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Solid wood panel trim.

### 1.02 RELATED SECTIONS

A. Section 01 6116 - Volatile Organic Compound (VOC) Content Restrictions.

B. Section 06 1000 - Rough Carpentry: Grounds and concealed blocking.

C. Section 09 9000 - Painting and Coating: Site finishing of wood veneer faced paneling.

### 1.03 REFERENCES

A. ANSI A208.1 - American National Standard for Particleboard 2009.

B. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials 2015a.

C. AWI (QCP) - Quality Certification Program current edition at www.awiqcp.org.

D. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards 2014.

E. AWPA U1 - Use Category System: User Specification for Treated Wood 2016.

F. HPVA HP-1 - American National Standard for Hardwood and Decorative Plywood 2016.

G. PS 20 - American Softwood Lumber Standard 2010.

H. WI (CCP) - Certified Compliance Program (CCP) current edition at www.woodworkinstitute.com.

### 1.04 SUBMITTALS

A. See Division 01 - Administrative Requirements, for submittal procedures.

B. Shop Drawings: Show materials, layout, dimensions, profiles, fasteners and anchors, and interface with adjacent construction.

C. Product Data: Manufacturer's data sheets on each standard product to be used.

D. Submit product test reports from a qualified independent testing agency indicating each type and class of panel system complies with the project performance requirements, based on comprehensive testing of current products. Previously completed test reports will be acceptable if for current manufacturer and indicative of products used on this project.
   1. Test reports required are:
      a. Flame Spread and Smoke Developed (ASTM E 84)

E. Storage and handling requirements, including required environmental conditions, and recommendations and installation instructions.

F. Samples for Initial Selection:
   1. Submit minimum 4-inch by 4-inch samples. Indicate pattern and finish.

G. Samples for Verification:
   1. Submit minimum 4-inch by 4-inch sample for each pattern/finish combination of Architectural Woodwork

H. Mockups:
   1. Build mockups to verify selections made under sample Submittals and to demonstrate aesthetic effects.
   2. Build mockup of Architectural Woodwork.
   3. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

I. Maintenance Data: Submit manufacturer's care and maintenance data, including care, repair and cleaning instructions. Include in Project closeout documents.

J. Field finishing instructions, to be forwarded to painting applicator.

**1.05 QUALITY ASSURANCE**

A. Manufacturer Qualifications: Member of the Architectural Woodwork Institute, capable of producing the woodwork specified in quantity required within the project time-frame.

B. Materials and systems shall be manufactured by a company continuously and regularly employed in the manufacture of specified materials for a period of at least two (2) consecutive years and which can show evidence of those materials being satisfactorily used on at least three (3) projects of similar size, scope and location. At least three (2) of the projects shall have been successful for use two (2) years or longer.

C. Quality Certification: Provide AWI (QCP) inspection report and quality certification of completed work.
   1. Provide labels or certificates indicating that the work complies with requirements of AWI/AWMAC/WI (AWS) Grade or Grades specified.
   2. Prior to delivery to the site provide shop drawings with certification labels.
   3. Provide labels on each product when required by certification program.
   4. Upon completion of installation provide certificate certifying that the installation and products meet the specified requirements.
   5. Arrange and pay for inspections required for certification.
   6. Replace, repair, or rework all work for which certification is refused.

**1.06 REGULATORY REQUIREMENTS**

A.

**1.07 MOCK-UP**

A. Construct mock-up, 4 feet long by 6 feet wide, illustrating full panel sheet, edge trim, joint trim, applied finish.

B. Locate where directed.

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

**1.08 DELIVERY, STORAGE, AND HANDLING**

A. Store products in manufacturer's unopened packaging until ready for installation.

B. Do not deliver Architectural Woodwork, components and accessories to Project site until areas are ready for installation.

C. Store materials in a flat orientation in a dry place that is not exposed to exterior elements.

D. Handle materials to prevent damage to finished surfaces. Provide protective coverings to prevent damage or staining following installation for duration of project.

**1.09 PROJECT CONDITIONS**

A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

B. B. Materials must be acclimated in an environment of 65-75 degrees Fahrenheit with maintained relative humidity levels of 25-55% for at least 48 hours prior to beginning the installation.

**1.10 WARRANTY**

A. Manufacturer's Special Warranty on polymer panel system: Manufacturer's standard form agreeing to repair or replace units that fail in material or workmanship within the specified warranty period.

B. Warranty Period: 1 year after the date of substantial completion.

C. The warranty shall not deprive the Union County Commissioner's Office of other rights or remedies the Union County Commissioner's Office may have under other provisions of the Contract Documents, and is in addition to and runs concurrent with other warranties made by the Contractor under the requirements of the Contract Documents.

## PART 2 PRODUCTS

### 2.01 PANELING

A. Quality Level: Unless otherwise indicated provide products of quality specified by AWI//AWMAC/WI (AWS) for Custom Grade.

B. Solid Wood Decking:
   1. Species: Match Existing.
   2. Panel Veneer Cut: Match Existing.
   3. Joints: Fastened with Tongue and groove.
   4. Panels: Flat.
   5. Finish: Transparent, shop finished.

### 2.02 MATERIALS

A. Wood fabricated from old growth timber is not permitted.

B. Hardwood Plywood: HPVA HP-1 Grade A; veneer core, type of glue recommended for application; of grain quality suitable for transparent finish.

C. Lumber: Maximum moisture content of 6 percent; with vertical grain , of quality suitable for transparent finish.

D. Sheet minimum performance attributes:
   1. Flame Spread and Smoke Developed (ASTM E 84). Material must meet a minimum Class B rating.

E. Miscellaneous Materials
   1. General: Provide products of material, size, and shape required for application indicated, and with a proven record of compatibility with surfaces contacted in installation.
   2. Cleaner: Type recommended by manufacturer.

### 2.03 ADHESIVES AND FASTENERS

A. Adhesives: Type suitable for intended purpose, complying with applicable air quality regulations.

### 2.04 ACCESSORIES

A. Wood Filler: Tinted to match surface finish color.

### 2.05 WOOD TREATMENT PROCESSES

A. Fire Retardant Treatment (FR-S Type) for Lumber: Chemically treated and pressure impregnated; capable of providing flame spread index of 25, maximum, and smoke developed index of 450, maximum , when tested in accordance with ASTM E84.

B. Wood Preservative by Pressure Treatment (PT Type): Provide AWPA U1 using waterborne preservative to 0.25 lb/cu ft retention.

### 2.06 SHOP TREATMENT OF WOOD MATERIALS

A. Shop pressure treat wood materials requiring UL fire rating to concealed wood blocking.

B. Provide UL approved identification on fire retardant treated material.

C. Deliver fire retardant treated materials cut to required sizes. Minimize field cutting.

### 2.07 FABRICATION

A. When necessary to cut and fit on site, provide materials with ample allowance for cutting and scribing.

**2.08 SHOP FINISHING**

A. On items to receive transparent finishes, use wood filler that matches surrounding surfaces and is of type recommended for the applicable finish.

B. Prime paint surfaces that will be in contact with cementitious materials.

C. Back prime woodwork items to be field finished, prior to installation.

**PART 3 EXECUTION**

**3.01 EXAMINATION**

A. Verify that field measurements are as indicated on shop drawings.

B. Verify adequacy of backing and support framing.

C. Verify mechanical, electrical, and building items affecting work of this section are placed and ready to receive this work.

D. Do not begin installation until substrates have been properly prepared.

E. If substrate preparation is the responsibility of another installer, notify Gardner Spencer Smith Tench and Jarbeau, PC of unsatisfactory preparation before proceeding.

**3.02 PREPARATION**

A. Clean surfaces thoroughly prior to installation.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

**3.03 INSTALLATION**

A. Install work in accordance with AWI/AWMAC/WI (AWS) requirements for grade indicated.

B. Do not begin installation until wood materials have been fully acclimated to interior conditions.

C. Set and secure materials and components in place, plumb and level, using concealed fasteners wherever possible.

D. Where necessary to cut and fit on site, scribe work abutting other components. Do not use additional overlay trim to conceal gaps.

E. Coordinate the installation of firestopping behind paneling.

F. Set exposed fasteners, fill with wood filler, and finish to match panel finish.

G. Touch up damaged finish to match original, using materials provided by fabricator; replace components that cannot be refinished like new.

H. Install components plumb, level and rigid, scribed to adjacent finishes, in accordance with approved shop drawings and product data.

I. Seal exterior woodwork to adjacent construction; seal exposed joints in woodwork units.

**3.04 SITE APPLIED WOOD TREATMENT**

A. Apply preservative treatment in accordance with manufacturer's instructions.

B. Brush apply one coats of preservative treatment on wood in contact with cementitious materials. Treat site-sawn cuts.

C. Allow preservative to dry prior to erecting paneling.

**3.05 PREPARATION FOR FIELD FINISHING**

A. Set exposed fasteners. Apply wood filler in exposed fastener indentations. Sand work smooth.

B. Site Finishing: Refer to Section 09 9000 - Painting and Coating.

**3.06 TOLERANCES**

A. Maximum Variation from True Position: 1/16 inch.

B. Maximum Offset from True Alignment with Abutting Materials: 1/32 inch.

**3.07 PROTECTION**

A. Protect exterior woodwork from weather until finished.

B. Protect installed products until completion of project.

C. Touch-up, repair or replace damaged products before Substantial Completion.

**END OF SECTION**

# SECTION 06 4100
# ARCHITECTURAL WOOD CASEWORK

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Specially fabricated cabinet units.

B. Countertops.

C. Cabinet hardware.

D. Preparation for installing utilities.

### 1.02 RELATED REQUIREMENTS

A. Section 06 1000 - Rough Carpentry: Support framing, grounds, and concealed blocking.

### 1.03 REFERENCE STANDARDS

A. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards, 2nd Edition 2014, with Errata (2016).

B. AWMAC/WI (NAAWS) - North American Architectural Woodwork Standards 2021, with Errata.

C. ANSI A135.4 - Basic Hardboard 2012 (Reaffirmed 2020).

D. ANSI A208.1 - American National Standard for Particleboard 2022.

E. ANSI A208.2 - Medium Density Fiberboard (MDF) for Interior Applications 2022.

F. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards, 2nd Edition 2014, with Errata (2016).

G. AWI/AWMAC (QSI) - Architectural Woodwork Quality Standards Illustrated; Architectural Woodwork Institute and Architectural Woodwork Manufacturers Association of Canada; 2005, 8th Ed., Version 2.0.

H. BHMA A156.9 - Cabinet Hardware 2020.

I. GSA CID A-A-1936 - Adhesives, Contact, Neoprene Rubber 1996a (Validated 2013).

J. HPVA HP-1 - American National Standard for Hardwood and Decorative Plywood 2020.

K. ISSFA-2 - Classification and Standards for Solid Surfacing Material; International Solid Surface Fabricators Association; 2001 (2002)

L. NEMA LD 3 - High-Pressure Decorative Laminates 2005.

M. NHLA G-101 - Rules for the Measurement and Inspection of Hardwood and Cypress 2019.

N. PS 1 - Structural Plywood 2019.

O. PS 20 - American Softwood Lumber Standard 2021.

P. WI (MAN) - Manual of Millwork; Woodwork Institute; 2003.

### 1.04 ADMINISTRATIVE REQUIREMENTS

A. Preinstallation Meeting: Convene a preinstallation meeting not less than one week before starting work of this section; require attendance by all affected installers.

### 1.05 SUBMITTALS

A. See Division 01 - Administrative Requirements, for submittal procedures.

B. Shop Drawings: Indicate materials, component profiles and elevations, assembly methods, joint details, fastening methods, accessory listings, hardware location and schedule of finishes.
   1. Show details full size.
   2. Show locations and sizes of furring, blocking, and hanging strips, including concealed blocking and reinforcement specified in other Sections.
   3. Show locations and sizes of cutouts and holes for plumbing fixtures, grommets, faucets, soap dispensers and other items installed in cabinets.

C. Product Data: For each type of product indicated, including cabinet hardware and accessories and finishing materials and processes.

D. Samples for Initial Selection:
   1. Shop applied transparent finishes.
   2. Solid-surfacing materials.

E. Samples for Verification:
   1. Veneer leaves representative of and selected from flitches to be used for transparent finished cabinets.
   2. Veneer faced panel products with or for transparent finish, 12 inches square, for each species and cut. Include at least one face veneer seam and finish specified.
   3. Corner pieces as follows:
      a. Cabinet front frame joints between stiles and rail, as well as exposed end pieces, 18 inches (450mm) high by 18 inches (450 mm) wide by 6 inches (150mm) deep.
      b. Miter joints for standing trim.
   4. Exposed cabinet hardware and accessories, one unit for each type.
   5. Product Certificates: Signed by manufacturers of woodwork certifying that the products furnished comply with the requirements,
   6. Qualification Data: For firms and persons specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include list of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.

**1.06 QUALITY ASSURANCE**

A. Perform work in accordance with AWI/AWMAC Architectural Woodwork Quality Standards Illustrated, Custom quality, unless other quality is indicated for specific items.
   1. Provide certificates of compliance.

B. Fabricator Qualifications: Shop that employs skilled workers who custom-fabricate products similar to those required for this Project with a minimum of three years documented experience and whose products have a record of successful in-service performance. Shop is certified in AWI's Quality Certification Program.

C. Installers Qualifications: Member in good standing of the Architectural Woodwork Institute (AWI), or the Architectural Woodwork Manufacturers Association of Canada (AWMAC) and familiar with the AWI/AWMAC QSI.

D. Quality Certification: Provide inspection and quality certification of completed custom cabinets in accordance with AWI/AWMAC Quality Certification Program.

E. Source Limitation: Engage a qualified woodworking firm to assume undivided responsibility for production of cabinets with sequenced-matched wood veneers.

**1.07 MOCK-UP**

A. Provide mock-up of typical base cabinet, wall cabinet, and countertop, including hardware, finishes, and plumbing accessories.

B. Locate where directed.

C. Demonstrate the proposed range of aesthetic effects and workmanship.

D. Obtain Gardner Spencer Smith Tench and Jarbeau, PC's approval of mockups before starting interior cabinet fabrication.

E. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.

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

**1.08 DELIVERY, STORAGE, AND HANDLING**

A. Protect units from moisture damage.

B. Immediately upon delivery to jobsite, place materials indoors, protected from the weather.

C. Store materials a minimum of 6" off floor on framework or blocking and cover with protective waterproof covering providing for adequate air circulation and ventilation. Store materials in a dry, conditioned space.

D. Protect edges, ends, corner and surfaces of millwork fabrications from damage.

**1.09 FIELD CONDITIONS**

A. Environmental Limitations: During and after installation of custom cabinets, maintain temperature and humidity conditions in building spaces at same levels planned for occupancy.

B. Field Measurements: Where woodwork is 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 process to avoid delaying of Work.
   1. Locate concealed framing, blocking, and reinforcements that support woodwork by field measurements before being enclosed, and indicate measurements on Shop Drawings.

**1.10 COORDINATION**

A. Coordinate sizes and locations of framing, blocking, furring, reinforcements, and other related units of Work specified in other Sections to ensure that interior architectural woodwork can be supported and installed as indicated.

**PART 2 PRODUCTS**

**2.01 MATERIALS**

A. General: Provide materials that comply with requirements of AWI's quality standard for each type of woodwork and quality grade specified, unless otherwise indicated.

B. Wood Species and Cut for Transparent Finish: White Oak, plain sawn or sliced.

C. Wood Species for Opaque Finish: Any closed-grain hardwood.

D. Wood Species unexposed: Standard Grade Lumber.

E. Wood Products: Comply with the following:
   1. Medium Density Fiberboard: ANSI A208.2, Grade MD.
   2. Plywood or solid lumber must be utilized for construction that is a minimum of 3/4 inch thick. No particle board will be allowed.
   3. Softwood Plywood: DOC PS 1.
   4. Veneer Faced Panel Products (Hardwood Plywood): HPVA HP-1.

F. High Pressure Decorative Laminate Type: PL: NEMA LD 3, grades as indicated or, if not indicated, as required by woodwork quality standard which ever is greater.
   1. Colors, Patterns and Finishes: Selected from laminate manufacturer's full range of colors and matte finishes.
      a. See Drawings and Finish Schedule.
   2. Manufacturer: Subject to compliance with requirements, provide high pressure decorative laminates by one of the following:
      a. Abet Laminati, Inc.; www.abetlaminati.com.
      b. Arborite; Division of ITW Canada, Inc.; www.arborite.com.
      c. Formica Corp.; www.formica.com.
      d. Lamin-Art, Inc.; www.laminart.com.
      e. Nevamar Co., LLC; Decorative Products Div.; www.nevamar.com.
      f. Panolam Industries International, Inc.; www.panolam.com.
      g. Wilsonart International; Div. of Premark International, Inc.; www.wilsonart.com.
      h. Substitutions: See Division 01 - Product Requirements.

G. Solid Surfacing Material Type: SS: Homogeneous solid sheets of filled plastic resin complying with material and performance requirements in ANSI Z124.3, for Type 5 or Type 6, without a precoated finish.

1. Colors, Patterns and Finishes: Selected from laminate manufacturer's full range of colors and matte finishes.
   a. See Drawings and Finish Schedule.
2. Manufacturer: Subject to compliance with requirements, provide solid surfacing material by one of the following:
   a. Avonite Surfaces : www.avonitesurfaces.com.
   b. Dupont : www.corian.com.
   c. Formica Corporation : www.formica.com.
   d. LG Hausys : www.lghausys.com.
   e. Wilsonart International, Inc : www.wilsonart.com.
   f. Substitutions: See Division 01 - Product Requirements.

**2.02 CABINETS**

A. Quality Standard: Custom Grade, in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS), unless noted otherwise.

**2.03 PLASTIC LAMINATE CABINETS**

A. Grade: Custom.

B. AWI Type of Cabinet Construction: Flush overlay.

C. Laminate Cladding for Exposed Surfaces: High pressure decorative laminate complying with the following requirements:
   1. Horizontal Surfaces Other Than Tops: Grade HGS.
   2. Vertical Surfaces: Grade VGS.
   3. Edges: Grade HGS.

D. Materials for Semiexposed Surfaces:
   1. Surfaces Other Than Drawer Bodies: High pressure decorative laminate, Grade CLS.
      a. Edges of Plastic Laminate Shelves: PVC T-mold matching laminate in color, pattern and finish.
      b. For semiexposed backs of panels with exposed plastic laminate surface, provide surface of high pressure decorative laminate, Grade CLS.
   2. Drawer Sides and Backs: Solid hardwood lumber.
   3. Drawer Bottoms: Hardwood plywood.

E. Concealed Backs of Panels with Exposed Plastic Laminate Surfaces: High Pressure decorative laminate, Grade BKL.

**2.04 SOLID SURFACING MATERIAL COUNTERTOPS**

A. Grade: Premium.

B. Solid Surfacing Countertops: Solid surfacing sheet or plastic resin casting over continuous substrate.

C. Solid Surfacing Sheet and Plastic Resin Castings: Complying with ISSFA-2 and NEMA LD 3; acrylic or polyester resin, mineral filler, and pigments; homogenous, non-porous and capable of being worked and repaired using standard woodworking tools; no surface coating; color and pattern consistent throughout thickness.

D. Edge Treatment: Square, substrate built up to minimum 1-1/4 inch thick; fabricate tops in one piece with shop applied backsplashes and edges, unless otherwise indicated. Comply with solid surfacing material manufacturer's written recommendations for adhesives, sealers, fabrication, and finishing.

E. Back and End Splashes: Same material, same construction.
   1. Splash Dimensions: 4 inch high by 1 inch thick, unless otherwise indicated.

F. Solid Surfacing Material: 3/4" (19 mm).

**2.05 HARDWARE**

A. General: Provide cabinet hardware and accessory materials associated with architectural cabinets, except for items specified in Division 8 Door Hardware.
   1. Hardware Standard: BHMA A156.9.
   2. Exposed Hardware Finishes: For exposed hardware, provide finish that complies with BHMA A156.18 for type of finish.
   3. For concealed hardware, provide manufacturer's standard finish that complies with product class requirements in BHMA A156.9.

B. Frameless Concealed Hinges (European Type): BHMA A156.9, B01602, 170 degrees of opening, self-closing.

C. Pulls for Drawers and Swinging Doors: One-piece 6 11/16" X 1 13/32" Round Top Drawer Pull DP128/6 by Mockett or approved equal, in color selected by Gardner Spencer Smith Tench and Jarbeau, PC from manufacturer's standard color selections. Pull design to be in compliance with Americans with Disabilities Act, Federal Register Volume 56, No. 144, Rules and Regulations.

D. Adjustable Shelf Standards and Supports: BHMA A156.9, B04071; with shelf rests, B04081 and BHMA A156.9, B04102; with shelf brackets, B04112 where required for span.

E. Shelf Rests: BHMA A156.9, B04013; metal.

F. Drawer Slides: B05091; side mounted; full extension type; epoxy coated steel with ball bearings; of the following grades:
   1. Box Drawer Slides: Grade 1.
      a. Standard drawers: 100 lb. capacity, self-closing with positive in-stop/out-stop and out keeper to maintain drawer in 80% open position. Front and rear captive rollers.
         1) Color: White epoxy.
         2) Basis of Design: Blum style no. BS230M.
         3) Other acceptable manufacturers: Accuride International Inc. and Knape & Vogt Manufacturing Company.
   2. File Drawer Slides: Grade 1HD-100.
      a. File drawers: Full extension, 3 part progressive opening slide, 100 lb. capacity.
         1) Color: White epoxy.
         2) Basis of Design: Blum style no. BS430E.
         3) Other acceptable manufacturers: Accuride International Inc. and Knape & Vogt Manufacturing Company.
   3. Pencil Drawer Slides: Grade 2.
      a. Paper storage drawers: Full extension, 3 part progressive opening slide, 100 lb. capacity.
         1) Color: White epoxy.
         2) Basis of Design: Blum style no. BS230M.
         3) Other acceptable manufacturers: Accuride International Inc. and Knape & Vogt Manufacturing Company.
   4. Keyboard Slides: Grade 1.

G. File Drawer Accessory: Basis of Design, Integral Pendaflex rack.
   1. Other acceptable manufacturers: Accuride International Inc. and Knape & Vogt Manufacturing Company.

H. Locks at Cabinet/Drawers: BHMA A156.11, E07121. Provide 3 keys per lock. Half mortise design with only round cylinder exposed, five pin tumbler cylinder, with master key; satin chrome finish.
   1. Provide locks where indicated on Cabinet Elevation Drawings. Key all locks on doors and drawers within each individual room alike; when applicable.
   2. Basis of Design: National Lock, #M4-7054.

3. Other acceptable manufacturers: Accuride International Inc. and Knape & Vogt Manufacturing Company.

I. Catches: Magnetic catches shall be Stanley #SPHG (AL) or equal by Epco or Blum; BHMA A156.9, B03141.

J. Magnetic door catch: Provide door catch with 7 lb. pull.

K. Silencers /bumpers: Door bumpers shall be Blum Clear 'TP150" or equal by Stanley or Epco.

L. Shelf Standards and Supports: Manufacturer's standard adjustable type, wrought steel, mortise mounted in cabinet end panels. Provide supports for each shelf at each standard. All surfaces shall be nickel plated.

M. Rod sockets: Die cast aluminum, surface mounted insert with tapered rod hole, to receive support rods; anodized finish.

N. Support rods: Aluminum alloy, 3/4" diameter by required length, rounded at top and tapered at bottom to fit rod sockets; anodized finish.

O. Grommets for Cable Passage through Countertops: In locations as shown on the drawings minimum 2-1/2 inch OD, black or gray, molded-plastic grommets and matching plastic caps with slot for wire passage.
   1. Basis of Design: Doug Mockett & Co., Series TG.
   2. Other acceptable manufacturers: My Cable Mart, LLC and Cable Organizer Inc.

P. Wire Cable Tray (under countertops at computer locations): J-Shape wire manager to be fastened under a desk/work surface to keep cables up and out of the way.
   1. Basis of Design: Doug Mockett & Co., Series WM22.
   2. Other acceptable manufacturers: My Cable Mart, LLC and Cable Organizer Inc.

Q. Metal Support Brackets: For countertop locations without base cabinets. Maximum 4'-0" o.c. unless otherwise noted, meeting the following minimum requirements.
   1. 1/8" Steel with 1,000lbs Load Limit.
   2. 1 1/2" Forms with Multiple 1/4" Mounting Holes per Side.
   3. 3" x 3" - 45 degree notch at the corner allowing for wall cleat and wire run clearance.
   4. 1" smaller than overall width of countertop in horizontal position.
   5. Color as selected from manufacturers standard selection.

R. Resilient Base: As specified in Section 09 6500 - Resilient Flooring.

S. Exposed Hardware Finishes: For exposed hardware, provide finish that complies with BHMA A156.18 or BHMA finish number indicated.
   1. Satin Chromium Plated: BHMA 626 for brass base; BHMA 652 for steel base.
   2. Satin Stainless Steel: BHMA 630.

T. Concealed Hardware: BHMA A156.9, types as recommended by fabricator for quality grade specified.

**2.06 FABRICATION**

A. Cabinet Style: Flush overlay.

B. Cabinet Doors and Drawer Fronts: Flush style.

C. Drawer Construction Technique: As recommended by fabricator.

D. Assembly: Shop assemble cabinets for delivery to site in units easily handled and to permit passage through building openings.

E. Edging: Fit shelves, doors, and exposed edges with specified edging. Do not use more than one piece for any single length.

F. Fitting: When necessary to cut and fit on site, provide materials with ample allowance for cutting. Provide matching trim for scribing and site cutting.

G. Complete fabrication, including assembly, finishing, and hardware application, to maximum extent possible before shipment to Project site. Disassemble components as necessary for

shipment and installation. Where necessary for fitting at site, provide ample allowance for scribing, trimming, and fitting.

H. Shop cut openings to maximum extent possible to receive hardware, appliances, plumbing fixtures, 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.
   1. Seal edges of openings in countertops with a coat of varnish.

I. Install glass to comply with applicable requirements in division 8 Section "Glazing" and in GANA's "Glazing Manual." For glass in wood frames, secure glass with removable stops.

J. Caulk inside and outside joints of plastic laminate woodwork with colored caulk matching plastic laminate.

K. Fill joints or seams between plastic laminate sheets with plastic seam filler.

L. Fabricate tops and splashes in the largest sections practicable, with top surface of joints flush.
   1. Join lengths of tops using best method recommended by manufacturer.
   2. Fabricate to overhang fronts and ends of cabinets 1 inch except where top butts against cabinet or wall.
   3. Prepare all cutouts accurately to size; replace tops having improperly dimensioned or unnecessary cutouts or fixture holes.

M. Provide back/end splash wherever counter edge abuts vertical surface unless otherwise indicated.
   1. Secure to countertop with concealed fasteners and with contact surfaces set in waterproof glue.
   2. Height: 4 inches, unless otherwise indicated.

N. Solid Surfacing: Fabricate tops up to 144 inches long in one piece; join pieces with adhesive sealant in accordance with manufacturer's recommendations and instructions.

O. Wall-Mounted Counters: Provide skirts, aprons, brackets, and braces as indicated on drawings, finished to match.

P. Provide cutouts for plumbing fixtures. Verify locations of cutouts from on-site dimensions. Prime paint cut edges.

## PART 3 EXECUTION

### 3.01 PREPARATION

A. Before installation, condition cabinets to average prevailing humidity conditions in installation areas.

B. Before installing cabinets, examine shop-fabricated work for completion and complete work as required, including removal of packing and backpriming.

### 3.02 EXAMINATION

A. Verify adequacy of backing and support framing.

B. Verify location and sizes of utility rough-in associated with work of this section.

### 3.03 INSTALLATION

A. Assemble cabinets and complete fabrication at Project site to comply with requirements for fabrication as herein described under Part 2, to extent that it was not completed in the shop.

B. Set and secure custom cabinets in place, assuring that they are rigid, plumb, and level.
   1. Tolerance: 1/8 inch in 8 feet.

C. Use fixture attachments in concealed locations for wall mounted components.

D. Use concealed joint fasteners to align and secure adjoining cabinet units and countertops.

E. Carefully scribe casework abutting other components, with maximum gaps of 1/32 inch. Do not use additional overlay trim for this purpose.

F. Secure cabinets and counter bases to floor using appropriate angles and anchorages.

G. Countersink anchorage devices at exposed locations. Conceal with solid wood plugs of species to match surrounding wood; finish flush with surrounding surfaces.

**3.04 CABINETS**

A. Install without distortion so doors and drawers fit openings properly 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 indicated.
   1. Install cabinets with no more than 1/8 inch in 8 feet sag, bow, or other variation from straight line.
   2. Maintain veneer sequence matching of cabinets with transparent finish.
   3. Fasten wall cabinets through back, near top and bottom, at ends and not more than 16 inches o.c. as follows:
      a. Use No. 10 wafer-head screws sized for 1 inch penetration wood framing, blocking or hanging strips.
      b. Use toggle bolts through metal backing or metal framing behind wall finish.

**3.05 COUNTERTOPS**

A. Anchor securely by screwing through corner blocks of base cabinets or other supports into underside of countertop.

B. Install countertops with no more than 1/8 inch in 8 feet sag, bow or other variation from straight line.

C. Secure backsplashes to tops with concealed metal brackets at 16 inches o.c. and to walls with adhesive.

D. Caulk space between backsplash and wall with sealant specified in Division 07.

**3.06 ADJUSTING**

A. Adjust installed work.
   1. Repair damaged and defective cabinets, where possible, to eliminate functional and visual defects.
   2. Adjust joinery for uniform appearence.

B. Adjust moving or operating parts to function smoothly and correctly.

**3.07 CLEANING**

A. Clean casework, counters, shelves, hardware, fittings, and fixtures.

B. Touch up shop-applied finishes to restore damaged or soiled areas.

**3.08 PROTECTION**

A. Protect installed products until completion of project.

B. Touch-up, repair or replace damaged products before Substantial Completion.

**END OF SECTION**

# SECTION 06 4216
# WOOD-VENEER PANELING

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Custom wood veneer paneling.

B. Solid wood panel trim.

C. Shop finishing.

### 1.02 RELATED REQUIREMENTS

A. Section 06 1000 - Rough Carpentry: Grounds and concealed blocking.

B. Section 09 9000 - Painting and Coating: Site finishing of wood veneer faced paneling.

### 1.03 REFERENCE STANDARDS

A. ANSI A208.1 - American National Standard for Particleboard 2022.

B. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials 2023.

C. AWI (QCP) - Quality Certification Program Current Edition.

D. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards, 2nd Edition 2014, with Errata (2016).

E. AWPA U1 - Use Category System: User Specification for Treated Wood 2022.

F. HPVA HP-1 - American National Standard for Hardwood and Decorative Plywood 2020.

G. PS 20 - American Softwood Lumber Standard 2021.

H. WI (CCP) - Certified Compliance Program (CCP) Current Edition.

### 1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data on fire retardant treatment materials and application instructions.

C. Shop Drawings: Indicate materials, component profiles, fastening methods, jointing details, and accessories.
   1. Minimum Scale of Detail Drawings: 1-1/2 inch to 1 foot.
   2. Include plan of panel number sequencing.
   3. Provide the information required by AWI/AWMAC/WI (AWS).

D. Samples: Submit two samples of finished plywood, 12 x 12 inch in size, illustrating wood grain and specified finish.

E. Samples: Submit two samples of wood trim, 6 inch long.

### 1.05 QUALITY ASSURANCE

A. Fabricator Qualifications: Company specializing in fabricating the products specified in this section with minimum five years of documented experience.
   1. Company with at least one project in the past 5 years with value of woodwork within 20 percent of cost of woodwork for this Project.
   2. Accredited participant in the specified certification program prior to the commencement of fabrication and throughout the duration of the project.
   3. Single Source Responsibility: Provide and install this work from single fabricator.

B. Quality Certification: Provide AWI (QCP) inspection report and quality certification of completed work.
   1. Provide labels or certificates indicating that the work complies with requirements of AWI/AWMAC/WI (AWS) Grade or Grades specified.
   2. This project has been registered as AWI (QCP) project number _____.

3. Prior to delivery to the site provide shop drawings with certification labels.
4. Provide labels on each product when required by certification program.
5. Upon completion of installation provide certificate certifying that the installation and products meet the specified requirements.
6. Arrange and pay for inspections required for certification.
7. Replace, repair, or rework all work for which certification is refused.

**1.06 REGULATORY REQUIREMENTS**

A. Conform to applicable code for fire retardant requirements.

**1.07 MOCK-UP**

A. Construct mock-up, 4 feet long by 6 feet wide, illustrating full panel sheet, edge trim, joint trim, applied finish.

B. Locate where directed.

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

**1.08 DELIVERY, STORAGE, AND HANDLING**

A. Protect work from moisture damage.

B. Do not deliver wood materials to project site until building is fully enclosed and interior temperature and humidity are in accordance with recommendations of AWI//AWMAC/WI (AWS).

**PART 2 PRODUCTS**

**2.01 PANELING**

A. Quality Level: Unless otherwise indicated provide products of quality specified by AWI//AWMAC/WI (AWS) for Custom Grade.

B. Stile and Rail Paneling:
   1. Species: TBD.
   2. Panel Veneer Cut: TBD.
   3. Stiles and Rails: 3/4 inch.
   4. Joints: Fastened with dowels or biscuits.
   5. Panels: Flat.
   6. Finish: Transparent, shop finished.

C. Flat Paneling:
   1. Species: TBD.
   2. Cut: TBD.
   3. Panels: Veneer of full width and balanced sequence matched.
      a. Panels More Than One Leaf High: Architectural end matching.
      b. Each Panel Within Single Area: Full width premanufactured sets, and doors and other components.
   4. Visible Edges and Reveals: Filled and painted.
   5. Outside Corners: Mitered and splined.

**2.02 WOOD-BASED MATERIALS - GENERAL**

A. Wood fabricated from old growth timber is not permitted.

B. Hardwood Plywood: HPVA HP-1 Grade A; veneer core, type of glue recommended for application; of grain quality suitable for transparent finish.

C. Particleboard: C omposed of wood chips, medium density, with waterproof resin binders; of grade to suit application; sanded faces; complying with ANSI A208.1.

D. Lumber: Maximum moisture content of 6 percent; with vertical grain , of quality suitable for transparent finish.

**2.03 ADHESIVES AND FASTENERS**

A. Adhesives: Type suitable for intended purpose, complying with applicable air quality regulations.

**2.04 ACCESSORIES**

A. Primer: Alkyd primer sealer type.

B. Wood Filler: Tinted to match surface finish color.

**2.05 WOOD TREATMENT PROCESSES**

A. Fire Retardant Treatment (FR-S Type) for Lumber: Chemically treated and pressure impregnated; capable of providing flame spread index of 25, maximum, and smoke developed index of 450, maximum , when tested in accordance with ASTM E84.

B. Wood Preservative by Pressure Treatment (PT Type): Provide AWPA U1 using waterborne preservative to 0.25 lb/cu ft retention.

**2.06 SHOP TREATMENT OF WOOD MATERIALS**

A. Shop pressure treat wood materials requiring UL fire rating to concealed wood blocking.

B. Provide UL approved identification on fire retardant treated material.

C. Deliver fire retardant treated materials cut to required sizes. Minimize field cutting.

**2.07 FABRICATION**

A. Shop prepare and identify panels for grain matching during site erection.

B. Prepare panels for delivery to site, permitting passage through building openings.

C. Finish exposed edges of panels as specified by grade requirements.

D. When necessary to cut and fit on site, provide materials with ample allowance for cutting and scribing.

**2.08 SHOP FINISHING**

A. Sand work smooth and set exposed nails and screws.

B. Apply wood filler in exposed nail and screw indentations.

C. On items to receive transparent finishes, use wood filler that matches surrounding surfaces and is of type recommended for the applicable finish.

D. Finish work in accordance with AWI/AWMAC/WI (AWS), Section 5 - Finishing for grade specified and as follows:
   1. Transparent:
      a. System - 1, Lacquer, Nitrocellulose.
      b. Stain: As selected by Gardner Spencer Smith Tench and Jarbeau, PC.
      c. Sheen: Flat.
   2. Opaque:
      a. System - 1, Lacquer, Nitrocellulose.
      b. Color: As selected by Gardner Spencer Smith Tench and Jarbeau, PC.
      c. Sheen: Flat.

E. Prime paint surfaces that will be in contact with cementitious materials.

F. Back prime woodwork items to be field finished, prior to installation.

**PART 3 EXECUTION**

**3.01 EXAMINATION**

A. Verify that field measurements are as indicated on shop drawings.

B. Verify adequacy of backing and support framing.

C. Verify mechanical, electrical, and building items affecting work of this section are placed and ready to receive this work.

**3.02 INSTALLATION**

A. Install work in accordance with AWI/AWMAC/WI (AWS) requirements for grade indicated.

B. Do not begin installation until wood materials have been fully acclimated to interior conditions.

C. Set and secure materials and components in place, plumb and level, using concealed fasteners wherever possible.

D. Where necessary to cut and fit on site, scribe work abutting other components. Do not use additional overlay trim to conceal gaps.

E. Coordinate the installation of firestopping behind paneling.

F. Set exposed fasteners, fill with wood filler, and finish to match panel finish.

G. Touch up damaged finish to match original, using materials provided by fabricator; replace components that cannot be refinished like new.

**3.03 SITE APPLIED WOOD TREATMENT**

A. Apply preservative treatment in accordance with manufacturer's instructions.

B. Brush apply one coats of preservative treatment on wood in contact with cementitious materials. Treat site-sawn cuts.

C. Allow preservative to dry prior to erecting paneling.

**3.04 PREPARATION FOR FIELD FINISHING**

A. Set exposed fasteners. Apply wood filler in exposed fastener indentations. Sand work smooth.

B. Site Finishing: Refer to Section 09 9123.

**3.05 TOLERANCES**

A. Maximum Variation from True Position: 1/16 inch.

B. Maximum Offset from True Alignment with Abutting Materials: 1/32 inch.

**END OF SECTION**

# SECTION 07 2100
# THERMAL INSULATION

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Board insulation at cavity wall construction, perimeter foundation wall, and underside of floor slabs.

B. Batt insulation and vapor retarder in exterior wall and ceiling construction.

C. Batt insulation for filling perimeter window and door shim spaces and crevices in exterior wall and roof.

D. At concrete unit masonry non-reinforced cores.

E. Injected cavity foamed-in-place insulation at concrete unit masonry non-reinforced cores.

F. Foamed sealant insulation at junctions of dissimilar wall and roof materials to achieve a thermal and air seal.

### 1.02 RELATED REQUIREMENTS

A. Section 03 3000 - Cast-In-Place Concrete: Field-applied termiticide for concrete slabs and foundations.

B. Section 04 2100 - Brick Masonry: Masonry walls enclosing insulation.

C. Section 04 2200 - Concrete Unit Masonry: Masonry walls enclosing insulation.

D. Section 04 4313 - Stone Masonry Veneer: Masonry walls enclosing insulation.

E. Section 07 8400 - Firestopping: Insulation as part of fire-rated through-penetration assemblies.

F. Section 07 8420 - Fire Resistive Joint Systems: Insulation as part of fire-rated through-penetration assemblies.

G. Section 09 2116 - Gypsum Board Assemblies: Acoustic insulation inside walls and partitions.

### 1.03 REFERENCE STANDARDS

A. ASTM C518 - Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus 2021.

B. ASTM C552 - Standard Specification for Cellular Glass Thermal Insulation 2022.

C. ASTM C553 - Standard Specification for Mineral Fiber Blanket Thermal Insulation for Commercial and Industrial Applications 2013 (Reapproved 2019).

D. ASTM C578 - Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation 2022.

E. ASTM C665 - Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing 2017.

F. ASTM D2842 - Standard Test Method for Water Absorption of Rigid Cellular Plastics; 2012.

G. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials 2023.

H. ASTM E96/E96M - Standard Test Methods for Gravimetric Determination of Water Vapor Transmission Rate of Materials 2022a, with Editorial Revision (2023).

I. NFPA 255 - Standard Method of Test of Surface Burning Characteristics of Building Materials; National Fire Protection Association; 2006.

J. NFPA 285 - Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Wall Assemblies Containing Combustible Components 2023.

K. UL 723 - Standard for Test for Surface Burning Characteristics of Building Materials; Underwriters Laboratories Inc.; Current Edition, Including All Revisions.

**1.04 SUBMITTALS**

A. See Division 01 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data on product characteristics, performance criteria, product limitations, and joint tape and adhesives.

C. ABAA Field Quality Control Submittals: Submit third-party reports of testing and inspection required by ABAA QAP.

D. Manufacturer's Installation Instructions: Include information on special environmental conditions required for installation and installation techniques.

E. ABAA Manufacturer Qualification: Submit documentation of current evaluation of proposed manufacturer and materials.

F. ABAA Installer Qualification: Submit documentation of current contractor accreditation and current installer certification. Keep copies of all contractor accreditation and installer certification on site during and after installation. Present on-site documentation upon request.

**1.05 QUALITY ASSURANCE**

A. Air Barrier Association of America (ABAA) Quality Assurance Program (QAP); www.airbarrier.org/sle:
   1. Installer Qualification: Use accredited contractor, certified installers, evaluated materials, and third-party field quality control audit.
   2. Manufacturer Qualification: Use evaluated materials from a single manufacturer regularly engaged in air barrier material manufacture. Use secondary materials approved in writing by primary material manufacturer.

**1.06 FIELD CONDITIONS**

A. Do not install insulation adhesives when temperature or weather conditions are detrimental to successful installation.

**1.07 SEQUENCING**

A. Sequence work to ensure fireproofing, firestop, and vapor retarder materials are in place before beginning work of this section.

**PART 2 PRODUCTS**

**2.01 FOAM BOARD INSULATION MATERIALS**

A. Rigid Extruded Polystyrene Board Insulation: ASTM C 578, Type IV; Extruded polystyrene board with either natural skin or cut cell surfaces; with the following characteristics:
   1. Flame Spread Index: 25 or less, when tested in accordance with ASTM E84.
   2. Location: Cavity wall construction and perimeter slab edge as shown on drawings.
      a. Flame Spread Index: 75 or less, when tested in accordance with ASTM E84.
      b. Smoke Developed Index: 450 or less, when tested in accordance with ASTM E84.
   3. Thermal Conductivity (k factor) at 25 degrees F: 0.18.
      a. Thermal Conductivity (k factor) at 25 degrees F: 0.18.
         1) R-5 per inch minimum.
      b. Compressive Resistance: 25 psi.
      c. Board Density: 1.3 lb/cu ft.
      d. Water Absorption, Maximum: 0.3 percent, by volume.
      e. Surface Burning Characteristics: Flame spread/Smoke developed index of 25 or less, when tested in accordance with ASTM E 84.
   4. Manufacturers:
      a. Dow Chemical Company: www.dow.com.
      b. Owens Corning Corp: www.owenscorning.com.
      c. Kingspan Insulation LLC; GreenGuard XPS TYPE IV 25 PSI: www.trustgreenguard.com.
      d. Substitutions: See Section 01 6000 - Product Requirements.

## 2.02 BATT INSULATION MATERIALS

A. Batt Insulation: ASTM C 665; preformed batt; friction fit, conforming to the following:
   1. Material: Glass or mineral fiber.
   2. Location as required and shown on the drawings:
      a. Unfaced: Fiberglass blanket insulation meeting ASTM C665, Type I.
         1) For concealed and exposed applications in walls, soffits, plenums, floors and ceilings areas: Class A; maximum 25 flame spread and 50 smoke development when tested in accordance with ASTM E84-89a.
   3. Thermal Resistance: R of 19 for vertical installation and R of 30 for horizontal installation.
   4. Thickness:
      a. R of 19 batts: Minimum 6 1/4".
      b. R of 30 batts: Minimum 9 1/2".
   5. Size: Manufacturer's standard width equal to spacing of framing members.
   6. Accessories:
      a. Tape: Insulation manufacturer's standard foil faced tape or types as recommended; provided in widths required to cover joints.
      b. Fasteners and supports: Type as recommended by insulation manufacturer for installation conditions encountered.
         1) Protection: Where fasteners will be exposed to human contact after installation, protect ends with capped self-locking washers incorporating a spring steel insert to ensure permanent retention of cap.
         2) Anchor Adhesive: Provide product with demonstrated capability to bond insulation anchors securely to substrates indicated without damaging insulation, fasteners, and substrates.

B. Manufacturers:
   1. CertainTeed Corporation: www.certainteed.com.
   2. Guardian Building Products: www.guardianfiberglass.com.
   3. Johns Manville: www.jm.com.
   4. Knauf Insulation: www.knaufnorthamerica.com
   5. Owens Corning Corporation: www.ocbuildingspec.com/sle.
   6. Substitutions: See Division 01 - Product Requirements.

## 2.03 FOAMED SEALANT INSULATION

A. Location:
   1. At junctions of dissimilar wall and roof materials.
   2. At underside of steel decking.
   3. At perimeter window and door shim spaces.

B. Acceptable products; subject to compliance with specified requirements:
   1. 3M; Product Fire Block Foam FB-Foam: www.3m.com.
   2. Gavin, A Southern Business: Product Firestop Fireblocking Foam: www.garvinindustries.com
   3. Dow Chemical Chemical Co: Product Great Stuff Fireblock: www.greatstuff.dupont.com.
   4. Substitutions: See Division 01 - Product Requirements.

C. Characteristics:
   1. Foamed Sealant Insulation: Insulating Foam Sealant is a minimal-expanding single component polyurethane foam sealant, foamed on-site.
      a. Regulatory Requirements: Conform to applicable code for flame and smoke limitations.
      b. Aged Thermal Resistance: R-value of 4.5 min (deg F hr sq ft)/Btu, minimum, when tested at 1 inch thickness in accordance with ASTM C518 after aging for 180 days at 41 degrees F.

c. Water Vapor Permeance: Vapor retarder; 2 perm, maximum, when tested at intended thickness in accordance with ASTM E96/E96M, desiccant method.
d. Water Absorption: Less than 2 percent by volume, maximum, when tested in accordance with ASTM D2842.
e. Air Permeance: 0.004 cfm/sq ft, maximum, when tested at intended thickness in accordance with ASTM E2178 or ASTM E283 at 1.5 psf.
f. Closed Cell Content: At least 80 percent.
g. Surface Burning Characteristics: Flame spread/Smoke developed index of 25/450, maximum, when tested in accordance with ASTM E84.

**2.04 ACCESSORIES**

A. Weather resistant membranes: Specified in Section 07 2720 - Fluid-Applied Membrane Air & Vapor Barriers.

B. Tape: Bright aluminum self-adhering type, mesh reinforced, 2 inch wide.

C. Tape joints of rigid insulation in accordance with roofing and insulation manufacturers' instructions.

D. Insulation Fasteners: Lengths of unfinished, 13 gage (0.072 inch) high carbon spring steel with chisel or mitered tips, held in place by tension, length to suit insulation thickness and substrate, capable of securely supporting insulation in place.

E. Insulation Fasteners: Impaling clip of unfinished steel with washer retainer and clips, to be adhered to surface to receive insulation, length to suit insulation thickness and substrate, capable of securely and rigidly fastening insulation in place.

F. Insulation Fasteners: Appropriate for purpose intended and approved by roofing manufacturer.
1. Length as required for thickness of insulation material and penetration of deck substrate.

G. Nails or Staples: Steel wire; electroplated or galvanized; type and size to suit application.

H. Adhesive: Type recommended by insulation manufacturer for application.

**PART 3 EXECUTION**

**3.01 EXAMINATION**

A. Verify that substrate, adjacent materials, and insulation materials are dry and that substrates are ready to receive insulation.

B. Verify substrate surfaces are flat, free of honeycomb, fins, irregularities, or materials or substances that may impede adhesive bond.

**3.02 INSTALLATION GENERAL**

A. Comply with manufacturer's product data for installation of each type of insulation. Install insulation fitted to adjacent construction and with tight joints to provide unbroken thermal barrier. Cut insulation around obstructions and protrusions; fill voids with insulation. Remove projections interfering with installation. Seal tears and holes in vapor barrier facing with foil tape.

**3.03 BOARD INSTALLATION AT FOUNDATION PERIMETER**

A. Install boards horizontally on foundation perimeter.
1. Place boards to maximize adhesive contact.
2. Install in running bond pattern.
3. Butt edges and ends tightly to adjacent boards and to protrusions.

B. Extend boards over expansion joints, unbonded to foundation on one side of joint.

C. Cut and fit insulation tightly to protrusions or interruptions to the insulation plane.

**3.04 BOARD INSTALLATION UNDER CONCRETE SLABS**

A. Place insulation under slabs on grade after base for slab has been compacted.

B. Cut and fit insulation tightly to protrusions or interruptions to the insulation plane.

C. Prevent insulation from being displaced or damaged while placing vapor retarder and placing slab.

**3.05 BOARD INSTALLATION AT CAVITY WALLS**

A. Install boards to fit snugly between wall ties.
   1. Place membrane surface against adhesive.

B. Install boards horizontally on walls.
   1. Embed in tacky dampproofing between reinforcement.
   2. Place boards to maximize adhesive contact.
   3. Install in running bond pattern.
   4. Butt edges and ends tightly to adjacent boards and to protrusions.

C. Cut and fit insulation tightly to protrusions or interruptions to the insulation plane.

D. Cut insulation boards as required to extend through-wall flashing into exterior masonry wythes.

**3.06 BATT INSTALLATION**

A. Install insulation in accordance with manufacturer's instructions.

B. Install in exterior wall, roof, ceiling, and and other areas indicated spaces without gaps or voids. Do not compress insulation.

C. Trim insulation neatly to fit spaces. Insulate miscellaneous gaps and voids to provide unbroken thermal barrier.

D. Fit insulation tightly in cavities and tightly to exterior side of mechanical and electrical services within the plane of the insulation.

E. Remove projections interfering with installation. Seal tears and holes in vapor barrier facing with foil-faced tape.

F. Attach flanges to framing per manufacturer's recommendation. Install batt insulation with butted end joints as required.

**3.07 FOAMED SEALANT INSULATION**

A. Apply insulation in accordance with manufacturer's instructions.

B. Apply insulation by spray method, to a uniform monolithic density without voids.

C. Patch damaged areas.

D. Where applied to voids and gaps assure space for expansion to avoid pressure on adjacent materials that may bind operable parts.

E. Trim excess away for applied trim or remove as required for continuous sealant bead.

**3.08 PROTECTION**

A. Do not permit installed insulation to be damaged prior to its concealment.

B. Protect installed insulation including vapor barrier facing from damage due to weather exposure, physical abuse, work of construction trades and other causes.

C. Provide temporary coverings or enclosures where insulation will be subject to abuse and cannot be concealed by permanent construction immediately after installation.

**END OF SECTION**

# SECTION 07 2500
# VAPOR RETARDERS

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Materials to make below grade concrete slab water vapor-resistant and air tight.

B. Tape to seal joints and repair vapor retarder.

C. Pipe boots for sealing penetrations.

### 1.02 RELATED SECTIONS

A. Section 03 3000 - Cast-In-Place Concrete: Slabs on grade.

B. Section 07 2100 - Thermal Insulation: Vapor retarder associated with board insulation.

### 1.03 REFERENCES

A. ASTM D 882 - Tensile Properties of Thin Plastic Sheeting; 2002.

B. ASTM D 1709 - Standard Specification for Impact Resistance of Plastic Film by the Free-Falling Dart Method; 2004.

C. ASTM D 2582 - Standard Test Method for Puncture-Propagation Tear Resistance of Plastic Film and Thin Sheeting; 2003.

D. ASTM D 3776 - Standard Test Methods for Mass Per Unit Area (Weight) of Fabric; 1996 (Reapproved 2002).

E. ASTM E 84 - Surface Burning Characteristics of Building Materials; 2005.

F. ASTM E 96/E 96M - Water Vapor Transmission of Materials; 2005.

G. ASTM E 1643 - Standard Practice for Installation of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs; 1998 (Reapproved 2005).

H. ASTM E 1745 - Standard Specification for Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs; 1997 (Reapproved 2004).

I. NFPA 701 - Fire Tests for Flame-Resistant Textiles and Films; 2004.

### 1.04 SUBMITTALS

A. See Division 01 - Administrative Requirements, for submittal procedures.

B. Product Data: Manufacturer's data sheets on each product to be used, including:
   1. Preparation instructions and recommendations.
      a. Include independent laboratory test results showing compliance with ASTM & ACI Standards.
   2. Storage and handling requirements and recommendations.
   3. Installation methods.

C. Selection Samples: Submit manufacturer's samples of reinforced vapor retarders.

D. Verification Samples: For each product specified, submit samples representing actual product, color, and patterns, minimum size 6 inches square.

### 1.05 QUALITY ASSURANCE

A. Preinstallation Meeting: Convene a preinstallation meeting two weeks before start of installation of reinforced vapor retarders. Require attendance of parties directly affecting work of this section, including Contractor, Gardner Spencer Smith Tench and Jarbeau, PC, and installer. Review installation, protection, and coordination with other work.

### 1.06 DELIVERY, STORAGE, AND HANDLING

A. Delivery: Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly identifying product name and manufacturer.

B. Storage:

1. Store products in manufacturer's unopened packaging until ready for installation.
2. Store materials in a clean, dry area in accordance with manufacturer's instructions.

C. Handling: Protect materials during handling and installation to prevent damage.

## PART 2 PRODUCTS

### 2.01 UNDER-SLAB VAPOR RETARDERS

A. Products:
1. Stego Industries LLC: Stego Wrap (15-Mil) Vapor Barrier: www.stegoindustries.com.
2. W.R. Meadows, Inc.: Perminator 15 Mil: www.wrmeadows.com.
3. Raven Industries: VaporBlock VBLP15: www.ravenefd.com.
4. Reef Industries, Inc.: Griffolyn 15 Mil: www.reefindustries.com.
5. Substitutions: See Division 01 - Product Requirements.

### 2.02 ACCESSORIES

A. General: Furnish accessories recommended by vapor retarder manufacturer for intended use and compatible with vapor retarder membrane.

B. Seam Tape: High Density Polyethylene Tape with pressure sensitive adhesive.
1. Weight: 3.75 pounds per 100 feet.
2. Thickness: 35 mils.
3. 3 Inch Seam Shear: 35 pounds.

C. Pipe Boots: Provide factory-fabricated pipe boots from a compatible material and pressure sensitive tape.

## PART 3 EXECUTION

### 3.01 EXAMINATION

A. Examine surfaces and areas to receive reinforced vapor retarders. Notify Gardner Spencer Smith Tench and Jarbeau, PC in writing defects of work and other unsatisfactory site conditions that would cause defective installation of vapor retarders. Do not begin installation until unacceptable conditions have been corrected.

B. Verify site dimensions.

C. Commencement of work will imply acceptance of substrate.

### 3.02 INSTALLATION

A. Install reinforced vapor retarders in accordance with manufacturer's instructions and ASTM E 1643 at concrete slabs.

B. Install vapor retarders continuously at locations as indicated on the drawings. Ensure there are no discontinuities in vapor retarder at seams and penetrations.

C. Install vapor retarders in largest practical widths.

D. Ensure surface beneath vapor retarder is smooth with no sharp projections.

E. Join sections of vapor retarder and seal penetrations in vapor retarder with pressure sensitive tape. Ensure vapor retarder surfaces to receive pressure sensitive tape are clean and dry.

F. Immediately repair holes in vapor retarder with self-adhesive repair tape.

G. Seal around pipes and other penetrations in vapor retarder with pipe boots in accordance with manufacturer's instructions.

H. Lay vapor retarder over interior building area to receive concrete slab; lap edges 6" and seal with pressure sensitive tape over entire lap. Apply membrane in 8'-0" width. Lay membrane with seams perpendicular to and lapped in direction of pour. Turn edges of membrane up to within 1/2" of top of slab at intersection with vertical surfaces.

I. Where expansion or control joints are indicated in slab, lay vapor retarder continuous under joint filler.

J. Seal openings in vapor retarder around pipes and other protrusions with pressure sensitive tape. Fold at corners to form envelope.

K. No penetrations of the vapor retarder is allowed except for reinforcing steel and permanent utilities.

L. Repair damaged areas by cutting patches of vapor retarder, overlapping damaged area 6 inches and taping all four sides with pressure sensitive tape.

**3.03 PROTECTION**

A. Protect vapor retarder installation from damage until concrete slab is in place.

B. Immediately repair damaged vapor retarder in accordance with manufacturer's instructions.

**END OF SECTION**

# SECTION 07 2720
# FLUID-APPLIED MEMBRANE AIR & VAPOR BARRIERS

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. A fluid-applied membrane and accessory products for use as an air barrier in cavity walls.

B. Materials and installation methods to bridge and seal air leakage pathways in roof and foundation junctions, window and door openings, control and expansion joints, masonry ties, piping and other penetrations through the wall assembly.

### 1.02 RELATED REQUIREMENTS

A. Section 03 3000 - Cast-In-Place Concrete.

B. Section 04 2200 - Concrete Unit Masonry.

C. Section 07 2100 - Thermal Insulation.

D. Section 07 6200 - Sheet Metal Flashing and Trim: Metal through-wall flashings.

E. Section 07 9005 - Joint Sealers: Joint sealant materials and installation.

F. Section 08 1113 - Hollow Metal Doors and Frames.

G. Section 08 4313 - Aluminum-Framed Storefronts.

H. Section 09 2116 - Gypsum Board Assemblies: Sheathing over metal studs.

### 1.03 DEFINITIONS

A. Air Barrier Assembly: The collection of air barrier materials and auxiliary materials applied to an opaque wall, including joints and junctions to abutting construction, to control air movement through the wall.

### 1.04 REFERENCE STANDARDS

A. American Association of Textile Chemists and Colorists (AATCC) Test Method 127. “Water Resistance - Hydrostatic Pressure Test”

B. American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) Standard 90.1-2010 “Energy Standard for Buildings Except Low-Rise Residential Buildings”

C. ASTM C 920 Standard Specification for Elastomeric Joint Sealants

D. ASTM D 1970 Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep slope roofing Underlayment for Ice Dam Protection.

E. ASTM D 4541 Standard Test Method for Pull-Off Strength of Coatings Using Portable Adhesion Testers

F. ASTM E 96 Standard Test Methods for Water Vapor Transmission of Materials

G. ASTM E 783 Standard Test Method for Field Measurement of Air Leakage Through Installed Exterior Windows and Doors

H. ASTM E 1105 Standard Test Method for Field Determination of Water Penetration of Installed Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform or Cyclic Static Air Pressure Difference

I. ASTM E 2178 Standard Test Method for Air Permeance of Building Materials

J. ASTM E 2357 Standard Test Method for Determining Air Leakage of Air Barrier Assemblies

K. Canadian General Standards Board (CGSB) 71-GP-24M Standard for: Adhesive, Flexible, for Bonding Cellular Polystyrene Insulation

## 1.05 ADMINISTRATIVE REQUIREMENTS

A. Pre-Installation Conference: A pre-installation conference shall be held prior to commencement of field operations to establish procedures to maintain optimum working conditions and to coordinate this work with related and adjacent work. Preinstallation conference shall include the Contractor, installer, Gardner Spencer Smith Tench and Jarbeau, PC, and system manufacturer's field representative. Agenda for meeting shall include but not be limited to the following:
   1. Review of submittals.
   2. Review of surface preparation, minimum curing period and installation procedures.
   3. Review of special details and flashings.
   4. Sequence of construction, responsibilities and schedule for subsequent operations.
   5. Review of mock-up requirements.
   6. Review of inspection, testing, protection and repair procedures.

B. Sequence Work to enable air barrier continuity at wall-to-foundation, shelf angle, wall-to-roof, fenestration, different wall assemblies and other conditions providing challenges to air barrier continuity.

## 1.06 PERFORMANCE REQUIREMENTS

A. General: Air barrier shall be capable of performing as a continuous vapor-permeable air barrier and as a liquid-water drainage plane flashed to discharge to the exterior incidental condensation or water penetration. Air barrier assemblies shall be capable of accommodating substrate movement and of sealing substrate expansion and control joints, construction material changes, and transitions at perimeter conditions without deterioration and air leakage exceeding specified limits.

B. The building envelope shall be designed and constructed with a continuous air barrier to control air leakage into, or out of the conditioned space. An air barrier shall also be provided for interior partitions between conditioned space and space designed to maintain temperature or humidity levels which differ from those in the conditioned space by more than 50% of the difference between the conditioned space and design ambient conditions.

C. Installed product and accessories constitute a continuous air barrier, as described in ASHRAE Standard 90.1-2010 Section 5.4.3.1

D. Installed product and accessories shall perform as a liquid water drainage plane flashed to discharge to the exterior any incidental condensation or water penetration.

E. Installed product and accessories shall exhibit an air leakage rate, infiltration and exfiltration modes, measured after pressure cycling, not to exceed 0.2 L/s*m2 at 75 Pa (0.040 CFM/ft2 at 1.57 PSF) according to ASTM E 2357.

F. Product shall be a nominal 0.040 inch (40 mils) thickness membrane, with dry film thickness of installed product measuring a minimum of 0.030 inch (30 mils) with a comb gauge.

G. Product shall meet the following requirements:

| REQUIREMENT | RESULT | TEST METHOD |
|---|---|---|
| Air Permeance - on Porous Substrate | Not more than 0.02 L/s*m2 at 75 Pa (0.004 CFM/ft2 at 1.57 PSF) | ASTM E-2178, mod sprayed on CMU |
| Air Permeance - Free Film | Not more than 0.02 L/s*m2 at 75 Pa (0.004 CFM/ft2 at 1.57 PSF) | ASTM E-2178 |
| Low Temperature Flexibility | No cracking at minus 20 degrees F, 180 degree bend over 1 inch mandrel | ASTM D 1970 |

| | | |
|---|---|---|
| Fastener Sealability | No water leaking through nail penetration after 24 h. | ASTM D 1970 |
| Water Resistance | Product spray-applied to CMU and gypsum sheathing with joint shall resist a 55 cm (22 inch) column of water for 5 hours, no leaking or wet through. | |
| Pull Adhesion | Not less than 16 lbf per square inch (or report value at substrate failure) on glass-faced gypsum sheathing and concrete masonry unit (CMU) | ASTM D 4541, modified 4 inch wood puck |
| Water Vapor Permeance | Not more than 1 Perm | ASTM E-96, Method B |

**1.07 SUBMITTALS**

A. See Division 01 - Administrative Requirements, for submittal procedures.

B. Shop drawings showing locations and extent of air barrier and details of all typical conditions.

C. Manufacturer's technical data sheets and material safety data sheets for product and accessories.

D. Manufacturer's installation instructions.

E. Certification of compatibility by manufacturer, listing all materials on the project with which the product and accessories may come into contact.

F. Free film sample of product at representative cured thickness, minimum 2 inch by 3 inch size.

G. Sample of detail flashing and transition membrane, minimum 2 inch by 3 inch size

**1.08 QUALITY ASSURANCE**

A. Manufacturer: Air barrier systems shall be manufactured and marketed by a firm with a minimum of 20 years experience in the production and sales of waterproofing and air barriers. Manufacturers proposed for use, but not named in these specifications shall submit evidence of ability to meet all requirements specified, and include a list of projects of similar design and complexity completed within the past five years.

B. Source Limitations: Obtain primary air-barrier material and through wall flashing through one source from a single manufacturer. Should project require a vapor permeable and a vapor impermeable air barrier on same project, obtain vapor-permeable and vapor impermeable air barrier and through wall flashing from one source from a single manufacturer.

C. Applicator Qualifications: A firm experienced in applying air barrier materials 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.

D. Product and Accessories shall comply with all state and local regulations controlling use of volatile organic compounds (VOCs).

**1.09 MOCK-UP**

A. Field-Constructed Mock-Ups: Prior to installation on Project, apply product and accessories on mock-up to verify details under shop drawing submittals, to demonstrate tie-ins with adjoining construction and other termination conditions and to become familiar with properties of

materials in application:

1. Apply in field-constructed mockups of assemblies as specified in Section 04220 - Concrete Unit Masonry.

B. Allow full cure of product and test mock-up in accordance with Division 1 - Quality Assurance and test in accordance with ASTM E 783 and ASTM E1105 for air and water infiltration.

C. Cooperate and coordinate with the Union County Commissioner's Office's inspection and testing agency. Do not cover any installed product unless it has been inspected, tested and approved.

**1.10 DELIVERY STORAGE AND HANDLING**

A. Deliver materials to Project site in original packages with seals unbroken, labeled with manufacturer's name, product, lot number and directions for storage.

B. Store materials in their original undamaged packages in a clean, dry, protected location and within temperature range required by manufacturer.

C. Avoid spillage. Immediately notify Union County Commissioner's Office and Gardner Spencer Smith Tench and Jarbeau, PC if spillage occurs and start clean up procedures. Clean spills and leave area as it was prior to spill.

D. Sequence deliveries to avoid delays, but minimize on-site storage.

**1.11 PROJECT CONDITIONS**

A. Environmental Limitations: Apply air barrier within the range of ambient and substrate temperatures recommended by air barrier manufacturer. Protect substrates from environmental conditions that affect performance of air barrier. Do not apply air barrier to a wet substrate or during snow, rain, fog, or mist.

B. Apply product and accessories within approved ambient and substrate temperature range stated in manufacturer's literature.

C. Do not apply product or accessories over incompatible materials.

D. Observe safety and environmental measures indicated in manufacturer's MSDS, and mandated by federal, state and local regulations.

**1.12 WARRANTY**

A. See Division 01 - Closeout Submittals, for additional warranty requirements.

B. Provide the manufacturer's minimum five year material warranty.

**PART 2 PRODUCTS**

**2.01 MANUFACTURES**

A. Basis of Design - Carlisle Coatings & Waterproofing Incorporated; Product Spray Applied: Barriseal-S + Barricure: www.carlisle-ccw.com.

B. Grace Construction Products; Product Perm-A-Barrier VPO: www.na.graceconstruction.com.

C. W.R. Meadows, Inc; Product Air-Shield LM: www.wrmeadows.com.

D. Substitutions: See Division 01 - Product Requirements.

**2.02 MATERIALS**

A. Liquid Air Vapor Barrier System: One component, polymer modified, cold applied liquid air/vapor barrier membrane.

**2.03 ACCESSORIES**

A. Flashing and Transition Membrane: Minimum 40 mil thickness, self-adhering flashing consisting of polymeric film laminated with modified asphalt adhesive. Provided in rolls of various widths.

B. Sheathing Joint Tape: Minimum 20 mil thickness, self-adhering flashing consisting of polymeric film laminated with modified asphalt adhesive. Provided in 4 inch X 100 foot rolls.

C. Foil-Faced Tape: Minimum 30 mil thickness, self-adhering flashing consisting of 0.020 inch aluminum foil laminated with non-asphalt butyl adhesive. Provided in rolls of various widths.

D. Detail Mastic: Mastic for sealing penetrations and terminations of membrane.

E. Transition Membrane Primer. As required for applicable temperature ranges.

F. Reinforcing Fabric: Woven polyester fabric offered in rolls of various widths.

G. Glass Mat: Randomly-oriented glass strands held in water- soluble binder. Offered in rolls of various widths.

H. Pointing Mastic: Mastic for sealing penetrations and terminations of membrane.

## PART 3 EXECUTION

### 3.01 EXAMINATION

A. Examine surfaces to receive membrane. Notify Gardner Spencer Smith Tench and Jarbeau, PC if surfaces are not acceptable. Do not begin surface preparation or application until unacceptable conditions have been corrected.

### 3.02 PREPARATION

A. Protect adjacent surfaces not designated to receive air/vapor barrier.

B. Clean and prepare surfaces to receive air/vapor barrier membrane in accordance with manufacturer's instructions.

C. Do not apply membrane to surfaces unacceptable to manufacturer.

D. Concrete surfaces must be clean, free of standing water, ice, snow, frost, dust, dirt, oil, curing compounds or any other foreign material that could prevent proper adhesion of the membrane.

E. Patch all holes and voids and smooth out any surface misalignments.

F. Patch all cracks, protrusions, small voids, offsets, details, irregularities and small deformities with cementitious patching mortar at least two hours before application.

G. Ensure joints between dissimilar building materials are sealed with a strip of self-adhesive membrane 6" (150 mm) wide, centered over the joint.

H. Exterior Sheathing Panels:
   1. Panels are to be fastened according to sheathing panel manufacturer.
   2. Fill all panel joint with detailing compound prior to full application.
   3. Pre-treat all board joints with, manufacturer's recommended mesh-style wallboard tape.
   4. Joints greater than 1/4" (6.3 mm) in exterior sheathing panels (drywall and glass-faced) should be filled with detailing compound and then taped with manufacturer's recommended mesh-style wallboard tape.

I. Masonry Substrates:
   1. Apply air and vapor barrier over concrete block and brick with smooth trowel-cut mortar joints, struck full and flush.
      a. Prime substrate as required.
   2. Fill all voids and holes, particularly in the mortar joints, with a lean mortar mix, non-shrinking grout or parge coat.

J. Cover gaps in substrate plane and form a smooth transition from one substrate plane to another with stainless-steel sheet mechanically fastened to structural framing to provide continuous support for air barrier.

### 3.03 AIR BARRIER MEMBRANE INSTALLATION

A. Apply air barrier membrane to achieve a continuous air barrier according to air barrier manufacturer's written instructions.

B. Apply air barrier membrane within manufacturer's recommended application temperature ranges.

C. Apply a continuous unbroken air barrier to substrates according to the following minimum thickness. Apply membrane in full contact around protrusions such as masonry ties.

D. Do not cover air barrier until it has been tested and inspected by Union County Commissioner's Office's testing agency.

E. Correct deficiencies in or remove air barrier that does not comply with requirements; repair substrates and reapply air barrier components.

**3.04 TRANSITION MEMBRANE INSTALLATION**

A. Install strips, transition membrane, and auxiliary materials according to air barrier manufacturer's written instructions to form a seal with adjacent construction and maintain a continuous air barrier.

B. Apply primer to substrates to receive transition membrane at required rate and allow to dry. Limit priming to areas that will be covered by transition tape in same day. Re-prime areas exposed for more than 24 hours.
   1. Prime glass-fiber-surfaced gypsum sheathing not covered with air membrane material with number of prime coats needed to achieve required bond, with adequate drying time between coats.

C. Connect and seal exterior wall air barrier membrane continuously to roofing membrane air barrier, concrete below-grade structures, floor-to floor construction, exterior glazing and window systems, glazed curtain-wall systems, storefront systems, exterior louvers, exterior door framing, and other construction used in exterior wall openings, using accessory materials.

D. At end of each working day, seal top edge of strips and transition membrane to substrate with termination sealant.

E. Apply joint sealants forming part of air barrier assembly within sealant manufacturer's recommended application temperature ranges. Consult sealant manufacturer when sealant cannot be applied within these temperature ranges.

F. Wall Openings: Prime concealed perimeter frame surfaces of windows, curtain walls, storefronts, and doors. Apply transition membrane so that a minimum of 3 inches (75 mm) of coverage is achieved over both substrates.
   1. Transition Membrane: Roll firmly to enhance adhesion.

G. Fill gaps in perimeter frame surfaces of windows, curtain walls, storefronts, and doors, and miscellaneous penetrations of air barrier membrane with foam sealant.

H. Repair punctures, voids, and deficient lapped seams in strips and transition membrane. Slit and flatten fish-mouths and blisters. Patch with transition membrane extending 6 inches (150 mm) beyond repaired areas in strip direction.

**3.05 FIELD QUALITY CONTROL**

A. See Division 1 - Quality Requirements, for additional requirements.

B. Inspections: Air barrier materials and installation are subject to inspection for compliance with requirements. Inspections may include the following:
   1. Continuity of air barrier system has been achieved throughout the building envelope with no gaps or holes.
   2. Continuous structural support of air barrier system has been provided.
   3. Masonry and concrete surfaces are smooth, clean and free of cavities, protrusions, and mortar droppings.
   4. Site conditions for application temperature and dryness of substrates have been maintained
   5. Maximum exposure time of materials to UV deterioration has not been exceeded.
   6. Surfaces have been primed, if applicable.
   7. Laps in strips and transition membrane have complied with minimum requirements and have been shingled in the correct direction (or mastic has been applied on exposed

edges), with no fish-mouths.
8. Termination sealant has been applied on cut edges.
9. Strips and transition membrane have been firmly adhered to substrate.
10. Compatible materials have been used.
11. Transitions at changes in direction and structural support at gaps have been provided.
12. Connections between assemblies (membrane and sealants) have complied with requirements for cleanliness, preparation and priming of surfaces, structural support, integrity, and continuity of seal.
13. All penetrations have been sealed.

C. Tests: Testing to be performed will be determined by Union County Commissioner's Office's testing agency from among the following tests:
1. Qualitative Testing: Air barrier assemblies will be tested for evidence of air leakage according to ASTM E1186.

D. Remove and replace deficient air barrier components and retest as specified above.

**3.06 CLEANING AND PROTECTION**

A. Protect air barrier system from damage during application and remainder of construction period, according to manufacturer's written instructions.

B. Protect air barrier from exposure to UV light and harmful weather exposure as required by manufacturer. Remove and replace main air barrier material exposed for more than 30 days.

C. Clean spills, stains, and soiling from construction that would be exposed in the completed work using cleaning agents and procedures recommended by manufacturer of affected construction.

D. Remove masking materials after installation.

**END OF SECTION**

# SECTION 07 4120
# PREFORMED METAL ROOFING SYSTEM

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Preformed metal roofing system.

B. Perimeter and penetration flashing.

C. Closures.

D. Integral fascias.

E. Roof insulation.

F. Accessories.

### 1.02 RELATED SECTIONS

A. Division 05 - Structural Steel.

B. Division 05 - Metal Roof Deck.

C. Division 05 - Metal Fabrications.

D. Division 06 - Rough Carpentry.

E. Division 07 - Sheet Metal Flashing and Trim.

F. Division 07 - Joint Sealers.

### 1.03 REFERENCES

A. ASTM A 653/A 653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2004a.

B. ASTM B 32 - Standard Specification for Solder Metal; 2004.

C. ASTM B 209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2004.

D. ASTM B 209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate (Metric); 2004.

E. SMACNA (ASMM) - Architectural Sheet Metal Manual; Sheet Metal and Air Conditioning Contractors' National Association; 2003.

### 1.04 SUBMITTALS

A. See Division 01 - Administrative Requirements, for submittal procedures.

B. Shop Drawings: Indicate material profile, jointing pattern, jointing details, fastening methods, flashings, terminations, and installation details.

1. Show roofing system with flashings and accessories in plan and elevation; sections and details at large scale. Include metal thickness and finishes, panel lengths, joining details, anchorage details, flashings and special fabrication provisions for termination and penetrations, gutters and downspouts, roof insulation and anchorage, expansion provisions and supports. Indicate relationships with adjacent and interfacing work including metal-framed storefront system. Indicate concrete fastener testing pull-out requirements.

C. Product Data: Provide data on metal types, finishes, characteristics, manufacturer's detailed material and system description, installation instructions, engineering performance data with product and performance data for roof insulation.

D. Design Calculations: Submit design calculations, indicating compliance with specified performance criteria. Indicate fastener types and spacings. Design calculations shall bear the seal of a professional engineer licensed in Georgia. Indicate that the engineer has reviewed shop drawings.

E. Test Reports: Submit reports by an independent testing laboratory to support structural calculations and show compliance with specified performance criteria.
   1. Tests shall have been made for substantially identical systems within ranges of specified performance criteria.
   2. If test data is not available, or if data does not represent project conditions, Contractor shall be responsible for securing satisfactory tests by an independent testing agency acceptable to Gardner Spencer Smith Tench and Jarbeau, PC, with cost of such testing borne by Contractor.

F. Certificates: Submit certificates based upon independent testing laboratory Indicating no measurable water penetration or air leakage through the system when tested in accordance with ASTM E331-86 and E283-84.

G. Intent to Warrant and Certifications:
   1. Submit an Intent to Warrant executed by authorized representative of metal roofing manufacturer, stating the following (use exact wording): "The metal roofing system manufacturer _____ has reviewed drawings and specifications, conditions affecting the work and the relationship of metal roofing system with related work, and thereby proposes to provide the warranty as specified herein without further stipulation. Attached are applicator certification and certification that specified system, materials, surfaces and conditions, are acceptable for purpose of providing specified warranty."
   2. Submit certification that proposed applicator is approved for warranted work by metal roofing manufacturer.
   3. Submit certification from authorized representative of metal roofing manufacturer stating that specified system and materials, as well as indicated surfaces and conditions, are acceptable for purpose of providing specified warranty.
   4. Submit certification from authorized representative of metal roofing manufacturer, stating that proposed roof system meets design and performance criteria, and specified requirements.

H. Submit two samples 24" x 24" inch in size illustrating metal roofing mounted on plywood backing illustrating typical seam.

I. Submit two samples of panel clips, closures, insulation and accessory items.

**1.05 QUALITY ASSURANCE**

A. Perform work in accordance with SMACNA Architectural Sheet Metal Manual requirements and standard details, except as otherwise noted.

B. Fabricator and Installer Qualifications: Company specializing in performing sheet metal roof installations with minimum ten years of experience.
   1. Shall be approved in writing by system manufacturer, with trained supervisory personnel observing and directing work.
   2. If required, proposed Fabricator and Installer shall submit adequate financial responsibility. Gardner Spencer Smith Tench and Jarbeau, PC reserves the right to inspect fabrication facilities in determining qualifications.

C. Source Limitations: Obtain preformed metal roofing systems for each kind of construction condition indicated through one source from a single manufacturer.

D. Fire-Rated Roof Assemblies: Comply with fire resistance assembly designs indicated on drawings. Use only manufacturers and materials specified in fire rated assembly designs indicated.

**1.06 PRE-INSTALLATION MEETING**

A. Convene one week before staring work of this section.

B. Prior to beginning metal roofing work, a pre-installation conference shall be held to review work to be accomplished.

1. Contractor, Gardner Spencer Smith Tench and Jarbeau, PC, metal roofing subcontractor, metal roofing system manufacturer's representative and all subcontractors who have equipment penetrating roof or whose work involves access to roof shall be present.
2. Contractor shall record minutes of meeting and shall distribute copies of minutes to all attending parties.

**1.07 DELIVERY, STORAGE, AND PROTECTION**

A. Stack material to prevent twisting, bending, or abrasion, and to provide ventilation. Slope metal sheets to ensure drainage.

B. Provide protective interleaving between contact areas of exposed surfaces to prevent abrasion during shipment, storage and handling.

C. Prevent contact with materials which may cause discoloration or staining.

D. Handle materials to prevent damage to surfaces, edges and ends of roofing sheets and sheet metal items. Damaged material shall be rejected and removed from site.

E. Store insulation in dry, covered area, off ground, out of direct sunlight.

F. Protect panels from wind related damage.

G. Inspect materials upon delivery. Reject and remove physically damaged or marred materials from project site.

**1.08 PROJECT CONDITIONS**

A. Provide protection or avoid traffic on completed roof surfaces.

B. Avoid overloading roof with stored materials.

C. Support no roof mounted equipment directly on roofing system.

D. Coordinate work of other trades which penetrates roof or is to be made watertight by roof is in place and approved in writing prior to installation of roofing.

**1.09 DESIGN REQUIREMENTS**

A. Structural Properties: Calculate structural properties for roof panels and accessories fabricated from sheet steel in accordance with AISI SG02-1, "North American Specifications for the Design of Cold-Formed Steel Structural Members,".

B. Thermal Movement: Completed metal roofing and flashing system shall be capable of withstanding expansion and contraction on components caused by temperature range from -10 degrees F. to +150 degrees F. without buckling, producing excess stress on structure, anchors or fasteners, or reducing performance.

C. Uniform Wind Load Capacity: Installed roof system shall withstand positive and negative design wind loading pressures complying with the applicable Building Code, with a maximum system deflection of L/140. System shall withstand a supplementary loading of 150% of design wind pressures. Capacity shall be determined using pleated airbag method in accordance with the principals of ASTM E330-84, Procedure A, adapted to testing of roof panels as follows:
   1. Roof test specimens shall be either full length or representative of the main body of the roof - free from edge restraint of perimeter attachments, continuous over one or more supports, and containing at least five panel modules for standing seam roof.
   2. No attachments shall be permitted at sides or at end perimeter other than those that occur uniformly throughout the roof. Side and end seals shall be flexible and in no way restrain crosswise distortion of panels.
   3. Panels and accessories shall be production materials of same type and thickness proposed for use on project.
   4. Seals or film shall not span any crevices or cracks that may tend to separate under pressure.

D. Concentrated Load Capacity: System shall withstand a load of 250 lbs. applied to a four square inch area located in the center of the panel between stiffener ribs, without buckling of ribs or permanent panel distortion.

## 1.10 PERFORMANCE REQUIREMENTS

A. Structural Performance: Capacity of metal roof panels system shall be capable of withstanding specified loads and stress for conditions indicated as determined in accordance with ASTM E1592-01 test method by an independent testing agency.
   1. Uniform wind load capacity: Installed roof system, including anchors and connections shall withstand positive and negative design wind loading pressures complying with The Standard Building Code, with Georgia current amendments. Project specific data are indicated on the drawings for manufacturer's use in determining the design of roof panel system.
      a. Maximum system deflection: L/180 of the span.
      b. Supplementary loading: System shall be capable of withstanding 165% of design wind pressures.
   2. Concentrated load capacity: System shall withstand a load of minimum 250 lbs. applied to a four square inch area located in the center of the panel between stiffener ribs, without buckling of ribs or permanent panel distortion.
   3. Capacities for gauge, span or loading other than those tested may be determined by interpolation of test results within the range of test data. Extrapolations for conditions outside test range are not acceptable.

B. Water Penetration (Dynamic Pressure): No uncontrolled water penetration, other than condensation, when exposed to dynamic rain and 70 mph wind velocities for not less than five minutes duration, when tested in accordance with principles of AAMA 501.1-83 and ASTM E331-86.

C. Test Results: Capacities for gauge, span or loading other than those tested may be determined by interpolation of test results within the range of test data. Extrapolation for conditions outside test range are not acceptable.

D. Static Pressure Air Infiltration: Completed roof system shall have maximum of 0.01 cfm/sq. ft. with 6.24 psf air pressure differential per ASTM E283-84.

E. Windstorm Rating: Provide material and methods to achieve FM Class I-90 windstorm resistance classification.

## 1.11 WARRANTY

A. See Division 01 - Closeout Submittals, for additional warranty requirements.

B. Endorse and forward to Union County Commissioner's Office the following warranties:
   1. Manufacturer's twenty (20) year finish warranty covering refinishing of fluoropolymer coating due to checking, crazing, peeling, chalking, fading or adhesion.
   2. Manufacturer's twenty (20) year limited material warranty covering structural defects and corrosion.
   3. Installer's five (5) year warranty covering roofing system installation and watertightness.
   4. Warranties shall commence on Date of Substantial Completion.

# PART 2 PRODUCTS

## 2.01 MANUFACTURERS

A. In other Part 2 articles where title below introduce lists, the following requirements apply to product selection:
   1. Manufacturers: Subject to compliance with requirements, provide products by one of the manufacturers specified.
   2. Basis-of-Design Product: The design for each visual display surface is based on the product specified. Subject to compliance with requirements, provide either the named product or a comparable product by one of the other manufacturers specified.

B. Metal Roofing System: Acceptable manufacturers subject to compliance with specified requirements:
   1. Basis of design: AEP-Span; Product, Span-Lok HP, SL Series: www.aep-span.com.

2. Berridge Manufacturing Company: www.berridge.com.
3. International Metal Co., Inc: www.imetco.com.
4. Metal Building Components, Inc: www.mbci.com.
5. McElroy Metal: www.mcelroymetal.com.
6. MM Systems Corporation: www.mmsystemscorp.com.
7. Perma Clad Products of Georgia:
8. Peterson Aluminum Corporation: www.pac-clad.com.
9. Substitutions: See Division 01 - Product Requirements.

**2.02 SHEET MATERIALS**

A. Panel Material: Minimum 24 gauge, commercial grade hot-dipped galvanized steel meeting ASTM A446-87, Grade C G90 coated in accordance with ASTM A525-87.

B. Flashing and Flat Stock Material: Minimum 24 gauge galvanized steel of same type and finish as panel material.

C. Finish on Exposed Surfaces:
1. Two-coat, coil-applied, baked-on, fluoropolymer coating based on Pennwalt Corp., Kynar 500 resin (polyvinylidene fluoride, PVDF), formulated by a Pennwalt licensed manufacturer and applied by manufacturer's approved applicator.
2. Coating System Thickness: 0.90 mils minimum dry film thickness, consisting of primer and minimum 0.75 mil dry film thickness color coat.
3. Color: Color to be selected by Gardner Spencer Smith Tench and Jarbeau, PC from coating manufacturer's formulated colors.

D. Finish on Unexposed Surfaces: Manufacturer's standard baked enamel finish or Grade C Galvalume ASTM 792-86, AZ 55, Satin Finish.

E. Characteristics:
1. Configuration: Standing seams incorporating mechanically interlocked, concealed anchor clips allowing thermal movement, and of configuration which will prevent entrance or passage of water.
2. Match Existing.

**2.03 ACCESSORIES**

A. Anchor clips: Stainless steel designed to receive recessed mechanical anchor into structural support elements, purlins, girts, metal decking or blocking. Clips shall allow free thermal expansion and contraction movement, relative to the structure, within the full temperature ranges specified.

B. Anchors: Stainless steel screws designed to meet structural loading requirements.

C. Exposed fasteners: Stainless steel self-tapping hexagonal head screws with neoprene sealing washers, #14 size, Minimum; head finished to match panel color.

D. Closures: Factory pre-cut closed cell foam meeting ASTM D1056-85, Grade SCE-41 (EPT), and field-fabricated PVC hip closures enclosed in metal channel matching panels when used at hip and ridge.
1. "Z" closures shall be same material as panels, manufacturer's standard detail, with continuous sealant bead at edges, ends and contact area with adjacent materials.

E. Panel joint sealant: Non-curing polyisobutylene tape of thickness to adhere to both surfaces being joined.

F. Vinyl weatherseal insert: Vinyl inserts form pieces in longest practical lengths.

**2.04 ROOF INSULATION**

A. Isocyanurate Roof Insulation:
1. Type: Rigid isocyanurate insulation boards with nonasphaltic glass facing sheets.
   a. Water absorption: Less than 1% volume in accord with ASTM C518-91.
   b. Dimensional stability: 2% maximum at 7 days in accord with ASTM C209-92.

c. Compressive strength: 18 psi minimum in accord with ASTM D1621-94.
d. Density: 2.0 pcf nominal in accord with ASTM D1622-93.
e. Moisture Vapor Transmission: Less than 1 perm in accord with ASTM E96-94.
f. Service temperature: -100 degrees F. to 122 degrees F.
g. Flame spread: 25 in accord with ASTM E84-97a.

2. Face size: Sizes as required for securement between roof purlins.
3. Thickness: 2 inch, minimum, or as indicated on drawings.
4. "R" value: Stabilized at 75 degrees F.: 5.56/inch.
5. Fire hazard classification: FM Class I, meeting the requirements of FM 4450.

B. Insulation Fastener System: Insulation fastener system for attachment to metal decks; Type required by roofing system manufacturer and meeting characteristics and wind uplift requirements:
1. Corrosion resistance: Pass FM4470 Corrosion Test, modified DIN 50018 standard, with maximum of 15 percent red rust after 15 wet and dry acidic atmosphere cycles in Kesternich cabinet.
2. Plates: Minimum 3 inch diameter, non-corrosive material.

C. Gypsum Underlayment for Metal Decks: Meeting ASTM C1177-04, Type X, 5/8 inch thickness; moisture and fire resistant gypsum board meeting fire-rated assembly design indicated.
1. Acceptable Product; subject to compliance with specified requirements: Georgia Pacific Corp.; Dens-Deck Fireguard Type X.

**2.05 ACCESSORY PRODUCTS**

A. Purlins: Rolled-formed, galvanized structural steel sheet to ASTM A525-83, Coating Designation G90; gauges and sizes as required by manufacturer's structural analysis and of configuration and size to secure insulation to roof deck.

B. Roof Insulation Fasteners: As required by roof insulation manufacturer and roof panel manufacturer's design to meet specified wind uplift rating for roof deck substrates indicated.
1. Corrosion resistance: Passing FM 4470 Corrosion Test, modified DIN 50018 standard, with a maximum of 15% red rust after 15 wet and dry acidic atmosphere cycles in Kestemich cabinet.
2. Plates: Non-corrosive type; sized as required for wind uplift rating.
3. Wind Uplift Requirement: FM Class 1-90 windstorm rating.

C. Wood Nailers and Blocking: Fire-retardant treated wood as specified in Rough Carpentry Section; sizes as indicated.

D. Butyl Sealant for Concealed Joints:
1. Acceptable products:
a. Pecora Corp., BC-158.
b. Protective Treatments, Inc., 757.
c. Tremco, Inc., Butyl Sealant.
d. W.R. Meadows, Inc., Elastomeric Butyl Caulk.
2. Characteristics:
a. Type: One-part butyl sealant.
b. Colors: As selected by Gardner Spencer Smith Tench and Jarbeau, PC from manufacturer's standard selection.

E. Self-Adhered Membrane Roofing Underlayment: Waterproof membrane underlayment for application directly under roofing, for installation under metal copings, for hips, ridges, valleys and low edge starter course. Comprised of a cross laminated, high density polyethylene film and an adhesive allowing the product to adhere to the roof and seal around the fasteners used in the installation of the preformed metal roofing system.
1. Acceptable products; subject to compliance with specified requirements:
a. Polyguard Products, Inc., Polygaurd Deck Guard.
b. W.R. Grace, Vycor Ultra.

c. Nicolon Mirafi Group, Miradri WIP 300HT.

2. Characteristics:
   a. Type: Self-adhering rubberized asphalt sheet complying with ASTM D1790-94.
   b. Thickness: 40 mils minimum.
   c. Tensile strength: 250 psi minimum when tested in accord with ASTM D412-97.
   d. Elongation: 250% when tested in accord with ASTM D412-97, Die C Modified.
   e. Provide primers, sealants and accessories required for a waterproof installation.

F. Bituminous Coating: Cold applied, asphalt mastic meeting SSPC-paint 12-82, minimum 30 mils thickness.

G. Sheet Metal Flashing and Trim: Provide gutters, downspouts, ridge caps, penetration flashings and miscellaneous accessories for complete installation. All exposed to view components and accessories shall receive the same finish as the roofing panels. Detail and construct flashing and sheet metal components in accordance with Sheet Metal Flashing and Trim section of the specifications.

H. Concrete Splash Blocks: As specified in Sheet Metal Flashing and Trim section of the specifications.

**2.06 FABRICATION**

A. Shop fabricate metal roofing and flashing components to maximum extent possible, forming metal work with clear, sharp, straight and uniform bends and arrises. Hem exposed edges of flashing.

B. Curved Panels shall be site-formed with manufacturer's portable roll formers in continuous lengths with a minimum of 35'-0" radius to conform to the solid sheathed curved substrate.

C. Form flashing components from full single width sheet. Provide shop fabricated, mitered corners, joined using closed end pop rivets and joint sealant.

D. Fabricate roofing and related sheet metal work in accordance with approved shop drawings and applicable standards.

E. Solder sheet metal joints with heavy, well-heated coppers. Pre-tin joints not less than 1-1/2 inches wide. Provide 1 inch minimum soldered joints. After soldering, wash joints and neutralize remaining acid with alkaline solution.

F. Provide linear sheet metal items in minimum 10'-0" sections except as otherwise noted. Form flashing using single pieces for the full width. Provide shop fabricated, mitered and joined corners, with minimum 2'-0" long legs.

**PART 3 EXECUTION**

**3.01 EXAMINATION**

A. Provide Union County Commissioner's Office and Gardner Spencer Smith Tench and Jarbeau, PC with notice of each inspection at least seven days prior to proposed inspection time.

B. Inspections shall be performed by roof manufacturer's authorized representative.

C. Examine alignment and placement of substrates before proceeding with installation of preformed metal roofing. Acceptance shall be given prior to and after underlayment installation. Do not proceed until substrates are acceptable.

D. Obtain manufacturer's written acceptance of substrates prior to roofing installation.

E. Inspect roof deck to verify deck is clean and smooth, free of depressions, waves, or projections, properly sloped to eaves.

F. Verify correct placement of wood nailers and insulation positioning between nailers.

G. Verify roof openings, curbs, pipes, sleeves, ducts, or vents through roof are solidly set, reglets are in place, and nailing strips located.

H. Verify roofing termination and base flashings are in place, sealed, and secure.

**3.02 PREPARATION**

A. Install starter and edge strips, and cleats before starting installation.

B. Back paint concealed metal surfaces and surfaces in contact with dissimilar metals with protective backing paint to a minimum dry film thickness of 15 mil.

C. Immediately prior to application of roof insulation materials, sweep roof deck, removing debris and foreign material.

D. Examine alignment and placement of substrates before proceeding with installation of preformed metal roofing.

E. Install gypsum board underlayment over structural metal deck in accord with code requirements. Stagger end joints one-half board length. Bear edges on deck ribs.

**3.03 INSTALLATION - ROOF INSULATION**

A. Install roof insulation over metal decking in accordance with approved shop drawings and manufacturer's product data; secured in position with roof purlins at spacings indicated.

B. Anchor roof purlins to roof deck using fasteners and spaced as indicated on approved shop drawings.

C. Install roof insulation over metal decking and gypsum board underlayment in accordance with approved shop drawings and manufacturer's product data.

D. Lay insulation boards parallel with eaves with end joints staggered from subsequent boards at least 12 inches. Allow approximately 1/8 inch space between board edges and ends for expansion.

E. Install preservative treated wood blocking equal to insulation thickness along eaves, rakes and cut-outs and as required. Install blocking as specified in Rough Carpentry section.

F. Attach insulation to deck with screws spaced as directed by manufacturer to meet specified wind uplift requirements. Drive screws tight to insulation face, with screw heads flush with surface of insulation.

G. Install only as much insulation each work period as can be made dry by end of same work period.

H. Cover the entire insulated roof deck area immediately below the metal roof panels with single layer of waterproofing underlayment per the manufacturer's written recommendations.

I. Cover the entire insulated roof deck area immediately below the metal roof panels with single layer of waterproofing underlayment per the manufacturer's written recommendations. Attach membrane to roof purlins to prevent movement or blow-off until metal roofing system is installed.

**3.04 INSTALLATION - WATERPROOF MEMBRANE**

A. Install waterproof membrane underlayment over roof insulation at all areas:
   1. Install membrane underlayment fully adhered to substrates in accord with manufacturer's product data.
   2. If required, prime surfaces to receive membrane materials. Allow primer to dry until tack-free. Prime only area which can be covered with sheet membrane during work period. Reprime surfaces which are not covered within 24 hours of primer application.
   3. Install membrane materials with side and end laps lapped as recommended by written product data. Begin installation at low points, lapping succeeding sheets to shed water.
      a. Apply membrane in shingle fashion to shed water.
   4. Membrane applications shall be fully adhered, smooth, straight and free of blisters, buckles, fishmouths and wrinkles affecting the complete adherence of the membrane. Patch and repair defective work in accord with manufacturer's written product data. Replace defective areas.
   5. Double membrane at changes in plane by application of centered membrane strip. Cover strip completely with full width sheet.

a. Install full width underlayment sheet centered along valleys and ridges; extending equal distance each side with membrane pressed firm in place.

6. Seal around protrusions and at terminations in accord with product data.
   a. Where roofing meets walls and similar vertical surfaces, extend underlayment up vertical surfaces, minimum 8 inches.
7. Repair punctures and tears in membrane by patching with membrane material prior to protection board installation. Trowel-apply mastic at exposed edges of patch.
8. Do not allow installed underlayment to be exposed to the weather for prolong periods; cover with specified metal roof panels as soon as possible following membrane application.

**3.05 INSTALLATION - ROOFING**

A. Install roofing and flashings in accordance with approved shop drawings and manufacturer's product data, within specified erection tolerances.

B. Where metal roofing is indicated to be installed direct over metal decking, install waterproofing underlayment over decking in same manner as specified for installation over insulation, except attached to metal decking.

C. Isolate dissimilar metals and masonry or concrete from metals with bituminous coating. Use gasketed fasteners to prevent corrosive action between fastener, substrate and panels.

D. Use exposed fasteners, matching panels and trim. Limit exposed fasteners to extent indicated on shop drawings.

E. Anchorage shall allow for temperature expansion and contraction movement within specified range without stress or elongation of panels, clips or anchors. Attach clips to metal decking using self-drilling screws of size and spacing in accordance with manufacturer's product data and design calculations to resist specified uplift and thermal movement forces.

F. Install roof panels in single lengths, from top to bottom of run, with no exposed fasteners or joints. Seal all terminations in accord with roofing system manufacturer's written product data.

G. Curved design snap-on seams shall be 1 inch in height and shall contain manufacturer's factory applied extruded vinyl weather seal insert to prevent siphoning of moisture through the standing seam.

H. Seal laps and joints in accordance with roofing system manufacturer's product data.

I. Coordinate flashing and sheet metal work to provide weathertight conditions at roof terminations. Fabricate and install in accordance with standards of SMACNA "Architectural Sheet Metal Manual" and NRCA "Construction Details" using continuous cleats at all exposed edges.

J. Penetrations of metal roofing shall only be allowed where no other location is possible. Where penetrations are unavoidable, they shall be located in the center of the affected panel, with clearance available to each adjacent seam. No penetrations shall occur over seams. Penetration flashing shall allow for differential movement between the roof assembly and the penetration. Penetration flashing shall be watertight; provide water diverter above the penetration, adhered to the roof panel with elastomeric silicone sealant.

K. Provide temperature expansion and contraction movement of panels at roof penetrations and roof mounted equipment in accordance with system manufacturer's product data and design calculations.

L. Installed system shall be true to line and plane and free of dents, oilcanning and physical defects.

M. Form joints in linear sheet metal to allow for 1/2 inch minimum expansion at 20 feet o.c. maximum and 8 feet from corners. Provide 12 inch wide back-up plate at intersections. Form plates to profile of sheet metal item

N. At joints in linear sheet metal items, set sheet metal over back-up plate in two beads of butyl sealant, 1/4 inch diameter, minimum. Extend sealant over all metal surfaces. Mate components

for positive seal. Allow no sealant to migrate onto exposed surfaces.

O. Copings, gutters and downspouts shall be install in accordance with Sheet Metal Flashing and Trim section.

P. Paint edges where panels are field cut. Touch up using paint furnished by roofing panel manufacturer, matching exposed panel surface finish.

**3.06 TOLERANCES**

A. Applicable Erection Tolerances: Maximum variation from planes or lines; 1/4 inch in 20 feet or 3/8 inch in 40 feet or more.

**3.07 CLEANING AND PROTECTION**

A. Do not permit traffic over unprotected roof surface.

B. Remove damaged work and replace with new, undamaged components.

C. Clean exposed surfaces of roofing and accessories after completion of installation. Leave in clean condition at Date of Substantial Completion. Touch up minor abrasions and scratches in finish.

**END OF SECTION**

# SECTION 07 4213
# METAL WALL PANELS

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Manufactured metal panels for soffits, and fascias with related flashings and accessory components.

### 1.02 RELATED REQUIREMENTS

A. Section 07 2100 - Thermal Insulation.

B. Section 07 9005 - Joint Sealers: Sealing joints between metal wall panel system and adjacent construction.

### 1.03 REFERENCE STANDARDS

A. AAMA 609 & 610 - Cleaning and Maintenance Guide for Architecturally Finished Aluminum (Combined Document) 2015.

B. ASCE 7 - Minimum Design Loads and Associated Criteria for Buildings and Other Structures Most Recent Edition Cited by Referring Code or Reference Standard.

C. ASHRAE Std 93 - Methods of Testing to Determine the Thermal Performance of Solar Collectors 2010, with Errata (2014).

D. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process 2022.

E. ASTM A792/A792M - Standard Specification for Steel Sheet, 55% Aluminum-Zinc Alloy-Coated by the Hot-Dip Process 2022.

F. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate 2014.

G. ASTM B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate (Metric) 2014.

H. ASTM C665 - Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing 2017.

I. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials 2023.

### 1.04 ADMINISTRATIVE REQUIREMENTS

A. Preinstallation Meeting: Conduct a preinstallation meeting one week prior to the start of the work of this section; require attendance by all affected installers.

B. Sequencing: Ensure that utility connections are achieved in an orderly and expeditious manner.

### 1.05 SUBMITTALS

A. See Division 01 - Administrative Requirements, for submittal procedures.

B. Panel System Manufacturer Qualifications.

C. Product Data: Panel manufacturer's data sheets on each product to be used, including thickness, physical characteristics, and finish, and:
   1. Finish manufacturer's data sheet showing physical and performance characteristics.
   2. Storage and handling requirements and recommendations.
   3. Fabrication instructions and recommendations.
   4. Specimen warranty for finish, as specified herein.

D. Shop Drawings: Show layout and elevations, dimensions and thickness of panels, finishes and textures, connections, details and location of joints, sealants and gaskets, method of anchorage, number of anchors, supports, reinforcement, trim, flashings, and accessories.
   1. Indicate panel numbering system.

2. Differentiate between shop and field fabrication.
3. Indicate substrates and adjacent work with which the panel system must be coordinated.

E. Samples: Submit one selection and verification samples of panel, 12 inch by 12 inch in size illustrating finish color, sheen, and texture.
1. Selection samples: Manufacturer's color charts or chips illustrating full range of colors, finishes and textures available with factory-applied finishes.
2. Verification samples:
a. Structural: 24 inch by 24 inch sample panel assembly, including intersection of 4 panels, in thickness specified, including Z-clips, stiffeners, substrate supports, and sealant for assembly approval.
b. Include separate samples with factory applied finish on 6 inch by 6 inch of each color and finish selected for project.
3. Installer’s Qualifications: Include a minimum of three (3) projects with similar types of exterior panels, with facility contact information.
4. Certificate: Certify that the work results of this section meet or exceed specified requirements.
5. Manufacturer's installation instructions.
6. Manufacturer's Field Reports: Provide within 48 hours of field review. State what was observed and what changes, if any, were requested or required.
7. Maintenance Data: Care of finishes and warranty requirements.
8. Executed Warranty: Submit warranty and ensure that forms have been completed in CRL's name and registered with manufacturer.

**1.06 QUALITY ASSURANCE**

A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years of documented experience.

B. Installer Qualifications: Company specializing in installing products of the type specified in this section with minimum three years of documented experience.

C. Field Measurements: Verify actual dimensions by field measurement before fabrication; show recorded measurements on shop drawings.

D. Design Engineer's Qualifications: When required by building authority having jurisdiction, Design structural supports and anchorages under direct supervision of a Structural Engineer experienced in design of this type of Work and licensed in Georgia.

**1.07 MOCK-UP**

A. Mock-Up: Provide a mock-up for evaluation of fabrication workmanship.

B. Locate where directed by Architect.

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

**1.08 DELIVERY, STORAGE, AND HANDLING**

A. Protect panels from accelerated weathering by removing or venting sheet plastic shipping wrap.

B. Store prefinished material off the ground and protected from weather; prevent twisting, bending, or abrasion; provide ventilation; slope metal sheets to ensure proper drainage.

C. Prevent contact with materials that may cause discoloration or staining of products.

D. Deliver products in manufacturer's original, unopened, undamaged containers with identification labels intact.
1. Protect finishes by applying heavy duty removable plastic film during production.
2. Package for protection against transportation damage.
3. Provide markings to identify components consistently with drawings.
4. Exercise care in unloading, storing and installing panels to prevent bending, warping, twisting and surface damage.

5. Store products protected from exposure to harmful weather conditions and at temperature conditions recommended by manufacturer.

**1.09 WARRANTY**

A. See Division 01 - Closeout Submittals, for additional warranty requirements.

B. Correct defective work within a five year period after Date of Substantial Completion for degradation of panel finish, including color fading caused by exposure to weather.

**PART 2 PRODUCTS**

**2.01 MANUFACTURERS**

A. Basis of Design:
   1. Metal Wall Panels; Type: MP1 - Concealed Fasteners:
      a. Basis of Design, Petersen Aluminum Corporation; Match Existing: www.pac-clad.com.
      b. ATAS International, Inc: www.atas.com.
      c. McElroy Metal: www.mcelroymetal.com.
      d. Sheffield Metals International: www.sheffieldmetals.com.

B. Other Acceptable Manufacturers:
   1. Berridge Manufacturing Company: www.berridge.com/sle.
   2. Centria: www.centria.com.
   3. DAMS Incorporated: www.damsinc.com/sle.
   4. MBCI: www.mbci.com.
   5. Substitutions: See Division 01 - Product Requirements.

**2.02 FORMED METAL FABRICATIONS - GENERAL**

A. Shop Assembly: Preassemble items to greatest extent possible. Minimize field splices and field assembly. Disassemble only as necessary for transportation and handling. Mark items clearly for assembly and installation.

B. Coordination: Match dimensions and attachment of formed metal items to adjacent construction. Produce integrated assemblies. Closely fit joints; align edges and flat surfaces unless indicated otherwise.

C. Forming: Profiles indicated. Maximize lengths. Fold exposed edges to form hem indicated or ease edges to radius indicated with concealed stiffener. Provide flat, flush surfaces without cracking or grain separation at bends.

D. Reinforcement: Increase metal thickness; use concealed stiffeners, backing materials or both. Provide stretcher leveled standard of flatness and stiffness required to maintain flatness and hold adjacent items in flush alignment.

E. Anchors: Straps, plates and anchors as required to support and anchor items to adjacent construction.

F. Supports: Miscellaneous framing, mounting, clips, sleeves, fasteners and accessories required for installation.

**2.03 MANUFACTURED METAL PANELS**

A. Wall Panel System: Factory fabricated prefinished metal panel system, site assembled.
   1. Provide soffit panels and subgirt framing assembly.
   2. Design and size components to support assembly dead loads, and to withstand live loads caused by positive and negative wind pressure acting normal to plane of wall.
   3. Design Pressure: In accordance with applicable codes.
   4. Maximum Allowable Deflection of Panel: L/180 for length(L) of span.
   5. Movement: Accommodate movement within system without damage to components or deterioration of seals, movement between system and perimeter components when subject to seasonal temperature cycling; dynamic loading and release of loads; and deflection of structural support framing.

6. Drainage: Provide positive drainage to exterior for moisture entering or condensation occurring within panel system.
7. Fabrication: Formed true to shape, accurate in size, square, and free from distortion or defects; pieces of longest practical lengths.
8. Corners: Factory-fabricated in one continuous piece with minimum 2 inch returns.
9. Provide continuity of air barrier and vapor retarder seal at building enclosure elements in accordance with materials specified in Section 07 2710 - Modified Bituminous Sheet Air Barriers.

B. Internal and External Corners: Same material, thickness, and finish as exterior sheets; profile to suit system; shop cut and factory mitered to required angles.

C. Expansion Joints: Same material, thickness and finish as exterior sheets; manufacturer's standard brake formed type, of profile to suit system. See Section 07 7160 - Roof Expansion Assemblies.

D. Trim: Same material, thickness and finish as exterior sheets; brake formed to required profiles.

E. Anchors: Galvanized steel.

**2.04 MATERIALS**

A. Precoated Aluminum Sheet: ASTM B209 (ASTM B209M), 3105 alloy, O temper, smooth surface texture; continuous-coil-coated on exposed surfaces with specified finish coating and on panel back with specified panel back coating.

B. Select materials with surface flatness, smoothness, and lack of surface blemishes where exposed to view in finished system.

**2.05 FINISHES**

A. Exposed Surface Finish: Panel manufacturer's standard polyvinylidene fluoride (PVDF) coating, top coat over epoxy primer.

B. Panel Backside Finish: Panel manufacturer's standard siliconized polyester wash coat.

**2.06 ACCESSORIES**

A. Gaskets: Manufacturer's standard type suitable for use with system, permanently resilient; ultraviolet and ozone resistant.

B. Sealants:
1. Exposed Sealant: Elastomeric; silicone, polyurethane, or silyl-terminated polyether/polyurethane.
2. Concealed Sealant: Non-curing butyl sealant or tape sealant.

C. Sealants: Manufacturer's standard type suitable for use with installation of system; non-staining.
1. Color: To be selected by Gardner Spencer Smith Tench and Jarbeau, PC.

D. Fasteners: Manufacturer's standard type to suit application; with soft neoprene washers, steel, hot dip galvanized. Fastener cap same color as exterior panel.
1. Metal-to-Metal Fasteners: Self-drilling, self-tapping screws.

E. Field Touch-up Paint: As recommended by panel manufacturer.

**PART 3 EXECUTION**

**3.01 EXAMINATION**

A. Verify that building framing members are ready to receive panels.

B. Verify that weather barrier has been installed over substrate completely and correctly.

C. Verify dimensions, tolerances, and interfaces with other work.

D. Verify substrate on-site to determine that conditions are acceptable for product installation in accordance with manufacturer's written instructions.

E. If substrate preparation is the responsibility of another installer, notify Gardner Spencer Smith Tench and Jarbeau, PC of unsatisfactory preparation before proceeding.

F. Notify Gardner Spencer Smith Tench and Jarbeau, PC in writing of conditions detrimental to proper and timely completion of work. Do not proceed with erection until unsatisfactory conditions have been corrected.

**3.02 PREPARATION**

A. Install subgirts perpendicular to panel length, securely fastened to substrates and shimmed and leveled to uniform plane. Space at intervals indicated.

B. Protect adjacent work areas and finish surfaces from damage during installation.

C. Deliver anchorage items to be cast into concrete or built into masonry to appropriate installer(s) together with setting templates.

D. Coat concrete and masonry surfaces that will be in contact with metal surfaces with bituminous coating.

**3.03 INSTALLATION**

A. Install panels on walls and soffits in accordance with manufacturer's instructions.

B. Protect surfaces in contact with cementitious materials and dissimilar metals with bituminous paint. Allow to dry prior to installation.

C. Fasten panels to structural supports; aligned, level, and plumb.

D. Locate joints over supports.

E. Use concealed fasteners unless otherwise approved by Gardner Spencer Smith Tench and Jarbeau, PC.

F. Provide expansion joints where indicated.

G. Where joints are designed for field applied sealant, seal joints completely with specified sealant.

H. Install square, plumb, straight, and true, accurately fitted, with tight joints and intersections maintaining the following installation tolerances:
   1. Variation From Plane or Location: 1/2 inch in 30 feet (10 mm in 10 m) of length and up to 3/4 inch in 300 feet (20 mm in 100 m), maximum.
   2. Deviation of horizontal and vertical alignment of installed metal panels: 0.25 inch in 20 feet (6.4 mm in 6.1 m), noncumulative.
   3. Offset From True Alignment Between Two Adjacent Members Abutting End To End, In Line: 0.03 inch (0.75 mm), maximum.

I. Do not rout, bend, or otherwise form panels in field unless required by panel system manufacturer and approved by Gardner Spencer Smith Tench and Jarbeau, PC; comply with metal panel manufacturer's instructions and recommendations for field forming.

J. Seal and place gaskets to prevent weather penetration. Maintain neat appearance.

**3.04 TOLERANCES**

A. Maximum Offset From True Alignment Between Adjacent Members Butting or In Line: 1/16 inch

B. Maximum Variation from Plane or Location Indicated on Drawings: 1/4 inch.

**3.05 CLEANING**

A. Remove site cuttings from finish surfaces.

B. Clean and wash prefinished surfaces with mild soap and water; rinse with clean water.

C. Upon completion of installation, thoroughly clean prefinished aluminum surfaces in accordance with AAMA 609 & 610.

D. Shop Primer Touchup and Repair: Clean field welds, bolted connections and abraded areas of shop paint.

1. Paint exposed areas with same material used for shop painting.
2. Apply by brush or spray to provide a minimum 2.0 mil dry film thickness.

E. Restore finishes damaged during installation and construction period. Return items that cannot be refinished in the field to manufacturer or fabricator. Refinish entire unit or provide new units.

F. Remove protective film after installation of joint sealers, after cleaning of adjacent materials, and immediately prior to completion of work.

G. Remove temporary coverings and protection of adjacent work areas.

**END OF SECTION**

# SECTION 07 6200
# SHEET METAL FLASHING AND TRIM

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Fabricated sheet metal items, including, gutters and downspouts.

B. Precast concrete splash pads.

### 1.02 RELATED SECTIONS

A. Section 04 0090 - Masonry Accessories: Exposed and unexposed flashing in masonry.

B. Section 05 5600 - Construction Castings: Downspout boots.

C. Section 05 8000 - Expansion Joint Cover Assemblies: Expansion joint covers.

D. Section 07 4120 - Preformed Metal Roofing System: Roofing system.

E. Section 07 4213 - Metal Wall Panels: Flashings associated with meta wall panels.

F. Section 07 9005 - Joint Sealers.

G. Section 09 9000 - Painting and Coating: Field painting.

### 1.03 REFERENCES

A. AAMA 611 - Voluntary Specification for Anodized Architectural Aluminum; American Architectural Manufacturers Association; 1998.

B. AAMA 2603 - Voluntary Specification, Performance Requirements and Test Procedures for Pigmented Organic Coatings on Aluminum Extrusions and Panels; 2002.

C. AAMA 2604 - Voluntary Specification, Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels; 2005.

D. AAMA 2605 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels; 2005.

E. ASTM A 653/A 653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2004a.

F. ASTM A 666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar; 2003.

G. ASTM B 32 - Standard Specification for Solder Metal; 2004.

H. ASTM B 101 - Standard Specification for Lead-Coated Copper Sheet and Strip for Building Construction; 2002.

I. ASTM B 209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2004.

J. ASTM B 209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate (Metric); 2004.

K. ASTM D 4586 - Standard Specification for Asphalt Roof Cement, Asbestos-Free; 2000.

L. SMACNA (ASMM) - Architectural Sheet Metal Manual; Sheet Metal and Air Conditioning Contractors' National Association; 2003.

### 1.04 PERFORMANCE REQUIREMENTS

A. General: Install sheet metal flashing and trim to withstand wind loads, structural movement, thermally induced movement, and exposure to weather without failing, rattling, leaking, and fastener disengagement.

B. Thermal Movements: Provide sheet metal flashing and trim that allow for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures by preventing buckling, opening of joints, hole elongation, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Provide clips that resist

rotation and avoid shear stress as a result of sheet metal and trim thermal movements. Base engineering calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.

1. Temperature Change (Range): 120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces.

C. Water Infiltration: Provide sheet metal flashing and trim that do not allow water infiltration to building interior.

**1.05 SUBMITTALS**

A. See Division 01 - Administrative Requirements, for submittal procedures.

B. Shop Drawings: Indicate material profile, jointing pattern, jointing details, fastening methods, flashings, terminations, and installation details. Distinguish between shop and field assembled work. Include the following:

1. Identify material, thickness, weight, and finish for each item and location in Project.
2. Details for forming sheet metal flashing and trim, including profiles, shapes, seams, and dimensions.
3. Details for fastening, joining, supporting, and anchoring cleats, and attachments to adjoining work.
4. Details of expansion-joint covers, including showing direction of expansion and contraction.

C. Product data: Indicate product description, finishes and installation instructions for all manufactured products, including interface with adjacent materials and surfaces.

D. Samples: Submit two samples, 6 x 6 inch in size illustrating material, finish, and fabrication details of typical standing seam, external corner, and internal corner.

E. Samples for Verification: For each type of exposed finish required, prepared on Sample of size indicated below:

1. Sheet Metal Flashing: 12-inches (300-mm) long. Include fasteners, closures, and other attachments.
2. Trim: 12-inches (300-mm) long. Include fasteners and other exposed accessories.
3. Gutters and Downspout: 12-inches (300-mm) long. Include brackets, supports, and expansion joint.
4. Accessories: Full-size Sample.

F. Submittals schedule: Obtain Gardner Spencer Smith Tench and Jarbeau, PC's acceptance of submittals prior to pre-roofing conference.

**1.06 QUALITY ASSURANCE**

A. Perform work in accordance with SMACNA Architectural Sheet Metal Manual requirements and standard details, except as otherwise indicated.

B. Fabricator and Installer Qualifications: Company specializing in sheet metal work with 3 years of documented experience.

**1.07 PROJECT CONDITIONS**

A. Provide protection or avoid traffic on completed roof surfaces.

B. Prevent overloading roof with stored materials.

C. Support no roof-mounted equipment directly on roofing system.

D. Ascertain that work of other trades which penetrates roof or is to be made watertight by roof is in place and approved prior to installation of sheet metal flashing and trim.

E. At the completion of the construction of the roof drainage system, the Contractor shall supply to Gardner Spencer Smith Tench and Jarbeau, PC a written survey of the system, to confirm that the downspouts and cast iron boots are unobstructed and free of debris, that slopes and elevations meet specified requirements and to determine that there are no birdbaths in excess of the allowable limits.

**1.08 MOCK UP**

A. Prior to installation of the work, fabricate and erect mock-ups for each type of finish and application required to verify selections made under sample submittals and to demonstrate aesthetic effects as well as qualities of materials and execution. Build mock-ups to comply with the following requirements, using materials indicated for final unit of work.
   1. Locate mock-ups on site in location and size indicated or, if not indicated, as directed by Gardner Spencer Smith Tench and Jarbeau, PC
      a. Construct mock-ups for the following type of sheet metal flashing and trim:
         1) Coping.
         2) Conductor heads.
         3) Scuppers.
         4) Exposed trim.
         5) Gutters and Downspouts.
      b. Construct Mock-ups for the following type of metal wall panel:
         1) Erect a minimum of 100 sq. ft. of wall panels. Approved, undamaged mock-up may remain as part of the finished work.
   2. Demonstrate the proposed range of aesthetic effects and workmanship to be expected in the completed work.
   3. Obtain Gardner Spencer Smith Tench and Jarbeau, PC's acceptance of mock-ups before start of final unit of work.
   4. Retain and maintain mock-ups during construction in undisturbed condition as a standard for judging completed unit of work.
      a. When directed, demolish and remove mock-ups from the Project site.

B. Coordination: Coordinate work of this Section with interfacing and adjoining work for proper sequencing of each installation. Ensure best possible weather resistance, durability of work, and protection of materials and finishes.

**1.09 PRE-INSTALLATION CONFERENCE**

A. Convene one week before starting work of this section.

**1.10 DELIVERY, STORAGE, AND HANDLING**

A. Stack material to prevent twisting, bending, and abrasion, and to provide ventilation. Slope metal sheets to ensure drainage.

B. Prevent contact with materials which may cause discoloration or staining.

C. Unload, store, and install sheet metal flashing materials and fabrications in a manner to prevent bending, warping, twisting, and surface damage.

**1.11 COORDINATION**

A. Coordinate installation of sheet metal flashing and trim with interfacing and adjoining construction to provide a leakproof, secure, and noncorrosive installation.

**1.12 WARRANTIES**

A. Warrant flashing and sheet metal work to be free of defects in materials and workmanship. Warranty period shall be three years. Combine warranty with roofing warranty.

B. Finish warranty: Warrant fluoropolymer coating to remain free of imperfections, checking, crazing, peeling, chalking or fading for a period of ten years, in accord with AAMA 605.2-92 (R1994).

C. Coping warranty: Provide manufacturer's fifteen year material and labor warranty against wind-related damage, roof membrane damage and leakage. Warranty period shall begin at Date of Substantial Completion.

D. Warranties shall begin at the Date of Substantial Completion.

## PART 2 PRODUCTS

### 2.01 SHEET MATERIALS

A. Aluminum: Provide alloy and temper recommended by aluminum producer and finisher for type of use and finish indicated and with not less than the strength and durability of alloy and temper designated below:
   1. Anodized Aluminum Sheet: ASTM B 209, 5005-H14, with a minimum thickness of 0.050-inch except as indicated below.
      a. Gravel Stops, Gutters, Downspouts, Scuppers and Conductor Heads: Minimum 0.063 thickness.
      b. Copings: Minimum 0.063 thickness.
   2. Extruded Aluminum: ASTM B 221, Alloy 6063-T52, with minimum thickness of 0.080-inch for primary legs of extrusions that are anodized, unless otherwise indicated.

B. Lead Sheet: ASTM B 749, Type L51121, copper-bearing lead sheet, with a minimum thickness of 0.0625 inch except not less than 0.0937-inch thick for application where burning (welding) is involved.

### 2.02 MISCELLANEOUS MATERIALS AND ACCESSORIES

A. Burning Rod for Lead: Provide same composition as lead sheet.

B. Solder: ASTM B 32, Grade Sn50, used with rosin flux.

C. Fasteners: Provide same metal as sheet metal flashing or other non-corrosive metal as recommended by sheet metal manufacturer. Match finish of exposed heads with material being fastened.

D. Asphalt Mastic: SSPC Paint 12, solvent type asphalt mastic, normally free of sulfur and containing no asbestos fibers, compounded for 15 mil dry film thickness per coat.

E. Mastic Sealant: Provide polyisobutylene; non-hardening, non-skinning, nondrying, non-migrating sealant.

F. Elastomeric Sealant: Provide generic type recommended by sheet metal manufacturer and fabricator of components being sealed and complying with requirements for joint sealants as specified in Section 07900 - Joint Sealers.

G. Epoxy Seam Sealer: Provide two-part, non-corrosive, aluminum seam-cementing compound, recommended by aluminum manufacturer for exterior and interior non-moving joints, including but not limited to, riveted joints.

H. Adhesives: Provide type recommended by flashing sheet metal manufacturer for waterproof and weather-resistant seaming and adhesive application of flashing sheet metal.

I. Paper Slip Sheet: Provide 5 pounds per 100 square feet red rosin-sized building paper conforming to FS UU-B-790, Type 1, Style 1b.

J. Polyethylene Underlayment: ASTM D 4397, minimum 6.0-mil thick black polyethylene film, resist to decay when tested according to ASTM E 154.

K. Metal Accessories: Provide sheet metal clips, straps, anchoring devices, and similar accessory units as required for installation of work, matching or compatible with material being installed; non-corrosive; size and thickness required for performance.

L. Roofing Cement: ASTM D 4586, Type 1, asbestos-free, asphalt-based.

M. Downspout Strainers: Provide strainers to be inserted into outlet tubes inside conductor heads made of the same base material as the gutter.

N. Sheet lead: Minimum 4.0 lbs./sq. ft., hard type.

O. Soldering materials:
   1. Solder: Meeting ASTM B32-96, alloy grade SN50, 50% pig lead and 50% block tin.
   2. Solder flux:
      a. For galvanized metal: Muriatic acid neutralized with zinc.

b. For lead: Non-corrosive rosin.

P. Mastic: as recommended by roofing manufacturer.

Q. Fasteners: Same material or compatible with sheet metal being fastened.
1. Nails: Flat head, needle point, not less than 12 ga. and of sufficient length to penetrate substrate 1" minimum.
2. Expansion shields: Lead or bronze sleeves.
3. Screws: Self-tapping type, with round heads.
4. Bolts: Furnished complete with nuts and washers.
5. Rivets: Round head, solid type.
6. Blind clips and cleats: Same gauge as sheet material.

R. Butyl sealant for concealed joints:
1. Acceptable products:
a. Pecora Corp., BC-158.
b. Protective Treatments, Inc., 707.
c. Tremco, Inc., Butyl Sealant.
2. Type: One part, non-skinning butyl sealant.

S. Pour grade sealant for pitch pockets:
1. Acceptable products:
a. Mameco International, Vulkem 45.
b. Pecora Corp., NR 201 Urexpan.
c. Sonneborn Building Products, Div. of ChemRex, Inc., Sonolastic SL-1.
d. Tremco, Inc., Polyroof.
2. Characteristics: Self-leveling, one-part polyurethane; grey color.

T. Bituminous coating: Cold-applied, asphalt mastic meeting SSPC-Paint 12-82, minimum 30 mils thickness.

U. Waterproof membrane subflashing for installation under copings and expansion joint covers, and over blocking.
1. Acceptable products; subject to compliance with specified requirements:
a. Under dark color copings, flashing and at high temperature conditions:
1) Polyguard products, Inc., Polyguard Deck Guard.
2) W.R. Grace, Vycor Ultra.
3) Nicolon Mirafi Group, Miradri WIP 300HT.
b. Under metal flashing:
1) Polyguard products, Inc., Polyguard Deck Guard.
2) W.R. Grace, Vycor Ice and Water Shield.
3) Nicolon Mirafi Group, Miradri WIP 200.
2. Characteristics:
a. Type: Self-adhering rubberized asphalt sheet complying with ASTM D1790-94.
b. Thickness: 40 mils minimum.
c. Tensile strength: 250 psi minimum when tested in accord with ASTM D412-97.
d. Elongation: 250% when tested in accord with ASTM D412-97, Die C Modified.
e. Provide primers, sealants and accessories required for a waterproof installation.

V. Membrane flashing for installation over subflashing, under expansion joint covers and copings: Modified bitumen flashing sheet as specified in Modified Bituminous Membrane Roofing section.

**2.03 SPECIAL FINISHES**

A. Fluoropolymer coating finish:
1. Two-coat, coil-applied, baked-on 70% fluoropolymer coating system based on Elf Atochem, Kynar 500 resin or Ausimont U.S.A., Inc., Hylar 5000 resin (polyvinylidene fluoride, PVDF), formulated by a licensed manufacturer and applied by manufacturer's

approved applicator to meet AAMA Publication 605.2-92.
2. Coating system shall provide minimum 1.0 mil dry film thickness consisting of minimum 0.20 mil primer and minimum 0.80 mil color coat.
3. Colors: As selected by Gardner Spencer Smith Tench and Jarbeau, PC from manufacturer's line of standard colors.
4. Work to receive fluoropolymer coating includes all copings, fascias, wall caps, expansion joint covers, gutters, conductor heads, downspouts and other flashing and sheet metal exposed to view from building elevations.

B. Location of Fluoropolymer finish:
1. Scuppers through parapets, conductor heads, prefabricated copings, gravel stops, flashings, gutters and downspouts.
2. Miscellaneous exposed flashings as indicated on drawings.

**2.04 FABRICATION**

A. General: Custom fabricate sheet metal flashing and trim to comply with recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to design, dimensions, metal, and other characteristics of item indicated. Shop fabricate items where practicable. Obtain field measurements for accurate fit before shop fabrication

B. Fabricate sheet metal flashing and trim in thickness or weight needed to comply with performance requirements, but not less than that specified for each application and metal.

C. Fabricate sheet metal flashing and trim without excessive oil canning, buckling, and tool marks and true to line and levels indicated, with exposed edges folded back to form hems.
1. Seams for Aluminum: Fabricate nonmoving seams with flat-lock seams Form seams and seal with epoxy seam sealer. Rivet joints for additional strength.
2. Seams for Other Than Aluminum: Fabricate nonmoving seams in accessories with flat-lock seams. Tin edges to be seamed, form seams, and solder.

D. Sealed Joints: Form nonexpansion but movable joints in metal to accommodate elastomeric sealant to comply with SMACNA recommendations.

E. Expansion Provisions: Where lapped or bayonet-type expansion provisions in the Work cannot be used, form expansion joints of intermeshing hooked flanges, not less than 1-inch (25-mm) deep, filled with elastomeric sealant concealed within joints.

F. Conceal Fasteners and expansion provisions where possible on exposed-to-view sheet metal flashing and trim, unless otherwise indicated.

G. Fabricate cleats and attachments device from same material as accessory being anchored or from compatible, noncorrosive metal.
1. Thickness: As recommended by SMACNA's "Architectural Sheet Metal Manual" for application but not less than thickness of metal being secured.

**2.05 GUTTER AND DOWNSPOUT FABRICATION**

A. Hanging Gutters: Fabricate to cross section indicated, complete with end pieces, outlet tubes, and other accessories as required. Fabricate in minimum 96-inch (2400-mm) long sections. Furnish flat-stock gutter spacers and gutter brackets fabricated from same metal as gutters, of size recommended by SMACNA but not less than twice the gutter thickness. Fabricate expansion joints, expansion-joint covers, and gutter accessories from same metal as gutters.
1. Expansion Joints: Butt type.
2. Accessories: Continuous removable leaf screen with sheet metal frame and hardware cloth screen.
3. Gutters with Girth 21 to 25 Inches (530 to 640 mm): Fabricate from the following material:
a. Aluminum: 0.050-inch (1.2-mm) thick.

B. Downspouts: Fabricate downspouts complete with mitered elbows. Furnish with metal hangers, from same material as downspouts, and anchors.
1. Hanger Style: Straps.
2. Downspout Boots: Cast iron.

3. Downspouts 1-inch (25.4-mm) less than width of gutters: Fabricate downspouts from the following material:
   a. Aluminum: 0.050-inch (1.2-mm) thick.

C. SMACNA Manual fabrication requirements:
1. Square Gutters: Figure 1-2, Style A.
2. Rectangular Downspouts: Figure 1-32B.
3. Gravel stops: Similar to Figure 2-1A.
4. Copings: Figure 3-1, similar but without surface attachments and with welded corners.
5. Gutter Expansion Joint: Butt Type, Figure 1-7.
6. Downspout Strainer: Figure 1-24D.
7. Roof Penetration Hoods: Figure 4-15A.

## 2.06 LOW-SLOPE ROOF SHEET METAL FABRICATIONS

A. Roof Edge Flashing (Gravel Stop) and Fascia Caps: Fabricate in minimum 96-inch (2400-mm) long, but not exceeding 10-foot (3-m) long, sections. Furnish with 6-inch (150-mm) wide joint cover plates.
1. Joint Style: Butt, with 12-inch (300-mm) wide concealed backup plate.
2. Fabricate parapet scuppers from the following material:
   a. Aluminum: 0.050-inch (1.2-mm) thick.

B. Roof and Roof to Wall Transition Expansion-Joint Cover:
1. Fabricate from the following material:
   a. Aluminum: 0.040-inch (1.0-mm) thick.

C. Base Flashing:
1. Fabricate from the following material:
   a. Aluminum: 0.040-inch (1.0-mm) thick.

D. Counterflashing:
1. Fabricate from the following material:
   a. Aluminum: 0.040-inch (1.0-mm) thick.

E. Flashing Receivers:
1. Fabricate from the following material:
   a. Aluminum: 0.040-inch (1.0-mm) thick.

## 2.07 MISCELLEOUS SHEET METAL FABRICATIONS

A. Equipment Support Flashing: Fabricate from the following material:
1. Stainless Steel: 0.0187-inch (0.5-mm) thick.

## 2.08 FINISHES

A. General: Comply with NAAMM MFM for recommendations relative to application and designations of finishes.

B. Finishes:
1. General: Provide high performance organic coating specified below on the following substrates:
   a. Aluminum: Comply with AA DAF-45 for finish designation and application recommendations. Finish designations prefixed by "AA" conform to the system established by the Aluminum Association for designing aluminum finishes.
   b. Coil-Coated Galvanized Steel Sheet Finish: Apply system by coil-coating process on galvanized steel sheet as recommended by coating manufacturers and applicator.
2. High Performance Organic Coating Finish: AA-C12C42R1x (Chemical Finish: cleaned with inhibited chemicals; Chemical Finish: acid chromate-fluoride-phosphate conversion coating; Organic Coating: as specified below). Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturer's instructions.
   a. Fluoropolymer Two-Coat Coating System: Manufacturer's standard two-coat, thermocured system composed of specially formulated inhibitive primer and

fluoropolymer color topcoat containing not less than 70 percent polyvinylidene fluoride (PVDF) resin by weight; complying with AAMA 605.2.

b. Color and Gloss: As selected by Gardner Spencer Smith Tench and Jarbeau, PC from manufacturer's standard choices for color and gloss.

## PART 3 EXECUTION

### 3.01 EXAMINATION

A. Verify roof openings, curbs, pipes, sleeves, ducts, and vents through roof are solidly set, reglets in place, and nailing strips located.

B. Verify roofing termination and base flashings are in place, sealed, and secure.

C. Examine substrates, areas, and conditions, with Installer present, to verify actual locations, dimensions and other conditions affecting performance of work.
   1. Verify that substrate is sound, dry, smooth, clean, sloped for drainage, and securely anchored.
   2. Proceed with installation only after unsatisfactory conditions have been corrected.
   3. Beginning of the work shall indicate acceptance of the areas and conditions as satisfactory by the Installer.

### 3.02 PREPARATION

A. Install starter and edge strips, and cleats before starting installation.

B. Install surface mounted reglets true to lines and levels. Seal top of reglets with sealant.

C. Back paint concealed metal surfaces with protective backing paint to a minimum dry film thickness of 15 mil.

### 3.03 INSTALLATION

A. General: Anchor sheet metal flashing and trim and other components of the Work securely in place, with provisions for thermal and structural movement. Use fasteners, solder, welding rods, protective coatings, separators, sealants, and other miscellaneous items as required to complete sheet metal flashing and trim system.
   1. Torch cutting of sheet metal flashing and trim is not permitted.

B. Metal Protection: Where dissimilar metals will contact each other or corrosive substrates, protects against galvanic action by painting contract surfaces with bituminous coating or by other permanent separation as recommended by fabricator or manufacturers of dissimilar metals.
   1. Coat side of uncoated aluminum and stainless-steel sheet metal flashing and trim with bituminous coating where flashing and trim will contact wood, ferrous metal, or cementitious construction.
   2. Underlayment: Where installing metal flashing directly on cementitious or wood substrates, install a course of felt underlayment and covert with slip sheet or install a course of polyethylene underlayment.
   3. Bed flanges in thick coat of asphalt roofing cement where required for waterproof performance.

C. Install exposed sheet metal flashing and trim without excessive oil canning, buckling, and tool marks.

D. Install sheet metal flashing and trim true to line and levels indicated. Provide uniform, neat seams with minimum exposure of solder, welds, and elastomeric sealant.

E. Install sheet metal flashing and trim to fit substrates and to result in watertight performance. Verify shapes and dimensions of surfaces to be covered before fabricating sheet metal.
   1. Space cleats not more than 12-inches (399-mm) apart. Anchor each cleat with fasteners. Bend tabs over fasteners.

F. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at maximum of 10 feet (3 m) with no joints allowed within 24-inches (600-mm)

of corner or intersection. Where lapped or bayonet-type expansion provisions cannot be used or would not be sufficiently watertight, form expansion joints of intermeshing hooked flanges, not less than 1-inch (25-mm) deep, filled with elastomeric sealant concealed within joints.

G. Fasteners: Use fasteners of sizes that will penetrate substrate not less than 1-1/4-inches (32-mm) for nails and not less than 3/4-inch (19-mm) for wood screws.
   1. Galvanized or Prepainted, Metallic-Coated Steel: Use stainless-steel fasteners.
   2. Aluminum: Use aluminum or stainless-steel fasteners.
   3. Copper: Use copper or stainless-steel fasteners.
   4. Stainless Steel: Use stainless-steel fasteners.

H. Seal joints with elastomeric sealant as required for watertight construction.
   1. Where sealant-filled joints are used, embed hooked flanges of joint members not less than 1-inch (25-m) into sealant. Form joints to completely conceal sealant. When ambient temperature at time of installation is moderate, between 40 and 70 deg F (4 and 21 deg C), set joint members for 50 percent movement either way. Adjust setting proportionately for installation at higher ambient temperatures. Do not install sealant-type joints at temperatures below 40 deg F (4 deg C).
   2. Prepare joints and apply sealants to comply with requirements in Division 7 Section "Joint Sealant."

I. Aluminum Flashing: Rivet or weld joints in uncoated aluminum where necessary for strength.

J. Install work in accord with approved shop drawings and applicable standards. Sheet metal items shall be true to line, without buckling, creasing, warp or wind in finished surfaces.

K. Secure flashings in place using concealed fasteners. Use exposed fasteners only where permitted.

L. Apply plastic cement compound between metal flashings and felt flashings.

M. Fit flashings tight in place. Make corners square, surfaces true and straight in planes, and lines accurate to profiles.

N. Seal metal joints watertight.

O. Coordinate flashing at roof surfaces with roofing work to provide weathertight condition at roof terminations.

P. Perform field joining of lengths as specified for shop fabrication.

Q. Isolate dissimilar materials to prevent electrolysis. Separate using bituminous coating.

R. Seaming: Form seams in direction of flow. Steel seams shall be flatlock with cleats soldered. Aluminum seams shall be flatlock with cleats soldered. Aluminum seams shall be flatlocked and filled with butyl sealant. Lap seams occuring in members sloping 45 degrees or more than 4", minimum; bed in flashing cement.

S. Secure sheet metal items using continuous cleats, clips and fasteners as indicated. Perform no exposed face fastening.

T. Fastening:
   1. Nails: Confine to one edge only of flashing 1'-0" or less in width. Space nails at 4" o.c., maximum. Provide neoprene washers for nails.
   2. Cleats: Continuous, formed to profile of item being secured.
   3. Clips: Minimum 2" wide by 3" long, formed to profile of being secured. Space at 2'-0" o.c., maximum.

U. Form joints in linear sheet metal to allow for 1/2" minimum expansion at 12'-0" o.c., maximum, and maximum 2'-0" from corners. Provide 1'-0" wide backup plate at intersections. Form plates to profile of sheet metal item.

V. At joints in linear sheet metal items, set sheet metal over backup plate and set cover plate over sheet metal in two beads of butyl sealant, 1/4" in diameter, minimum. Extend sealant over all metal surfaces. Accurately mate components for positive seal. Allow no sealant to migrate onto

exposed surface.

W. Gutters and downspouts:
   1. Construct with riveted and soldered joints, lapped 1", minimum, in direction of flow. Provide 1/2" minimum expansion joints at 30'-0" o.c., maximum. Form expansion joints in accord with SMACNA Manual, Figure 1-6, lap type or 1-7, butt type.
   2. Hang gutters with high points equidistant from downspouts, evenly sloped toward downspouts. Support gutters in accord with SMACNA Manual, Figure 1-19A and as detailed on the drawings.
   3. Secure downspouts to exterior walls at 6'-0" o.c., maximum, using straps and expansion type fasteners in accord with SMACNA Manual, Figure 1-35C. Lap downspouts joints 1-1/2", minimum, and solder joints.
   4. Provide downspout strainers in all downspouts and conductor heads.
   5. Where downspouts empty onto lower roof surfaces, provide precast concrete splashblocks as specified in Splashblocks section.

X. Pitch pockets and roof penetrations flashing: Refer to Modified Bituminous Membrane Roofing section for membrane installation.

**3.04 PREFABRICATED COPING INSTALLATION**

A. Install prefabricated copings in accord with manufacturer's product data, true to line.

B. Install membrane subflashing under copings, secured under backup plates and continuous cleats.
   1. Install membrane subflashing fully adhered to substrates in accord with manufacturer's product data, except where more stringent requirements are specified herein.
   2. If required, prime surfaces to receive membrane materials. Allow primer to dry until tack-free. Prime only area which can be covered with sheet membrane during work period. Reprime surfaces which are not covered within 24 hours of primer application.
   3. Install membrane materials with side and end laps recommended by product data. Begin installation at low points, lapping succeeding sheets to shed water.
   4. Membrane applications shall be fully adhered, smooth, straight and free of blisters, buckles, fishmouths and wrinkles affecting the complete adherence of the membrane. Patch and repair defective work in accord with manufacturer's product data. Areas which exhibit defective areas or generally poor or improper workmanship shall be removed and replaced.
   5. Double membrane at changes in plane by application of a centered membrane strip. Cover strip completely with full width sheet.
   6. Seal around protrusions and terminations in accord with product data.
   7. Repair punctures and tears in membrane by patching with membrane material prior to protection board installation. Trowel-apply roofing cement at exposed edges of patch.

C. Install modified bitumen roof membrane flashing sheet up and over parapet walls, over subflashing, as indicated; refer to Modified Bituminous Membrane Roofing section for flashing membrane.

D. Install anchor plate at 5'-0" o.c. maximum under copings. Install concealed splice plates at intersections. Set copings over splice plates in full bed of sealant or extruded butyl tape, 1/2" from intersection edges.

E. Make weathertight fit, allowing for expansion and contraction as recommended by manufacturer's product data.

F. Attach materials using aluminum or stainless steel fasteners. Exposed fasteners shall match metal in finish.

**3.05 ROOF DRAINAGE SYSTEM INSTALLATION**

A. General: Install sheet metal roof drainage items to produce complete roof drainage system according to SMACNA recommendations and as indicated. Coordinate installation of roof perimeter flashing with installation of roof drainage system.

B. Hanging Gutters: Join sections with riveted and soldered joints or with lapped joints sealed with elastomeric sealant. Provide for thermal expansion. Attach gutters at eave or fascia to firmly anchored gutter brackets spaced not more than 36-inches (900-mm) apart. Provide end closures and seal watertight with sealant. Slope to downspouts.
   1. Fasten gutter spacers to front and back of gutter.
   2. Loosely lock straps to front gutter bead and anchor to roof deck.
   3. Anchor and loosely lock back edge of gutter to continuous eave or apron flashing.
   4. Anchor back of gutter that extends onto roof deck with cleats spaced not more than 24--inches (600-mm) apart.
   5. Anchor gutter with spikes and ferrules spaced not more than 24-inches (600-mm) apart.
   6. Install gutter with expansion joints at locations indicated but not exceeding 50 feet (15.24 m) apart. Install expansion joint caps.

C. Downspouts: Join sections with 1-1/2-inche (38-mm) telescoping joints. Provide fasteners designed to hold downspouts securely 1-inch (25-mm) away from walls; locate fasteners at top and bottom and at approximately 60-inches (1500-mm) o.c. in between, or as indicated on drawings.
   1. Connect downspouts to underground drainage system indicated.

**3.06 ROOF FLASHING INSTALLATION**

A. General: Install sheet metal roof flashing and trim to comply with performance requirements, sheet metal manufacturer's written installation instructions, and SMACNA's "Architectural Sheet Metal Manual." Provide concealed fasteners where possible, set units true to line, and level as indicated. Install work with laps, joints, and seams that will be permanently watertight.

B. Pipe or Post Counterflashing: Install counterflashing umbrella with close-fitting collar with top edge flared for elastomeric sealant, extending a minimum of 4-inches (100-mm) over base flashing. Install stainless-steel draw band and tighten.

C. Counterflashing: Coordinate installation of counterflashing umbrella with installation of base flashing. Insert counterflashing in reglets or receivers and fit tightly to base flashing. Extend counterflashing 4-inches (100-mm) over base flashing. Lap counterflashing joints a minimum of 4-inches (100-mm) and bed with elastomeric sealant.
   1. Secure in waterproof manner by means of interlocking folded seam or blind rivets and sealant.

D. Roof-Penetration Flashing: Coordinate installation of roof-penetration flashing with installation of roofing and other items penetrating roof. Install flashing as follows:
   1. Turn lead flashing down inside vent piping, being careful not to block vent piping with flashing.
   2. Seal with elastomeric sealant and clamp flashing to pipes penetrating roof except for lead flashing on vent piping.

**3.07 WALL FLASHING INSTALLATION**

A. General: Install sheet metal flashing to intercept and exclude penetrating moisture according to SMACNA recommendations and as indicated. Coordinate installation of wall flashing with installation of wall-opening components such as windows, doors, and louvers.

B. Through-Wall Flashing: Installation of formed through-wall flashing is specified in Division 4 Section.

C. Openings Flashing in Frame Construction: Install continuous head, sill, and similar flashings to extend 4-inches (100-mm) beyond wall openings.

**3.08 MISCELLANEOUS FLASHING INSTALLATION**

A. Overhead-Piping Safety Pans: Suspend pans from pipe and install drain line to plumbing waste or drain line. Provide positive slope to drain.

B. Support Flashing: Coordinate installation of equipment flashing with installation of roofing and equipment. Weld or seal flashing with elastomeric sealant to equipment support member.

**3.09 FIELD QUALITY CONTROL**

A. See Division 01 - Quality Requirements, for field inspection requirements.

B. Inspection will involve surveillance of work during installation to ascertain compliance with specified requirements.

**3.10 CLEANING AND PROTECTION**

A. Clean exposed metal surfaces, removing substances that might cause corrosion of metal or deterioration of finishes.

B. Clean and neutralize flux material. Clean off excess solder and sealants.

C. Remove temporary coverings and strippable films as sheet metal flashing and trim are installed. On completion of installation, clean finished surfaces, including removing unused fasteners, metal filings, pop rivet stems, and pieces of flashing. Maintain in clean condition during construction.

D. Replace sheet metal flashing and trim that have been damaged or that have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

E. Protect all downspouts from construction debris.

**END OF SECTION**

# SECTION 07 6500
# FLEXIBLE FLASHING

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Materials to make door and window frames, piping, conduit, duct and similar penetrations water vapor-resistant and air tight.

B. Self-adhering rubberized asphalt flashings.

C. Mastic for setting and sealing joints.

### 1.02 PRODUCTS INSTALLED BUT NOT SUPPLIED UNDER THIS SECTION

A. Through-wall flashings to be built into masonry cavity are furnished under Section 04 0090 - Masonry Accessories.

### 1.03 RELATED SECTIONS

A. Section 04 0090 - Masonry Accessories.

B. Section 04 2200 - Concrete Unit Masonry.

C. Section 04 4313 - Stone Masonry Veneer.

D. Section 06 1000 - Rough Carpentry: Flashings at openings and sills.

E. Section 09 2116 - Gypsum Board Assemblies: Sheathing.

### 1.04 REFERENCES

A. SMACNA (ASMM) - Architectural Sheet Metal Manual; Sheet Metal and Air Conditioning Contractors' National Association; 2003.

### 1.05 PERFORMANCE REQUIREMENTS

A. Installed Product and Accessories shall exhibit no visible water leakage when tested per ASTM E 331 and shall perform as a liquid water drainage plane flashed to discharge to the exterior any incidental condensation or water penetration.

B. Installed Product and Accessories shall exhibit an air leakage rate not exceeding 0.02 L/s*m2 at 75 Pa (0.004 CFM/ft2 at 1.57 PSF) according to ASTM E 283. Air leakage shall not exceed this rate while Product and Accessories remain soundly adhered after exposure to sustained and gust wind loading according to ASTM E 330.

C. Installed Product and Accessories shall perform as a vapor barrier, installed on the predominantly warm side of the insulation.

D. Product shall consist of nominal 0.040 inch (40 mils) thickness membrane consisting of smooth surfaced, cross-laminated high-density polyethylene (HDPE) film fully-coated with rubberized asphalt adhesive. Film shall be legibly imprinted with manufacturer's brand name, logo and contact information. Membrane shall be provided in rolls of various widths interleaved with disposable silicone release paper.

### 1.06 SUBMITTALS

A. See Division 01 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data on material characteristics, performance criteria, limitations, including manufacturer's printed instructions for evaluating and preparing substrate, technical data, and tested physical and performance properties.

1. Include independent laboratory test results showing compliance with ASTM & ACI Standards.

C. Shop Drawings: Provide drawings showing locations and extent vapor barrier, including details for substrate joints and cracks, seaming and pipe boots, sheet flashings, penetrations, tie-ins with adjoining construction, and other termination conditions.

D. Samples: Provide 3x6 inch (75x150-mm) minimum size, of each vapor retarder material required for the Project.

E. Installer certificates signed by manufacturer certifying that Installers comply with requirements under the "Quality Assurance" Article.

F. Manufacturer's Installation Instructions: Indicate preparation, installation methods, and storage and handling criteria.

**1.07 QUALITY ASSURANCE**

A. Installer Qualifications: Company with at least five years of successful experience in weathertight installation of flashing.

B. Vapor Permeability (Perm): Measure in accordance with ASTM E 96 Procedure E.

C. Single-Source Responsibility: Obtain vapor retarder materials from a single manufacturer regularly engaged in manufacturing vapor retarder.

D. Field-Constructed Mock-Ups: Prior to installation on Project, apply Product and Accessories on mock-up to verify details under shop drawing submittals, to demonstrate tie-ins with adjoining construction and other termination conditions and to become familiar with properties of materials in application.

**1.08 DELIVERY, STORAGE, AND HANDLING**

A. Deliver materials to project site in manufacturer's sealed containers and packaging, bearing manufacturer's name and product identification.

B. Stack flashing materials to avoid twisting, bending, and abrasion. Protect materials from weather before installation.

C. Store mastic materials in sealed containers under cover.

**1.09 WASTE MANAGEMENT AND DISPOSAL**

A. Separate and recycle waste materials in accordance with Section - Construction Waste Management and Disposal, and with the Waste Reduction Work Plan.

B. Place materials defined as hazardous or toxic waste in designated containers.

C. Ensure emptied containers are stored safely for disposal away from children.

**1.10 FIELD CONDITIONS**

A. Maintain temperature and humidity recommended by the materials manufacturers before, during and after installation.
   1. Do not apply vapor retarder in snow, rain, fog, or mist.

B. Maintain adequate ventilation during preparation and application of vapor retarder materials.

C. Do not apply Product or Accessories over incompatible materials.

D. Observe safety and environmental measures indicated in Manufacturer's MSDS, and mandated by federal, state and local regulations.

**PART 2 PRODUCTS**

**2.01 MANUFACTURERS**

A. Acceptable Manufacturer: Subject to compliance with specified requirements:
   1. Carclisle Coatings & Waterproofing Inc; Product: Self-Adhering Thru-Wall Flashing: www.www.carlisle-ccw.com.
   2. Grace Waterproofing Products; Product: Perm-A-Barrier Wall Flashing: www.grace.com.
   3. Hohman & Barnard, Inc; Product: TeXtroflash Flashing: www.h-b.com.
   4. Polyguard Products, Inc., Product: 400 TWF Product: www.architectural.polyguardproducts.com.

B. Substitutions: See Division 01 - Product Requirements.

**2.02 MATERIALS**

A. Flexible Flashing: Self-Adhering Flashing; 40 mil thick membrane comprised of 32 mils of highly adhesive rubberized asphalt integrally bonded to an 8 mil high density, cross laminated polyethylene film.

B. Primer: Manufacturer's special primer formulated to prepare surfaces for self-adhering flashing.

C. Termination bar for flexible membrane flashing with or without sheathing backup: Minimum Stainless Steel 1/8" thick 1-1/2" wide continuous with holes 8" on center.
   1. Termination Mastic:
      a. Description: Rubberized asphalt-based mastic with 200 g/L max. VOC Content.
      b. Apply a bead or trowel coat of mastic along flashing vertical and horizontal edges, seams, cuts, and penetrations.

**2.03 FABRICATION**

A. Forming: Fabricate flashings true to shape and accurate in dimension. Form pieces in longest possible lengths to minimize joints. Fold flashing at corners and at ends of pans instead of cutting.

B. Joints: Provide not less than 4 inches of overlap at flashing joints.

**2.04 SEALANTS**

A. Sealant approved by Manufacturer. Shall conform to ASTM C 920 Type 1 or 2, Grade NS, Class 25 or 50.

B. Primers, Cleaners, and Other Sealant Materials: As recommended by sealant manufacturer, appropriate to application, and compatible with adjacent materials.

**2.05 ADHESIVES**

A. Contact Adhesive: Compatible with sheet seal and substrate and approved by Manufacturer.

B. Mastic: Compatible with sheet seal and substrate and approved by Manufacturer.

C. Fill Compound: Compatible with sheet seal and substrate and approved by Manufacturer.

D. Aerosol Insulation Adhesive: Compatible with sheet seal and substrate and approved by Manufacturer.

**PART 3 EXECUTION**

**3.01 EXAMINATION**

A. Verify that surfaces to receive flashing are thoroughly dry, free from loose materials, and reasonably smooth, with no sharp edges or projections.

B. Verify that locations to receive flashing are sloped so water that enters will drain to building exterior.

C. Verify that surfaces and conditions are ready to accept the work of this section, with Installer present, for compliance with requirements. Do not proceed with installation until unsatisfactory conditions have been corrected.
   1. Notify Gardner Spencer Smith Tench and Jarbeau, PC in writing of anticipated problems using vapor retarder over substrate including but not limited to:
      a. Cracks in concrete and masonry.
      b. Anticipated problems applying Product and Accessories over substrate.

D. Concrete shall be cured for a minimum of seven days.

E. Surfaces shall be sound, dry and free of oil, grease, dirt, excess mortar or other contaminants.

F. Surfaces shall be supported and flush at joints without large voids.

G. Masonry joints shall be struck flush and completely filled with mortar. Mortar droppings shall be removed from masonry ties and surfaces.

H. Damaged or improperly-fastened sheathing shall be remedied to comply with building code and sheathing manufacturer's requirements.

**3.02 PREPARATION**

A. Self-Adhering Flashing: Prime all surfaces to receive self-adhering flashing, and allow to dry for not less than 20 minutes prior to flashing application.

B. Fill cracks, gaps and joints exceeding 1/4 inch width with fill compound or joint sealant.

C. Fill rough gaps around pipe, conduit and similar penetrations with mortar, non-shrink grout or Polyurethane Foam.

**3.03 INSTALLATION**

A. General: Comply with recommendations of SMACNA Architectural Sheet Metal Manual.
   1. Lap joints minimum of 4 inches and seal watertight with mastic.
   2. Carry flashing vertically as detailed, but not less than 6 inches above horizontal plane.
   3. Extend head and sill flashings not less than 6 inches beyond edges of openings and turn up to form watertight pan; seal with mastic.

B. Coordination: Interface flashing work with adjacent and adjoining work to ensure best possible weather resistance and durability of completed flashing.

C. Masonry Flashing: Comply with requirements of sections where masonry installation is specified.

D. Flashing in Steel to Masonry Construction: Install over solid backing, both vertically and horizontally. Secure in place with mastic; avoid puncturing installed flashing with nails or other fasteners.

E. Self-Adhesive Sheets:
   1. Prepare substrate in manner recommended by sheet manufacturer; fill and tape joints in substrate and between dissimilar materials.
   2. Lap sheets shingle-fashion to shed water and seal laps air tight.
   3. Once sheets are in place, press firmly into substrate with resilient hand roller; ensure that all laps are firmly adhered with no gaps or fishmouths.
   4. Use same material, or other material approved by sheet manufacturer for the purpose, to seal to adjacent construction and as flashing.
   5. At wide joints, provide extra flexible membrane allowing joint movement.

F. Openings and Penetrations in Exterior Weather Barriers:
   1. Install flashing over sills, covering entire sill frame member, extending at least 5 inches onto weather barrier and at least 6 inches up jambs; mechanically fasten stretched edges.
   2. At openings to be filled with frames having nailing flanges, seal head and jamb flanges using a continuous bead of sealant compressed by flange and cover flanges with at least 4 inches wide; do not seal sill flange.
   3. At openings to be filled with non-flanged frames, seal weather barrier to all sides of opening framing, using flashing at least 9 inches wide, covering entire depth of framing.
   4. At head of openings, install flashing under weather barrier extending at least 2 inches beyond face of jambs; seal weather barrier to flashing.
   5. At interior face of openings, seal gap between window/door frame and rough framing, using joint sealant over backer rod.
   6. Service and Other Penetrations: Form flashing around penetrating item and seal to weather barrier surface.

G. Install as directed by manufacturer, level and true to line. Provide Flexible Membrane flashing across all steel columns or steel beams inside a concrete masonry unit wall with or without sheathing backup whether or not specifically indicated.

H. Terminate membrane 4" minimum on each side of masonry substrates. Overlap adjacent lengths 6" over each subsequent lower membrane for a water-tight system.

I. Provide termination bars for edges of membrane flashing terminating on concrete masonry unit faces. Minimum Stainless Steel 1/8" thick 1-1/2" wide continuous with holes 8" on center. Provide termination bars predrilled at spacing to match spacing of cold formed metal framing.

J. Apply a bead or trowel coat of mastic along flashing vertical and horizontal edges, seams, cuts, and penetrations.

K. Provide a full bed of sealant at outside edge of flexible flashing and termination bars. See Section 07 9005 - Joint Sealers.

**3.04 FIELD QUALITY CONTROL**

A. Do not cover installed weather barriers until required inspections have been completed.

B. Obtain approval of installation procedures by the weather barrier manufacturer based on a mock-up installed in place, prior to proceeding with remainder of installation.

**3.05 PROTECTION**

A. Do not leave materials exposed to weather longer than recommended by manufacturer.

**3.06 PROTECTING AND CLEANING**

A. Protect from damage during application and remainder of construction period, according to manufacturer's written instructions.

**END OF SECTION**

# SECTION 07 7160
# ROOF EXPANSION ASSEMBLIES

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Aluminum roof expansion joint assemblies.

### 1.02 RELATED SECTIONS

A. Section 06 1000 - Rough Carpentry.

B. Section 07 6100 - Preformed Metal Roofing System.

C. Section 07 9005 - Joint Sealers.

### 1.03 PERFORMANCE REQUIREMENTS

A. General: Provide roof expansion joint assemblies that, when installed, remain watertight within movement limitations specified by manufacturer.

### 1.04 SUBMITTALS

A. See Division 01 - Administrative Requirements, for submittal procedures.

B. Product Data: Include manufacturer’s product specifications, construction details, material and finish descriptions, installation instructions, and dimensions of individual components.

C. Shop Drawings: Include plans, elevations, sections, details, joints, splices, locations of joints and splices, anchorage details, intersections, transitions, fittings, and attachments to other Work. Where joint assemblies change planes, provide isometric drawing depicting how components interconnect to achieve continuity.

D. Research/Evaluation Reports: Evidence of roof expansion joint assemblies’ compliance with building code in effect for Project, from a model code organization acceptable to authorities having jurisdiction.

### 1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than three years of documented experience.

B. Installer Qualifications: Company specializing in performing the work of this section with minimum three years of experience.

### 1.06 DELIVERY, STORAGE, AND PROTECTION

A. Coordinate delivery and installation of expansion joint assemblies to prevent damage and provide timely integration of units with roofing membranes and flashing.

### 1.07 WARRANTY

A. See Division 01 - Closeout Submittals, for additional warranty requirements.

B. General Warranty: Special warranty specified in this Article shall not deprive Union County Commissioner's Office of other rights Union County Commissioner's Office may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.

C. Special Warranty: Written warranty, signed by roof expansion assembly manufacturer and Installer agreeing to repair or replace roof expansion assemblies that leak, deteriorate in excess of rate specified in manufacturer’s published product literature, or otherwise fail to perform within specified warranty period.

D. Warranty Period: 5 years after date of Substantial Completion.

## PART 2 PRODUCTS

### 2.01 MANUFACTURERS

A. Products: Subject to compliance with requirements, provide one of the following:

1. Aluminum Roof Expansion Joint Assemblies:
   a. Balco Metalines, a division of Balco, Inc.; Type FR or FRE.
   b. Conspec Systems, Inc; Type JR-27LP.
   c. Metal-Era, Inc., Product: Perma-Tite Expansion Joint.
   d. MM Systems Corporation; Type RXH or RXJ.

B. Substitutions: See Division 01 - Product Requirements.

**2.02 MATERIALS**

A. Sheet Aluminum: ASTM B 209 (ASTM B 209M) alloy 3003-H14, 5052-H32, or 6063-T52, mill finish, minimum 0.032 inch thick.

B. Extruded Aluminum: ASTM B 221 (ASTM B 221M) alloy 6063-T5 or 6063-T52, mill finish, minimum 0.040 inch thick.

**2.03 ACCESSORIES**

A. Roof Cement: ASTM D 4586, Type II.

B. Mineral-Fiber Blanket: ASTM C 665.

C. Flexible Cellular Sponge or Expanded Rubber: ASTM D 1056.

D. Silicone Extrusions: Classified according to ASTM D 2000, 4GE, 709, UV stabilized and does not propagate flame.

**2.04 ALUMINUM ROOF EXPANSION JOINT ASSEMBLIES**

A. General: Provide above-deck assemblies consisting of aluminum base member with sloped cants and provisions for anchoring and sealing to roofing membrane or flashing in a waterproof-sealed joint. Provide free-to-move, extruded-aluminum cover plate anchored against displacement and waterproofed integral seals. Provide prefabricated units for corner and joint intersections and horizontal and vertical transitions, including those to other building expansion joints, splicing units, adhesives, coatings, and other components as recommended by joint unit manufacturer for complete installation. Fabricate assemblies specifically for curb-to-curb and curb-to-wall applications.
   1. Base Frame: Extruded aluminum with mill finish.
   2. Covers: Minimum 0.078-inch- thick, formed aluminum with mil finish.
   3. Moisture Barrier: Semi-concealed, captive, polymeric sheet bellows unit of neoprene, EPDM, reinforced chlorinated polyethylene, PVC, not less than 30 mils thick.

**PART 3 EXECUTION**

**3.01 PREPARATION**

A. Coordinate installation of roof expansion joint assembly materials and associated work so complete assemblies comply with assembly performance requirements.

**3.02 INSTALLATION**

A. Comply with manufacturer's written instructions for handling and installing roof expansion assemblies and materials, unless more stringent requirements are indicated.

B. Extended roof expansion joint assemblies over curbs, parapets, fasciae and other elements in the construction profile with factory-fabricated transitions to provide continuous, uninterrupted, waterproof roof expansion assemblies.
   1. Install factory-fabricated transitions between roof expansion joint cover assemblies, specified in Division 05 Section “Expansion Joint Cover Assemblies,” to provide continuous, uninterrupted, watertight construction.

C. Splice roof expansion joint assemblies with materials provide by roof expansion assembly manufacturer for this purpose, according to manufacturer’s written instructions, to provide continuous, uninterrupted, waterproof roof expansion assemblies.

D. Provide uniform profile of expansion joint assembly throughout length of each installation; do not stretch polymeric sheets.

E. Install mineral-fiber blanket insulation to fill joint space within joint and moisture barrier.

**3.03 FIELD QUALITY CONTROL**

A. Perform field inspection and testing in accordance with Division 01 requirements.

**3.04 PROTECTION**

A. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and Installer, that ensures roof expansion joint assemblies are without damage or deterioration at time of Substantial Completion.

**END OF SECTION**

# SECTION 07 8400
# FIRESTOPPING

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Firestopping of all joints and penetrations in fire resistance rated and smoke resistant assemblies, whether indicated on drawings or not, and other openings indicated.
   1. Floors.
   2. Roofs.
   3. Walls and partitions.
   4. Smoke barriers.
   5. Construction enclosing compartmentalized areas.

### 1.02 RELATED REQUIREMENTS

A. Section 01 7800 - Closeout Submittals: Cutting and patching.

B. Section 01 7800 - Closeout Submittals: Labeling..

C. Section 07 8420 - Fire Resistive Joint Systems.

D. Section 07 9005 - Joint Sealers.

E. Section 092116: Gypsum wallboard fireproofing.

### 1.03 REFERENCE STANDARDS

A. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials 2022.

B. ASTM E814 - Standard Test Method for Fire Tests of Penetration Firestop Systems 2013a (Reapproved 2017).

C. ASTM E1966 - Standard Test Method for Fire-Resistive Joint Systems 2015 (Reapproved 2019).

D. ASTM E2837 - Standard Test Method for Determining the Fire Resistance of Continuity Head-of-Wall Joint Systems Installed Between Rated Wall Assemblies and Nonrated Horizontal Assemblies 2013 (Reapproved 2017).

E. FM 4991 - Approval Standard of Firestop Contractors 2013.

F. FA (AG) - FM Approval Guide; Factory Mutual Research Corporation; current edition.

G. UL 2079 - Standard for Tests for Fire Resistance of Building Joint Systems Current Edition, Including All Revisions.

H. UL (FRD) - Fire Resistance Directory Current Edition.

### 1.04 PERFORMANCE REQUIREMENTS

A. General: For the following constructions, provide through-penetration firestop systems that are produced and installed to resist spread of fire according to requirements indicated, resist passage of smoke and other gases, and maintain original fire-resistance rating of assembly penetrated.
   1. Fire- resistance-rated non-load-bearing walls, including partitions, with fire-protection-rated openings.
   2. Fire-resistance-rated floor assemblies.
   3. Fire-resistance-rated roof assemblies.

B. F-Rated Systems: Provide through-penetration firestop systems with F-ratings indicated, as determined per ASTM E 814, but not less than that equaling or exceeding fire-resistance rating of constructions penetrated.

C. T-Rated Through-Penetration Firestop Systems: Provide through-penetration firestop systems with T ratings, in addition to F ratings, as determined per ASTM E 814, where indicated and where systems protect penetrating items exposed to contact with adjacent materials in

occupied floor areas. T-rated assemblies are required where the following conditions exist:
1. Where firestop systems protect penetrations located outside of wall cavities.
2. Where firestop systems protect penetrations located outside fire-resistive shaft enclosures.
3. Where firestop systems protect penetrations located in construction containing doors required to have a temperature-rise rating.
4. Where firestop systems protect penetrating items larger than a 4-inch-diameter nominal pipe or 16 sq. in. in overall cross-sectional area.

D. Fire-Resistive Joint Sealants: Provide joint sealants with fire-resistance ratings indicated, as determined per ASTM E 119, but not less than that equaling or exceeding the fire-resistance rating of the construction in which the joint occurs.

E. For through-penetration firestop systems exposed to view, traffic, moisture, and physical damage, provide products that after curing do not deteriorate when exposed to these conditions both during and after construction.
1. For piping penetrations for plumbing and wet-pipe sprinkler systems, provide moisture-resistant through-penetration firestop system.
2. For floor penetrations with annular spaces exceeding 4-inches (100-mm) in width and exposed to possible loading and traffic, provide firestop systems capable of supporting floor loads involved either by installing floor plates or by other means.
3. For penetrations involving insulated piping, provide through-penetration firestop systems not requiring removal of insulation.

**1.05 SUBMITTALS**

A. See Division 01 - Administrative Requirements, for submittal procedures.

B. Schedule of Firestopping: List each type of penetration.

C. Product Data: Provide data on product characteristics, performance ratings, and limitations. Include test reports indicating that firestopping materials systems and devices meet or exceed specified requirements and design criteria. Indicate U.L. Classification markings.

D. Shop Drawings: For each through-penetration firestop system, show each kind of construction condition penetrated, relationships to adjoining construction, and kind of penetrating item. Include firestop design designation of testing and inspecting agency acceptable to authorities having jurisdiction that evidences compliance with requirements for each condition indicated.
1. Submit documentation, including illustrations, from a qualified testing and inspecting agency that is applicable to each through-penetration firestop system configuration for construction and penetrating items.
2. Where Project conditions require modification of qualified testing and inspecting agency's illustration to suit a particular through-penetration firestop condition, submit engineer judgement drawing developed by through-penetration firestop system manufacturer's fire-protection engineer in accordance with the provisions of the International Firestop Council.

E. Through-Penetration Firestop System Schedule: Indicate locations of each through-penetration firestop system, along with the following information:
1. Types of penetrating items.
   a. Types of constructions penetrated, including fire-resistance ratings and, where applicable, thicknesses of construction penetrated.
   b. Through-penetration firestop systems for each location identified by firestop design designation of qualified testing and inspecting agency.

F. Product test reports from, and based on tests performed by, a qualified testing and inspecting agency evidencing compliance of firestopping with requirements based on comprehensive testing of current products.

G. Qualification Data: For firms and persons specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information

specified.

H. Manufacturer's Installation Instructions: Indicate preparation and installation instructions.

I. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

**1.06 QUALITY ASSURANCE**

A. Fire Testing: Provide firestopping assemblies of designs that provide the scheduled fire ratings when tested in accordance with methods indicated.

B. Installer Qualifications: An experienced installer who is qualified by having the necessary experience, staff, and training to install manufacturer's products per specified requirements. A manufacturer's willingness to sell its through-penetration firestop system products to Contractor or to an installer engaged by Contractor does not in itself confer qualification on buyer.

C. Installer Training: Individuals performing the installation of firestop systems shall be trained by direct representative of the firestop materials manufacturer, not a distributor or agent.

D. Source Limitations: Obtain through-penetration firestop systems, for each kind of penetration and construction condition indicated, from a single manufacturer.

E. Fire-Test-Response Characteristics: Provide through-penetration firestop systems that comply with the following requirements and those specified in "Performance Requirements" Article:
   1. Firestopping tests are performed by a qualified testing and inspecting agency. A qualified testing and inspecting agency is UL, or other agency performing testing and follow-up inspection services for firestop systems acceptable to authorities having jurisdiction.
   2. Through-penetration firestop systems are identical to those tested per ASTM E 814. Provide rated systems complying with the following requirements:
      a. Through-penetration firestop system products bear classification marking of qualified testing and inspecting agency.
      b. Through-penetration firestop systems correspond to those indicated by reference to through-penetration firestop system designations listed by UL in the "Fire Resistance Directory."

F. Design criteria:
   1. Through-penetration firestop systems and devices shall be tested in accordance with ASTM E 814-94b with a minimum positive differential pressure of 0.03-inch water column. F-rating shall equal or exceed the rating of the fire-resistive construction assembly through which the penetration is made. F-rating at floor penetrations located outside of shaft enclosures shall equal one-half of the required fire resistance rating of the floor construction.
   2. Firestop systems using cementitious fill materials shall not be permitted.
   3. Systems shall be free of asbestos.
   4. Systems used within or adjacent to occupied spaces shall be free of volatile solvents, noxious fumes and strong odors.

G. Coordinating Work: Coordinate construction of openings and penetrating items to ensure that designated through-penetration firestop systems are installed per specified requirements.

**1.07 MOCK-UP**

A. Install one firestopping assembly representative of each fire rating design required on project.
   1. Where one design may be used for different penetrating items or in different wall constructions, install one assembly for each different combination.
   2. Where firestopping is intended to fill a linear opening, install minimum of 1 linear ft.

B. Obtain approval of authorities having jurisdiction (AHJ) before proceeding.

C. If accepted, mock-up will represent minimum standard for the Work.

**1.08 PRE-INSTALLTION MEETING**

A. Preinstallation Conference: Contractor to schedule conference at Project site.

1. Review special inspection and testing and inspecting agency procedures for field quality control, and concrete protection.
2. Convene two weeks before starting work of this section.

**1.09 DELIVERY, STORAGE, AND HANDLING**

A. Deliver through-penetration firestop system products to Project site in original, unopened containers or packages with intact and legible manufacturers' labels identifying products and manufacturer; date of manufacture; lot number; shelf life, if applicable; qualified testing and inspecting agency's classification marking applicable to Project; curing time; and mixing instructions for multi-component materials.

B. Store and handle materials for through-penetration firestop systems to prevent their deterioration or damage due to moisture, temperature changes, contaminants, or other causes.

**1.10 JOB CONDITIONS**

A. Coordinate firestopping installation with other work requiring penetrations through fire-resistive construction. Install penetrating elements prior to installation of firestopping systems or devices.

B. Secure inspection and approval of firestopping work by building officials prior to concealment.

C. Support penetrating elements independently of firestopping systems or devices.

**1.11 FIELD CONDITIONS**

A. Comply with firestopping manufacturer's recommendations for temperature and conditions during and after installation; maintain minimum temperature before, during, and for three days after installation of materials.

B. Provide ventilation in areas where solvent-cured materials are being installed.

**1.12 COORDINATION**

A. Coordinate construction of openings and penetrating items to ensure that through-penetration firestop systems are installed according to specified requirements.

B. Coordinate sizing of sleeves, openings, core-drilled holes, or cut openings to accommodate through-penetration firestop systems.
   1. Coordinate size and location of cast-in-place firestop devices to accommodate planned pipe and cable runs. Ensure proper placement of devices before placement of concrete.

C. Notify Union County Commissioner's Office's inspecting agency at least seven days in advance of through-penetration firestop system installations; confirm dates and times on days preceding each series of installations.

D. Do not cover up through-penetration firestop system installations that will become concealed behind other construction until each installation has been examined by building inspector, if required by authorities having jurisdiction.

**PART 2 PRODUCTS**

**2.01 MATERIALS, GENERAL**

A. Compatibility: Before selection and purchase of each specified firestopping, investigate its compatibility with joint surfaces, joint fillers and other materials in joint system. Provide only materials (manufacturer's recommended variation of specified materials) which are known to be fully compatible with actual installation conditions, as shown by manufacturer's published data or certification.

B. Provide size and shape of firestopping, as recommended by manufacturer, either in published data or through consultation with technical representative.

C. Accessories: Provide components for each firestopping system that are needed to install fill materials and to comply with "System Performance Requirements" article in Part 1. Use only components specified by the firestopping manufacturer and approved by the qualified testing and inspecting agency for the designated fire-resistance-rated systems. Accessories include but are not limited to the following items:

1. Permanent forming/damming/backing materials including the following:
   a. Semirefractory fiber (mineral wool) insulation.
   b. Ceramic fiber.
   c. Sealants used in combination with other forming/damming materials to prevent leakage of fill materials in liquid state.
   d. Joint fillers for joint sealants.
   e. Temporary forming materials.
2. Substrate primers.
3. Collars.
4. Steel sleeves.

D. Color: Provide color as selected from manufacturer's standard available colors.

**2.02 FIRESTOPPING SYSTEMS**

A. General: Each firestop system installation shall bear at a minimum the same fire rating as the partition penetrated except at floor slabs systems shall have a 2-hour rating. Provide metal and/or wire mesh sleeves, retaining collars, backing materials including mineral wool and other components required for firestop system used.

B. Acceptable Products:
1. FBX Safing Insulation; Fibrex, Inc.
2. PAROC Safing Insulation; Partek Insulation, Inc.
3. Thermafiber Safing Insulation; USG Interiors, Inc.

C. Characteristics:
1. Composition: Bonded, compressible, semi-rigid mineral fiber blanket; unfaced, meeting ASTM C655-95a, Type 1.
2. Density: 4.0 pcf.
3. Combustibility: Non-combustible in accordance with ASTM E136-96a, with melting point in excess of 2000 degrees F.
4. Surface burning characteristics: Maximum 15 flame spread and 5 smoke development when tested in accordance with ASTM E84-97a.
5. Facing: Plain.

**2.03 THROUGH-PENETRATION FIRESTOP SYSTEMS**

A. Acceptable Manufacturers:
1. Nelson, Div.; General Signal.
2. Hilti Construction Chemicals, Inc.
3. International Protective Coatings Corp. (IPC).
4. 3M Contractor Products.
5. Rector Seal Corp.
6. Specified Technologies, Inc. (STI).

B. System Characteristics: Field-constructed firestopping for penetrations through walls and floors composed of specified materials and accessories assembled in accordance with Through-Penetration Firestopping System Numbers, listed in Underwriters' Laboratory (U.L.) Directory, current edition, and tested in accordance with ASTM E 814-94b.

C. Materials: U.L. classified for use in through-penetration firestop systems.
1. Firestop sealant: Single-component, elastomeric silicone or endothermic latex sealant compound; self-adhering, flexible and watertight; non-sag and self-leveling types as required.
2. Firestop foam: Two-part, room temperature vulcanizing, silicone elastomer, non-combustible foam void seal.
3. Intumescent sealants and putties: Single-component, synthetic, organic/inorganic intumescent elastomers.
4. Intumescent wrap strips: One-part, organic/inorganic, intumescent elastomeric sheet; aluminum foil-faced one side.

5. Intumescent composite sheets: Composite sheets composed of organic/inorganic intumescent elastomeric core bonded on one side to 28 ga. galvanized steel sheet and other side reinforced with steel wire mesh, covered with aluminum foil.
6. Mineral wool or ceramic fiber safing: Non-combustible fiber tested in accordance with ASTM E 136-96a, with melting point in excess of 2000 degrees F.; flame spread of 15 maximum and 0 smoke development when tested in accordance with ASTM E84-97a. Thickness and density shall be as required by U.L. Through-Penetration Firestop System designs.

D. Accessories:
1. Primers, adhesives and backer rods: As required by manufacturer's product data and system designs.
2. Forming, damming, and packing materials: Types as indicated in U.L. Through-Penetration Firestop System designs.
3. Restricting collars: Manufacturer's standard design as required for firestop system.
4. Fasteners, anchor clips, sleeves, clamps, spacers, ties, cover plates and miscellaneous accessories: Provide as by manufacturer's product data and in accordance with U.L. Through-Penetration Firestop System designs.

## 2.04 THROUGH-PENETRATION FIRESTOP DEVICES

A. Acceptable Manufacturers:
1. Nelson Div.; General Signal.
2. ProSet Systems.
3. Specified Technologies, Inc. (STI).

B. Types: Factory-assembled, self-contained firestopping devices for penetrations through walls and floors; U.L. Classified for Through-Penetration Devices as listed in U.L. Building Materials Directory, current edition and tested in accordance with ASTM E814-94b.

C. Accessories: Provide sealants, adhesives, fasteners, sleeves, clamps, spacers, anchor clips, ties and accessories in accordance with manufacturer's product data and as required for complete installation.

## 2.05 FIRESTOP SEALANTS

A. Acceptable Products:
1. CLK; Nelson Div.; General Signal.
2. Flame-Safe FS500/FST600; International Protective Coatings Corp. (IPC).
3. CP/25 Fire Stop Sealant; 3M Contractor Products.
4. Metacaulk Series; Rector Seal Corp.
5. SpecSeal Sealant; Specified Technologies, Inc.

B. Characteristics: Single-component, self-adhering, flexible, watertight, elastomeric silicone or synthetic elastomer sealant compound; U.L. Classified. Provide self-leveling type for horizontal applications, non-sag type for all other applications.

C. Sealant Colors: Provide color of exposed joint sealants to comply with the following:
1. Provide selections made by Gardner Spencer Smith Tench and Jarbeau, PC from manufacturer's full range of standard colors for products of type indicated.

D. Firestopping at Control Joints (without Penetrations): Any material meeting requirements.

## 2.06 MIXING

A. For those products requiring mixing prior to application, comply with firestopping manufacturer's directions for accurate proportioning of materials, water (if required), type of mixing equipment, selection of mixer speeds, mixing containers, mixing time, and other procedures needed to produce firestopping products of uniform quality with optimum performance characteristics for application indicated.

## 2.07 MISCELLANEOUS MATERIALS

A. Joint Cleaner: Provide type of joint cleaning compound recommended by firestopping manufacturer, for joint surfaces to be cleaned.

B. Joint Primer/Sealer: Provide type of joint primer/sealer recommended by firestopping manufacturer, for joint surfaces to be primed or sealed.

C. Accessories: Dam materials, metal collars, retainers, clips, backer rod and other accessories shall be as recommended by manufacturer and in compliance with tests performed on the firestopping system.

# PART 3 EXECUTION

## 3.01 EXAMINATION

A. Examine areas to receive firestopping materials prior to beginning work. Verify that opening areas and dimensions for penetrations to receive firestopping systems and other devices do not exceed design requirements.

B. Remove projections interfering with installation. Prepare surfaces in accordance with manufacturer's product data and U.L. Through-Penetration Firestop System Numbers.

C. Verify openings are ready to receive the work of this section.

## 3.02 PREPARATION

A. Clean substrate surfaces of dirt, dust, grease, oil, loose material, or other materials that could adversely affect bond of firestopping material.
   1. Remove from surfaces of opening substrates and from penetrating items foreign materials that could interfere with adhesion of through-penetration firestop systems.
   2. Clean opening substrates and penetrating items to produce clean, sound surfaces capable of developing optimum bond with through-penetration firestop systems. Remove loose particles remaining from cleaning operation.
   3. Remove laitance and form-release agents from concrete.

B. Remove incompatible materials that could adversely affect bond.

C. Priming: Prime substrates where recommended in writing by through-penetration firestop system manufacturer using that manufacturer's recommended products and methods. Confine primers to areas of bond; do not allow spillage and migration onto exposed surfaces.

D. Masking Tape: Use masking tape to prevent through-penetration firestop systems from contacting adjoining surfaces that will remain exposed on completion of Work and that would otherwise be permanently stained or damaged by such contact or by cleaning methods used to remove smears from firestop system materials. Remove tape as soon as possible without disturbing firestop, system's seal with substrates.

## 3.03 INSTALLATION

A. General:
   1. Comply with manufacturer's product data and UL Through-Penetration Firestop System Numbers.
   2. Install firestopping materials fitted to adjacent construction to fill voids.
   3. Firestop penetrations through fire-rated walls, partitions, floors and floor/ceiling assemblies with tested assemblies in accordance with ASTM E119-95a or with a through penetration firestop system or device when tested in accordance with ASTM E814-97a.
   4. Firestopping shall comply with the requirements of the Standard Building Code, 1994 Edition or the International Building Code, latest edition and any local amendments.

B. Mineral fiber safing:
   1. Install safing in cavities of penetrations through non-rated floor and wall construction, including spaces around piping, conduits, cables, and duct penetrations.
   2. Install safing in voids and joints of non-rated walls and partitions abutting metal decking of floor and roof structures. Pack flutes of metal decking solid with safing material.

3. Safing shall be installed at joints and penetrations in non-rated construction not exposed to view and concealed in finish work. Secure safing by compressing into voids or joints and using manufacturer's standard clips or closure plates as required.

C. Through-penetration firestop systems and devices:
1. Install at penetrations through fire-rated floor and wall construction, including partitions and floor/ceiling assemblies, in accordance with manufacturer's product data and UL System Numbers. Provide materials and accessories as required.
2. Install intumescent type firestop systems where plastic piping, cable, conduit and other combustible items, including uninsulated metal pipes, penetrate fire-rated construction.
3. At Contractor's option, through-penetration firestop devices of similar function may be installed in lieu of firestop systems.
4. Do not remove forming materials unless specified in system designs.

D. Firestop sealant: Seal perimeters, voids and joints of fire-rated walls and partitions, including abutment of floor and roof or ceiling structure, and flutes of metal decking. If required by UL Design, install mineral wool or ceramic fiber in cavities packed with firestop sealant. Tool sealant flush with adjacent finish. In accordance with UL Fire Resistance Directory Designs, packed concrete and masonry joints shall be sealed using firestop sealant or using sealant as specified in other sections.
1. Tool nonsag sealants immediately after sealant application and prior to the time skinning or curing begins. Form smooth, uniform beads of configuration indicated or required to produce fire-resistance rating, as well as to eliminate air pockets, and to ensure contact and adhesion of sealants with sides of joint. Remove excess sealant from surfaces adjacent to joint. Do not use tooling agents that discolor sealants or adjacent surfaces or are not approved by sealant manufacturer.

E. Seal voids and joints of non-rated walls and partitions abutting structural fiber and concrete floor and roof construction using sealant as specified in other sections.

F. Install materials in manner described in fire test report and in accordance with manufacturer's instructions, completely closing openings.

**3.04 CLEANING**

A. Clean adjacent surfaces of firestopping materials.

B. Spillage: Do not allow sealants or compounds to overflow or spill onto adjoining surfaces, or to migrate into voids of adjoining surfaces including rough textures. Use masking tape or other precautionary devices to prevent staining of adjoining surfaces, by either primer/sealer or the sealant.

C. Remove excess and spillage of compounds promptly as the work progresses. Clean adjoining surfaces by whatever means may be necessary to eliminate evidence of spillage, without damage to adjoining surfaces or finishes.

**3.05 IDENTIFICATION**

A. Identify through-penetration firestop systems with pressure-sensitive, self adhesive, preprinted vinyl labels. Attach labels permanently to surfaces of penetrated construction on both sides of each firestop system installation where labels will be visible to anyone seeking to remove penetrating items or firestop systems. Include the following information on labels:
1. The words: "Warning-Through-Penetration Firestop System; Do Not Disturb"
2. Contactors name, address, and phone number.
3. Through-penetration firestop system designation of applicable testing and inspecting agency.
4. Date of installation.
5. Installer's name.

**3.06 PROTECTION**

A. Protect adjacent surfaces from damage by material installation.

B. Cure firestopping materials in compliance with manufacturer's instructions and recommendations, to obtain high early bond strength, internal cohesive strength and surface durability. Do not cure in a manner which would significantly alter material's modulus of elasticity or other characteristics.

C. Installer shall advise Contractor of procedures required for curing and protection of sealants during construction period, so that they will be without deterioration or damage (other than normal wear and weathering) at time of Union County Commissioner's Office's acceptance.

D. Provide final protection and maintain conditions during and after installation that ensure through-penetration firestop systems are without damage or deterioration at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated through-penetration firestop systems immediately and install new materials to produce through-penetration firestop systems complying with specified requirements.

**3.07 SCHEDULE**

A. FS1, Firestop Systems for Metallic Pipes, Conduit, or tubing:
   1. Type of Fill Materials: One or more of the following:
      a. Latex sealant.
      b. Silicone sealant.
      c. Intumescent acrylic sealant.
      d. Intumescent putty.
      e. Mortar.

B. FS2, Firestop Systems for Nonmetallic Pipes, Conduit, or Tubing:
   1. Type of Fill Materials: One or more of the following:
      a. Latex sealant.
      b. Silicone sealant.
      c. Intumescent acrylic sealant.
      d. Intumescent putty.
      e. Intumescent wrap strips.
      f. Firestop device.

C. FS3, Firestop Systems for Electrical Cables:
   1. Type of Fill Materials: One or more of the following:
      a. Latex sealant.
      b. Silicone sealant.
      c. Intumescent acrylic sealant.
      d. Intumescent putty.
      e. Silicone foam.

D. FS4, Firestop Systems for Cable Trays:
   1. Type of Fill Materials: One or more of the following:
      a. Latex sealant.
      b. Intumescent acrylic sealant.
      c. Intumescent putty.
      d. Silicone foam.
      e. Pillows/bags.
      f. Preformed foam intumescent blocks.
      g. Mortar.

E. FS5, Firestop Systems for Insulated Pipes:
   1. Type of Fill Materials: One or more of the following:
      a. Latex sealant.
      b. Intumescent acrylic sealant.
      c. Intumescent putty.
      d. Silicone foam.

e. Intumescent wrap strips.
f. Preformed foam intumescent blocks.

F. FS6, Firestop Systems for Miscellaneous Electrical Penetrations:
1. Type of Fill Materials: One or more of the following:
a. Latex sealant.
b. Intumescent acrylic sealant.
c. Intumescent putty.
d. Mortar.

G. FS7, Firestop Systems for Miscellaneous Mechanical Penetrations:
1. Type of Fill Materials: One or more of the following:
a. Latex sealant.
b. Intumescent acrylic sealant.
c. Mortar.

H. FS8, Firestop Systems for Groupings of Penetrations:
1. Type of Fill Materials: One or more of the following:
a. Latex sealant.
b. Intumescent wrap strips.
c. Intumescent composite sheet.
d. Firestop device.
e. Preformed foam intumescent blocks.
f. Mortar.

**END OF SECTION**

# SECTION 07 8420
# FIRE RESISTIVE JOINT SYSTEMS

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. This Section includes fire-resistive joint systems for the following:
   1. Floor-to-floor joints.
   2. Floor-to-wall joints.
   3. Head-of-wall joints.
   4. Wall-to-wall joints.

### 1.02 RELATED SECTIONS

A. Section 04 2200 - Concrete Unit Masonry.

B. Section 07 2100 - Thermal Insulation.

C. Section 07 8400 - Firestopping.

D. Section 09 2116 - Gypsum Board Assemblies: Gypsum board fireproofing.

E. Section 07 9005 - Joint Sealers.

### 1.03 PERFORMANCE REQUIREMENTS

A. General: For joints in the following constructions, provide fire-resistive joint systems that are produced and installed to resist spread of fire according to requirements indicated, resist passage of smoke and other gases, and maintain original fire-resistance rating of assembly in which fire-resistive joint systems are installed.
   1. Fire-resistance-rated non-load-bearing walls, including partitions, with fire-protection-rated openings.
   2. Fire-resistance-rated floor assemblies.

B. Fire Resistance of Joint Systems: Assembly ratings and movement capabilities indicated, but with assembly ratings not less than that equaling or exceeding fire-resistance rating of constructions in which joints are located, as determined by UL 2079.

### 1.04 SUBMITTALS

A. See Division 01 - Administrative Requirements, for submittal procedures.

B. Product Data: For each type of product indicated.

C. Shop Drawings: For each fire-resistive joint system, show each kind of construction condition in which joints are installed and relationships to adjoining construction. Include fire-resistive joint system design designation of testing and inspecting agency acceptable to authorities having jurisdiction that demonstrates compliance with requirements for each condition indicated.

D. Product Certificates: For each type of fire-resistive joint system, signed by product manufacturer.

E. Qualification Data: For Installer.

F. Research/Evaluation Reports: For each type of fire-resistive joint system.

### 1.05 QUALITY ASSURANCE

A. Source Limitations: Obtain fire-resistive joint systems for each kind of joint and construction condition indicated through one source from a single manufacturer.

B. Fire-Test-Response Characteristics: Provide fire-resistive joint systems that comply with the following requirements and those specified in “Performance Requirements” Article:
   1. Fire-resistance tests are performed by a qualified testing and inspecting agency. A qualified testing and inspecting agency is UL or other agency performing testing and follow-up inspection services for fire-resistive joint systems acceptable to authorities having jurisdiction.

2. Fire-resistive joint systems are identical to those tested per UL 2079. Perimeter fire-containment systems are identical to those tested per both UBC Standard 26-9 and UL 2079. Provide rated systems complying with the following requirements:
   a. Fire-resistive joint system products bear classification marking of qualified testing and inspecting agency.
   b. Fire-resistive joint systems correspond to those indicated by referencing system designations listed by UL in its “Fire Resistance Directory.”

**1.06 PRE-INSTALLATION MEETING**

A. Convene one week before starting work of this section.

**1.07 DELIVERY, STORAGE, AND PROTECTION**

A. Deliver fire-resistive joint system products to Project site in original, unopened containers or packages with qualified testing and inspecting agency’s classification marking applicable to Project and with intact and legible manufacturer’s labels identifying product and manufacturer, date of manufacture, lot number, shelf life, curing time, and mixing instructions for multi-component materials.

B. Store and handle materials for fire-resistive joint systems to prevent their deterioration or damage due to moisture, temperature changes, contaminants, or other causes.

**1.08 PROJECT CONDITIONS**

A. Environmental Limitations: Do not install fire-resistive joint systems when ambient or substrate temperatures are outside limits permitted by fire-resistive joint system manufacturers or when substrates are wet due to rain, frost, condensation, or other causes.

B. Ventilate fire-resistive joint systems per manufacturer’s written instructions by natural means or, if this is inadequate, forced-air circulation.

**1.09 COORDINATION**

A. Coordinate construction of joints to ensure that fire-resistive joint systems are installed according to specified requirements.

B. Coordinate sizing of joints to accommodate fire-resistive joint systems.

**PART 2 PRODUCTS**

**2.01 MANUFACTURERS**

A. In other Part 2 articles where subparagraph titles below introduce lists, the following requirements apply for product selection:
   1. Products: Subject to compliance with requirements, provide one of the products specified.
      a. Fire-Resistive Joint Systems:
         1) Hilti, Inc.
         2) Grace Construction Products.
         3) Nelson Firestop Products.
         4) RectorSeal Corporation (The).
         5) Specified Technologies Inc.
         6) 3M Fire Protection Products.
         7) Tremco, Inc.
         8) United States Gypsum Company.
      b. Substitutions: See Division 01 - Product Requirements.

**2.02 FIRE-RESISTIVE JOINT SYSTEMS, GENERAL**

A. Compatibility: Provide fire-resistive joint systems that are compatible with joint substrates, under conditions of service and application, as demonstrated by sire-resistive joint system manufacturer based on testing and field experience.

B. Accessories: Provide components of fire-resistive joint systems, including forming materials, that are needed to install fill materials and to comply with Part 1 “Performance Requirements” Article. Use only components specified by fire-resistive joint system manufacturer and approved

by the qualified testing and inspecting agency for systems indicated.

**2.03 FIRE-RESISTIVE JOINT SYSTEMS**

A. Where UL-classified fire-resistive joint systems are indicated, they refer to alphanumeric designations listed in UL's "Fire Resistance Directory" under product Category XHBN.

B. FRJ-1, Floor-to-Floor, Fire-Resistive Joint System:
   1. UL-Classification:
      a. FF-D (Dynamic):
   2. Basis-of-Design UL-Classified Product: FF-D
   3. Assembly Rating: 1 hour.
   4. Joint Width: As indicated.
   5. Movement Capabilities: Class I- 25 percent compression or extension.

C. FRJ-2, Floor-to-Wall, Fire-Resistive Joint System:
   1. UL-Classification:
      a. FW-D (Dynamic).
   2. Basis-of-Design UL-Classified Product: FW-D
   3. Assembly Rating: 1 hour.
   4. Joint Width: As indicated.
   5. Movement Capabilities: Class I- 25 percent compression or extension.

D. FRJ-3, Head-of-Wall, Fire-Resistive Joint System:
   1. UL-Classification:
      a. HW-D (Dynamic).
   2. Basis-of-Design UL-Classified Product: HW-D
   3. Assembly Rating: 1 hour.
   4. Joint Width: As indicated.
   5. Movement Capabilities: Class I- 25 percent compression or extension.

E. FRJ-4, Wall-to-Wall, Fire-Resistive Joint System:
   1. UL-Classification:
      a. WW-D (Dynamic).
   2. Basis-of-Design UL-Classified Product: WW-D
   3. Assembly Rating: 1 hour.
   4. Joint Width: As indicated.
   5. Movement Capabilities: Class I- 25 percent compression or extension.

**PART 3 EXECUTION**

**3.01 EXAMINATION**

A. Examine substrates and conditions, with Installer present, for compliance with requirements for joint configurations, substrates, and other conditions affecting performance.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

**3.02 PREPARATION**

A. Surface Cleaning: Clean joints immediately before installing fire-resistive joint systems to comply with fire-resistive joint system manufacturer's written instructions and the following requirements:
   1. Remove from surfaces of joint substrates foreign materials that could interfere with adhesion of fill materials. Remove loose particles remaining from cleaning cleaning operation.
   2. Remove laitance and form-release agents from concrete.
   3. Priming: Prime substrates where recommended in writing by fire-resistive joint system manufacturer using that manufacturer's recommended products and methods. Confine primers to areas of bond; do not allow spillage and migration onto exposed surfaces.

B. Masking Tape: Use masking tape to prevent fill materials of fire-resistive joint system from contacting adjoining surfaces that will remain exposed on completion of Work and that would otherwise be permanently stained or damaged by such contact or by cleaning methods used to remove smears from fire-resistive joint system materials. Remove tape as soon as possible without disturbing fire-resistive joint system's seal with substrates.

**3.03 INSTALLATION**

A. General: Install fire-resistive joint system to comply with Part 1 "Performance Requirements" Article and fire-resistive joint system manufacturer's written installation instructions for products and applications indicated.

B. Install forming/packing/backing materials and other accessories of types required to support fill materials during their application and in position needed to produce cross-sectional shapes and depths required to achieve fire ratings indicated.

C. Install fill materials for fire-resistive joint systems by proven techniques to produce the following results:
   1. Fill voids and cavities formed by openings and forming/packing/backing materials as required to achieve fire-resistance ratings indicated.
   2. Apply fill materials so they contact and adhere to substrates formed by joints.
   3. For fill materials that will remain exposed after completing Work, finish to produce smooth, uniform surfaces that are flush with adjoining finishes.

**3.04 CLEANING AND PROTECTION**

A. Clean off excess fill materials adjacent to joints as Work progresses by methods and with cleaning materials that are approved in writing by fire-resistive joint system manufacturers and that do not damage materials in which openings occur.

B. Provide final protection and maintain conditions during and after installation that ensure fire-resistive joint systems are without damage or deterioration at time of Substantial Completion. If damage or deterioration occurs despite such protection, cut out and remove damaged or deteriorated fire-resistive joint systems immediately and install new materials to produce fire-resistive joint systems complying with specified requirements.

**END OF SECTION**

# SECTION 07 9005
# JOINT SEALERS

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Sealants and joint backing.

B. Precompressed foam sealers.

C. Joints of a nature similar to that of joints indicated on the schedule shall be sealed with same sealer, whether indicated on the drawings to be sealed or not.

### 1.02 RELATED REQUIREMENTS

A. Section 01 6116 - Volatile Organic Compound (VOC) Content Restrictions.

B. Section 07 8400 - Firestopping: Firestopping sealants.

C. Section 07 8420 - Fire Resistive Joint Systems: Firestopping sealants.

D. Section 08 4313 - Aluminum-Framed Storefronts: Joint sealers.

E. Section 08 8000 - Glazing: Glazing sealants and accessories.

F. Section 09 2116 - Gypsum Board Assemblies: Acoustic sealant.

G. Section 09 3000 - Tiling: Sealant used as tile grout.

H. Division 23: Mechanical.

I. Division 26: Electrical.

### 1.03 REFERENCE STANDARDS

A. ASTM C834 - Standard Specification for Latex Sealants 2017.

B. ASTM C919 - Standard Practice for Use of Sealants in Acoustical Applications 2022.

C. ASTM C1193 - Standard Guide for Use of Joint Sealants 2016.

### 1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordinate the work with other sections referencing this section.

### 1.05 DEFINITIONS

A. Substrates:
   1. M-type substrates: Concrete, concrete masonry units, brick, mortar, or natural stone. The term "masonry" shall mean brick, stone, and concrete masonry work.
   2. G-type substrates: Glass and transparent plastic glazing sheets.
   3. A-type substrates: Metals, porcelain, glazed tile, and smooth plastics.
   4. O-type substrates: Wood, unglazed tile, and substrates not included under other categories.
   5. NT-type substrates: Surfaces not exposed to vehicular or pedestrian traffic.
   6. T-type substrates: Surfaces exposed to vehicular or pedestrian traffic.

B. Sealing: Making exterior and interior construction voids, junctions, or joints, air tight, dust tight, and water tight.

C. Joint Failure: A sealed joint exhibiting one or more of the following:
   1. Air or water, or both, infiltration or leakage.
   2. Dust infiltration.
   3. Sealant material migration.
   4. Loss of adhesion to bonded surfaces.
   5. Bonding of sealer to joint filler material or bond breaker material.
   6. Loss of cohesion.
   7. Discoloration or fading.
   8. Staining or marring of adjacent work or materials.

**1.06 SUBMITTALS**

A. See Section 01 3200 - Construction Progress Documentation, for submittal procedures.

B. Product Data: Provide data indicating sealant chemical characteristics, performance criteria, substrate preparation, color availability, and instructions for installation.

C. Samples: Submit three samples, 3 x 3 inch in size illustrating sealant colors for selection.
   1. Submit samples of manufacturer's standard material colors for standard color sealants.
   2. Submit samples of custom color sealant materials matching color sample provided by Gardner Spencer Smith Tench and Jarbeau, PC.
   3. Samples shall be actual materials or literature depicting actual colors of standard color materials. Gardner Spencer Smith Tench and Jarbeau, PC reserves the right to reject work not in conformance with selected colors, based on samples submitted.

D. Adhesion Compatibility Test Results: Submit a letter from sealant manufacturer indicating that adhesion and compatibility testing has been performed on actual samples of substrate as noted above and, that materials are compatible and that adhesion is acceptable. Indicate requirements for primers or special preparation.

E. Certified Product Test Reports: Independent testing agency reports showing compliance with all specified requirements.
   1. Reports may be on tests conducted up to 24 months before submission, provided the products tested were aged specimens of the same formulation as that to be used.

F. Certificates: For each sealer, provide manufacturer's certificate stating that the product complies with the specifications and is appropriate for the use intended.
   1. Submit letter of certification from sealant manufacture indicating that specified FDA Approved Sealant complies with FDA regulations and certifiable grades.

**1.07 JOB CONDITIONS**

A. Protection of Adjacent Surfaces:
   1. Protect by applying masking material or manipulating application equipment to keep materials in joint. If masking materials are used, allow no tape to touch cleaned surfaces to receive sealant. Remove tape immediately after caulking, before surface skin begins to form.
   2. Remove misapplied materials from surfaces by using solvents and methods recommended in writing by manufacturer.
   3. At surfaces from which materials have been removed, restore to original condition and appearance.

**1.08 QUALITY ASSURANCE**

A. Maintain one copy of each referenced document covering installation requirements on site.

B. Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with minimum three years documented experience.

C. Applicator Qualifications: Company specializing in performing the work of this section with minimum three years documented experience and approved by manufacturer.

D. Source Limitations: Obtain each type of joint sealant through one source from a single manufacturer.

**1.09 MOCK-UP**

A. Provide mock-up of sealant joints in conjunction with window, wall, and air barrier system under provisions of Section 04 2100 - Brick Masonry.

B. Construct mock-up with specified sealant types and with other components noted.

C. Locate where directed.

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

### 1.10 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials in original containers or bundles with labels showing manufacturer, product name or designation, color, shelf life, and installation instructions.

### 1.11 FIELD CONDITIONS

A. Maintain temperature and humidity recommended by the sealant manufacturer during and after installation.

B. Do not install sealers if any of the following conditions exist:
   1. Air or substrate temperature exceeds the range recommended by the sealer manufacturer or is below 40 degrees F.
   2. Substrate is wet, damp, or covered with snow, ice, or frost.
   3. Dimensional Limitations: Do not install sealers if joint dimensions are less than or greater than that recommended by sealer manufacturer; notify Gardner Spencer Smith Tench and Jarbeau, PC and get sealer manufacturer's recommendations for alternative procedures.
   4. Contaminants capable of interfering with adhesion have not yet been removed from joint substrates.

### 1.12 COORDINATION

A. Coordinate the work with all sections referencing this section.

### 1.13 WARRANTY

A. See Section 01 7800 - Closeout Submittals Division 01 - Closeout Submittals, for additional warranty requirements.

B. Correct defective work within a five year period after Date of Substantial Completion. Correction is limited to replacement of sealers.

C. Warranty: Include coverage for installed sealants and accessories which fail to achieve airtight seal and watertight seal, exhibit loss of adhesion or cohesion, or do not cure or fail in any manner previously defined.
   1. Submit warranty in writing signed by the Contractor, and installer.

## PART 2 PRODUCTS

### 2.01 GENERAL

A. See schedule at the end of this section for additional information in regards to type and location of each product.

### 2.02 MATERIALS, GENERAL

A. Compatibility: Provide joint sealants, backings, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by sealant manufacturer, based on testing and field experience.

### 2.03 SILICONE SEALANTS: FOR EXTERIOR JOINTS

A. Acceptable products; subject to compliance with specified requirements:
   1. GE Plastics; Product Silpruf Sealant: www.geplastics.com.
   2. Pecora Corporation; Product #895: www.pecora.com.
   3. Dow Corning Corp.; Product #795: www.dow.com

B. Substitutions: See 01 6000 - Product Requirements.

C. Characteristics:
   1. Type: One-part medium modulus silicone rubber; meeting ASTM C920-95, Type S, Grade NS, Class 25.
   2. Colors: Custom colors as selected by Gardner Spencer Smith Tench and Jarbeau, PC

D. Related work: Refer to Expansion Joint Cover Assemblies section for expansion joint assemblies.

**2.04 SILICONE SEALANTS: FOR WET AREAS**

A. Acceptable products:
   1. GE Plastics; Product #SCS 1702 Silicone Sanitary Sealant: www.geplastics.com.
   2. Pecora Corporation; Product #898 Silicone Sanitary Sealant: www.pecora.com.
   3. Dow Corning Corp.; Product #786 Mildew-Resistant Silicone Sealant: www.dow.com

B. Substitutions: See 01 6000 - Product Requirements.

C. Characteristics:
   1. Type: One-part silicone rubber, mildew and stain resistant.
   2. Color: White or off white.

**2.05 FDA APPROVED SEALANTS: FOR KITCHEN AND FOOD SERVICE AREA**

A. Acceptable products:
   1. Pecora Corporation; Product #860 Silicone: www.pecora.com.
   2. Tremco, Inc.; Product Proglaze Silicone Construction Sealant: www.tremco.com.
   3. GE Plastics; Product Construction 1200 Silicone Sealant: www.geplastics.com.

B. Substitutions: See 01 6000 - Product Requirements.

C. Characteristics:
   1. Type: One-part, moisture-curing silicone rubber; FDA Approved for use in indirect food contact areas.
   2. Color: As selected by Gardner Spencer Smith Tench and Jarbeau, PC from manufacturer's standard colors..

**2.06 POLYURETHANE SEALANT: FOR HORIZONTAL TRAFFIC-BEARING SURFACES**

A. Acceptable products:
   1. Tremco, Inc; Product THC-900/THC-901: www.tremcosealants.com.
   2. Pecora Corp.; Product Urexpan NR-200: www.pecora.com.
   3. A.C. Horn, Inc.; Product Daraseal-U.
   4. Mameco International, Inc.; Product Vulkem 245/227.
   5. Harry S. Peterson Co.; Product Iso-Flex 880 GB/881.
   6. Sonneborn, ChemRex, Inc; Product Sonolastic SL-2: www.chemrex.com.

B. Substitutions: See 01 6000 - Product Requirements.

C. Characteristics:
   1. Type: Two-component polyurethane sealant for horizontal traffic-bearing surface meeting ASTM C920-95, Type M, Grade P or NS, Class 25; self-leveling for flat surfaces and non-sag for sloped surfaces.
   2. Color: As selected by Gardner Spencer Smith Tench and Jarbeau, PC from manufacturer's standard colors..

**2.07 POLYURETHANE SEALANT: FOR WATERTIGHT JOINTS AND SEAMS**

A. Acceptable Products:
   1. Basis of Design: Pecora Corporation; Product DynaFlex SC: www.pecora.com.
   2. A.C. Horn, Inc: www.tamms.com.
   3. DAP, Inc: www.dap-inc.com.
   4. Sonneborn, ChemRex, Inc: www.chemrex.com.
   5. Tremco, Inc: www.tremcosealants.com.

B. Substitutions: See 01 6000 - Product Requirements.

C. Characteristics:
   1. Type: One-part, polyurethane sealant meeting ASTM C-920-98, Type S, Grade NS, Class 12.5; non-sag, tamper resistant elastomeric joint sealant.
   2. Color: As selected by Gardner Spencer Smith Tench and Jarbeau, PC from manufacturer's standard colors.

**2.08 ACRYLIC-LATEX CAULKING COMPOUND: TYPICAL INTERIOR JOINTS AND SEAMS**

A. Acceptable Products:
   1. Pecora Corporation; Product AC-20 Acrylic-Latex Caulk: www.pecora.com.
   2. Sonneborn, ChemRex, Inc; Product Sonolac: www.chemrex.com.
   3. A.C. Horn, Inc.; Product Acrylic Latex Caulk.
   4. DAP, Inc.; Product DAP Acrylic-Latex Caulk.
   5. Tremco Inc.; Product Acrylic-Latex Caulk.

B. Substitutions: See 01 6000 - Product Requirements.

C. Characteristics:
   1. Flexible, paintable, non-staining, non-bleeding acrylic emulsion.

**2.09 ACOUSTICAL SEALANT: FOR CONCEALED LOCATIONS ONLY**

A. Acceptable Products:
   1. Acoustical Surfaces, Inc., SF-550.
   2. Gold Bond Building Products/Div. National Gypsum Co., Sound Seal.
   3. Protective Treatments, Inc., 808 Acoustical Sealant.
   4. Tremco, Inc., Acoustical Sealant.
   5. United States Gypsum Co., Sheetrock Acoustical Sealant.

B. Substitutions: See 01 6000 - Product Requirements.

C. Characteristics:
   1. Butyl or acrylic sealant; ASTM C 920, Grade NS, Class 12-1/2, Uses M and A; single component, solvent release curing, non-skinning.

**2.10 POLYURETHANE SEALANT: FOR TILE CONTROL AND EXPANSION JOINTS**

A. Acceptable products:
   1. Tremco, Inc; Product Dymeric: www.tremcosealants.com.
   2. Pecora Corp.; Product Dynatrol II: www.pecora.com.
   3. Sonneborn, ChemRex, Inc; Product NP-2: www.chemrex.com.

B. Substitutions: See 01 6000 - Product Requirements.

C. Characteristics:
   1. Type: Two-component, polyurethane-based sealant with separate pre-packaged color agent.
   2. Color: As selected by Gardner Spencer Smith Tench and Jarbeau, PC from manufacturer's standard colors.

**2.11 JOINT-SEALANT BACKING**

A. General Provide sealant backings of material and type that are nonstaining; are compatible with joint substrates, sealants, primers, and other joint fillers; and are approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.

B. Cylindrical Sealant Backing: ASTM C 1330, Type C (closed-cell material with a surface skin) O (open-cell material) B (bicellular material with surface skin) or any of the preceding types, as approved in writing by joint-sealant manufacturer for joint application indicated, and of size and density to control sealant depth and otherwise contribute to producing optimum performance.

C. Bond-Breaker Tape: Polyethylene tape or other plastic tape recommended by sealant manufacturer for preventing sealant from adhering to rigid, inflexible joint-filler materials or joint surfaces at back of joint where such adhesion would result in sealant failure. Provide self-adhesive tape where applicable.

**2.12 ACCESSORIES**

A. Primer: Non-staining type, recommended by sealant manufacturer to suit application.

B. Joint Cleaner: Non-corrosive and non-staining type, recommended by sealant manufacturer; compatible with joint forming materials.

C. Joint Backing: Round foam rod compatible with sealant; ASTM D 1667, closed cell PVC; oversized 30 to 50 percent larger than joint width.

D. Bond Breaker: Pressure sensitive tape recommended by sealant manufacturer to suit application.

E. Tooling agent: Agent recommended by material manufacturer to ensure contact of material with inner joint faces.

## PART 3 EXECUTION

### 3.01 EXAMINATION

A. Verify that substrate surfaces are ready to receive work.

B. Verify that joint backing and release tapes are compatible with sealant.

C. With Installer present, examine joints indicated to receive joint sealants, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting joint-sealant performance.

### 3.02 PREPARATION

A. Remove loose materials and foreign matter that could impair adhesion of sealant.

B. Clean and prime joints in accordance with manufacturer's instructions.

C. Perform preparation in accordance with manufacturer's instructions and ASTM C1193.

D. Protect elements surrounding the work of this section from damage or disfigurement.

E. Etch concrete and masonry joint surfaces to remove excess alkalinity, unless material manufacturer's product data indicates that alkalinity does not interfere with bond and performance. Etch with 5% solution of muriatic acid; neutralize with dilute ammonia solution; rinse with clean water and allow to dry before caulking.

F. Clean porous joint substrate surfaces by brushing, grinding, blast cleaning, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealants. Remove loose particles remaining after cleaning operations above by vacuuming or blowing out joints with oil-free compressed air. Porous joint substrates include the following:
   1. Concrete.
   2. Masonry.
   3. Unglazed surfaces of ceramic tile.

G. Remove laitance and form-release agents from concrete.

H. Clean nonporous surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants. Nonporous joint substrates include the following:
   1. Metal.
   2. Glass.
   3. Porcelain enamel.
   4. Glazed surfaces of ceramic tile.

I. Joint Priming: Prime joint substrates, where recommended in writing by joint-sealant manufacturer, based on prior experience. Apply primer to comply with joint-sealant manufacturer’s written instructions. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.

J. Masking Tape: Use masking tape where required to prevent contact of sealant with. adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

## 3.03 INSTALLATION

A. Perform work in accordance with sealant manufacturer's requirements for preparation of surfaces and material installation instructions.

B. Perform installation in accordance with ASTM C1193.

C. Perform acoustical sealant application work in accordance with ASTM C919.

D. Measure joint dimensions and size joint backers to achieve width-to-depth ratio, neck dimension, and surface bond area as recommended by manufacturer, except where specific dimensions are indicated.

E. Install bond breaker where joint backing is not used.

F. Install sealant free of air pockets, foreign embedded matter, ridges, and sags.

G. Apply sealant within recommended application temperature ranges. Consult manufacturer when sealant cannot be applied within these temperature ranges.

H. Install sealant backings of type indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.
   1. Do not leave gaps between ends of sealant backings.
   2. Do not stretch, twist, puncture, or tear sealant backings.
   3. Remove absorbent sealant backings that have become wet before sealant application and replace them with dry materials.

I. Install sealants using proven techniques that comply with the following and at the same time backings are installed:
   1. Place sealants so they directly contact and fully wet joint substrates.
   2. Completely fill recesses in each joint configuration.
   3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.

J. Do not allow material to overflow onto adjacent surfaces. Prevent staining of adjacent surfaces.

K. Interior joints: At interior joints and seams at abutting and adjacent materials, recess caulking compound 3/16" in joints wider than 1/4". At joints 1/4" or less in width, tool caulking flush.

L. Cure sealants and caulking compounds in accord with manufacturer's product data to obtain high early bond strength, internal cohesive strength and surface durability. Protect uncured surfaces from contamination and physical damage.

M. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified below to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.
   1. Remove excess sealant from surfaces adjacent to joints.
   2. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.
   3. Provide concave joint configuration per Figure SA in ASTM C 1193, unless otherwise indicated.
   4. Provide flush joint configuration where indicated per Figure SB in ASTM C 1193.
   5. Provide recessed joint configuration of recess depth and at locations indicated per Figure 5C in ASTM C 1193.
      a. Use masking tape to protect surfaces adjacent to recessed tooled joints.

## 3.04 CLEANING

A. Clean adjacent soiled surfaces.

B. Clean off excess sealant or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved in writing by manufacturers of joint sealants and of products in which joints occur.

**3.05 PROTECTION**

A. Protect sealants until cured.

B. Protect joint sealants during and after curing period from contact with contaminating substances and from damage resulting from construction operations or other causes so sealants are without deterioration or damage at time of Substantial Completion.

**3.06 SCHEDULE**

A. General: Unless otherwise indicated, joints around perimeter of frames, where indicated to be sealed, are to be sealed using sealer specified for the substrate adjacent to the frame.

B. Exterior joints in masonry, structural precast, metal panels, stucco, including control joints: Polyurethane sealant.

C. Interior joints in masonry, metal panels and stucco, including control joints: Polyurethane sealant.

D. Exterior and interior joints at perimeter of aluminum framing systems: Silicone sealants.

E. Exterior and interior joints of steel door framing: Silicone sealants for exterior joints and acrylic-latex sealant for interior joints.

F. Exterior and interior horizontal traffic-bearing joints, excluding ceramic tile joints: Polyurethane sealant for horizontal traffic-bearing surfaces.

G. Interior concealed bedding joints and thresholds: Silicone sealant for watertight joints and seams.

H. Interior tile joints: Polyurethane sealant for tile control and expansion joints.

I. Rated wall assemblies and firestopped joints: Firestop sealant as specified in Firestopping and Fire Resistive Joint Systems Sections.

J. Typical interior joints and seams at abutting and adjacent materials except as specified herein: Acrylic-latex caulking compound.

K. Interior joints in conjunction with vanities, fixtures and tile finishes: Silicone sealant for wet areas.

L. Interior joints and seams at abutting and adjacent materials in kitchen and food service areas, including joints around kitchen equipment: FDA approved sealant.

M. Acoustical sensitive joints and seams as defined on the drawings: Acoustical sealant for concealed locations only.

**END OF SECTION**

# SECTION 08 1113
# HOLLOW METAL DOORS AND FRAMES

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Non-fire-rated hollow metal doors and frames.

B. Hollow metal frames for wood doors.

C. Fire-rated hollow metal doors and frames.

D. Thermally insulated hollow metal doors with frames.

E. Hollow metal borrowed lites glazing frames.

F. Accessories, including glazing, louvers, and matching panels.

### 1.02 RELATED REQUIREMENTS

A. Section 04 2200 - Concrete Unit Masonry: Adjacent construction.

B. Section 08 7100 - Door Hardware.

C. Section 08 8000 - Glazing: Glass for doors and borrowed lites.

D. Section 09 2116 - Gypsum Board Assemblies: Adjacent construction.

E. Section 09 9000 - Painting and Coating: Field painting.

F. Division 23: Mechanical.

### 1.03 ABBREVIATIONS AND ACRONYMS

A. ANSI - American National Standards Institute.

B. ASCE - American Society of Civil Engineers.

C. HMMA - Hollow Metal Manufacturers Association.

D. NAAMM - National Association of Architectural Metal Manufacturers.

E. NFPA - National Fire Protection Association.

F. SDI - Steel Door Institute.

G. UL - Underwriters Laboratories.

### 1.04 REFERENCE STANDARDS

A. ANSI/ICC A117.1 - American National Standard for Accessible and Usable Buildings and Facilities; International Code Council; 2009.

B. ANSI/SDI A250.3 - Test Procedure and Acceptance Criteria for Factory Applied Finish Coatings for Steel Doors and Frames 2019.

C. ANSI/SDI A250.8 - Specifications for Standard Steel Doors and Frames (SDI-100) 2017.

D. ANSI/SDI A250.10 - Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames 2020.

E. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process 2022.

F. ASTM A1008/A1008M - Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Required Hardness, Solution Hardened, and Bake Hardenable 2021a.

G. ASTM A1011/A1011M - Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength 2018a.

H. ASTM C236 - Standard Test Method for Steady-State Thermal Performance of Building Assemblies by Means of a Guarded Hot Box; 1989 (Reapproved 1993).

I. ASTM C1363 - Standard Test Method for Thermal Performance of Building Assemblies by Means of a Hot Box Apparatus; 2011.

J. ASTM E90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements 2009 (Reapproved 2016).

K. BHMA A156.115 - Hardware Preparation in Steel Doors and Steel Frames 2016.

L. FBC TAS 201 - Impact Test Procedures; Testing Application Standard 1994.

M. DHI A115 Series - Specifications for Steel Doors and Frame Preparation for Hardware; Door and Hardware Institute; 2000 (ANSI/DHI A115 Series).

N. NAAMM HMMA 805 - Recommended Selection and Usage Guide for Hollow Metal Doors and Frames 2012.

O. NAAMM HMMA 831 - Hardware Locations for Hollow Metal Doors and Frames 2011.

P. NAAMM HMMA 840 - Guide Specifications For Receipt, Storage and Installation of Hollow Metal Doors and Frames 2017.

Q. NAAMM HMMA 850 - Fire-Rated Hollow Metal Doors and Frames 2014.

R. NAAMM HMMA 860 - Guide Specifications for Hollow Metal Doors and Frames 2018.

S. NAAMM HMMA 861 - Guide Specifications for Commercial Hollow Metal Doors and Frames 2014.

T. NAAMM HMMA 862 - Guide Specifications for Forced Entry/Bullet Resistant (FE/BR) Security Hollow Metal Doors and Frames 2021.

U. NAAMM HMMA 865 - Guide Specifications for Sound Control Hollow Metal Door and Frame Assemblies 2013.

V. NFPA 80 - Standard for Fire Doors and Other Opening Protectives 2022.

W. NFPA 105 - Standard for Smoke Door Assemblies and Other Opening Protectives 2022.

X. NFPA 252 - Standard Methods of Fire Tests of Door Assemblies 2022.

Y. SDI 117 - Manufacturing Tolerances for Standard Steel Doors and Frames 2023.

Z. UL (DIR) - Online Certifications Directory Current Edition.

AA. UL 10B - Standard for Fire Tests of Door Assemblies Current Edition, Including All Revisions.

BB. UL 10C - Standard for Positive Pressure Fire Tests of Door Assemblies Current Edition, Including All Revisions.

**1.05 SUBMITTALS**

A. See Division 01 - Administrative Requirements, for submittal procedures.

B. Product Data: Materials and details of design and construction, hardware locations, reinforcement type and locations, anchorage and fastening methods, and finishes; and one copy of referenced standards/guidelines.

C. Shop Drawings: Details of each opening, showing elevations, glazing, frame profiles, and any indicated finish requirements.

D. Certificates:
   1. Provide manufacturer's certification that products comply with referenced standards.
   2. Provide evidence of manufacturer's membership in the Steel Door Institute.

E. Door, frame, and hardware schedule in accordance with SDI 111.

**1.06 QUALITY ASSURANCE**

A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than three years documented experience.
   1. Hollow metal distributor company who is a direct account of the manufacturer of the products furnished. In addition, that distributor must have in their regular employment an

Architectural Hardware Consultant (AHC), a Certified Door Consultant (CDC) or an Architectural Openings Consultant (AOC), who will be available to consult with Gardner Spencer Smith Tench and Jarbeau, PC and Contractor regarding matters affecting the door and frame opening.

B. Maintain at project site copies of reference standards relating to installation of products specified.

C. Quality Standard: Comply with SDI 100.

D. Manufacturer Qualifications: Provide all products from a single manufacturer who is a member of the Steel Door Institute.

E. Labeled Assemblies: At all locations where fire-rated door and frame assemblies are required , provide assemblies which comply with NFPA 80 and have been tested and labeled in accordance with ASTM E 152 by agency acceptable to governing authorities

F. Allowable erection tolerances:
   1. Variation from specified clearances: +/- 1/32".
   2. Variation in face alignment, pairs of doors: +/- 1/16".
   3. Variation in face alignment between door and frame: 1/8" maximum.

G. Performance criteria:
   1. Physical endurance: Comply with performance level for specified grade classification in accord with ANSI/SDI-100-03 and ANSI A250.4-94 for doors and hardware reinforcing, ANSI A250.5-94 for frames and anchors.
   2. Finish: Comply with standard performance criteria of ANSI A224.1-90 for primed steel surfaces.
   3. Thermal performance: Minimum aged value of U = 0.10 (R = 10.2) or better, apparent thermal performance in accord with SDI 113.
   4. Air infiltration: Maximum 1.25 cfm/1.f. at 1.567 psi (25 mph) in accord with SDI-116.
   5. Acoustical performance: STC of 25 or better in accord with SDI-114 and ASTM E90-97.

H. Coordination: Transmit copy of final shop drawings to wood door manufacturer to allow prefitting of wood doors to steel frames.

**1.07 DELIVERY, STORAGE, AND HANDLING**

A. Comply with NAAMM HMMA 840 or ANSI/SDI A250.8 (SDI-100) in accordance with specified requirements.
   1. ANSI A250.8 - SDI-100 Recommended Specifications for Standard Steel Doors and Frames; 2003.

B. All doors and frames shall be stored vertically under cover.

C. Deliver welded frames with two removable spreader bars across bottom of frames, tack welded to jambs and mullions.

D. The units shall be placed on at least 4" high wood sills or in a manner that will prevent rust or damage.

E. Provide a 1/4" space between the doors to promote air circulation.

F. If the shipping wrap on the door becomes wet, it must be removed immediately.

G. Protect with resilient packaging; avoid humidity build-up under coverings; prevent corrosion and adverse effects on factory applied painted finish.

**PART 2 PRODUCTS**

**2.01 MANUFACTURERS**

A. Manufacturers: Products of the following SDI manufacturers, provided they comply with the requirements of the contract documents, will be among those considered acceptable:
   1. Ceco Door Products: www.cecodoor.com.
   2. Curries Company: www.curries.com.

3. Mesker: www.meskerdoor.com.
4. Overly: www.overly.com.
5. Palmetto Metal Products, Inc: www.palmettometalproducts.com.
6. Steelcraft Manufacturing Company: www.steelcraft.com.
7. Republic Doors: www.republicdoor.com.

B. Substitutions: See Division 01 - Product Requirements.

**2.02 DOORS AND FRAMES**

A. Fabrication standard: Except for more stringent requirements specified, comply with ANSI/SDI-100-91, including performance levels as referenced.

B. Steel:
1. Interior doors and frames: Fabricate of cold-rolled steel sheet meeting ASTM A366-96. For doors scheduled as galvanized or galvannealed steel sheet meeting ASTM A653-96, Designation A60 or G60; wipe coat not acceptable.
2. All exterior, kitchen, dishwashing and serving line doors and frames: Fabricate of commercial quality, hot-dipped, galvanized or galvannealed steel sheet meeting ASTM A653-96, Designation A60 or G60; wipe coat not acceptable.

C. Stainless steel: Provide stainless steel frames as indicated on the door schedule. Stainless steel shall be AISI type 302/304, satin finish.

D. Finish for steel: Prime painted steel surfaces in compliance with ANSI A224.1-90.
1. Interior doors and frames: One coat of manufacturer's standard rust-inhibitive primer.
2. Exterior doors and frame: One coat of manufacturer's standard rust-inhibitive primer after chemical treatment of galvanized surface for paint adhesion.

E. Door classification:
1. Standard interior hollow metal doors: Grade III, 16 ga., Extra Heavy Duty, Model One with edge seams, 1-3/4" thickness.
2. Label fire-resistive composite metal doors: Grade III, 16 ga., Extra Heavy Duty, Model One with edge seams, 1-3/4" thickness, with mineral fiberboard core for all ratings over 20 minutes.
3. Exterior Insulated composite metal doors: Grade III, 16 ga., Extra Heavy Duty, Model One with edge seams, 1-3/4" thickness, with polystyrene core.

F. Door characteristics:
1. Edge bevel: Vertical edges beveled 1/8" in 2"; double-acting doors rounded on 2-1/8" radius. Non-handed door blanks with filler plates are not acceptable.
2. Top and bottom edges: Flush, welded, minimum 18 ga. steel. Provide weep holes in bottom edge of exterior doors.
3. Join door edges by continuous weld extending the full height of door. Grind, fill and dress welds smooth to make invisible and provide smooth flush surface.
4. Astragals: Split type, 12 ga., material. Fire-rated "B" and "C" labeled doors shall be of type not requiring astragals to obtain rating.

G. Frame construction including sidelights and borrowed lite frames:
1. Welded frames: 14 ga., with backbend returns, setup arc welded, with all joints, including face, flange and throat, full welded, dressed and ground smooth; no mechanical interlocking allowed. Provide welded frames with temporary spreaders during shipping, storage and erection.
2. Transom bars and mullions: Shop fabricate from same material as door frames, setup arc welded, with all joints, including face, flange and throat, full welded, dressed and ground smooth; no mechanical interlocking allowed. Fabricate in largest size sections allowed by shipping and installation restrictions. Field joints shall occur only as indicated on approved shop drawings.
3. Machine door frames for hardware scheduled for installation on that frame. Filler plates installed at unused openings will not be acceptable.

4. Mortar guards: Provide properly sized frame mortar guards at hardware locations.
5. Joints:
   a. Dress welded joints and ground smooth, indistinguishable in complete work.
   b. Make non-welded connections with tight fitting, closed joints.
   c. Make joints with aligned faces and arrises.

H. Frame anchors:
1. Wall anchors for frame attachment to masonry construction: Adjustable, flat, minimum 18 ga. corrugated or perforated, T-shaped steel anchors with leg not less than 2" wide by 10" long. Provide one anchor per jamb for each 2'-0" of height or fraction thereof. Anchors for fire-rated frames shall be labeled type.
2. Wall anchors for frame attachment to drywall partitions: Manufacturer's standard adjustable type for attachment to studs. Provide one anchor per jamb for each 2'-0" of height or fraction thereof. Anchors for fire-rated frames shall be labeled type.
3. Typical floor anchors: Provide frames with minimum 18 ga. anchors for attachment to floor. For wall conditions that do not allow for the use of a floor anchor, provide an additional jamb anchor. Anchors for fire-rated frames shall be labeled type.
4. In-place masonry or concrete: 3/8" countersunk, flat head, stove bolts in expansion shields, spaced 6" maximum from top and bottom of frame and at 2'-0" o.c., maximum, between. Anchors for fire-rated frames shall be labeled type.

I. Applied stops: Formed, 20 ga. steel with mitered corners. Attach using countersunk oval head machine screws at 1'-0" o.c., maximum.

J. Preparation for hardware and anchors:
1. Reinforcement: Reinforce components for hardware installation in accord with ANSI/SDI-100-91.
2. Punch single leaf frames to receive three silencers; double leaf frames to receive two silencers per leaf, at head. Protect holes from grout.
3. Factory-prepared hardware locations shall be in accord with ANSI/SDI 100-91 ANSI/SDI 107.
4. Provide grout shields where frames in masonry walls are cut or drilled.
5. Install hardware reinforcement and anchors without distortions or blemishes on exposed surfaces.
6. Head shall have 12 gage door closer reinforcement sleeve, full width and length of head, whether or not closers are called for. No mutes or mute holes.

## 2.03 ACCESSORIES

A. Louvers: Roll formed steel with overlapping frame; finish same as door components; factory-installed. As specified in Division 23 and or as shown in Drawings.
1. Sightproof Louvers: Stationary louvers constructed with inverted V-shaped or Y-shaped blades. Blades: 24 gauge. Frame: 20 gauge. Hot-dip galvanize all exterior door louvers Provide with galvanized insect screen where louvers installed on exterior doors.
2. Fire-Rated Automatic Louvers: Louvers constructed with movable blades closed by actuating fusible links and listed and labeled for use in fire-rated door assemblies of type and fire-resistance rating indicated by the same testing and inspecting agency that established fire-resistance rating of door assembly

B. Glazing: Tempered As specified in Section 08 8000 - Glazing, factory installed.

C. Removable Stops: Formed sheet steel, shape as indicated on drawings, mitered or butted corners; prepared for countersink style tamper proof screws.

D. Astragals for Double Doors: Specified in Section 08 7100 - Door Hardware.

E. Grout for Frames: Portland cement grout with maximum 4 inch slump for hand troweling; thinner pumpable grout is prohibited.

F. Silencers: Resilient rubber, fitted into drilled hole; provide three on strike side of single door, three on center mullion of pairs, and two on head of pairs without center mullions.

G. Temporary Frame Spreaders: Provide for factory- or shop-assembled frames.

**2.04 FINISHES**

A. Primer: Rust-inhibiting, complying with ANSI/SDI A250.10, door manufacturer's standard.

B. Bituminous Coating: Asphalt emulsion or other high-build, water-resistant, resilient coating.

**PART 3 EXECUTION**

**3.01 EXAMINATION**

A. Verify existing conditions before starting work.

B. Verify that opening sizes and tolerances are acceptable.

C. Verify that finished walls are in plane to ensure proper door alignment.

**3.02 PREPARATION**

A. Coat inside of frames to be installed in masonry or to be grouted, with bituminous coating, prior to installation.

B. Remove welded-in shipping spreaders installed at factory.

C. Prior to installation and with installation spreaders in place, adjust and securely brace standard steel door frames for squareness, alignment, twist, and plumb to the following tolerances:
   1. Squareness: Plus or minus 1/16 inch, measured at door rabbet on a line 90 degrees from jamb perpendicular to frame head.
   2. Alignment: Plus or minus 1/16 inch, measured at jambs on a horizontal line parallel to plane of wall.
   3. Twist: Plus or minus 1/16 inch, measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of wall.
   4. Plumbness: Plus or minus 1/16 inch, measured at jambs on a perpendicular line from head to floor.

D. Drill and tap doors and frames to receive nontemplated mortised and surface-mounted door hardware.

**3.03 INSTALLATION**

A. Install doors and frames in accordance with manufacturer's instructions and related requirements of specified door and frame standards or custom guidelines indicated.

B. Install fire rated units in accordance with NFPA 80, NFPA 257 and UL 9.

C. Coordinate frame anchor placement with wall construction.

D. Grout frames in masonry construction, using hand trowel methods; brace frames so that pressure of grout before setting will not deform frames.

E. Install door hardware as specified in Section 08 7100.

F. Comply with glazing installation requirements of Section 08 8000.

G. Coordinate installation of electrical connections to electrical hardware items.

H. Touch up damaged factory finishes.

**3.04 TOLERANCES**

A. Clearances Between Door and Frame: Comply with related requirements of specified frame standards or custom guidelines indicated in accordance with SDI 117 or NAAMM HMMA 861.

B. Maximum Diagonal Distortion: 1/16 inch measured with straight edge, corner to corner.

**3.05 STEEL FRAMES**

A. General:
   1. Install hollow metal frames in accord with ANSI/SDI 100-03 and SDI 105-92, approved shop drawings and product data.
   2. Clearance between frame and interfacing wall surfaces shall be 1/16" maximum.

3. Shimming of door hinges is not an acceptable correction of door frames installed out of erection tolerance.

B. Welded frames:
1. Set welded frames in position prior to beginning partitions work. Brace frames until permanent anchors are set.
2. Set anchors for frames as work progresses. Install anchors at hinge and strike levels. Fully grout frames in masonry walls as specified in Concrete Unit Masonry section.
3. Remove temporary braces and spreaders after wall construction is complete.
4. Install welded frames in prepared openings in concrete and masonry walls using countersunk bolts and expansion shields. Fully grout in place.
5. Solidly pack mineral-fiber insulation behind frames in metal-stud partitions.
6. Weld field splices in borrowed lite frames and grind smooth.
7. Fire-rated frame: Install in accord with requirements of NFPA No. 80-92 and No. 105-93.

**3.06 STEEL DOORS**

A. Install hollow metal doors in frames, using hardware specified in Finish Hardware section. Shimming of door hinges is not an acceptable repair of warped doors or door frames out of erection tolerances.

B. Edge clearances at doors:
1. Between door and frame, at head and jambs: 1/8".
2. At meeting edges of pairs of doors and at mullions: 1/8" to 1/4" (1/8" for fire-rated doors).
3. At transom panels, without transom bars: 1/8".
4. At sills without thresholds: 3/8" maximum above finish floor.
5. At sills with thresholds: 3/8" maximum above top of threshold.
6. Between face of door and door stop: 1/16".

C. Fire-rated doors: Install in accord with requirements of NFPA No. 80-99 and No. SDI 105-92.

**3.07 ADJUSTING AND CLEANING**

A. Adjust for smooth and balanced door movement.

B. Check and readjust operating hardware items immediately before final inspection. Leave work in complete and proper operating condition. Remove and replace defective work, including standard steel doors or frames that are warped, bowed, or otherwise unacceptable.

C. Clean grout and other bonding material off standard steel doors and frames immediately after installation.

D. Prime-Coat Touchup: Immediately after erection, sand smooth rusted or damaged areas of prime coat and apply touchup of compatible air-drying primer.

E. Galvannealed Surfaces: Clean abraded areas and repair with galvanizing repair paint according to manufacturer's written instructions.

**END OF SECTION**

# SECTION 08 1416
# FLUSH WOOD DOORS

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Flush wood doors; flush and flush glazed configuration; fire rated, non-rated, and acoustical.

B. Shop priming or factory finishing flush wood doors.

C. Factory fitting flush wood doors to frames and factory machining for hardware.

### 1.02 RELATED REQUIREMENTS

A. Section 08 7100 - Door Hardware.

B. Section 08 8000 - Glazing.

C. Section 09 2116 - Gypsum Board Assemblies: Sheathing and wallboard for partitions and walls.

D. Section 09 9000 - Painting and Coating: Field finishing of doors.

E. Division 23: Mechanical.

### 1.03 REFERENCE STANDARDS

A. 16 CFR 1201 - Safety Standard for Architectural Glazing Materials Current Edition.

B. ASTM E413 - Classification for Rating Sound Insulation 2022.

C. ASTM E1408 - Standard Test Method for Laboratory Measurement of the Sound Transmission Loss of Door Panels and Door Systems; 1991 (Reapproved 2000).

D. AWI (QCP) - Quality Certification Program Current Edition.

E. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards, 2nd Edition 2014, with Errata (2016).

F. AWMAC/WI (NAAWS) - North American Architectural Woodwork Standards 2021, with Errata.

G. FM (AG) - FM Approval Guide Current Edition.

H. ICC (IBC) - International Building Code Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

I. ITS (DIR) - Directory of Listed Products Current Edition.

J. AWI/AWMAC (QSI) - Architectural Woodwork Quality Standards Illustrated; Architectural Woodwork Institute and Architectural Woodwork Manufacturers Association of Canada; 2005, 8th Ed., Version 2.0.

K. ICC (IBC) - International Building Code; 2012.

L. ITS (DIR) - Directory of Listed Products; Intertek Testing Services NA, Inc.; current edition.

M. NFPA 80 - Standard for Fire Doors and Other Opening Protectives 2022.

N. NFPA 105 - Standard for Smoke Door Assemblies and Other Opening Protectives 2022.

O. NFPA 252 - Standard Methods of Fire Tests of Door Assemblies 2022.

P. UL (BMD) - Building Materials Directory; Underwriters Laboratories Inc.; current edition.

Q. UL 10B - Standard for Fire Tests of Door Assemblies Current Edition, Including All Revisions.

R. UL 10C - Standard for Positive Pressure Fire Tests of Door Assemblies Current Edition, Including All Revisions.

S. WDMA I.S. 1A - Interior Architectural Wood Flush Doors 2021, with Errata (2022).

T. WI (CCP) - Certified Compliance Program (CCP) Current Edition.

### 1.04 SUBMITTALS

A. See Division 01 - Administrative Requirements, for submittal procedures.

B. Product Data: Indicate door core materials and construction; veneer species, type and characteristics.

C. Shop Drawings: Indicate location, size, and hand of each door; elevation of each kind of door; construction details not covered in Product Data; location and extent of hardware blocking; and other pertinent data.
   1. Indicate dimensions and locations of mortises and holes for hardware.
   2. Indicate dimensions and locations of cutouts.
   3. Indicate requirements for veneer matching.
   4. Indicate doors to be factory finished and finish requirements.
   5. Indicate fire ratings for fire doors.

D. Samples for Verification:
   1. Factory finishes applied to actual door face materials, approximately 8 by 10 inches, for each material and finish. For each wood species and transparent finish, provide set of three samples showing typical range of color and grain to be expected in the finished work.
   2. Louver blade and frame sections, 6 inches long, for each material and finish specified.
   3. Frames for light openings, 6 inches long, for each material, type, and finish required.

E. Samples: Submit two samples of door construction, 12 x 12 inch in size cut from top corner of door.

F. Samples: Submit two samples of door veneer, 12 x 12 inch in size illustrating wood grain, stain color, and sheen.

G. Manufacturer's Installation Instructions: Indicate special installation instructions.

**1.05 QUALITY ASSURANCE**

A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section, with not less than three years of documented experience.

B. Allowable fabrication tolerances:
   1. Overall dimension: +/- 1/16".
   2. Width: +/- 1/32".
   3. Maximum warp, bow, cup or twist: 1/4".
   4. Squareness: Maximum 1/8" difference in diagonal measurement.
   5. Hardware locations: -0", +1/32".

C. Allowable erection tolerances:
   1. Variation from specified clearances: +1/32", -0".
   2. Maximum variation in edge alignment, pairs of doors: 1/16".

D. Allowable color and grain variation: Doors for natural finish shall be selected for uniformity in color and grain. Joints in face veneers shall be inconspicuous. Adjacent doors and doors viewed together shall have similar color and grain.
   1. Doors with a pronounced “barber pole” effect or strong color variations may be rejected based upon the determination Gardner Spencer Smith Tench and Jarbeau, PC.

E. Labels:
   1. On top edge, provide each door with a label which identifies manufacturer, trade association of which he is a member, grade and type of door or industry standard with which it complies.
   2. Fire-rated doors:
      a. Fire-rated doors shall bear label of testing and approval by independent Testing Agency, having been tested in accord with NFPA 252 for ratings indicated. Doors to be Positive pressure tested UL10C and Category A edge sealing where required. Permanently attached label at eye level to hinge stile of each fire-rated door.
      b. Fire-rated doors shall provide rating without the use of salt-treated wood, or manufacturer shall provide certification that treated wood is non-hygroscopic and will

warrant door against failure or discoloration of face veneer and door finish.
c. Do not paint over labels.
3. All flush doors shall be the products of one manufacturer.

F. Installed Fire Rated Door and Transom Panel Assembly: Conform to {\rs\#1} for fire-rating as indicated.

**1.06 DELIVERY, STORAGE, AND HANDLING**

A. Package, deliver and store doors in accordance with specified quality standard.

B. Accept doors on site in manufacturer's packaging. Inspect for damage.

C. Protect doors with resilient packaging sealed with heat shrunk plastic. Do not store in damp or wet areas; or in areas where sunlight might bleach veneer. Seal top and bottom edges with tinted sealer if stored more than one week. Break seal on site to permit ventilation.

D. Do not walk or stack other materials on top of stacked doors. Do not drag doors across each other.

**1.07 PROJECT CONDITIONS**

A. Coordinate the work with door opening construction, door frame and door hardware installation.

B. Do not deliver or install doors until building is enclosed, wet work is complete, and HVAC system is operating and will maintain temperature and relative humidity at occupancy levels during the remainder of the construction period.

**1.08 WARRANTY**

A. See Division 01 - Closeout Submittals, for additional warranty requirements.

B. Special Warranty: Manufacturer’s standard form, signed by manufacturer. Installer, and Contractor, in which manufacturer agrees to repair or replace doors that are defective in materials or workmanship, have warped (bow, cup, or twist) more than 1/4 inch in a 42-by-84-inch section, or show telegraphing of core construction in face veneers exceeding 0.01 inch in a 3-inch span.
1. Warranty shall also include installation and finishing that may be required due to repair or replacement of defective doors.
2. Warranty shall be in effect during Ihe following period of time from date of Substantial Completion:
a. Solid-Core Interior Doors: Life of installation.

**PART 2 PRODUCTS**

**2.01 MANUFACTURERS**

A. Wood Veneer Faced Doors:

B. Staved Lumber Core veneer doors:
1. ABS Manufacturing; Product American Series Flush Doors: www.doormerica.com.
2. Algoma Hardwoods, Inc; Product Novodor.
3. Graham Manufacturing Co./Essex Industries, Inc; Product GPC Series.
4. Oshkosh Architectural Door Co., Classic Architectural Door; Product GP Series: www.oshkosh.com.
5. Mohawk Flush Doors, Inc; Product Custom Grade: www.mohawkdoors.com.

C. Mineral core fire-rated veneer doors:
1. ABS Manufacturing; Product American Series Flush Doors: www.doormerica.com.
2. Eggers Industries; Product FireGuard Plus: www.eggersindustries.com.
3. Marshfield DoorSystems, Inc; Product Signature Series Mineral Core Door: www.marshfielddoors.com. (formerly Weyerhaeuser Door Division)
4. Algoma Hardwoods, Inc; Product Superfire Door System.
5. Graham Manufacturing Co./Essex Industries, Inc; Product GFM Series.
6. Oshkosh Architectural Door Co., Classic Architectural Door; Product GF Series: www.oshkosh.com.

7. Mohawk Flush Doors, Inc; Product Custom Grade: www.mohawkdoors.com

D. Substitutions: See Division 01 - Product Requirements.

**2.02 DOORS**

A. Doors: Refer to drawings for locations and additional requirements.
   1. Quality Level: Premium Grade with A grade veneer, in accordance with AWI/AWMAC Architectural Woodwork Quality Standards Illustrated, Section 1300.
   2. Wood Veneer Faced Doors: 5-ply or 7-ply unless otherwise indicated.

B. Interior Doors: 1-3/4 inches thick unless otherwise indicated; flush construction.
   1. Provide solid core doors at each location.
   2. Fire Rated Doors: Tested to ratings indicated on drawings in accordance with UL 10C - Positive Pressure; Underwriters Laboratories Inc (UL) or Intertek/Warnock Hersey (WHI) labeled without any visible seals when door is open.
   3. Wood veneer facing for field transparent finish as indicated on drawings.

**2.03 DOOR AND PANEL CORES**

A. Non-Rated Solid Core and 20 Minute Rated Doors: Type Kiln Dried staved lumber core (SLC), plies and faces as indicated above. Core to be one species per core. Cores are to be finger jointed and glued with type II water resistant adhesives and machined to a smooth consistent thickness.

B. Fire-Rated Doors: Mineral core type, with fire resistant composite core (FD), plies and faces as indicated above; with core blocking as required to provide adequate anchorage of hardware without through-bolting.
   1. Fire-Rated Doors: Comply with the following requirements:
      a. Construction: Construction and core specified above for type of face indicated or manufacturer's standard mineral-core construction as needed to provide fire rating indicated.
      b. Blocking: For mineral-core doors, provide composite blocking with improved screw-holding capability approved for use in doors of fire ratings indicated as follows:
         1) 5-inch top-rail blocking.
         2) 5-inch bottom-rail blocking, in doors indicated to have protection plates.
         3) 5-inch midrail blocking, in doors indicated to have armor plates.
         4) 5-inch midrail blocking, in doors indicated to have exit devices.
      c. Edge Construction: Provide edge construction with intumescent seals concealed by outer stile matching face veneer, and laminated backing at hinge stiles for improved screw-holding capability and split resistance. Provide Category seals as required for UL-IOC and UL-1784 compliance.
      d. Pairs: Provide fire-rated pairs with fire-retardant stiles matching face veneer that are labeled and listed for kinds of applications indicated without formed-steel edges and astragals. Provide stiles with concealed intumescent seals.

C. Sound-Rated Doors: Equivalent to type, with particleboard core (PC) construction as required to achieve STC rating specified; plies and faces as indicated above.
   1. Construction: Meeting WDMA I.S. 1A, C-9; Sound Resistant Doors. Core shall be glued to stiles and rails.
   2. Sound Transmission Class (STC): Minimum STC 44 for doors without lites, STC 39 for doors with lites, when tested in accordance with ASTM E90-99 and ASTM E413-87(1999).
   3. Acoustical Gaskets and Seals: Acoustical door perimeter seals, automatic door bottom seals and thresholds are specified in Section 08 7100 - Door Hardware, Finish Hardware, for each acoustical door.

**2.04 DOOR FACINGS**

A. Veneer Facing for Transparent Finish: White Birch, veneer grade in accordance with quality standard indicated, Plain Sliced, with Booked Matched between leaves of veneer, Center Matched of spliced veneer leaves assembled on door or panel face; unless otherwise indicated.

1. Vertical Edges: Same species as face veneer.
2. "Pair Match" each pair of doors; "Set Match" pairs of doors within 10 feet of each other when doors are closed.
   a. Assembly of Veneer Leaves on Door Faces: Center balance match.
3. Room Match: Match door faces within each separate room or area of building. Corridor door faces do not need to match where they are separated by 10 feet or more.

**2.05 ACCESSORIES**

A. Glazing for Doors: As specified in Section 08 8000 - Glazing.

B. In-Door Louvers: Specified in Division 23.

C. Glazing Stops: Wood, of same species as door facing, butted corners; prepared for countersink style tamper proof screws.
   1. Wood Beads for Light Openings in Wood Doors:
      a. Wood Species: Any closed-grain hardwood.
      b. Profile: Manufacturer's standard shape.
      c. At 20-minute, fire-rated, wood-core doors, provide wood beads and metal glazing clips approved for such use.
   2. Wood-Veneered Beads for Light Openings in Fire Doors: Manufacturer's standard wood-veneered noncombustible beads matching veneer species of door faces and approved for use in doors of fire rating indicated. Include concealed metal glazing clips where required for opening size and fire rating indicated.

**2.06 DOOR CONSTRUCTION**

A. Fabricate doors in accordance with door quality standard specified.

B. Cores Constructed with stiles and rails:

C. Provide solid blocks at lock edge for hardware reinforcement.
   1. Provide solid blocking for other throughbolted hardware.

D. Fit door edge trim to edge of stiles after applying veneer facing.

E. Vertical Exposed Edge of Stiles - Veneer Faces: Of same species as veneer facing.

F. Fit door edge trim to edge of stiles after applying veneer facing.

G. Factory machine doors for hardware other than surface-mounted hardware, in accordance with hardware requirements and dimensions.

H. Factory fit doors for frame opening dimensions identified on shop drawings, with edge clearances in accordance with specified quality standard.

I. Provide edge clearances in accordance with the quality standard specified.

**2.07 FACTORY FITTING, MACHINING, AND FINISHING**

A. Factory machining is required for all wood doors. Factory finishing is required for all wood doors.

B. Pre-Fitting and Pre-Machining:
   1. Factory pre-fit and machine doors to clearances and bevels specified.
   2. Prepare for hardware installation using hardware manufacturer's templates. Locate in accordance with DHI-WDHS-3 recommendations, unless otherwise indicated.
   3. Seal edges of doors and cutouts immediately following machining.

C. Openings:
   1. Cut openings to receive glass lites in accordance with WDMA I.S. 1A, C-7.
   2. Seal edges of cutout immediately following cutting using solvent type sealer.
   3. Install glass lites snug without rattle. Trim shall have mitered corner joints and conceal edges of cutout and door core.
   4. Provide gasketing materials for openings in acoustical doors as required by manufacturer to maintain sound rating.

5. Protect door faces from damage during cutting.
6. Prepare and glaze openings in fire-rated doors in accordance with NFPA and UL requirements.

D. Clearances and Bevel:
1. Hinge stile: 1/8".
2. Lock stile: 1/8".
3. Top: 1/8".
4. Bottom: 1/4" above floor finish or threshold, except where undercutting is indicated. Confirm installed floor covering thickness before cutting door bottom edges.
5. Meeting stiles, pairs of doors: 1/8".
6. 6. Bevel: 1/8" in 2" for all vertical edges.

E. Factorv Finish:
1. Finish System: Factory finish doors in accordance with WDMA F-3 Finish System Description or AWI Section 1500-T-14 - Finish System Standards. Factory finish to be water based stain and ultraviolet (UV) cured polyurethane to comply with EPA Title 5 guidelines for Volatile Organic Compound (VOG) emissions limitations. Finish must meet or exceed performance standards of WDMA Finish System TR-6 Catalyzed Polyurethane.
2. Color and Sheen: To be selected by Gardner Spencer Smith Tench and Jarbeau, PC.

## PART 3 EXECUTION

### 3.01 EXAMINATION

A. Verify existing conditions before starting work.

B. Verify that opening sizes and tolerances are acceptable.

C. Do not install doors in frame openings that are not plumb or are out-of-tolerance for size or alignment.

### 3.02 INSTALLATION

A. Install doors in accordance with manufacturer's instructions and specified quality standard.
1. Install fire-rated doors in accordance with NFPA 80 requirements.

B. Trim door height by cutting bottom edges to a maximum of 3/4 inch (19 mm).
1. Trim fire door height at bottom edge only, in accordance with fire rating requirements.

C. Use machine tools to cut or drill for hardware.

D. Coordinate installation of doors with installation of frames and hardware.

E. Coordinate installation of glazing.

F. Install door louvers plumb and level.

### 3.03 TOLERANCES

A. Conform to specified quality standard for fit and clearance tolerances.

B. Conform to specified quality standard for telegraphing, warp, and squareness.

C. Maximum Vertical Distortion (Bow): 1/8 inch measured with straight edge or taut string, top to bottom, over an imaginary 36 by 84 inches surface area.

D. Maximum Width Distortion (Cup): 1/8 inch measured with straight edge or taut string, edge to edge, over an imaginary 36 by 84 inches surface area.

### 3.04 ADJUSTING

A. Adjust doors for smooth and balanced door movement.

B. Adjust closers for full closure.

C. Replace doors that are damaged or do not comply with requirements. Doors with minor scrapes and scratches may be repaired or refinished if work complies with requirements and shows no evidence of repair or refinishing.

**3.05 CLEANING AND PROTECTION**

A. Restore factory finished doors to original conditions if damaged or if fitting or machining is required at job site. Refinish doors in accordance with manufacturer's recommendations. Replace doors if finish cannot be restored.

B. Remove protective packaging from factory finished doors at Date of Substantial Completion.

**END OF SECTION**

# SECTION 08 3100
# ACCESS DOORS AND PANELS

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Access door and frame units, non-fire-rated, in wall and ceiling locations.

### 1.02 RELATED REQUIREMENTS

A. Section 08 7100 - Door Hardware: Door cylinder core hardware.

B. Section 09 2116 - Gypsum Board Assemblies: Adjacent construction for recessed frames.

C. Section 09 9000 - Painting and Coating: Field paint finish.

D. Division 23: Mechanical.

### 1.03 REFERENCE STANDARDS

A. ADA Standards - 2010 ADA Standards for Accessible Design 2010.

B. ASTM A36/A36M - Standard Specification for Carbon Structural Steel 2019.

C. ASTM A1011/A1011M - Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength 2018a.

D. UL (FRD) - Fire Resistance Directory Current Edition.

### 1.04 SUBMITTALS

A. See Division 01 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide sizes, types, finishes, hardware, scheduled locations, and details of adjoining work.

C. Shop Drawings: Indicate exact position of each access door and/or panel unit.

D. Manufacturer's Installation Instructions: Indicate installation requirements.

E. Project Record Documents: Record actual locations of each access unit.

### 1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

B. Installer Qualifications: Company specializing in performing work of the type specified and with at least three years documented experience.

C. Source Limitations: Obtain doors and frames through one source from a single manufacturer.

D. Size Variations: Obtain Gardner Spencer Smith Tench and Jarbeau, PC's acceptance of manufacturer's standard-size units, which may vary slightly from sizes indicated.

### 1.06 COORDINATION

A. Verification: Determine specific locations and sizes for access doors needed to gain access to concealed equipment, and indicate on schedule specified under "Submittals" Article.

## PART 2 PRODUCTS

### 2.01 MANUFACTURERS

A. Wall and Ceiling Access Doors:
   1. Acudor Products Inc: www.acudor.com.
   2. J. L. Industries, Inc.: www.jlindustries.com.
   3. Karp Associates, Inc: www.karpinc.com.
   4. Larsen's Manufacturing Company: www.larsensmfg.com.
   5. Milcor by Commercial Products Group of Hart & Cooley, Inc: www.milcorinc.com.

B. Substitutions: See Division 01 - Product Requirements.

## 2.02 ACCESS DOORS AND PANELS ASSEMBLIES

A. Wall-Mounted Units:
   1. Material: Steel.
   2. Size: 12 inch by 12 inch.
   3. Door/Panel: Hinged, standard duty, with tool-operated spring or cam lock and no handle.
   4. Tool-operated spring or cam lock; no handle.
   5. Wall Mounting Criteria: Provide surface-mounted face frame and door surface flush with frame surface.

B. Wall-Mounted Units in Wet Areas:
   1. Material: Steel, hot-dipped zinc, or zinc-aluminum-alloy coated.
   2. Size: 12 inch by 12 inch.
   3. Door/Panel: Hinged, standard duty, with tool-operated spring or cam lock and no handle.
   4. Tool-operated spring or cam lock; no handle.
   5. Wall Mounting Criteria: Provide surface-mounted face frame and door surface flush with frame surface.

C. Ceiling-Mounted Units:
   1. Material: Steel.
   2. Size - Other Ceilings: 24 inch by 36 inch.
   3. Door/Panel: Hinged, standard duty, with tool-operated spring or cam lock and no handle.
   4. Tool-operated spring or cam lock; with handle.

## 2.03 ACCESS DOORS AND PANELS

A. All Units: Factory fabricated, fully assembled units with corner joints welded, filled, and ground flush; square and without rack or warp; coordinate requirements with assemblies units are to be installed in.

B. Flush Access Doors and Frames with Exposed Trim: Fabricated from steel sheet.
   1. Locations: Gypsum board ceiling surfaces.
   2. Door: Minimum 0.060-inch- thick sheet metal, set flush with exposed face flange of frame.
   3. Frame: Minimum 0.060-inch- thick sheet metal with I-inch- wide, surface-mounted trim.
   4. Hinges: Spring-loaded concealed pin type.
   5. Latch: Screwdriver-operated cam latch, unless indicated otherwise.

## 2.04 MATERIALS

A. Hot-Rolled Steel Sheets: ASTM A 569/A 569M, Commercial Steel (CS), Type B; free of scale, pitting, and surface defects; pickled and oiled; with minimum thickness indicated representing specified nominal thickness according to ASTM A 568/A 568M.

B. Cold-Rolled Steel Sheets: ASTM A366/A366M, Commercial Steel (CS), or ASTM A 620/A 620M, Drawing Steel (DS), Type B; stretcher-leveled standard of flatness; with minimum thickness indicated representing specified nominal thickness according to ASTM A 568/A 568M. Electrolytic zinc-coated steel sheet, complying with ASTM A59I/A591M, Class C coating, may be substituted at fabricator's option.

## 2.05 FABRICATION

A. General: Provide access door 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. Steel Doors and Frames: Grind exposed welds smooth and flush with adjacent surfaces. Furnish attachment devices and fasteners of type required to secure access panels to types of supports indicated.
   1. Exposed Flanges: Nominal 1 to 1-1/2 inches wide around perimeter of frame.

2. Provide mounting holes in frames to attach frames to metal framing in drywall construction.

D. Latching Mechanisms: Furnish number required to hold doors in flush, smooth plane when closed.
1. For cylinder lock, furnish 2 keys per lock and key all locks alike.

**2.06 STEEL FINISHES**

A. Surface Preparation: Prepare uncoated ferrous-metal surfaces to comply with minimum requirements of SSPC-SP 3, "Power Tool Cleaning" for surface-preparation specifications of installed metal fabrications.

B. Apply shop primer to uncoated surfaces of metal fabrications. Comply with SSPC-PA 1, "Paint Application Specification No. 1," for shop painting.

**2.07 PAINT**

A. Shop Primers: Provide primers that comply with Division 09 Section "Painting."

B. Shop Primer for Ferrous Metal: Fast-curing, lead- and chromate-free, universal modified-alkyd primer complying with performance requirements in FS TT-P-664; selected for good resistance to normal atmospheric corrosion, compatibility with finish paint systems indicated, and capability to provide a sound foundation for field-applied topcoats despite prolonged exposure.

**PART 3 EXECUTION**

**3.01 EXAMINATION**

A. Verify that rough openings are correctly sized and located.

B. Begin installation only after substrates have been properly prepared, and if the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

**3.02 PREPARATION**

A. Advise Installers of other work about specific requirements relating to access door installation, including sizes of openings to receive access door and frame, as well as locations of supports, inserts, and anchoring devices. Furnish inserts and anchoring devices for access doors that must be built into other construction. Coordinate delivery with other work to avoid delay.

B. Clean surfaces thoroughly prior to proceeding with this work.

C. Prepare surfaces using methods recommended by manufacturer for applicable substrates in accordance with project conditions.

**3.03 INSTALLATION**

A. Install units in accordance with manufacturer's instructions.

B. Install frames plumb and level in openings, and secure units rigidly in place.

C. Position units to provide convenient access to concealed equipment when necessary.

**3.04 ADJUST AND CLEAN**

A. Adjust hardware and panels after installation for proper operation.

B. Remove and replace panels or frames that are warped, bowed, or otherwise damaged.

**END OF SECTION**

# SECTION 08 4313
# ALUMINUM-FRAMED STOREFRONTS

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Aluminum-framed storefront, with vision glass.

B. Aluminum curtainwall system.

C. Aluminum doors and frames.

D. Weatherstripping.

E. Perimeter sealant.

### 1.02 RELATED REQUIREMENTS

A. Division 05: Structural Steel.

B. Section 05 5000 - Metal Fabrications: Steel attachment devices.

C. Section 07 4213 - Metal Wall Panels.

D. Section 07 2720 - Fluid-Applied Membrane Air & Vapor Barriers: Continuity of continuous air barrier.

E. Section 07 6500 - Flexible Flashing: Sealing perimeter between frames and adjacent construction.

F. Section 07 9005 - Joint Sealers: Sealing joints between frames and adjacent construction.

G. Section 07 9005 - Joint Sealers: Perimeter sealant and back-up materials.

H. Section 08 7100 - Door Hardware: Hardware items other than specified in this section.

I. Section 08 8000 - Glazing: Glass and glazing accessories.

J. Section 09 9000 - Painting and Coating: Field painting.

K. Section 12 2113 - Horizontal Louver Blinds: Attachments to framing members.

L. Section 12 4816 - Entrance Floor Grilles: Attachments to framing members.

M. Division 26: Electrical.

### 1.03 REFERENCE STANDARDS

A. AA DAF-45 - Designation System for Aluminum Finishes; The Aluminum Association, Inc.; 2003.

B. AAMA CW-10 - Care and Handling of Architectural Aluminum from Shop to Site 2015.

C. AAMA 501.2 - Quality Assurance and Diagnostic Water Leakage Field Check of Installed Storefronts, Curtain Walls, and Sloped Glazing Systems 2015.

D. AAMA 1503 - Voluntary Test Method for Thermal Transmittance and Condensation Resistance of Windows, Doors and Glazed Wall Sections 2009.

E. ASCE 7 - Minimum Design Loads and Associated Criteria for Buildings and Other Structures Most Recent Edition Cited by Referring Code or Reference Standard.

F. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes 2021.

G. ASTM B221M - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric) 2021.

H. ASTM E283 - Standard Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen 2004 (Reapproved 2012).

I. ASTM E330/E330M - Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference 2014

(Reapproved 2021).

J. ASTM E331 - Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference; 2000 (Reapproved 2009).

**1.04 ADMINISTRATIVE REQUIREMENTS**

A. Coordinate with installation of other components that comprise the exterior enclosure.

B. Preinstallation Meeting: Conduct a preinstallation meeting one week before starting work of this section; require attendance by all affected installers.

**1.05 PERFORMANCE REQUIREMENTS**

A. Deflection in plane of wall: Not greater than that which would reduce glass edge clearance to 25 percent of design dimension or 1/8 inch, whichever is greater, or that which would reduce glass bite to 75 percent of design dimension.
   1. Design system to withstand 150 percent of design wind load with no failure or permanent deformation greater then 0.2 percent of span.

B. General: Provide aluminum-framed systems, including anchorage, capable of withstanding, without failure, the effects of the following:
   1. Structural loads.
   2. Thermal movements.
   3. Movements of supporting structure indicated on Drawings including, but not limited to, story drift and deflection from uniformly distributed and concentrated live loads.
   4. Dimensional tolerances of building frame and other adjacent construction.
   5. Failure includes the following:
      a. Deflection exceeding specified limits.
      b. Thermal stresses transferred to building structure.
      c. Framing members transferring stresses, including those caused by thermal and structural movements, to glazing.
      d. Glazing-to-glazing contact.
      e. Noise or vibration created by wind and thermal and structural movements.
      f. Loosening or weakening of fasteners, attachments, and other components.
      g. Sealant failure.
      h. Failure of operating units to function properly.

C. Structural Sealant: Capable of withstanding tensile and shear stresses imposed by aluminum-framed systems without failing adhesively or cohesively. Provide sealant that fails cohesive before sealant releases from substrate when tested for adhesive compatibility with each substrate and joint condition required.
   1. Adhesive failure occurs when sealant pulls away from substrate cleanly, leaving no sealant material behind.
   2. Cohesive failure occurs when sealant breaks or tears within itself but does not separate from each substrate because sealant-to-substrate bond strength exceeds sealant's internal strength.

D. Structural-Sealant Joints: Designed to produce tensile or shear stress in structural-sealant joints of less than 20 psi (138 kPa).

E. Structural Performance: Completed systems shall withstand positive and negative wind pressure loading complying with governing authorities and particular code; loads acting perpendicular to wall plane. Test per ASTM E330, Procedure A.
   1. Design pressure loading:
      a. Deflection Normal to Wall Plane: Limited to 1/175 of clear span for spans up to 13 feet 6 inches and to 1/240 of clear span plus 1/4 inch for spans greater than 13 feet 6 inches or amount that restricts edge deflection of individual glazing lites to 3/4 inch, whichever is less.
      b. No glass breakage.

c. Deflection Parallel to Glazing Plane: Limited to 1/360 of clear span or 1/8 inch, whichever is smaller.
d. When tested at positive and negative wind-load design pressure, systems do not evidence deflection exceeding specified limits.
e. When tested at 150 percent of positive and negative wind-load design pressures, systems, including anchorage, do not evidence material failures, structural distress, and permanent deformation of main framing members exceeding 0.2 percent of span.
f. Test Durations: As required by design wind velocity but not less than 10 seconds.

F. Thermal Movements: Provide aluminum-framed systems that allow for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures. Base engineering calculation on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss. Submit certification to the below from a professional structural engineer licensed in Georgia to Gardner Spencer Smith Tench and Jarbeau, PC. for file.
1. Temperature Change (Range): 120 deg F, ambient; 180 deg F, material surfaces.
2. Test Performance: No buckling; stress on glass; sealant failure; excess stress on framing, anchors, and fasteners; or reduction of performance when tested according to AAMA 501.5.
a. Test High Exterior Ambient-Air Temperature: That which produces an exterior metal-surface temperature of 180 deg F.
b. Test Low Exterior Ambient-Air Temperature: 0 deg F.
c. Test Interior Ambient-Air Temperature: 75 degF.

G. Air Infiltration: Provide aluminum-framed systems with maximum air leakage through fixed glazing and framing areas of 0.06 cfm/sq. ft. of fixed wall area when tested according to ASTM E 283 at minimum static-air-pressure difference of 6.24 lbf/sq. ft..

H. Water Penetration Under Static Pressure: Provide aluminum-framed systems that do not evidence water leakage through fixed glazing and framing areas when tested according to ASTM E 331 at a minimum static-air-pressure difference of 20 percent of positive wind-load design pressure, but not less than 6.24 lbf/sq. ft..

I. Water Penetration Under Dynamic Pressure: Provide aluminum-framed systems that do not evidence water leakage through fixed glazing and framing areas when tested according to AAMA 501.1 under dynamic pressure equal to 20 percent of positive wind-load design pressure, but not less than 6.24 lbf/sq. ft..
1. Maximum Water Leakage: No uncontrolled water penetrating systems or appearing on systems' normally exposed interior surfaces from sources other than condensation. Water controlled by flashing and gutters that is drained to exterior and cannot damage adjacent materials or finishes is not considered water leakage.

J. Condensation Resistance: Provide aluminum-framed systems with fixed glazing and framing areas having condensation-resistance factor (CRF) of not less than 53 when tested according to AAMA 1503.

K. Average Thermal Conductance: Provide aluminum-framed systems with fixed glazing and framing areas having average U-factor of not more than 0.69 Btu/sq. ft. x h x deg F when tested according to AAMA 1503.

**1.06 SUBMITTALS**

A. See Division 01 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide component dimensions, describe components within assembly, anchorage and fasteners, glass and infill, internal drainage details.

C. Shop Drawings: Indicate system dimensions, framed opening requirements and tolerances, affected related Work, expansion and contraction joint location and details, and field welding required.
1. Include structural analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

2. Include details of provisions for system expansion and contraction and for draining moisture occuring within the system to the exterior.
3. For entrances, include hardware schedule and indicate operating hardware types, functions, quantities, and locations.

D. Hardware Schedule: Complete itemization of each item of hardware to be provided for each door, cross-referenced to door identification numbers in Contract Documents.

E. Samples: Submit two samples 6 x 6 inches in size illustrating finished aluminum surface, glass, glazing materials.

F. Fabrication Sample: Of each vertical-to-horizontal intersection of systems, made from 12-inch lengths of full-size components and showing details of the following:
1. Joinery.
2. Sealant adhesion.
3. Anchorage.
4. Expansion provisions.
5. Glazing.
6. Flashing and drainage.

G. Manufacturer's Certificate: Certify that the products supplied meet or exceed the specified requirements.

H. Qualification Data: For Installer.

I. Field quality-control test and inspection reports.

J. Maintenance Data: For aluminum-formed systems to include in maintenance manuals.

K. Glass manufacturer's approval: Indicate on shop drawings, or by letter prior to submission of shop drawings, that selected glass manufacturer's have reviewed and approved details, including glass bite, clearances, system weepage, air circulation around interior window treatments, shading by exterior building components and glazing methods.

L. Warranty: Submit manufacturer warranty and ensure forms have been completed in Union County Commissioner's Office's name and registered with manufacturer.

## 1.07 QUALITY ASSURANCE

A. Single Source Requirements: Entrances and storefront systems shall be products of a single manufacturer or acceptable to storefront manufacturer. Storefront framing system receiving window unit installation shall be acceptable to aluminum window manufacturer.

B. Installer Qualifications: Capable of assuming engineering responsibilities and performing work of this Section and who is acceptable to manufacturer with minimum three years of documented experience.
1. Engineering Responsibility: Preparation of data for aluminum-framed systems including Shop Drawings based on testing and engineering analysis of manufacturer’s standard units in assemblies similar to those indicated for this Project and submission of reports of tests performed on manufacturer’s standard assemblies.

C. Product Options: Information on Drawings and in Specifications establishes requirements for systems' aesthetic effects and performance characteristics. Aesthetic effects are indicated by dimensions, arrangements, alignment, and profiles of components and assemblies as they relate to sightlines, to one another, and to adjoining construction. Performance characteristics are indicated by criteria subject to verification by one or more methods including preconstruction testing, field testing, and in-service performance.
1. Do not modify intended aesthetic effects, as judged solely by Gardner Spencer Smith Tench and Jarbeau, PC, except with Gardner Spencer Smith Tench and Jarbeau, PC's approval. If modifications are proposed, submit comprehensive explanatory data to Gardner Spencer Smith Tench and Jarbeau, PC for review.

D. Accessible Entrances: Comply with the U.S. Architectural & Transportation Barriers Compliance Boards’s “Americans with Disabilities Act (ADA), Accessibility Guidelines for Buildings and

Facilities (ADAAG)."

E. Structural-Sealant Glazing: Comply with recommendations in ASTM C 1401, "Guide for Structural Sealant Glazing."

F. Structural-Sealant Joints: Design reviewed and approved by structural-sealant manufacturer.

**1.08 PRE-INSTALLATION MEETING**

A. Convene one week before starting work of this section.

**1.09 DELIVERY, STORAGE, AND HANDLING**

A. Handle products of this section in accordance with AAMA CW-10.

B. Protect finished aluminum surfaces with wrapping. Do not use adhesive papers or sprayed coatings that bond to aluminum when exposed to sunlight or weather.

**1.10 PROJECT CONDITIONS**

A. Coordinate the work with installation of firestopping components or materials.

B. Field Measurements: Verify actual locations of structural supports for aluminum-framed systems by field measurements before fabrication and indicate measurements on shop Drawings.

**1.11 FIELD CONDITIONS**

A. Do not install sealants when ambient temperature is less than 40 degrees F. Maintain this minimum temperature during and 48 hours after installation.

B. Protection: Protect aluminum surfaces from contact with lime, mortar, cement, acids and other harmful surfaces and from coreless handling, storage or machining.

**1.12 WARRANTY**

A. See Division 01 - Closeout Submittals, for additional warranty requirements.

B. Basis of Design: Trulite Glass & Aluminum Solutions, LLC; 3200 Resistor Hurricane Impact Storefront, Thermally Broken.

C. Correct defective Work within a five year period after Date of Substantial Completion.

D. Provide five year manufacturer warranty against failure of glass seal on insulating glass units, including interpane dusting or misting. Include provision for replacement of failed units.

E. Provide five year manufacturer warranty against excessive degradation of exterior finish. Include provision for replacement of units with excessive fading, chalking, or flaking.

**PART 2 PRODUCTS**

**2.01 MANUFACTURERS**

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   1. Basis of design Metal-Framed Storefronts and Doors: Kawneer Company, Inc; Product Tri-Fab 451UT: www.kawneer.com.
   2. Basis of design Curtianwall System: Kawneer Company, Inc; Product 1600UT Wall System-1: www.kawneer.com.
   3. Basis of design Metal-Framed Doors: Kawneer Company, Inc; Product 500 tuffline door entrances: www.kawneer.com.
   4. EFCO Corp.: www.efcocorp.com.
   5. Special-Lite, Inc: www.special-lite.com.
   6. TRACO: www.traco.com.
   7. Tubelite, Inc.: www.tubeliteinc.com.
   8. United States Aluminum: www.usalum.com.
   9. YKK Corp.: www.ykk.com.
   10. Wausau Window and Wall Systems: www.wausauwindow.com.

B. Substitutions: See Section 01 6000 - Product Requirements.

**2.02 COMPONENTS**

A. Aluminum-Framed Storefront: Factory fabricated, factory finished aluminum framing members with infill, and related flashings, anchorage and attachment devices.
   1. Metal-Framed Storefront System Framing Characteristics:
      a. Member sizes: 2" wide by minimum 4-1/2" deep.
      b. Construction: Flush glazed two-piece mullion & stop system for inside glazing.
      c. System construction: Screw spline two-piece snap together, or shear block tubular mullion.
      d. Glazing pocket depth: As required by glass manufacturer.
      e. Make provisions in framing for minimum edge clearance, nominal edge cover, and nominal pocket width for thickness and type of glazing.
      f. Design framing for panel removal from interior.
      g. Provide all required subframing, blocking, shims, and other items necessary for complete installation. Subframes and reinforcing members shall be of carbon steel with shop applied protective coating.
   2. Curtainwall System Framing Characteristics:
      a. Member sizes: 2-1/2" wide by 7-1/2" deep, reinforced as required.
      b. Construction: Flush glazed tubular for outside glazing.
      c. System construction: Screw spline or shear block.
      d. Infill adapters: Manufacturer's standard for single glazing installations where indicated.
      e. Make provisions in framing for minimum edge clearance, nominal edge cover, and nominal pocket width for thickness and type of glazing.
      f. Design framing for panel removal from exterior.
      g. Provide all required subframing, blocking, shims, and other items necessary for complete installation. Subframes and reinforcing members shall be of carbon steel with shop applied protective coating.
   3. Finish: Class I natural anodized.
      a. Factory finish all surfaces that will be exposed in completed assemblies.

**2.03 COMPONENTS**

A. Sill flashing: Provide special shaped sill flashing at all exterior storefronts. Sill flashing shall match storefronts in material and finish. Sill flashing shall be continuous, set in storefront sealant and joints sealed as herein specified; form endams at terminations and corners.

B. Aluminum Framing Members: Tubular aluminum sections, thermally broken with interior section insulated from exterior, drainage holes and internal weep drainage system.
   1. Framing members for interior applications need not be thermally broken.
   2. Glazing Stops: Flush.

**2.04 MATERIALS**

A. Aluminum: Alloy and temper recommended by manufacturer for type of use and finish indicated.

B. Sheet and Plate: ASTM B 209 (ASTM B 209M).
   1. Extruded Bars, Rods, Profiles, and Tubes: ASTM B 221 (ASTM B 221M).
   2. Extruded Structural Pipe and Tubes: ASTM B 429.
   3. Structural Profiles: ASTM B 308/ B 308B.

C. Steel Reinforcement: With manufacturer’s standard corrosion-resistant primer complying with SSPC-PS Guide No. 12.00 applied immediately after surface preparation and pretreatment. Select surface preparation and pretreatment. Select surface preparation methods according to recommendations in SSPC-SP COM and prepare surfaces according to applicable SSPC standard.
   1. Structural Shapes, Plates, and Bars: ASTM A 36/A 36M.
   2. Cold-Rolled Sheet and Strip: ASTM A 1008/A 1008M.

3. Hot-Rolled Sheet and Strip: ASTM A 1011/A 1011M.

**2.05 FRAMING SYSTEMS**

A. Framing Members: Manufacturer's standard extruded-aluminum framing members of thickness required and reinforced as required to support imposed loads.
   1. Construction: Framing members are composite assemblies of two separate extruded-aluminum components permanently bonded by an elastomeric material of low thermal conductance.

B. Brackets and Reinforcements: Manufacturer's standard high-strength aluminum with non-staining, nonferrous shims for aligning system components.

C. Fasteners and Accessories: Manufacturer's standard corrosion-resistant, nonbleeding fasteners and accessories compatible with adjacent materials.
   1. Where fasteners are subject to loosening or turning out from thermal and structural movements, wind loads, or vibration, use self-locking devices.
   2. Reinforce members as required to receive fasteners threads.
   3. Use exposed fasteners with countersunk Phillips screw heads, finished to match framing system.

D. Concrete and Masonry Inserts: Hot-dip galvanized cast-iron, malleable-iron, or steel inserts complying with ASTM A 123/A 123M or ASTM A 153/ A 153M requirements.

E. Flashing: Manufacturer's standard corrosion-resistant, nonstaining, nonbleeding flashing compatible with adjacent materials. Form exposed flashing from sheet aluminum finished to match framing and of sufficient thickness to maintain a flat appearance without visible deflection.

F. Sill Flashing: Formed of minimum 0.062" thickness aluminum; matching storefront framing of type with interior end and rear legs turned up minimum 1/2" against framing member to form watertight gutter. Seal all aluminum to aluminum laps with sealant.

G. Framing System Gaskets and Sealants: Manufacturer's standard recommended by manufacturer for joint type.

H. Design framing for panel removal from interior.

I. Trim and Closures: Provide exterior and interior trim and closure components in materials and finishes matching storefront framing for complete installation. Trim components shall be attached without use of exposed fasteners.

**2.06 GLAZING SYSTEMS**

A. Glazing: As specified in Section 08 8000 - Glazing.

B. Glazing Gaskets: Manufacturer's standard compression types, replaceable, mold or extruded, that maintain uniform pressure and watertight seal.

C. Spacers and Setting Blocks: Manufacturer's standard elastomeric types.

D. Bond-Breaker Tape: Manufacturer's standard TFE-fluorocarbon or polyethylene material to which sealant will not develop adhesion.

E. Glazing Sealants: For structural-sealant-glazed systems, as recommended by manufacturer for joint type and as follows:
   1. Structural Sealant: ASTM C 1184, neutral-curing silicone formulation compatible with system components with which it comes in contact, specifically formatted and tested for use as structural sealant, and approved by structural-sealant manufacturer for use in aluminum-framed systems indicated.
      a. Color: Gardner Spencer Smith Tench and Jarbeau, PC to select from manufacturer's full range.
   2. Weatherseal Sealant: ASTM C 920 for Type S, Grade NS, Class 25, Uses NT, G, A, and O; neutral-curing silicone formulation compatible with structural sealant and other systems components with which it comes in contact; and recommended by structural- and

weatherseal-sealant and aluminum-framed system manufacturers for this use.
a. Color: As selected by Gardner Spencer Smith Tench and Jarbeau, PC from manufacturer's full range.

**2.07 DOORS**

A. Doors: Manufacturer's standard glazed doors, for manual swing operation.
1. Door Construction: 1-3/4 inch overall thickness, with minimum 0.125 inch thick, extruded-aluminum tubular rail and stile members. Mechanically fasten corners with reinforcing brackets that are deep penetration and fillet welded or that incorporate concealed tie rods.
2. Door Design: Wide stile; 5 inch nominal width.
a. Accessible Doors: Smooth surface for width of door in area within 10 inches above floor or ground plane.
3. Glazing Stops and Gaskets: Beveled, snap-on, extruded-aluminum stops and preformed gaskets.
a. Provide nonremovable glazing stops on outside of door.

B. Door Hardware: As specified in Division 08 Section "Door Hardware."

**2.08 ACCESSORY MATERIALS**

A. Insulating Materials: As specified at perimeter of aluminum-framed systems, as specified in Section 07 2100 - Thermal Insulation.

B. Joint Sealants: For installation at perimeter of aluminum-framed systems, as specified in Section 07 9005 - Joint Sealers.
1. Storefront sealant shall be non-skinning type meeting AAMA 800-86.

C. Bituminous Paint: Cold-applied asphalt-mastic paint complying with SSPC-Paint 12 requirements except containing no asbestos formulated for 30-mil thickness per coat.

D. Framing Anchors: Series 300 stainless steel, sizes as required to be structurally adequate to carry dead load, accommodate thermal movement, resist wind load specified herein, and withstand normal loads imposed by entry door operation.

E. Exposed-to-View Fasteners: Series 300 stainless steel or hardened aluminum flat-head, phillips head type in finish to match framing members.

**2.09 MATERIALS**

A. Extruded Aluminum: ASTM B221 (ASTM B221M).

B. Fasteners: Stainless steel.

C. Perimeter Sealant: Type as specified in Section 07 9005 - Joint Sealers.

D. Glass in Storefront System: As specified in Section 08 8000 - Glazing and as noted on the drawings.

E. Glass in Doors: Tempered and as specified in Section 08 8000 - Glazing and as noted on the drawings.

F. Glazing Gaskets: Type to suit application to achieve weather, moisture, and air infiltration requirements.

G. Glazing Accessories: As specified in Section 08 8000 - Glazing.

**2.10 FINISHES**

A. General: Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

B. Finish designations prefixed by AA comply with the system established by the Aluminum Association for designating aluminum finishes.

C. Class I Natural Anodized Finish: AAMA 611 AA-M10C22A31 Clear anodic coating not less than 0.7 mils thick.

1. Color and Gloss: As selected by Gardner Spencer Smith Tench and Jarbeau, PC from manufacturer's full range.
2. All framing members shall be in the uniform color range of manufacturer's standard finish range, and the colors of all framing members within the same unit shall be identical. The fabricator shall carefully select framing materials from the manufacturer to comply with this criterion.
3. Unexposed aluminum components: Mill finish.

D. Touch-Up Materials: As recommended by coating manufacturer for field application.

**2.11 FABRICATION**

A. Fabricate components with minimum clearances and shim spacing around perimeter of assembly, yet enabling installation and dynamic movement of perimeter seal.

B. Accurately fit and secure joints and corners. Make joints flush, hairline, and weatherproof.

C. Prepare components to receive anchor devices. Fabricate anchors.

D. Reinforce components internally for door hardware and door operators.
1. At pairs of exterior doors, provide sliding weather stripping retained in adjustable strip mortised into door edge.
2. At exterior doors, provide weather sweeps applied to door bottoms.

E. Hardware Installation: Factory install hardware to the greatest extent possible. Cut, drill, and tap for factory-installed hardware before applying finishes.

F. Framing Members, General: Fabricate components that, when assembled, have the following characteristics:
1. Profiles that are sharp, straight, and free of defects or deformations.
2. Accurately fitted joints with ends coped or mitered.
3. Means to drain water passing joints, condensation occurring within framing members, and moisture migrating within the system to exterior.
4. Physical and thermal isolation of glazing edge clearances.
5. Provision for field replacement of glazing from exterior.
6. Fasteners, anchors, and connection devices that are concealed from view to greatest extent possible.

G. Mechanically Glazed Framing Members: Fabricated for flush glazing (without projecting stops).

H. Structural-Sealant-Glazed Framing Members: Include accommodations for using temporary support device (dutchman) to retain glazing in place while structural sealant cures.

I. Door Frames: Reinforce as required to support loads imposed by door operation and for installing hardware.
1. At exterior doors, provide compression weather stripping at fixed stops.

J. After fabrication, clearly mark components to identify their locations in Project according to Shop Drawings.

K. Form aluminum shapes before finishing.

**2.12 SOURCE QUALITY CONTROL**

A. Structural-Sealant-Glazed Systems: Perform quality-control procedures complying with ASTM C 1401 recommendations including but not limited to, system material qualification procedures, sealant testing, and system fabrication reviews and checks.

**PART 3 EXECUTION**

**3.01 EXAMINATION**

A. Examine areas, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of work.

B. Verify dimensions, tolerances, and method of attachment with other work.

C. Verify that wall openings and adjoining air and vapor seal materials are ready to receive work of this section.

D. Proceed with installation only after unsatisfactory conditions have been corrected.

**3.02 PREPARATION**

A. Inserts and Anchorage:
   1. Furnish inserts and anchoring devices, which must be present in concrete on timely basis to avoid delay in the work. Set at locations indicated on approved shop drawings.
   2. Coordinate setting drawings, diagrams, templates and instructions for installation of concrete inserts, anchor bolts and miscellaneous items having integral anchors cast in concrete construction.

B. Anchor Locations: Verify location and alignment of preset anchors. Report deviations and proposed method for correction to Gardner Spencer Smith Tench and Jarbeau, PC prior to proceeding with installation.

**3.03 INSTALLATION**

A. Install wall system in accordance with manufacturer's instructions.

B. Attach to structure to permit sufficient adjustment to accommodate construction tolerances and other irregularities.

C. Provide alignment attachments and shims to permanently fasten system to building structure.

D. Align assembly plumb and level, free of warp or twist. Maintain assembly dimensional tolerances, aligning with adjacent work.

E. Provide thermal isolation where components penetrate or disrupt building insulation.

F. Install sill flashings. Turn up ends and edges; seal to adjacent work to form water tight dam.

G. Where fasteners penetrate sill flashings, make watertight by seating and sealing fastener heads to sill flashing.

H. Coordinate attachment and seal of perimeter air and vapor barrier materials.

I. Pack fibrous insulation in shim spaces at perimeter of assembly to maintain continuity of thermal barrier.

J. Protect aluminum in contact with masonry, steel, concrete or other dissimilar material from contact by neoprene gaskets or bituminous coating.

K. Install sill flashing at all exterior storefronts in accordance with written recommendations. Flashing shall extend continuous with joints lapped and sealed; set in full continuous bed of storefront sealant. Where possible, secure sill flashing at ends, otherwise, seal all penetrations through flashing.

L. Locate expansion mullions in accordance with manufacturer's recommendation, as indicated on approved shop drawings.

M. Install weep hole baffle with filter at weep holes. Install filter under 30% compression.

N. Verify during installation that storefront system allows water which enters the system to be collected in gutters and weeped to exterior. Ascertain that weep holes are open and that metal to metal joints are sealed.

O. Set thresholds in bed of sealant and secure.

P. Install hardware using templates provided.

Q. See Section 08 7100 - Door Hardware for hardware installation requirements.

R. Install glass and infill panels in accordance with Section 08 8000 - Glazing, using glazing method required to achieve performance criteria.

S. Install perimeter sealant in accordance with Section 07 9005 - Joint Sealers.

T. Touch-up minor damage to factory applied finish; replace components that cannot be satisfactorily repaired.
   1. Caulk metal-to-metal internal storefront joints using storefront sealant.
   2. Caulk perimeter of storefronts using medium modulus silicone sealant. Caulk both exterior and interior faces of storefront perimeter.

**3.04 ERECTION TOLERANCES**

A. Erection Tolerances: Install aluminum-framed systems to comply with the following maximum tolerances:
   1. Location and Plane: Limit variation from true location and plane to 1/8 inch in 12 feet; 1/4 inch over total length.
   2. Alignment:
      a. Where surfaces abut in line, limit offset from true alignment to 1/6 inch.
      b. Where surfaces meet at corners, limit offset from true alignment to 1/32 inch.
   3. Diagonal Measurements: Limit differences between diagonal measurement to 1/8 inch.

**3.05 FIELD QUALITY CONTROL**

A. See Division 01 - Quality Requirements, for independent testing and inspection requirements. Inspection will monitor quality of installation and glazing.

B. Basis of Design: Trulite Glass & Aluminum Solutions, LLC; 351 Series.

C. Test installed storefront for water leakage in accordance with AAMA 501.2 hose test.

D. Testing Agency: Engage a qualified independent testing and inspecting agency to perform field tests and inspections and prepare test reports.

E. Testing Services: Testing and inspecting of representative areas to determine compliance of installed systems with specified requirements shall take results for previously completed areas show compliance with requirements.
   1. Water Spray Test: Before installation of interior finishes has begun, a minimum area of 75 feet by 1 story of aluminum-framed systems designated by Architect shall be tested according to AAMA 501.2 and shall not evidence water penetration.

F. Repair or remove work where test results and inspections indicate that it does not comply with specified requirements.

G. Additional testing and inspecting, at Contractor's expense, will be preformed to determine compliance of replaced or additional work with specified requirements.

**3.06 ADJUSTING**

A. Adjust operating hardware and sash for smooth operation.

B. Entrances: Adjust operating hardware for smooth operation according to hardware manufacturer's written instructions.

C. For doors accessible to people with disabilities, adjust closers to provide a 3-second closer sweep period for doors to move from a 70-degree open position to 3 inches from the latch measured to the leading door edge.

**3.07 CLEANING**

A. Remove protective material from pre-finished aluminum surfaces.

B. Remove excess sealant by method acceptable to sealant manufacturer.

**3.08 PROTECTION**

A. Protect installed products from damage until Date of Substantial Completion.

**END OF SECTION**

# SECTION 087100
# DOOR HARDWARE - DORMAKABA GROUP

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Hardware for fire-rated doors.

B. Thresholds.

C. Weatherstripping and gasketing.

### 1.02 RELATED REQUIREMENTS

A. Section 080671 - Door Hardware Schedule: Schedule of door hardware sets.

B. Section 081113 - Hollow Metal Doors and Frames.

C. Section 081116 - Aluminum Doors and Frames.

D. Section 081213 - Hollow Metal Frames.

E. Section 081416 - Flush Wood Doors.

F. Section 081433 - Stile and Rail Wood Doors.

G. Section 084313 - Aluminum-Framed Storefronts: Door hardware, except as noted in section.

### 1.03 REFERENCE STANDARDS

A. ADA Standards - 2010 ADA Standards for Accessible Design 2010.

B. ASTM E283/E283M - Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Skylights, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen 2019.

C. BHMA A156.1 - Standard for Butts and Hinges 2021.

D. BHMA A156.2 - Bored and Preassembled Locks and Latches 2017.

E. BHMA A156.3 - Exit Devices 2020.

F. BHMA A156.4 - Door Controls - Closers 2019.

G. BHMA A156.6 - Standard for Architectural Door Trim 2021.

H. BHMA A156.7 - Template Hinge Dimensions 2016.

I. BHMA A156.16 - Auxiliary Hardware 2018.

J. BHMA A156.18 - Materials and Finishes 2020.

K. BHMA A156.21 - Thresholds 2019.

L. BHMA A156.22 - Standard for Gasketing 2021.

M. BHMA A156.26 - Standard for Continuous Hinges 2021.

N. BHMA A156.28 - Standard for Recommended Practices for Mechanical Keying Systems 2018.

O. BHMA A156.30 - High Security Cylinders 2020.

P. BHMA A156.115 - Hardware Preparation in Steel Doors and Steel Frames 2016.

Q. BHMA A156.115W - Hardware Preparation in Wood Doors with Wood or Steel Frames 2006.

R. DHI (H&S) - Sequence and Format for the Hardware Schedule 2019.

S. DHI (KSN) - Keying Systems and Nomenclature 2019.

T. DHI (LOCS) - Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames 2004.

U. DHI WDHS.3 - Recommended Locations for Architectural Hardware for Flush Wood Doors 1993; also in WDHS-1/WDHS-5 Series, 1996.

V. ICC A117.1 - Accessible and Usable Buildings and Facilities 2017.

W. ITS (DIR) - Directory of Listed Products Current Edition.

X. NFPA 80 - Standard for Fire Doors and Other Opening Protectives 2022.

Y. NFPA 101 - Life Safety Code Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

Z. NFPA 105 - Standard for Smoke Door Assemblies and Other Opening Protectives 2022.

AA. NFPA 252 - Standard Methods of Fire Tests of Door Assemblies 2022.

BB. UL (DIR) - Online Certifications Directory Current Edition.

CC. UL 10C - Standard for Positive Pressure Fire Tests of Door Assemblies Current Edition, Including All Revisions.

DD. UL 1784 - Standard for Air Leakage Tests of Door Assemblies Current Edition, Including All Revisions.

**1.04 ADMINISTRATIVE REQUIREMENTS**

A. Coordinate the manufacture, fabrication, and installation of products that door hardware is installed on.

B. Sequence installation to ensure facility services connections are achieved in an orderly and expeditious manner.

C. Preinstallation Meeting: Convene a preinstallation meeting one week prior to commencing work of this section; require attendance by affected installers and the following:
   1. Architect.
   2. Installer's Architectural Hardware Consultant (AHC).
   3. Hardware Installer.
   4. Owner's Security Consultant.

D. Furnish templates for door and frame preparation to manufacturers and fabricators of products requiring internal reinforcement for door hardware.

E. Keying Requirements Meeting:
   1. Attendance Required:
   2. Agenda:
      a. Establish keying requirements.
      b. Verify locksets and locking hardware are functionally correct for project requirements.
      c. Verify that keying and programming complies with project requirements.
      d. Establish keying submittal schedule and update requirements.
   3. Incorporate "Keying Requirements Meeting" decisions into keying submittal upon review of door hardware keying system including, but not limited to, the following:
   4. Record minutes and distribute copies within two days after meeting to participants, with two copies to Architect, Owner, participants, and those affected by decisions made.
   5. Deliver established keying requirements to manufacturers.

**1.05 SUBMITTALS**

A. See Section 013000 - Administrative Requirements for submittal procedures.

B. Product Data: Manufacturer's catalog literature for each type of hardware, marked to clearly show products to be furnished for this project, and includes construction details, material descriptions, finishes, and dimensions and profiles of individual components.

C. Shop Drawings - Door Hardware Schedule: A detailed listing that includes each item of hardware to be installed on each door.
   1. Prepared by or under supervision of Architectural Hardware Consultant (AHC).
   2. Comply with DHI (H&S) using door numbering scheme and hardware set numbers as indicated in Contract Documents.
      a. Submit in vertical format.
   3. Include complete description for each door listed.
   4. Include manufacturers and product names, and catalog numbers; include functions, types, styles, sizes and finishes of each item.

D. Shop Drawings - Electrified Door Hardware: Include diagrams for power, signal, and control wiring for electrified door hardware that include details of interface with building safety and security systems. Provide elevations and diagrams for each electrified door opening as follows:
   1. Prepared by or under supervision of Architectural Hardware Consultant (AHC) and Electrified Hardware Consultant (EHC).
   2. Elevations: Include front and back elevations of each door opening showing electrified devices with connections installed and an operations narrative describing how opening operates from either side at any given time.
   3. Diagrams: Include point-to-point wiring diagrams that show each device in door opening system with related colored wire connections to each device.

E. Samples for Verification:

1. Submit minimum size of 2 by 4 inch (51 by 102 mm) for sheet samples, and minimum length of 4 inch (102 mm) for other products.
2. Submit one (1) sample of hinge, latchset, lockset, closer, and illustrating style, color, and finish.
3. Include product description with samples.

F. Manufacturer's Installation Instructions: Indicate special procedures and perimeter conditions requiring special attention.

G. Manufacturer's qualification statement.

H. Installer's qualification statement.

I. Supplier's qualification statement.

J. Maintenance Data: Include data on operating hardware, lubrication requirements, and inspection procedures related to preventative maintenance.

K. Keying Schedule:
1. Submit three (3) copies of Keying Schedule in compliance with requirements established during Keying Requirements Meeting unless otherwise indicated.

L. Warranty: Submit manufacturer's warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

M. Project Record Documents: Record actual locations of concealed equipment, services, and conduit.

N. Maintenance Materials and Tools: Furnish the following for Owner's use in maintenance of project.
1. See Section 016000 - Product Requirements, for additional provisions.

**1.06 QUALITY ASSURANCE**

A. Standards for Fire-Rated Doors: Maintain one copy of each referenced standard on site, for use by Architect and Contractor.

B. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with minimum three years of documented experience.

C. Installer Qualifications: Company specializing in performing work of the type specified for commercial door hardware with at least three years of documented experience.

D. Supplier Qualifications: Company with certified Architectural Hardware Consultant (AHC) and Electrified Hardware Consultant (EHC) to assist in work of this section.

**1.07 DELIVERY, STORAGE, AND HANDLING**

A. Package hardware items individually; label and identify each package with door opening code to match door hardware schedule.

**1.08 WARRANTY**

A. See Section 017800 - Closeout Submittals for additional warranty requirements.

B. Manufacturer Warranty: Provide manufacturer warranty against defects in material and workmanship for period indicated, from Date of Substantial Completion. Complete forms in Owner's name and register with manufacturer.
1. Closers: Five years, minimum.
2. Exit Devices: Three years, minimum.
3. Locksets and Cylinders: Three years, minimum.
4. Other Hardware: Two years, minimum.

**PART 2 PRODUCTS**

**2.01 GENERAL REQUIREMENTS**

A. Provide specified door hardware as required to make doors fully functional, compliant with applicable codes, and secure to extent indicated.

B. Provide individual items of single type, of same model, and by same manufacturer.

C. Locks: Provide a lock for each door, unless it's indicated that lock is not required.
1. Lock Function: Provide lock and latch function numbers and descriptions of manufacturer's Series. As indicated in hardware sets.
2. Trim: Provide lever handle or pull trim on outside of each lock, unless otherwise indicated.
3. Strikes:
a. Finish: To match lock or latch.

b. Curved-Lip Strikes: Provide as standard, with extended lip to protect frame, unless otherwise indicated.
c. Center Strike at Pairs of Doors: 7/8 inch (22.2 mm) lip.

D. Closers:
1. Provide door closer on each exterior door, unless otherwise indicated.
2. Provide door closer on each fire-rated and smoke-rated door.
3. Spring hinges are not an acceptable self-closing device, unless otherwise indicated.

E. Thresholds:

F. Weatherstripping and Gasketing:
1. Provide weatherstripping on each exterior door at head, jambs, and meeting stiles of door pairs, unless otherwise indicated.

G. Fasteners:
1. Provide fasteners of proper type, size, quantity, and finish that comply with commercially recognized standards for proposed applications.
a. Aluminum fasteners are not permitted.
b. Provide Phillips flat-head screws with heads finished to match door surface hardware unless otherwise indicated.
2. Provide machine screws for attachment to reinforced hollow metal and aluminum frames.
a. Self-drilling (Tek) type screws are not permitted.
3. Provide stainless steel machine screws and lead expansion shields for concrete and masonry substrates.
4. Provide wall grip inserts for hollow wall construction.
5. Fire-Resistance-Rated Applications: Comply with NFPA 80.
a. Provide wood or machine screws for hinges mortised to doors or frames, strike plates to frames, and closers to doors and frames.
b. Provide steel through bolts for attachment of surface mounted closers, hinges, or exit devices to door panels unless proper door blocking is provided.

## 2.02 PERFORMANCE REQUIREMENTS

A. Provide door hardware products that comply with the following requirements:
1. Applicable provisions of federal, state, and local codes.
a. NFPA 101.
2. Accessibility: ADA Standards and ICC A117.1.
3. Fire-Resistance-Rated Doors: NFPA 80, listed and labeled by qualified testing agency for fire protection ratings indicated, based on testing at positive pressure in accordance with NFPA 252 or UL 10C.
4. Hardware on Fire-Resistance-Rated Doors: Listed and classified by as suitable for application indicated.
5. Hardware for Smoke and Draft Control Doors (Indicated as "S" on Drawings): Provide door hardware that complies with local codes, and requirements of assemblies tested in accordance with UL 1784.
6. Hardware Preparation for Steel Doors and Steel Frames: BHMA A156.115.
7. Hardware Preparation for Wood Doors with Wood or Steel Frames: BHMA A156.115W.
8. Products Requiring Electrical Connection: Listed and classified by UL (DIR) as suitable for the purpose specified.

## 2.03 HINGES

A. Manufacturers: Conventional butt hinges.
1. BEST; dormakaba Group: www.bestaccess.com/#sle.

B. Properties:
1. Butt Hinges: As applicable to each item specified.
a. Template screw hole locations.
b. Bearing assembly installed after plating.
c. Bearings: Exposed fully hardened bearings.
d. Bearing Shells: Shapes consistent with barrels.
e. Pins: Easily seated, non-rising pins.
1) Fully plate hinge pins.
2) Non-Removable Pins: Slotted stainless-steel screws.
f. UL 10C listed for fire-resistance-rated doors.
2. Continuous Hinges: As applicable to each item specified.
a. Geared Continuous Hinges: As applicable to each item specified.
1) Non-handed.

2) Anti-spinning through-fastener.
3) UL 10C listed for fire-resistance-rated doors.
(a) Metal Door Installation: Rated up to 90 minutes.
(b) Wood Door Installation: Rated up to 60 minutes.
4) Sufficient size to permit door to swing 180 degrees

b. Pin and Barrel Continuous Hinges: As applicable to each item specified.
1) Material: Fabricated from 14-gauge, 0.067 inch (1.7 mm) steel.
2) Slim barrel design.
3) Twin nylon self-lubricating bearings located between all knuckles except top and bottom.
4) Two stainless steel bearings top and bottom, to prevent sagging if nylon bearings degrade during a fire.

C. Sizes: See Door Hardware Schedule.
1. Hinge Widths: As required to clear surrounding trim.
2. Sufficient size to allow 180-degree swing of door.

D. Finishes: See Door Hardware Schedule.

E. Grades:
1. Butt Hinges: Comply with BHMA A156.1 and BHMA A156.7 for templated hinges.
2. Continuous Hinges: Comply with BHMA A156.26, Grade 1.

F. Pin-and-Barrel Hinges Standards Compliance: UL and ULC listed for fire-resistance rated 4 foot (1219 mm) by 8 foot (2438 mm) single doors and 8 foot (2438 mm) by 8 foot (2438 mm) pairs up to 3 hours.

G. Material: Base metal as indicated for each item by BHMA material and finish designation.

H. Types:
1. Butt Hinges: Include full mortise hinges.
2. Continuous Hinges: Include geared and pin and barrel hinges.

I. Options: As applicable to each item specified.
1. Provide dutch door prep as listed in the hardware sets.

J. Quantities:
1. Butt Hinges: Three (3) hinges per leaves up to 90 inches (2286 mm) in height. Add one (1) for each additional 30 inches (762 mm) in height or fraction thereof.
a. Hinge weight and size unless otherwise indicated in hardware sets:
1) For doors up to 36 inches (914 mm) wide and up to 1-3/4 inches (44.5 mm) thick provide hinges with a minimum thickness of 0.134 inch (3.4 mm) and a minimum of 4-1/2 inches (114 mm) in height.
2) For doors from 36 inches (914 mm) wide up to 42 inches (1067 mm) wide and up to 1-3/4 inches (44.5 mm) thick provide hinges with a minimum thickness of 0.145 inch (3.7 mm) and a minimum of 4-1/2 inches (114 mm) in height.
3) For doors from 42 inches (1067 mm) wide up to 48 inches (1219 mm) wide and up to 1-3/4 inches (44.5 mm) thick provide hinges with a minimum thickness of 0.180 inch (4.6 mm) and a minimum of 5 inches (127 mm) in height.
4) For doors greater than 1-3/4 inches (44.5 mm) thick provide hinges with a minimum thickness of 0.180 inch (4.6 mm) and a minimum of 5 inches (127 mm) in height.
2. Continuous Hinges: One per door leaf.

K. Applications: At swinging doors.
1. Provide non-removable pins at out-swinging doors with locking hardware and all exterior doors.

L. Products:
1. Butt Hinges:
a. Ball Bearing, Five (5) Knuckle.
2. Continuous Hinges:
a. Aluminum geared hinges.
b. Pin and barrel hinges.

**2.04 BOLTS**

A. Manufacturers:
1. Trimco: www.trimcohardware.com/#sle.

B. Properties:

C. Options:

D. Products:

**2.05 EXIT DEVICES**

A. Manufacturers:
1. BEST, dormakaba Group: www.bestaccess.com/#sle.
2. Substitutions: Not permitted.

B. Properties:
1. Actuation: Crossbar.
2. Touchpads: 'T" style metal touchpads and rail assemblies with matching chassis covers end caps.
3. Latch Bolts: Stainless steel deadlocking with 3/4-inch (19 mm) projection using latch bolt.
4. Lever Design: Match project standard lockset trims.
5. Cylinder: Include where cylinder dogging or locking trim is indicated.
6. Strike as recommended by manufacturer for application indicated.
7. Sound dampening on touch bar.
8. Dogging:
   a. Non-Fire-Resistance-Rated Devices: Cylinder 1/4-inch (6 mm) hex key dogging.
   b. Fire-Resistance-Rated Devices: Manual dogging not permitted.
9. Touch bar assembly on wide style exit devices to have a 1/4-inch (6.3 mm) clearance to allow for vision frames.
10. All exposed exit device components to be of architectural metals and “true” architectural finishes.
11. Handing: Field-reversible.
12. Fasteners on Back Side of Device Channel: Concealed - exposed fasteners not allowed.
13. Vertical Latch Assemblies' Operation: Gravity, without use of springs.

C. Grades: Complying with BHMA A156.3, Grade 1.
1. Provide exit devices tested and certified by UL or by a recognized independent laboratory for mechanical operational testing to 10 million cycles minimum with inspection confirming Grade 1 Loaded Forces have been maintained.

D. Options:
1. MLR: Motorized latch retraction.

E. Products:
1. 2000.

**2.06 CYLINDRICAL LOCKS**

A. Manufacturers:
1. BEST, dormakaba Group: www.bestaccess.com/#sle.

B. Properties:
1. Mechanical Locks:
   a. Fitting modified ANSI A115.2 door preparation.
   b. Door Thickness Fit: 1-3/8 inches (35 mm) to 2-1/4 inches (57 mm) thick doors.
   c. Construction: Hub, side plate, shrouded rose, locking pin to be a one-piece casting with a shrouded locking lug.
      1) Through-bolted anti-rotational studs.
   d. Cast stainless steel latch retractor with roller bearings for exceptionally smooth operation and superior strength and durability.
   e. Bored Hole: 2-1/8-inch (54 mm) diameter.
   f. Backset: 5 inches (127 mm) unless otherwise indicated.
   g. Latch: Single piece tail-piece construction.
      1) Latchbolt Throw: 9/16 inch (14.3 mm), minimum.
   h. Cylinders:
      1) Cylinder Core Types: Locks capable of supporting manufacturers' cores, as applicable.
         (a) Small format interchangeable.
   i. Lever Trim:
      1) Style: See Door Hardware Schedule.
      2) Functionality: Allow the lever handle to move up to 45 degrees from horizontal position prior to engaging the latchbolt assembly.

3) Strength: Locksets outside locked lever designed to withstand minimum1,400 inch-lbs (158.2 Nm) of torque. In excess of that, a replaceable part will shear. Key from outside and/or inside lever will still operate lockset.
4) Independent spring mechanism for each lever.
(a) Contain lever springs in the main lock hub.
5) Outside Lever Sleeve: Seamless one-piece construction.
6) Keyed Levers: Removable only after core is removed by authorized control key.

2. Electrified Locks: Same properties as standard locks, and as follows:
a. Voltage: 24 VDC.
b. Function: Electrically locked (Fail Safe) or unlocked (Fail Secure), as indicated for each lock in Door Hardware Schedule.
c. Temperature Control Module (TCM).

C. Finishes: See Door Hardware Schedule.
1. Core Faces: Match finish of lockset.

D. Grades: Comply with BHMA A156.2, Grade 1, Series 4000, Operational Grade 1, Extra Heavy Duty.
1. Durability: Passing 50 million cycle tests verified by third party testing agency.

E. Material: Manufacturer's standard for specified lock.
1. Critical Latch and Chassis Components: Brass or corrosion-resistance treated steel.
2. Outside Lever Sleeve: Hardened steel alloy.

F. Options:

G. Products: Cylindrical locks, including mechanical and electrified types.
1. 9K (Grade 1).

**2.07 DOOR PULLS AND PUSH PLATES**

A. Manufacturers:
1. Trimco: www.trimcohardware.com/#sle.

B. Properties:
1. Pull Type: Straight, unless otherwise indicated.
2. Push Plate Type: Flat, with square corners, unless otherwise indicated.
a. Edges: Beveled, unless otherwise indicated.

C. Grades: Comply with BHMA A156.6.

D. Material: Stainless steel, unless otherwise indicated.

E. Products:

**2.08 CLOSERS**

A. Manufacturers:
1. BEST, dormakaba Group www.bestaccess.com/#sle.

B. Properties:

C. Grades:
1. Closers: Comply with BHMA A156.4, Grade 1.
a. Underwriters Laboratories Compliance:
1) Product Listing: UL (DIR) and ULC for use on fire-resistance-rated doors.
(a) UL 228 - Door Closers-Holders, With or Without Integral Smoke Detectors.

D. Types:

E. Options:

F. Installation:
1. Mounting: Includes surface mounted installations.
2. Mount closers on non-public side of door and stair side of stair doors unless otherwise noted in hardware sets.
3. At outswinging exterior doors, mount closer on interior side of door.
4. Provide adapter plates, shim spacers, and blade stop spacers as required by frame and door conditions.
5. Where an overlapping astragal is included on pairs of swinging doors, provide coordinator to ensure door leaves close in proper order.

G. Products:

**2.09 PROTECTION PLATES**

A. Manufacturers:
1. Trimco: www.trimcohardware.com/#sle.

B. Properties:
1. Plates:
a. Kick Plates: Provide along bottom edge of push side of every wood door with closer, except aluminum storefront and glass entry doors, unless otherwise indicated.
1) Size: 10 inches (254 mm) high by 2 inch (51 mm) less door width (LDW) on push side of door.
b. Mop Plates: Provide along bottom edge of push side of doors to provide protection from cleaning liquids and equipment damage to door surface.
1) Size: 6 inch (152 mm) high by 1-1/2 inch (38 mm) less door width (LDW) on pull side and 2 inch (51 mm) LDW on push side of door.
c. Edges: Beveled, on four (4) unless otherwise indicated.

C. Grades: Comply with BHMA A156.6.

D. Material: As indicated for each item by BHMA material and finish designation.
1. Metal Properties: Stainless steel.

E. Installation:
1. Fasteners: Countersunk screw fasteners

F. Products:

**2.10 THRESHOLDS**

A. Manufacturers:
1. National Guard Products, Inc: www.ngpinc.com/#sle.

B. Properties:
1. Threshold Surface: Fluted horizontal grooves across full width.

C. Grades: Thresholds: Comply with BHMA A156.21.

D. Types: As applicable to project conditions. Provide barrier-free type at every location where specified.

E. Products:

**2.11 WEATHERSTRIPPING AND GASKETING**

A. Manufacturers:
1. National Guard Products, Inc: www.ngpinc.com/#sle.

B. Properties:
1. Weatherstripping Air Leakage Performance: Not exceeding 0.3 cfm/sq ft of door opening at 0.3 inches of water pressure differential for single doors, and 0.5 cfm/sq ft of door area at 0.3 inches of water pressure differential for double doors for gasketing other than smoke control, as tested according to ASTM E283/E283M; with resilient or flexible seal strips that are easily replaceable and readily available from stocks maintained by manufacturer.

C. Grades: Comply with BHMA A156.22.

D. Products:
1. Weatherstripping: See Door Hardware Schedule.

**2.12 MISCELLANEOUS ITEMS**

A. Manufacturers:

B. Properties:
1. Coat Hooks: Provide on room side of door, screw fastened.
a. Material: Brass.

C. Products:

**2.13 KEYS AND CORES**

A. Manufacturers:
1. BEST, dormakaba Group: www.bestaccess.com/#sle.
2. Substitutions: Not permitted.

B. Properties: Complying with guidelines of BHMA A156.28.
1. Provide small format interchangeable core.

2. Provide Patented CORMAX keys and cores.
3. Provide keying information in compliance with DHI (KSN) standards.
4. Keying Schedule: Arrange for a keying meeting, with Architect, Owner and hardware supplier, and other involved parties to ensure locksets and locking hardware, are functionally correct and keying complies with project requirements.
5. Keying: Master keyed.
6. Include construction keying and control keying with removable core cylinders.
7. Supply keys in following quantities:
   a. Master Keys: 4 each.
   b. Construction Master Keys: 6 each.
   c. Construction Keys: 15 each.
   d. Construction Control Keys: 2 each.
   e. Control Keys if New System: 2 each.
8. Provide key collection envelopes, receipt cards, and index cards in quantity suitable to manage number of keys.
9. Deliver keys with identifying tags to Owner by security shipment direct from manufacturer.
10. Permanent Keys and Cores: Stamped with applicable key marking for identification. Do not include actual key cuts within visual key control marks or codes. Stamp permanent keys "Do Not Duplicate."
11. Include installation of permanent cores and return construction cores to hardware supplier. Construction cores and keys to remain property of hardware supplier.

C. Products:

**2.14 KEY CABINETS**

A. Manufacturers:
   1. Lund Equipment Company, Inc: www.lundkey.com/#sle.
   2. Telkee: www.telkee.com/#sle.

B. Properties:
   1. Key Management System: For each keyed lock on project, provide one set of consecutively numbered duplicate key tags with hanging hole and snap catch.
   2. Security Key Tags: For each keyed lock on project, provide one set of matching key tags for permanent attachment to one key of each set.
   3. Provide key collection envelopes, receipt cards, and index cards in quantity suitable to manage number of keys.
   4. Mounting: Wall surface mounted.
   5. Capacity: Actual quantity of keys, plus 25 percent additional capacity.
   6. Key cabinet lock to facility's keying system.

C. Finishes: Baked enamel, manufacturer's standard color.

D. Material: Sheet steel.

**2.15 FINISHES**

**PART 3 EXECUTION**

**3.01 EXAMINATION**

A. Verify that doors and frames are ready to receive this work; labeled, fire-rated doors and frames are properly installed, and dimensions are as indicated on shop drawings.

B. Correct all defects prior to proceeding with installation.

C. Verify that electric power is available to power operated devices and of correct characteristics.

**3.02 INSTALLATION**

A. Install hardware in accordance with manufacturer's instructions and applicable codes.

B. Install hardware using the manufacturer’s fasteners provided. Drill and tap all screw holes located in metallic materials. Do not use “Riv-Nuts” or similar products.

C. Install hardware on fire-rated doors and frames in accordance with applicable codes and NFPA 80.

D. Install hardware for smoke and draft control doors in accordance with NFPA 105.

E. Use templates provided by hardware item manufacturer.

F. Do not install surface mounted items until application of finishes to substrate are fully completed.

G. Wash down masonry walls and complete painting or staining of doors and frames.

H. Complete finish flooring prior to installation of thresholds.

I. Door Hardware Mounting Heights: Distance from finished floor to center line of hardware item. As indicated in following list; unless noted otherwise in Door Hardware Schedule or on drawings.
   1. For Steel Doors and Frames: Install in compliance with DHI (LOCS) recommendations.
   2. For Steel Doors and Frames: See Section 6549.
   3. For Steel Door Frames: See Section 081213.
   4. For Aluminum-Framed Storefront Doors and Frames: See Section 084313.
   5. For Wood Doors: Install in compliance with DHI WDHS.3 recommendations.
   6. Flush Wood Doors: See Section 081416.
   7. Stile and Rail Wood Doors: See Section 081433.
   8. Mounting heights in compliance with ADA Standards:
      a. Locksets: 40-5/16 inch (1024 mm).
      b. Push Plates/Pull Bars: 42 inch (1067 mm).
      c. Deadlocks (Deadbolts): 48 inch (1219 mm).
      d. Exit Devices: 40-5/16 inch (1024 mm).
      e. Door Viewer: 43 inch (1092 mm); standard height 60 inch (1524 mm).

J. Set exterior door thresholds with full-width bead of elastomeric sealant at each point of contact with floor providing a continuous weather seal; anchor thresholds with stainless steel countersunk screws.

K. Include in installation for existing doors and frames any necessary field modification and field preparation of doors and frames for new hardware. Provide necessary fillers, reinforcements, and fasteners for mounting new hardware and to cover existing door and frame preparations.

**3.03 FIELD QUALITY CONTROL**

A. Perform field inspection and testing under provisions of Section 014000 - Quality Requirements.

**3.04 ADJUSTING**

A. Adjust work under provisions of Section 017000 - Execution and Closeout Requirements.

B. Adjust hardware for smooth operation.

C. Adjust gasketing for complete, continuous seal; replace if unable to make complete seal.

**3.05 CLEANING**

**3.06 PROTECTION**

A. Protect finished Work under provisions of Section 017000 - Execution and Closeout Requirements.

B. Do not permit adjacent work to damage hardware or finish.

**3.07 HARDWARE SETS**

**Set #01.0 - MAIN ENTRY/EXIT (3070/ALDXALF)**

Doors: 100A, 100B, 100C, 100D

| | | | | |
|---|---|---|---|---|
| 1 | CONTINUOUS HINGE | 661HD UL X LAR | AL | ST |
| 1 | NS RIM EXIT DEVICE | 3RO 2403 x 1703A SNB (2) | 630, 626W | PR |
| 1 | RIM CYLINDER | 12E-72 CORMAX | 626 | BE |
| 1 | CLOSER | 8916 S-DS BSHD DP89 FC SN1 | 689 | DM |
| 1 | SWEEP | 200 SA X LAR TORX 8X3/4" | | NA |
| 1 | THRESHOLD | 896S LAR X 1/4-20- SS MSEA/36 | AL | NA |

NOTE: ALL SEALS BY STOREFRONT CONTRACTOR

Number of Openings: **4**

**Set #02.0 - CROSS CORRIDOR (6070/SCWDXHMF)**

Doors: 101A, 102A

| | | | | |
|---|---|---|---|---|
| 6 | HINGE | FBB179 4.5" x 4.5" | 26D | ST |
| 2 | RIM EXIT DEVICE | 3RO 2114 X 4914A SNB (2) | 630 | PR |

**Set #02.0 - CROSS CORRIDOR (6070/SCWDXHMF)**

NOTE: MOUNT PARALLEL ARE - PUSH SIDE

| | | | | |
|---|---|---|---|---|
| 2 | CLOSER | 8916 AF89 FC SN1 | 689 | DM |
| 2 | PROTECTION PLATE | KO050 10" X 1" LDW B4E/CSK (KICK - PUSH SIDE) | 630 | TR |
| 2 | FLOOR OR WALL STOP | W1211 OR 1270 WV/WX AS NEEDED FOR CONDITION | 630 | TR |
| 2 | SILENCER | 1229A (HM FRAME) | GREY | TR |

Number of Openings: **2**

**Set #03.0 - EXT CORRIDOR ENTRY/EXIT (6070/HMDXHMF)**

Doors: 101B, 102B

| | | | | |
|---|---|---|---|---|
| 2 | CONTINUOUS HINGE | 651HD UL X LAR | 32D | ST |
| 2 | RIM EXIT DEVICE | 3RO 2103 X 1703A SNB (2) (STOREROOM) | 626W | PR |
| 2 | CLOSER | 8916 S-DS SN1 | 689 | DM |
| | NOTE: MOUNT PARALLEL ARM - PUSH SIDE | | | |
| 2 | PROTECTION PLATE | KO050 10" X 1" LDW B4E/CSK (KICK - PUSH SIDE) | 630 | TR |
| 2 | DRIP CAP | 16 A X OFW | | NA |
| 1 | SEAL | 5050C X LAR (HEAD/JAMBS/20) | | NA |
| 2 | SWEEP | 200 SA X LAR TORX 8X3/4" | | NA |
| 1 | THRESHOLD | 896 S X LAR X 1/4-20 SS MSEA/72 | AL | NA |

Number of Openings: **2**

**Set #04.0 - M/W RESTROOM (3070/SCWDXHMF)**

Doors: 103, 104

| | | | | |
|---|---|---|---|---|
| 3 | HINGE | FBB179 4.5" x 4.5" | 26D | ST |
| 1 | LATCHSET | 9K3-0N15C (PASSAGE) | 626 | BE |
| 1 | CLOSER | 8916 AF89 FC SN1 | 689 | DM |
| 1 | PROTECTION PLATE | KO050 10" X 2" LDW B4E/CSK (KICK - PUSH SIDE) | 630 | TR |
| 1 | FLOOR OR WALL STOP | W1211 OR 1270 WV/WX AS NEEDED FOR CONDITION | 630 | TR |
| 3 | SILENCER | 1229A (HM FRAME) | GREY | TR |

Number of Openings: **2**

**Set #05.0 - CASED OPENINGS**

Doors: 105A, 105B

NOTE: CASED OPENING - NO HARDWARE REQUIRED

Number of Openings: **2**

**Set #06.0 - GYM EXTERIOR (6070/HMDXHMF)**

Doors: 105C

| | | | | |
|---|---|---|---|---|
| 2 | CONTINUOUS HINGE | 651HD UL X LAR | 32D | ST |
| 1 | RIM EXIT DEVICE | 3RO 2103 X 1703A SNB (2) (STOREROOM) | 626W | PR |
| 1 | RIM EXIT DEVICE | 3RO 2100 SNB (6) (EXIT ONLY) | 626W | PR |
| 1 | RIM CYLINDER | 12E-72 CORMAX | 626 | BE |
| 2 | CLOSER | 8916 S-DS SN1 | 689 | DM |
| 2 | PROTECTION PLATE | KO050 10" X 1" LDW B4E/CSK (KICK - PUSH SIDE) | 630 | TR |
| 1 | DRIP CAP | 16 A X OFW | | NA |
| 2 | SWEEP | 200 SA X LAR TORX 8X3/4" | | NA |
| 1 | THRESHOLD | 896 S X LAR X 1/4-20 SS MSEA/72 | AL | NA |

Number of Openings: **1**

**Set #07.0 - MULTI PURPOSE EXTERIOR (3070/HMDXHMF)**

Doors: 106A

**Set #07.0 - MULTI PURPOSE EXTERIOR (3070/HMDXHMF)**

| | | | | |
|---|---|---|---|---|
| 1 | CONTINUOUS HINGE | 651HD UL X LAR | 32D | ST |
| 1 | RIM EXIT DEVICE | 3RO 2103 X 1703A SNB (2) (STOREROOM) | 626W | PR |
| 1 | RIM CYLINDER | 12E-72 CORMAX | 626 | BE |
| 1 | CLOSER | 8916 S-DS SN1 | 689 | DM |
| 1 | PROTECTION PLATE | KO050 10" X 2" LDW B4E/CSK (KICK - PUSH SIDE) | 630 | TR |
| 1 | DRIP CAP | 16 A X OFW | | NA |
| 1 | SEAL | 5050C X LAR (HEAD/JAMBS/20) | | NA |
| 1 | SWEEP | 200 SA X LAR TORX 8X3/4" | | NA |
| 1 | THRESHOLD | 896S LAR X 1/4-20- SS MSEA/36 | AL | NA |

Number of Openings: **1**

**Set #08.0 - MULTIPURPOSE VEST (3070/SCWDXHMF)**

Doors: 106B

| | | | | |
|---|---|---|---|---|
| 3 | HINGE | FBB179 4.5" x 4.5" | 26D | ST |
| 1 | RIM EXIT DEVICE | 3RO 2114 X 4914A SNB (2) | 630 | PR |
| 1 | CLOSER | 8916 AF89 FC SN1 | 689 | DM |
| 1 | PROTECTION PLATE | KO050 10" X 2" LDW B4E/CSK (KICK - PUSH SIDE) | 630 | TR |
| 1 | FLOOR OR WALL STOP | W1211 OR 1270 WV/WX AS NEEDED FOR CONDITION | 630 | TR |
| 3 | SILENCER | 1229A (HM FRAME) | GREY | TR |

Number of Openings: **1**

**Set #09.0 - OFFICE, JANITOR (3070/SCWDXHMF)**

Doors: 107, 109, 115

| | | | | |
|---|---|---|---|---|
| 3 | HINGE | FBB179 4.5" x 4.5" | 26D | ST |
| 1 | LOCKSET | 9K3-7AB15C CORMAX (ENTRY/OFFICE) | 626 | BE |
| 1 | FLOOR OR WALL STOP | W1211 OR 1270 WV/WX AS NEEDED FOR CONDITION | 630 | TR |
| 3 | SILENCER | 1229A (HM FRAME) | GREY | TR |

Number of Openings: **3**

**Set #10.0 - STORAGE CLOSET (3070/SCWDXHMF)**

Doors: 108

| | | | | |
|---|---|---|---|---|
| 3 | HINGE | FBB179 4.5" x 4.5" | 26D | ST |
| 1 | LOCKSET | 9K3-7D15C CORMAX (STOREROOM) | 626 | BE |
| 1 | FLOOR OR WALL STOP | W1211 OR 1270 WV/WX AS NEEDED FOR CONDITION | 630 | TR |
| 3 | SILENCER | 1229A (HM FRAME) | GREY | TR |

Number of Openings: **1**

**Set #11.0 - TOILET (3070/SCWDXHMF)**

Doors: 110, 114

| | | | | |
|---|---|---|---|---|
| 3 | HINGE | FBB179 4.5" x 4.5" | 26D | ST |
| 1 | LATCHSET | 9K3-0L15C (PRIVACY) | 626 | BE |
| 1 | PROTECTION PLATE | KO050 10" X 2" LDW B4E/CSK (KICK - PUSH SIDE) | 630 | TR |
| 1 | PROTECTION PLATE | KO050 6" X 1" LDW B4E/CSK (MOP - PULL SIDE) | 630 | TR |
| 1 | FLOOR OR WALL STOP | W1211 OR 1270 WV/WX AS NEEDED FOR CONDITION | 630 | TR |
| 3 | SILENCER | 1229A (HM FRAME) | GREY | TR |

Number of Openings: **2**

**Set #12.0 - ELECTRICAL (3070/SCWDXHMF/UL)**

Doors: 111

**Set #12.0 - ELECTRICAL (3070/SCWDXHMF/UL)**

| | | | | |
|---|---|---|---|---|
| 3 | HINGE | FBB179 4.5" x 4.5" | 26D | ST |
| 1 | RIM EXIT DEVICE | 3RO 2103 X 1703A SNB (2) (FEH, STOREROOM) | 630 | PR |
| 1 | CLOSER | 8916 S-DS SN1 | 689 | DM |
| 1 | PROTECTION PLATE | KO050 10" X 2" LDW B4E/CSK (KICK - PUSH SIDE) | 630 | TR |
| 1 | SEAL | 5050C X LAR (HEAD/JAMBS/20) | | NA |

Number of Openings: **1**

**Set #13.0 - MECHANICAL (6070/SCWDXHMF/UL)**

Doors: 112

| | | | | |
|---|---|---|---|---|
| 6 | HINGE | FBB179 4.5" x 4.5" | 26D | ST |
| 1 | SEMI-AUTO FLUSHBOLT (SCWD) | 3825L X 3815L | 626 | TR |
| 1 | LOCKSET | 9K3-7D15C CORMAX (STOREROOM) | 626 | BE |
| 1 | COORDINATOR | 3094 SERIES AS NEEDED X FILLER BAR | BLACK | TR |
| 2 | CLOSER | 8916 AF89 FC SN1 | 689 | DM |
| 2 | PROTECTION PLATE | KO050 10" X 1" LDW B4E/CSK (KICK - PUSH SIDE) | 630 | TR |
| 2 | FLOOR OR WALL STOP | W1211 OR 1270 WV/WX AS NEEDED FOR CONDITION | 630 | TR |
| 1 | CLOSER MOUNTING BRKT | 3095 OR 3096 AS NEEDED | BLACK | TR |
| 1 | SEAL | 5050C X LAR (HEAD/JAMBS/20) | | NA |

Number of Openings: **1**

**Set #14.0 - EXTERIOR ENTRY/EXIT (6070/HMDXHMF)**

Doors: 113

| | | | | |
|---|---|---|---|---|
| 2 | CONTINUOUS HINGE | 651HD UL X LAR | 32D | ST |
| 2 | RIM EXIT DEVICE | 3RO 2103 X 1703A SNB (2) (STOREROOM) | 626W | PR |
| 1 | RIM EXIT DEVICE | 3RO 2102 X 1702A SNB (2) (DUMMY TRIM) | 626W | PR |
| 2 | CLOSER | 8916 S-DS SN1 | 689 | DM |
| 2 | PROTECTION PLATE | KO050 10" X 1" LDW B4E/CSK (KICK - PUSH SIDE) | 630 | TR |
| 1 | DRIP CAP | 16 A X OFW | | NA |
| 1 | SEAL | 5050C X LAR (HEAD/JAMBS/20) | | NA |
| 2 | SWEEP | 200 SA X LAR TORX 8X3/4" | | NA |
| 1 | THRESHOLD | 896 S X LAR X 1/4-20 SS MSEA/72 | AL | NA |

Number of Openings: **1**

Total Number of Openings: **24**

Opening List

| Opening | Hdw Set |
|---|---|
| 103 | 04.0 |
| 104 | 04.0 |
| 107 | 09.0 |
| 108 | 10.0 |
| 109 | 09.0 |
| 110 | 11.0 |
| 111 | 12.0 |
| 112 | 13.0 |
| 113 | 14.0 |
| 114 | 11.0 |
| 115 | 09.0 |
| 100A | 01.0 |
| 100B | 01.0 |
| 100C | 01.0 |
| 100D | 01.0 |
| 101A | 02.0 |
| 101B | 03.0 |
| 102A | 02.0 |
| 102B | 03.0 |
| 105A | 05.0 |
| 105B | 05.0 |
| 105C | 06.0 |
| 106A | 07.0 |
| 106B | 08.0 |

**END OF SECTION 08 7100**

# SECTION 08 8000
# GLAZING

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Glass.

B. Glazing compounds and accessories.

### 1.02 RELATED SECTIONS

A. Section 07 2100 - Thermal Insulation: Insulation fill around window units.

B. Section 07 9005 - Joint Sealers: Sealant and back-up material.

C. Section 08 1416 - Flush Wood Doors: Glazed doors.

D. Section 08 4313 - Aluminum-Framed Storefronts.

### 1.03 REFERENCES

A. ANSI Z97.1 - American National Standard for Safety Glazing Materials Used in Buildings, Safety Performance Specifications and Methods of Test; 2004.

B. ASTM C 864 - Standard Specification for Dense Elastomeric Compression Seal Gaskets, Setting Blocks, and Spacers; 1999 (Reapproved 2005).

C. ASTM C 1193 - Standard Guide for Use of Joint Sealants; 2005.

D. GANA (GM) - GANA Glazing Manual; Glass Association of North America; 2004.

E. GANA (SM) - FGMA Sealant Manual; Glass Association of North America; 1990.

F. SIGMA TM-3000 - Glazing Guidelines for Sealed Insulating Glass Units; Sealed Insulating Glass Manufacturers Association; 2004.

### 1.04 PERFORMANCE REQUIREMENTS

A. Wind Loads: Comply with wind load criteria specified in Metal-Framed Storefronts section.

B. Thermal Insulating Units: Units shall comply with the requirements of ASTM E774-97 and be certified by Associated Laboratories, Inc., (ALI) or insulating Glass Certification Council (IGCC) for Class A.

C. Tinted Glass Types: Whether used in a monolithic state or as a lite of thermal insulating unit, shall each be the product of a single manufacturer.
   1. Basis of Color Design:
      a. PPG Solarban 60 on clear Low-E (3) Solargray Tinted or equal.
      b. Minimum 1/4" thickness except as otherwise indicated.
      c. Visible light transmittance for insulted unit: 35%.
      d. Thermal transmittance ("U" value) winter, night for insulated unit: 0.29.
      e. Thermal transmittance ("U" value) summer, day for insulated unit: 0.27.
      f. Shading coefficient for insulated unit: 0.33.

D. Glazing Materials: Whether in a monolithic state or as a lite of a thermal insulating unit, shall be heat treated where required by glass manufacturer's design calculations to resist stress caused by glass orientations, sizes and configurations, heat stress, inherent imperfections, wind loading, glazing conditions, temperature differential, inside window treatments or other conditions affecting breakage probability. Maximum allowable breakage probability at design loads shall be eight lites per thousand for vertical glazing.

E. For heat-treated glass, orient lites with roll distortion parallel to head and sill members.

F. Tempered and laminated glazing materials shall comply with CPSC 16-CFR, Part 1201, Category II.

G. Tinted and spandrel glass types, whether used in a monolithic state or as a lite of a thermal insulating unit, shall each be the product of a single manufacturer.

**1.05 SUBMITTALS**

A. See Division 01 - Administrative Requirements, for submittal procedures.

B. Product Data on Glass Types: Provide structural, physical and environmental characteristics, size limitations, special handling or installation requirements. Include technical data, storage and handling procedures and performance characteristics.

C. Product Data on Glazing Compounds: Provide chemical, functional, and environmental characteristics, limitations, special application requirements. Identify available colors.

D. Samples: Submit two samples 12 x 12 inch in size of glass units, showing coloration and design.

E. Certificates: Certify that products meet or exceed specified requirements.

F. Manufacturer's Certificate: Certify that sealed insulated glass meets or exceeds specified requirements.

G. Framing Manufacturer's Approval: Prior to submission of shop drawings, indicate by letter that an authorized representative of hollow metal frames and metal-framed storefront framing manufacturer has reviewed and approved details, including glass bite, clearances and glazing methods.

H. Calculations: Submit for Gardner Spencer Smith Tench and Jarbeau, PC's information only. Submit calculations prepared by glazing material manufacturer indicating recommendations for glass thickness and heat treating of glazing materials as a result of heat stress, building orientation, inside window treatments, shading by exterior building components or wind loading. Identify factors affecting breakage probability which have been taken into consideration and breakage probability anticipated by calculations.

I. Maintenance Data: Submit glazing material manufacturer's maintenance data for cleaning and care of each type of glazing material.

**1.06 QUALITY ASSURANCE**

A. Labeling: Label each piece of glass and glazing and mirrors with manufacturer's name, and the grade or quality of the material. Labels shall be intact before and after installation.

1. Glazing shall bear manufacturer's label identifying type, quality and thickness of material. Labels for single thickness annealed float glass, if not available on each lite shall at least be factory applied to shipping crates. All other glazing materials shall be required to bear labels on each lite either temporary or permanent types as required by governing building codes or certification agency where specified.
2. Tempered glass shall have permanent etched or ceramic fired identification on each unit indicating compliance with safety glazing standard. Identification shall be visible in completed installation and oriented in an inconspicuous corner.

B. Perform Work in accordance with GANA Glazing Manual and FGMA Sealant Manual for glazing installation methods.

C. Installer Qualifications: Company specializing in performing the work of this section with minimum ten years documented experience.

**1.07 MOCK-UP**

A. See Division 01 - Quality Requirements, for additional mock-up requirements.

B. Construct a masonry wall as part of the brick mock-up panel. See Section 04 2100 - Brick Masonry Masonry for related items to be installed and coordinated.

C. Locate where directed.

**1.08 PRE-INSTALLATION MEETING**

A. Convene one week before starting work of this section.

B. Contractor, Gardner Spencer Smith Tench and Jarbeau, PC, storefront supplier and erector, a representative of glass manufacturer, a representative of sealant manufacturer and glazing

subcontractor will be present.

C. Material submitted by Contractor, interfacing of glass and glazing and window wall work, dimensions and tolerances, sealant joint widths and depths and butt joint glazing will be reviewed.

**1.09 DELIVERY, STORAGE, AND PROTECTION**

A. Move no cases which have been partially unpacked. Unpack glazing materials in accord with manufacturer's product data for type of material being handled. Stack individual lites as recommended by manufacturer's product data.

B. Utilize rolling blocks to rotate glazing materials.

C. Handle insulating units without rotating, warping or cartwheeling units. Prevent damage to glazing material or edge seal.

**1.10 ENVIRONMENTAL REQUIREMENTS**

A. Do not install glazing when ambient temperature is less than 50 degrees F.

B. Maintain minimum ambient temperature before, during and 24 hours after installation of glazing compounds.

**1.11 WARRANTY**

A. See Division 01 - Closeout Submittals, for additional warranty requirements.

B. Provide a ten (10) year warranty to include coverage for sealed glass units from seal failure, interpane dusting or misting, and replacement of same.

C. Provide a ten (10) year warranty guaranteeing to correct failures in weathertightness signed by the installer and contractor. Failure is defined as water leakage through glazing assembly. Correction may include repair or replacement.

D. Provide a ten (10) year warranty to cover silver spoilage in mirrors.

E. Provide a two (2) year warranty to cover materials and labor to replace glazing damage for any reason other than natural disasters, vandalism or damage resulting from accident or abuse arising out of the Union County Commissioner's Office's operations.

F. All warranties shall commence on the Date of Substantial Completion of the Project.

**PART 2 PRODUCTS**

**2.01 ACCEPTABLE MANUFACTURERS AND FABRICATORS**

A. To maximum extent possible, provide domestically manufactured and fabricated glass, and provide glass from one manufacturer.

B. Types of glass specified or indicated shall be subject to compliance with specified requirements and manufactured or fabricated by one of the following:
   1. Basis of Design: Vitro Architectural Glass: www.vitroglasshub.com.
   2. ACH Glass/Versalux: www.versaluxglass.com
   3. AFG Industries, Inc: www.afgglass.com.
   4. Global Security Glazing: www.security-glazing.com.
   5. Pilkington North America: www.pilkington.com.
   6. Viracon, Inc: www.viracon.com.

C. Substitutions: Refer to Division 01 - Product Requirements.

**2.02 GLASS MATERIALS**

A. General: Conform to ASTM C 1036, ASTM C 1048 and to ANSI Z97.1. Label factory cut panes.

B. Float Glass: Type I, (transparent glass flat), Class 1 (clear), Quality q3, (glazing select), minimum 1/4 inch thickness unless otherwise indicated or required.

C. Tinted Float Glass: Type I, Class 2 (tinted heat absorbing and light reducing), quality q3, color as selected by Gardner Spencer Smith Tench and Jarbeau, PC, minimum 1/4 inch thickness

unless otherwise indicated or required.

D. Tempered Glass: Condition A, Type I or II, Class 1, Quality q3, Kind FT, match color of clear or tinted glass as applicable; fully thermal tempered, heat strengthening or chemical tempering is not permitted. Perform tempering by horizontal oscillating roller hearth or high speed roller hearth process. Do not permit fabrication processes leaving gripper or tong marks. Handle and size glass according to manufacturer's written instructions.

E. Insulated Glass: Pre-assembled sealed lite units with dehydrated space between glass units, complying with ASTM E 774 for Class CBA units.

F. Low Emissivity Glass (Low E Glass): Provide units with thin metallic high-transmittance coating applied to the number 3 surface of the unit, unless otherwise indicated. The U-value for the IGU shall be no greater than 0.29, unless otherwise indicated.

**2.03 GLASS SETTING MATERIALS**

A. Setting Blocks: ASTM C 864, channel shape; having 1/4 inch internal depth, Shore A hardness of 80 to 90 Durometer. Blocks shall be a minimum 2 inch long. Block width shall be approximately 1/16 inch less than the full width of the rabbet. Block thickness shall be at least 3/16 inch, sized for rabbet depth as required.

B. Spacers: ASTM C 864, channel shape, with 1/4 inch internal depth, 3/32 inch flanges, web, 1/8 inch thick, one to 3 inches long. Spacers shall provide Shore A hardness of 40 to 50 Durometer.

C. Vinyl Glazing Channels: Profile compatible with framing system and designed to accommodate glass of specified thickness, light gray in color. Provide for dry glazing aluminum frames where indicated or permitted.

D. Glazing Tape: Poly-isobutylene based sealant tape, conforming to AAMA 804.1, with adhesive one side protected by temporary paper cover, Extru-Seal manufactured by Pecora Corp., No. 303 by Protective Treatments, Inc., or equal.

E. Spring Steel Spacers: Galvanized steel wire or strip designed to position glazing in channel or rabbet sash with stops.

F. Glazing Clips: Galvanized steel spring wire designed to hold glass in position in rabbet sash without stops.

G. Glazing Points (Sprigs): Pure zinc stock, thin, flat, triangular or diamond-shaped pieces, 1/4 inch minimum size.

H. Glazing Sealants for Metal Sash: GE Silicones Silglaze II 2800, GE Silicones Silpruf, GE Silicones 1200 Silicone, and Dow Corning 999A. Polybutylene, oleoresinous, asphalt, and oil base sealants are not permitted. Provide sealant of same color as structural silicone sealant unless otherwise required.

I. Glazing Compound for Wood Sash: Acrylic latex caulk by Tremco. Provide for bedding and caulking glass in wood frames.

J. Glazing Compounds and Sealants for Thermoplastic: Provide silicone, butyl, or polysulfide glazing compound.

K. Mirror Setting Materials: Manufactured by Palmer Products Corporation, or equal, for installation of mirrors, and as follows:
   1. Mirror backing paint: Mirro-Bac Paint, or equal, formulated to protect mirror silvering.
   2. Mirror bond coat: Mirro-Mastic Bond, or equal, formulated to isolate deleterious backing materials from mastic and mirror.
   3. Mirror mastic: Mirro-Mastic, or equal, formulated for adhering mirrors and glass to substrates.

**2.04 FLAT GLASS MATERIALS**

A. Clear Float Glass (Type G1 ): Clear, fully tempered for interior applications unless otherwise indicated.

1. 1/4" thick complying with ASTM C1048-92. Glass for butt-joint glazing shall be free of tong marks and surface defects on exposed edges.

B. Tinted Float Glass (Type G3 ): Clear, fully tempered for exterior applications unless otherwise indicated.
   1. 1/4" thick complying with ASTM C1048-92. Glass for butt-joint glazing shall be free of tong marks and surface defects on exposed edges.
   2. Security Film: Product 3M Scotchshield Safety & Security Window Film Ultra S800 caulked into the frame or approved equal by Gardner Spencer Smith Tench and Jarbeau, PC

**2.05 SEALED INSULATING GLASS MATERIALS**

A. Tinted Insulated Unit (Type IG1 ): Low-E Tinted Insulating Glass. Cool Gray color, low-reflective glass outdoor appearance. Fully tempered glass for both inboard and outboard lites in units designated with a "T" on the Drawings. Located at exterior locations unless otherwise indicated.
   1. Product: “Solarban” 60 + “Solargray” (2) Clear by Vitro Architectural Glass.
   2. Insulating Unit Construction: 1/4 inch (6mm) “Solargray” +“Solarban” 60 Solar Control Glass (2), + 1/2 inch (13mm) air space + 1/4 inch (6mm) Clear Float Glass.
   3. Total unit thickness of 1", minimum.
   4. Performance Values:
      a. Visible Light Transmission – 35 percent.
      b. SHGC – 0.25.
      c. Shading Coefficient – 0.33.
      d. Outdoor Visible Light Reflectance – 6 percent.
      e. Heat Transfer Coefficient: U-Value Winter – 0.29, U-Value Summer – 0.24
   5. Spacers: Manufacturer's standard steel or aluminum spacer with welded, fused or bent corners and welded or fused splices and joints, filled with desiccant; hermetically sealed, dehydrated air space.

**2.06 GLAZING COMPOUNDS**

A. Manufacturers:
   1. Dow Corning Corp; Product #795 Silicone Building Sealant: www.dowcorning.com.
   2. GE Silicones; Product Ultraglaz SSG4000: www.gesilicones.com.
   3. Tremco, Inc; Product Spectrem II: www.tremcosealants.com.
   4. Substitutions: Refer to Division 01 - Product Requirements.

B. Silicone Sealant : Single component; chemical curing; capable of water immersion without loss of properties; non-bleeding, non-staining; cured Shore A hardness of 15 to 25; color as selected.

C. Provide primers as required by adhesion testing, backer rod and accessories acceptable to sealant manufacturer.

**2.07 GLAZING ACCESSORIES**

A. Manufacturers:
   1. Pecora Corp: www.pecora.com.
   2. Saint-Gobain: www.plastics.saint-gobain.com.
   3. Tremco, Inc: www.tremcosealants.com.
   4. Substitutions: Refer to Division 01 - Product Requirements.

B. Setting Blocks: Neoprene, 80 to 90 Shore A durometer hardness, ASTM C 864 Option I. Length of 0.1 inch for each square foot of glazing or minimum 4 inch x width of glazing rabbet space minus 1/16 inch x height to suit glazing method and pane weight and area.

C. Spacer Shims: Neoprene, 50 to 60 Shore A durometer hardness, ASTM C 864 Option I. Minimum 3 inch long x one half the height of the glazing stop x thickness to suit application, self adhesive on one face.

D. Interior Hollow Metal Partition Glazing: Manufacturer's standard resilient glazing beads.

E. Glazing Gaskets: Resilient polyvinyl chloride extruded shape to suit glazing channel retaining slot; ASTM C 864 Option I; black color.

F. Glazing Clips: Manufacturer's standard type.

G. Muntin Spacer Bars: Manufacturer's rectangular aluminum spacer bars factory-installed within air space of sealed insulated glazing units, simulating divided lites in patterns indicated on drawings.
   1. Grille members shall be 5/8" face width by depth of air space in finish rnatching storefront system at locations coinciding with applied-on muntins.

H. Glazing Gaskets for Metal Framed Skylights: Glazing assembly manufacturer's standard extruded or molded neoprene, Ethylene Propylene Diene Monomer (EPDM) or silicone rubber gaskets as required or recommended for system specified.

I. Fire-Rated Glazing Accessories:
   1. Fire-Rated Glazing Frames: Fire-rated glazing manufacturer's fire tested frames used with glazing assemblies for required ratings. Furnish for installation in fire-rated doors and hollow metal work in wall openings as reqUired by manufacturer's fire tested assemblies.
   2. Glazing Gaskets and Tapes: Closed cell polyvinyl chloride (PVC) foam tape, EPDM tape, ceramic glazing tape or other flame resistant gasket material as recommended by fire-rated glazing manufacturer and fire tested with glazing assemblies for specified ratings.
   3. Setting Blocks: Neoprene, EPDM or calcium silicate setting blocks as recommended by fire-rated glazing manufacturer and fire tested with glazing assemblies for specified ratings.
   4. Cleaners, Primers and Sealers: Types as recommended by glazing and gaskets manufacturer.

## PART 3 EXECUTION

### 3.01 EXAMINATION

A. Verify that openings for glazing are correctly sized and within tolerance.

B. Verify that surfaces of glazing channels or recesses are clean, free of obstructions that may impede moisture movement, weeps are clear, and ready to receive glazing.

C. Verify compliance with the following requirements prior to beginning glazing work:
   1. That framing is anchored in position, plumb and square within 1/8" of normal dimensions indicated.
   2. That fastener heads, and other projections are removed from glazing rabbets.
   3. That corners and fabrication intersections are sealed and framing is weathertight.
   4. That rabbets at sills weep to outside and rabbets are sufficient depth and width to receive glazing material and provide the required bite of the glazing material.
   5. That surfaces to receive zipper type gaskets comply with tolerances required by gasket manufacturer.
   6. That hollow metal frames have received paint finish in accord with Painting section.

### 3.02 PERFORMANCE REQUIREMENTS

A. Install glazing materials to obtain air-tight and water-tight installation and to withstand normal temperature changes and wind loads without failure.

B. Protect glazing material faces and edges during handling and installation.

C. Size glazing materials for each opening to ensure correct bite on glazing material, without imposing strain, in accordance with manufacturer's product data.

D. Maintain minimum bed clearance between glazing material and sash of 1/8", both sides, except where greater clearances is required by either glazing material or framing manufacturer.

### 3.03 PREPARATION

A. Clean contact surfaces with solvent and wipe dry.

B. Seal porous glazing channels or recesses with substrate compatible primer or sealer.

C. Prime surfaces scheduled to receive sealant.

D. Install sealants in accordance with ASTM C 1193 and FGMA Sealant Manual.

E. Install sealant in accordance with manufacturer's instructions.

F. Inspect glazing material prior to installation. Eliminate lites having face or edge damage.

G. of tempered and insulating glass shall not be cut or otherwise altered in the field.

**3.04 GLAZING PROCEDURES**

A. General: Install glazing materials in accordance with manufacturer's written product data and applicable standards, except where more stringent requirements are specified.

B. Setting Blocks: Install setting blocks for all glazing materials over six square feet in area. Install at sill rabbet located one quarter of glass width from each corner, but with edge nearest corner not closer than 6" from corner, unless otherwise required. Size setting blocks in proportion to glass weight; minimum 4" in length.

C. Shims: Shim all lites over 100 united inches, inboard and outboard, on all sides using continuous shims, except where gaskets accomplish shimming; unless otherwise specified.

D. Edge Blocks: Provide edge blocks at vertical jambs to prevent lateral movement of glass. Provide edge blocks at 3" minimum in length. Maintain 1/8" clearance between edge of glass and edge block.

E. Interior Hollow Metal Glazing: Glaze using specified glazing beads in accordance with manufacturer's instructions.

F. Fire-Rated Glazing: Comply with glazing manufacturer's instructions and NFPA 80 requirements for installation in doors and windows or framed openings.
   1. Install glazing materials of ratings scheduled for fire-rated doors and framed openings.
   2. Install glazing so that permanent labels are positioned in an inconspicuous corner for visual inspection by building official.

G. Exterior Hollow Metal Window Channel Glazing:
   1. Glaze using specified glazing tape inboard and outboard.
   2. Shim lites over 75 united inches, inboard and outboard, on all sides in accordance with glazing tape manufacturer's ecommendations.
   3. Cut tape to size to allow for tight butted joints; install to horizontal members first, then to verticals. Install tape to exterior stops so that top edge is approximately 1/8" below sight line of stop for sealant cap bead installation.
   4. Remove backing paper from tape prior to selling glass; center glazing in rabbet and pressed firm against tape. Apply heal bead sealant to interior side for minimum 3/16" bite and positive bond with metal framing.
   5. Install glazing tape to interior glass edges so that top edge will be flush with sight line of interior stop when installed. Install stops to framing and secure in position.
   6. Apply cap bead sealant to exterior side of glass over edge of glazing tape full perimeter of frame.

H. Glazing Sealant Installation: Comply with applicable provisions of Joint Sealers section. Prevent filling of weep holes with sealant.

**3.05 MANUFACTURER'S FIELD SERVICES**

A. Glass and Glazing product manufacturers to provide field surveillance of the installation of their products.

B. Monitor and report installation procedures and unacceptable conditions.

**3.06 ALLOWABLE TOLERANCES**

A. Mirrors:
   1. Fabrication tolerances:

a. Variation in mirror dimensions: +/- 1/32".
b. Variation in square (diagonal measurements): +/- 1/16".

2. Installation tolerances:
   a. Variation in plumb or square: +/- 1/8" in 10'-0".
   b. Variation in face plane of adjacent mirrors: +/- 1/32".

**3.07 CLEANING**

A. Remove glazing materials from finish surfaces.

B. Remove labels after Work is complete.

C. Clean glass and adjacent surfaces.

**3.08 PROTECTION OF FINISHED WORK**

A. After installation, mark pane with an 'X' by using removable plastic tape or paste; do not mark heat absorbing or reflective glass units.

B. Remove and replace broken, cracked, chipped or otherwise damaged glazing materials and materials not meeting specified design criteria prior to Date of Substantial Completion.

C. Final cleaning: Just prior to Date of Substantial Completion, clean glass inside and out. Clean using pretested detergent and water. Flush with clean water. Repair or replace work which cannot be cleaned or which has been damaged during construction operations.

**END OF SECTION**

# SECTION 09 2116
# GYPSUM BOARD ASSEMBLIES

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Metal stud wall framing.

B. Metal channel ceiling framing.

C. Fire rated area separation walls.

D. Exterior Sheathing Board.

E. Gypsum wallboard.

F. Joint treatment and accessories.

### 1.02 RELATED REQUIREMENTS

A. Section 01 6116 - Volatile Organic Compound (VOC) Content Restrictions.

B. Section 06 1000 - Rough Carpentry: Wood blocking product and execution requirements.

C. Section 07 2100 - Thermal Insulation: Acoustic insulation.

D. Section 07 2720 - Fluid-Applied Membrane Air & Vapor Barriers.

E. Section 07 8400 - Firestopping: Top-of-wall assemblies at fire rated walls.

F. Section 07 9200 - Joint Sealants: Sealing acoustical gaps in construction other than gypsum board or plaster work.

### 1.03 REFERENCE STANDARDS

A. AISI S100-12 - North American Specification for the Design of Cold-Formed Steel Structural Members 2012.

B. AISI SG02-1 - North American Specification for the Design of Cold-Formed Steel Structural Members; American Iron and Steel Institute; 2001 with 2004 supplement. (replaced SG-971)

C. ANSI A108/A118/A136.1 - Specifications for the Installation of Ceramic Tile 2020.

D. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process 2022.

E. ASTM C 36/C 36M - Standard Specification for Gypsum Wallboard; 2001.

F. ASTM C475/C475M - Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board 2017 (Reapproved 2022).

G. ASTM C 630/C 630M - Standard Specification for Water-Resistant Gypsum Backing Board; 2000.

H. ASTM C645 - Standard Specification for Nonstructural Steel Framing Members 2018.

I. ASTM C754 - Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products 2020.

J. ASTM C840 - Standard Specification for Application and Finishing of Gypsum Board 2020.

K. ASTM C954 - Standard Specification for Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Steel Studs from 0.033 in. (0.84 mm) to 0.112 in. (2.84 mm) in Thickness 2022.

L. ASTM C1002 - Standard Specification for Steel Self-Piercing Tapping Screws for Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs 2022.

M. ASTM C1047 - Standard Specification for Accessories for Gypsum Wallboard and Gypsum Veneer Base 2019.

N. ASTM C1177/C1177M - Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing 2017.

O. ASTM C1178/C1178M - Standard Specification for Coated Glass Mat Water-Resistant Gypsum Backing Panel 2018.

P. ASTM C1278/C1278M - Standard Specification for Fiber-Reinforced Gypsum Panel 2017.

Q. ASTM C1280 - Standard Specification for Application of Exterior Gypsum Panel Products for Use as Sheathing 2018.

R. ASTM C1396/C1396M - Standard Specification for Gypsum Board 2017.

S. ASTM E72 - Standard Test Methods of Conducting Strength Tests of Panels for Building Construction; 2010.

T. GA-216 - Application and Finishing of Gypsum Panel Products 2021.

U. GA-600 - Fire Resistance and Sound Control Design Manual 2021.

V. Gypsum Construction Handbook, current edition.

W. UL (FRD) - Fire Resistance Directory Current Edition.

## 1.04 SYSTEM DESCRIPTION

A. Acoustic Attenuation for Interior Partitions Indicated as Acoustic: STC of 45-49 calculated in accordance with ASTM E 413, based on tests conducted in accordance with ASTM E 90.
   1. Construction designated partitions in accordance with manufacturer's written instructions, as submitted, for obtaining Sound Transmission Class (STC) rating as indicated on the drawings and in accordance with ASTM E90-81.

B. Fire Resistance for Interior Partitions Indicated as Fire Rated: Configure and install components as required by manufacturer's written instructions for types as required by designs.
   1. Designs with tests by other testing agency listed may be submitted for Gardner Spencer Smith Tench and Jarbeau, PC's acceptance, subject to prior acceptance by governing authorities and specified requirements.

## 1.05 DEFINITIONS

A. Gypsum Board Terminology: Refer to ASTM C 11 for definitions of terms for gypsum board assemblies not defined in this Section or in other referenced standards.

## 1.06 SUBMITTALS

A. See Division 01 - Administrative Requirements, for submittal procedures.

B. Shop Drawings: Indicate special details associated with fireproofing and acoustic seals.

C. Product Data: Provide data on metal framing, gypsum board, accessories, and joint finishing system.
   1. Provide manufacturer's data on partition head to structure connectors, showing compliance with requirements.
   2. Include specific requirements for fire-rated and acoustical-rated partitions.
   3. Mark manufacturer's literature to include only those products proposed for use.
   4. Include manufacturer's written confirmation of stud gauge and size necessary to meet requirements herein identified.
   5. Include details of acoustical sealant installation.

D. Product Data: Provide manufacturer's data on partition head to structure connectors, showing compliance with requirements.

E. Test Reports: For stud framing products that do not comply with ASTM C645 or ASTM C754, provide independent laboratory reports showing maximum stud heights at required spacings and deflections.

## 1.07 QUALITY ASSURANCE

A. Perform in accordance with ASTM C 840. Comply with requirements of GA-600 for fire-rated assemblies.

B. Installer Qualifications: Company specializing in performing gypsum board installation and finishing, with minimum 5 years of experience.

C. Fire-Test-Response Characteristics: For gypsum board assemblies with fire-resistance ratings, provide materials and construction identical to those tested in assembly indicated according to ASTM E 119 by independent testing and inspecting agency acceptable to authorities having jurisdiction.
   1. Fire-Resistance-Rated Assemblies: Indicated by design designations from FM's "Approval Guide, Building Products", UL's "Fire Resistance Directory", GA-600, "Fire Resistance Design Manual", or ITS's "Directory of Listed Products."

D. Sound Transmission Characteristics: For gypsum board assemblies with STC ratings, provide materials and construction identical to those tested in assembly indicated according to ASTM E 90 and classified according to ASTM E 413 by a qualified independent testing agency.
   1. STC-Rated Assemblies: Indicated by design designations from GA-600, "Fire Resistance Design Manual."

**1.08 DELIVERY, STORAGE AND HANDLING**

A. Deliver materials in original packages, containers, or bundles bearing brand name and identification of manufacturer or supplier.

B. Storage:
   1. Stack wallboard off floor on pallets or similar platforms providing continuous support for wallboard and prevent sagging. Stack wallboard so that long lengths are not over short lengths.
   2. Store joint compound in dry area; provide protection against freezing at all times.
   3. Do not overload floor systems.

**1.09 JOB CONDITIONS**

A. Environmental Limitations: Comply with ASTM C 840 requirements or gypsum board manufacturer's written recommendations, whichever are more stringent.
   1. Install wallboard only after building is enclosed. Maintain uniform temperature in 55 degree F. to 80 degree F. range for 48 hours before, during, and after installation and finishing.

B. Ventilation:
   1. Provide ventilation during and following joint treatment and adhesive applications.
   2. Use temporary air circulators in enclosed areas lacking natural ventilation.
   3. Under slow drying conditions, allow additional drying time between coats of joint treatment.
   4. Protect installed materials from drafts during hot, dry weather.

**PART 2 PRODUCTS**

**2.01 GYPSUM BOARD ASSEMBLIES**

A. Provide completed assemblies complying with ASTM C840 and GA-216.

**2.02 GENERAL**

A. All products shall be totally Asbestos-Free.

**2.03 METAL FRAMING MATERIALS**

A. Manufacturers - Metal Framing, Connectors, and Accessories:
   1. Clarkwestern Dietrich Building Systems LLC: www.clarkdietrich.com.
   2. Consolidated Systems, Inc: www.csisteel.com.
   3. Dale/Incor: www.daleincor.com.
   4. Dietrich Metal Framing: www.dietrichindustries.com.
   5. National Gypsum Company: www.nationalgypsum.com.
   6. Suspension Corporation: www.scafco.com.
   7. Unimast, Inc: www.unimast.com.

8. Substitutions: See Division 01 - Product Requirements.

B. Metal Framing Connectors and Accessories:
1. Same manufacturer as framing.

**2.04 STEEL SUSPENDED CEILING AND SOFFIT FRAMING**

A. Components, General: Comply with ASTM C 754 for conditions indicated.

B. Non-Loadbearing Framing System Components: ASTM C 645; galvanized sheet steel, of size and properties necessary to comply with ASTM C 754 for the spacing indicated, with maximum deflection of wall framing of L/240 at 5 psf. Except as indicated on the drawings stud gauge shall be minimum 20 ga.
1. Exception: The minimum metal thickness and section properties requirements of ASTM C 645 are waived provided steel of 40 ksi minimum yield strength is used, the metal is continuously dimpled, the effective thickness is at least twice the base metal thickness, and maximum stud heights are determined by testing in accordance with ASTM E 72 using assemblies specified by ASTM C 754.
2. Studs: "C" shaped with flat or formed webs with knurled faces.
   a. ASTM C 645.
   b. Minimum Base Metal Thickness: 0.0179-inch (0.45-mm).
   c. Depth: As indicated.
3. Runners: U shaped, sized to match studs.
4. Ceiling Channels: C-shaped.
   a. 0.0538-inch (1.37-mm) bare steel thickness, with minimum 1/2-inch (12.7-mm) wide flange, 3/4-inch (19.1-mm) deep.
5. Cold-Rolled Channel Bridging:
   a. 0.0538-inch (1.37-mm) bare steel thickness, with minimum 1/2-inch (12.7-mm) wide flange.
   b. Depth: 1-1/2 inches (38.1 mm).
   c. Clip Angle: 1-1/2 by 1-1/2 inch (38.1 by 38.1 mm), 0.068-inch (1.73-mm) thick, galvanized steel.
6. Furring: Hat-shaped sections, minimum depth of 7/8 inch (22.2-mm).
7. Resilient Furring Channels: Asymmetrical or hat shaped.
   a. 1/2-inch (12.7-mm) deep, steel sheet members designed to reduce sound transmission.
   b. Configuration: Asymmetrical or hat shaped, with face attached to single flange by slotted leg (web) or attached to two flanges by slotted or expanded metal legs.
8. Deep-Leg Deflection Track: ASTM C 645 top runner with 2-inch (50.8-mm) deep flanges.
9. Flat Strap and Backing Plate: Steel sheet for blocking and bracing in length and width indicated.
   a. Minimum Base Metal Thickness: 0.0598-inch (1.5-mm).

C. Ceiling Hangers: Type and size as specified in ASTM C754 for spacing required.
1. See Section 09 5100 - Acoustical Ceilings for suspension system.
2. Tie Wire: ASTM A 641/A 641M, Class 1 zinc coating, soft temper, 0.0625-inch (1.59-mm) diameter wire, or double strand of 0.0475-inch (1.21-mm) diameter wire.
3. Rod Hangers: ASTM A 510 (ASTM A 510M), mild carbon steel.
   a. Diameter: 1/4-inch (6.34-mm).
   b. Protective Coating: Corrosion-resistant paint.
4. Flat Hangers: Commercial-steel sheet, ASTM A 366/A 366M, with corrosion-resistant paint finish.
   a. Size: 1 by 3/16-inch (25.4 by 4.76-mm) by length indicated.
5. Angle Hangers: ASTM A 653/A 653M, G60 (Z180), hot-dip galvanized commercial-steel sheet.
   a. Minimum Base Metal Thickness: 0.0312-inch (0.79-mm).
   b. Size: 7/8 by 1-3/8 inches (22.2 by 34.9 mm)

D. Fasteners for Metal Framing: Of type, material, size, corrosion resistance, holding power, and other properties required to fasten steel members to substrates.

E. Partition Head to Structure Connections: Provide mechanical anchorage devices that accommodate deflection using slotted holes, screws and anti-friction bushings, preventing rotation of studs while maintaining structural performance of partition.
   1. Structural Performance: Maintain lateral load resistance and vertical movement capacity required by applicable code, when evaluated in accordance with AISI S100-12.
   2. Material: ASTM A653/A653M steel sheet, SS Grade 50/340, with G60/Z180 hot dipped galvanized coating.
   3. Provide Z-clip components UL-listed for use in UL-listed fire-rated head of partition joint systems and fire proofing of fire rating and movement required.
   4. Deflection and Firestop Track:
      a. Provide mechanical anchorage devices as described above that accommodate deflection while maintaining the fire-rating of the wall assembly.
      b. Provide top runner manufactured to allow partition heads to expand and contract with movement of 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) Product: Subject to compliance with requirements, provide one of the following:
            (a) Fire Trak Corp.; Product: Fire Trak.
            (b) Metal-Lite, Inc.; Product: The System.
            (c) Clarkwestern Dietrich Building Systems LLC; MaxTrak.

**2.05 BOARD MATERIALS**

A. Manufacturers - Gypsum-Based Board:
   1. American Gypsum Company: www.americangypsum.com.
   2. Georgia-Pacific Gypsum: www.gpgypsum.com.
   3. National Gypsum Company: www.nationalgypsum.com.
   4. USG Corporation: www.usg.com.
   5. Substitutions: See Division 01 - Product Requirements.

B. Gypsum Wallboard: Paper-faced gypsum panels as defined in ASTM C1396/C1396M; sizes to minimize joints in place; ends square cut.
   1. Application: Use for vertical surfaces and ceilings, unless otherwise indicated.

C. Gypsum Wallboard: ASTM C 1396/C 1396M. Sizes to minimize joints in place; ends square cut.
   1. Regular Type:
      a. Application: Use for vertical surfaces and ceilings, unless otherwise indicated.
      b. Thickness: 1/2 inch, or as indicated.
      c. Edges: Tapered.
   2. Fire Resistant Type: Complying with Type X requirements; UL or WH rated.
      a. At Assemblies Indicated with Fire-Rating: Use type required by indicated tested assembly; if no tested assembly is indicated, use Type X.
      b. Application: Where required for fire-rated assemblies, unless otherwise indicated.
      c. Thickness: 1/2 inch, or as indicated.
      d. Edges: Tapered.
   3. Flexible Board: Special flexible board to bend fit tight radii.
      a. Application: Where required for tight radii to be more flexible than standard regular type panels of the same thickness, unless otherwise indicated. Apply in double layer at curved assemblies.
      b. Thickness: 1/4 inch, or as indicated.
      c. Edges: Tapered.
   4. Ceiling Board: Special sag-resistant type.
      a. Application: Ceilings, unless otherwise indicated.

b. Thickness: 1/2 inch.
c. Edges: Tapered.
d. Acceptable Manufacturers:
1) Basis of design: USG Corp; Fiberock Brand Abuse-Resistant Gypsum Fiber Panels.
2) James Hardie, Inc; Hardirock.
3) National Gypsum Company; Gold Bond Hi-Abuse Wallboard.
e. Core Type: Regular and Type X, or as indicated.
f. Thickness: 1/2 inch, or as indicated.

D. Water-Resistant Type: Sizes to minimize joints in place.
1. Water-Resistant Gypsum Backing Board: ASTM C 1396/C 1396M; ends square cut.
a. Application: Vertical surfaces behind thinset tile, except in wet areas.
b. Core Type: Regular and Type X, as indicated.
c. Thickness: 1/2 inch and 5/8 inch, as indicated.
d. Edges: Tapered.
2. Cementitious Backer Units: ANSI A118.9; ends square cut.
a. Acceptable Manufacturers:
1) Basis of design: USG Corp; DUROCK Cement Board.
b. Application: Vertical surfaces behind thinset tile, in wet areas.
c. Core Type: Regular.
d. Thickness: 1/2 inch and 5/8 inch, as indicated.
e. Edges: Square.

E. Exterior Sheathing and Ceiling Board: Sizes to minimize joints in place; ends square cut.
1. Manufacturer: G-P Gypsum Corporation: DensGlass Gold Exterior Guard.
a. Core Type: Type X.
b. Thickness: 5/8 inch, or as indicated.
c. Edges: V-shaped tongue and groove, for horizontal application and square, for vertical application.

## 2.06 FIBERGLASS REINFORCED BOARD MATERIALS

A. Cementitious Backer Board: ANSI A118.9, aggregated portland cement panels with glass fiber mesh embedded in front and back surfaces, 1/2 inch thick.

## 2.07 ACCESSORIES

A. Acoustic Insulation: ASTM C 665; preformed glass fiber, friction fit type, unfaced. Thickness 2" or as indicated on the drawings.
1. Contractor's option: Based on sound ratings and fire-resistance ratings required for assemblies, Contractor may select glass fiber or mineral wool sound attenuation materials as follows:
a. Glass fiber attenuation batts:
1) Acceptable products:
(a) CertainTeed Corp., Sound Control Batts.
(b) Fibrex, Sound Attenuation Batts.
(c) Owens-Corning Corp., Sound Attenuation Batts.
2) Characteristics:
(a) Type: Unfaced fiberglass batts for friction fit between studs.
(b) Surface burning characteristics: Maximum 25 flame spread and 50 smoke development when tested in accord with ASTM E84-97a.
(c) Assembly STC: As indicated in the drawings.
(d) Thickness: As indicated in the drawings.
b. Mineral wool sound attenuation blankets:
1) Acceptable products:
(a) Fibrex, Inc., FBX Sound Control Fire Blankets.

(b) Partek Insulations, Inc., Paroc Sound Attenuation Batts.
(c) USG Interiors, Inc., Thermafiber Sound Attenuation Fire Blankets (SAFB).

2) Characteristics:
(a) Type: Minimum 2.5 pcf density, paperless, semi-rigid mineral wool fiber blanket complying with ASTM C665-95, Type 1.
(b) Surface burning characteristics: Maximum 15 flame spread and smoke development when tested in accord with ASTM E84-97a.
(c) Assembly STC: As indicated in the drawings.
(d) Assembly fire-resistance rating: Meeting UL assemble noted in the drawings.

B. Acoustical tape: Closed cell polyvinyl chloride foam tape, 1/4" thickness by 1" wide.

C. Finishing Accessories: ASTM C1047, galvanized steel or rolled zinc, unless noted otherwise.
1. Types: As detailed or required for finished appearance.
2. Shapes:
a. Cornerbead: Use at outside corners.
b. LC-Bead: J-shaped; exposed long flange receives joint compound; use at exposed panel edges.
c. L-Bead; L-shaped; exposed long flange receives joint compound; use where indicated.
d. U-Bead; J-shaped; exposed short flange does not receive joint compound; use where indicated.
e. Expansion (control) Joint: Use where indicated.
f. Curved-Edge Cornerbead: With notched or flexible flanges; use at curved openings and where indicated.

D. Joint Materials: ASTM C475 and as recommended by gypsum board manufacturer for project conditions.
1. Interior Gypsum Board Tape: 2 inch wide, coated glass fiber tape for joints and corners, except as otherwise indicated.
a. Tile Backing Panels: As recommended by panel manufacturer.
2. Joint Compound for Interior Gypsum Board: For each coat use formulation that is compatible with other compounds applied on previous or successive coats.
a. Prefilling: At open joints, rounded or beveled panel edges, and damage surface areas, use setting-type taping compound.
b. Embedding and First Coat: For embedding tape and first coat joints, fasteners, and trim flanges, use setting-type taping compound or drying-type, all purpose compound.
1) Use setting-type compound for installing paper-faced metal trim accessories.
c. Fill Coat: For second coat, use drying-type, all purpose compound.
d. Finish Coat: For third coat, use drying-type, all-purpose compound.
e. Skim Coat: For final coat of Level 5 finish, use drying-type, all purpose compound.
3. Joint Compound for Tile Backing Panels:
a. Water-Resistant Gypsum Backing Board: Use setting-type taping and setting-type, sandable topping compounds.
b. Cementitious Backer Units: As recommended by manufacturer.

E. Corner reinforcement: Galvanized steel with 1-1/4" wide fine expanded mesh flanges.

F. Metal jamb, ceiling and casing trim: Manufacturer's standard "L" and "U" shaped galvanized members with fine expanded mesh flanges; "mud-in" type for finishing with joint compound.

G. Control joints: Roll-formed galvanized steel.

H. Furring channels: Minimum 25 ga. galvanized steel, 7/8" deep by 1-3/8" face width.

I. "Z" furring channels: Minimum 25 ga. galvanized steel, 1" deep.

J. Cold-rolled channels: Minimum 16 ga. steel, galvanized or black asphaltum-painted, 1-1/2" deep.

K. Furring channel clips: Manufacturer's standard type for attachment of furring channels to cold-rolled runner channels.

L. Resilient channel: Galvanized steel, manufacturer's standard type.

M. Furring brackets: Minimum 20 ga. galvanized steel, for attaching 3/4" furring channels to masonry walls.

N. Special trim shapes:
   1. Acceptable manufacturers; subject to compliance with specified requirements:
      a. Basis of design: Fry Reglet Corp., shapes including, but not limited to, "F" Reveal Molding and Radiused Corner Trim.
      b. MM Systems Corp
      c. Gordon, Inc.
      d. Pittcon Industries, Inc.
   2. Characteristics:
      a. Material: Manufacturer's standard aluminum alloy.
      b. Finish: Painted finish, Color selected by Gardner Spencer Smith Tench and Jarbeau, PC.
      c. Shapes: As indicated on the drawings.

O. High Build Drywall Surfacer: Vinyl acrylic latex-based coating for spray application, designed to take the place of skim coating and separate paint primer in achieving Level 5 finish.

P. Screws for Fastening of Gypsum Panel Products to Cold-Formed Steel Studs Less than 0.033 inch in Thickness and Wood Members: ASTM C1002; self-piercing tapping screws, corrosion resistant.

Q. Screws for Fastening of Gypsum Panel Products to Steel Members from 0.033 to 0.112 inch in Thickness: ASTM C954; steel drill screws, corrosion resistant.

R. Screws: ASTM C 1002; self-piercing tapping type, unless otherwise indicated.
   1. Use screws complying with ASTM C 954 for fastening panels to steel members from 0.033 to 0.112 inch (0.84 to 2.84 mm) thick.
   2. For fastening cementitious backer units, use screws of type and size recommended by panel manufacturer.

S. Isolation Strip at Exterior Walls:
   1. Asphalt-Saturated Organic Felt: ASTM D 226, Type I (no.15 asphalt felt), nonperforated.

T. Vapor Retarders:
   1. Polyethylene Vapor Retarder: ASTM D 4397, 6 mils thick, with maximum permeance rating of 0.13 perm.
   2. Fire-Retardant, Reinforced-Polyethylene Vapor Retarders: 2 outer layers of polyethylene film laminated to an inner reinforcing layer consisting of either a nonwoven grid of nylon cord or polyester scrim and weighing not less than 22 lb/1000 sq. ft., with maximum permeance rating of 0.1317 perm, and flame-spread and smoke-developed indices of not more than 5 and 60, respectively.
      a. Products: Subject to compliance with requirements, provide one of the following:
         1) Global Plastic Sheeting; Poly Scrim 6FR.
         2) Raven Industries, Inc.; DURA-SKRIM 2FR.
         3) Reef Industries, Inc.; Griffolyn T-55 FR.
   3. Vapor-Retarder Tape: Pressure-sensitive tape of type recommended by vapor-retarder manufacturer for sealing joints and penetrations in vapor retarder.

## PART 3 EXECUTION

### 3.01 EXAMINATION

A. Verify that project conditions are appropriate for work of this section to commence.

B. 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. Proceed with installation only after unsatisfactory conditions have been corrected.

**3.02 PREPARATION**

A. Suspended Ceilings: Coordinate installation of ceiling suspension systems with installation of overhead structure to ensure that inserts and other provisions for anchorages to building structure have been installed to receive ceiling hangers at spacing required to support ceilings and that hangers will develop their full strength.
   1. Furnish 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-on fire-resistive materials. Where offset anchor plates are required, provide continuous plates fastened to building structure not more than 24 inches (600 mm) o.c.
   2. After sprayed fire-resistive materials are applied, remove them only to the extent necessary for installation of gypsum board assemblies and without reducing the fire-resistive material thickness below which is required to obtain fire-resistance rating indicated. Protect remaining fire-resistive materials from damage.

**3.03 FRAMING INSTALLATION, GENERAL**

A. Metal Framing: Install in accordance with ASTM C754 and manufacturer's instructions.

B. Suspended Ceilings and Soffits: Space framing and furring members as indicated.
   1. Level ceiling system to a tolerance of 1/1200.
   2. Laterally brace entire suspension system.
   3. Install bracing as required at exterior locations to resist wind uplift.

C. Runners:
   1. Attach at floor and underside of structural deck with specified fasteners.
   2. Where partitions are indicated to stop at finish ceiling, attach to ceiling suspension system using 1/8" toggle bolts or sheet metal screws spaced at 1'-4" o.c., maximum, where partition aligns with ceiling grid. Where partition does not align with grid, attach at each intersection with grid.
   3. Install runners indicated to receive sound attenuation blankets in two beads of acoustical sealant, continuous.

D. Studs: Space studs at 16 inches on center.
   1. Extend partition framing to structure where indicated and to ceiling in other locations.
   2. Partitions Terminating at Ceiling: Attach ceiling runner securely to ceiling track in accordance with manufacturer's instructions and as noted herein.
   3. Provide double studs at interior and exterior corners, expansion joints, partition termination and adjacent to door and borrowed lite openings in partitions. Locate next stud not more than 6" from double studs.
   4. Secure abutting and intersecting walls with fasteners through stud flanges.
   5. For horizontal reinforcement at door and borrowed lite frames, install cut-to-length runner sections with slit flanges secured to studs.
   6. Install acoustical tape on metal studs which abut other studs or dissimilar surfaces in walls to receive around attenuation blankets.

E. Furring:
   1. Attach to masonry substrate with fasteners spaced at 2'-0" o.c. on alternating furring channel flange.
   2. Position channels vertically, spaced at 2'-0" o.c., maximum.

3. Partitions Terminating at Structure: Attach top runner to structure, maintain clearance between top of studs and structure, and connect studs to track using specified mechanical devices in accordance with manufacturer's instructions; verify free movement of top of stud connections; do not leave studs unattached to track.

F. Steel Plate Supports: Install minimum 20 gauge, 6 inch width sheet metal plates attached to metal studs of wallboard partition at stair handrail locations. Position plates at handrail height and rise for handrail bracket attachment. Attach to metal framing and sheet metal screws; provide plates in lengths to span across minimum two studs at bracket attachment points.

G. Openings: Reinforce openings as required for weight of doors or operable panels, using not less than double studs at jambs.

H. Standard Wall Furring: Install at concrete walls scheduled to receive gypsum board, not more than 4 inches from floor and ceiling lines and abutting walls. Secure in place on alternate channel flanges at maximum 24 inches on center.

I. Install supplementary framing, blocking, and bracing at terminations in gypsum board assemblies to support fixtures, equipment services, heavy trim, grab bars, toilet accessories, furnishings, or similar construction. Comply with details indicated and with gypsum board manufacturer's written recommendations or, if none available, with United States Gypsum's "Gypsum Construction Handbook."

J. Isolate steel framing from building structure at locations indicated to prevent transfer of loading imposed by structural movement.
   1. Isolate ceiling assemblies where they abut or are penetrated by building structure.
   2. Isolate partition framing and wall furring where it abuts structure, except at floor. Install slip-type joints at head of assemblies that avoid axial loading of assembly and laterally support assembly.
      a. Use deep-leg deflection track where indicated.
      b. Use firestop track in fire rated partitions.
   3. Do not bridge building control and expansion joints with steel framing or furring members. Frame both sides of joints independently.

## 3.04 STEEL SUSPENDED CEILING AND SOFFIT FRAMING

A. Suspend ceiling hangers from building structure as follows:
   1. Install hangers plumb and free from contact with insulation or other objects within ceiling plenum that are not part of supporting structural or ceiling suspension system. Splay hangers only where required to miss obstructions and offset resulting horizontal forces by bracing, countersplaying, or other equally effective means.
   2. Where width of ducts and other construction within ceiling plenum produces hanger spacings that interfere with the location of hangers required to support standard suspension system members, install supplemental suspension members and hangers in form of trapezes or equivalent devices. Size supplemental suspension members and hangers to support ceiling loads within performance limits established by referenced standards.
   3. Secure wire hangers by looping and wire-tying, either directly to structure or to inserts, eyescrews, or other devices and fasteners that are secure and appropriate for substrate, and in manner that will not cause them to deteriorate or otherwise fail.
   4. Secure rod, flat, or angle hangers to structure, including intermediate framing members, by attaching to inserts, eyescrews, or other devices and fasteners that are secure and appropriate for structure and hanger, and in a manner that will not cause hangers to deteriorate or otherwise fail.
   5. Do not support ceilings directly from permanent metal forms. Furnish cast-in-place hanger inserts that extend through forms.
   6. Do not attach hangers to steel deck tabs.
   7. Do not attach hangers to steel roof deck. Attach hangers to structural members.
   8. Do not connect or suspend steel framing from ducts, pipes, or conduit.

B. Installation Tolerances: Install steel framing components for suspended ceilings so members for panel attachment are level to within 1/8 inch in 12 feet (3 mm in 3.6 m) measured lengthwise on each member and transversely between parallel members.

C. Sway-brace suspended steel framing for "clouds" with hangers used for support.

D. Wire-tie furring channels to supports.

E. Install suspended steel framing components in sizes and spacings indicated, but not less than required by the referenced steel framing and installation standards.
   1. Hangers: 48 inches (1219 mm) o.c.
   2. Channels (Main Runners): 48 inches (1219 mm) o.c.
   3. Furring Channels (furring Members): 16 inches (406 mm) o.c.

F. Grid Suspension System: Attach perimeter wall track or angle where grid suspension system meets vertical surfaces. Mechanically join main beam and cross-furring members to each other and butt-cut to fit into wall track.

**3.05 STEEL PARTITION AND SOFFIT FRAMING**

A. Install tracks (runners) at floors, ceilings, and structural walls and columns where gypsum board assemblies abut other construction.
   1. Where studs are installed directly against exterior walls, install asphalt-felt isolation strip between studs and wall.

B. Extend partitions framing full height to structural supports or substrates above suspended ceilings, except where partitions are indicated to terminate at suspended ceilings. Continue framing over frames for doors and openings and frame around ducts penetrating partitions above ceiling to provide support for gypsum board.
   1. Cut studs 1/2 inch (13 mm) short of full height to provide perimeter relief.
   2. For fire-resistance-rated and STC-rated partitions that extend to the underside of floor/roof slabs and decks or other continuous solid-structure surfaces to obtain ratings, install framing around structural and other members extending below floor/roof slabs and decks, as needed to support gypsum board enclosures and to make partitions continuous from floor to underside of solid structure.
   3. Stud size: As indicated on the drawings.
   4. Stud gauge: As required by manufacturer's written product data for heights and conditions of use, with a maximum allowable deflection of L/240, except framing supporting ceramic tile finish shall be minimum 20 gauge.
   5. Head: Provide Z-clip members at all partitions that extend to structural supports or the underside of floor/roof slabs and decks that are required to be provided with sprayed applied fireproofing.

C. Install steel studs and furring at the following spacings:
   1. Single-Layer Construction: 16 inches (406 mm) o.c.
   2. Multi-Layer Construction: 16 inches (406 mm) o.c.
   3. Cementitious backer Units: 16 inches (406 mm) o.c.

D. Install steel studs so flanges point in the same direction and leading edge or end of each panel can be attached to open (unsupported) edges of stud flanges first.

E. Curved Partitions:
   1. Cut top and bottom track (runners) through leg and web at 2-inch (50-mm) intervals for arc length. In cutting lengths of track, allow for uncut straight lengths of not less than 12 inches (300 mm) at ends of arcs.
   2. Bend track to uniform curve and locate straight lengths so they are tangent to arcs.
   3. Support outside (cut) leg of track by clinching steel sheet strip, 1-inch (25-mm) high-by-thickness of track metal, to inside of cut legs using metal lock fasteners.
   4. Begin and end each arc with a stud, and space intermediate studs equally along arcs at stud spacing recommended in writing by gypsum board manufacturer for radii indicated. On straight lengths of not less than 2 studs at ends of arcs, place studs 6 inches (150 mm)

o.c.

F. Frame door openings to comply with GA-600 and with gypsum board manufacturer's applicable written recommendations, unless otherwise indicated. 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.
   1. Install two studs at each jamb.
   2. Install cripple studs at head adjacent to each jamb stud, with a minimum 1/2-inch (13-mm) clearance from jamb stud to allow for installation of control joint.
   3. Extend jamb studs through suspended ceilings and attach to underside of floor/roof structure above.

G. Frame openings other than door openings the same as required for door openings, unless otherwise indicated. Install framing below sills of openings to match framing required above door heads.

H. Polyethylene Vapor Retarder: Extend vapor retarder to extremities of areas to be protected from vapor transmission. Secure in place with adhesives. Extend vapor retarder to cover miscellaneous voids in insulated substrates, including those filled with loose-fiber insulation.
   1. Set vapor-retarder-faced units with vapor retarder to warm side of construction. Do not obstruct ventilation spaces, except for firestopping.
   2. Seal overlapping joints in vapor retarders with adhesives or vapor-retarder tape according to vapor-retarder manufacturer’s instructions. Seal butt joints and fastener penetrations with vapor-retarder tape. Locate all joints over framing members or other solid substrates.
   3. Seal joints caused by pipes, conduits, electrical boxes, and similar items penetrating vapor retarders with vapor-retarder tape to create an airtight seal between penetrating objects and vapor retarder.
   4. Repair any tears or punctures in vapor retarders immediately before concealment by other work. Cover with vapor-retarder tape or another layer of vapor retarder.

**3.06 BOARD INSTALLATION**

A. Comply with ASTM C 840, GA-216, and manufacturer's instructions. Install to minimize butt end joints, especially in highly visible locations.

B. Install sound attenuation blankets before installing gypsum panels, unless blankets are readily installed after panels have been installed on one side.

C. Install ceiling board panels across framing to minimize the number of abutting end joints and to avoid avoid abutting end joints in central area of each ceiling. Stagger abutting end joints of adjacent panels not less than one framing member.

D. Install gypsum panels with face side out. Butt panels together for a light contact at edges and ends with not more than 1/16 inch (1.5 mm) of open space between panels. Do not force into place.

E. Locate edge and end joints over supports, except in ceiling applications where intermediate supports or gypsum board back-blocking is provided behind end joints. Do not place tapered edges against cut edges or ends. Stagger vertical joints on opposite sides of partitions. Do not make joints other than control joints at corners of framed openings.

F. Attach gypsum panels to steel studs so leading edge or end of each panel is attached to open (unsupported) edges of stud flanges first.

G. Attach gypsum panels to framing provided at openings and cutouts.

H. Form control and expansion joints with space between edges of adjoining gypsum panels.

I. Cover both faces of steel stud partition framing with gypsum panels in concealed spaces (above ceilings, etc.), except in chases braced internally.
   1. Unless concealed application is indicated or required for sound, fire, air, or smoke ratings, coverage may be accomplished with scraps of not less than 8 sq. ft. (0.7 sq. m.) in area.
   2. Fit gypsum panels around ducts, pipes, and conduits.

3. Where partitions intersect open concrete coffers, concrete joist, and other structural members projecting below underside of floor/roof slabs and decks, cut gypsum panels to fit profile formed by coffers, joist, and other structural members; allow 1/4 to 3/8 inch (6.4 to 9.5 mm) wide joints to install sealant.

J. Isolate perimeter of non-load-bearing gypsum board partitions at structural abutments, except floors. Provide 1/4 to 1/2 inch (6.4 to 12.7 mm) wide spaces at these locations, and trim edges with U-bead edge trim where edges of gypsum panels are exposed. Seal joints between edges and abutting structural surfaces with acoustical sealant.
   1. Seal joints between edges and abutting structural surfaces of fire-rated partitions with firestopping sealant.

K. STC-Rated Assemblies: Seal construction at perimeters, behind control and expansion joints, and at openings and penetrations with a continuous bead of acoustical sealant. Install acoustical sealant at both faces of partitions at perimeters and through penetrations. Comply with ASTM C 919 and manufacturer's written recommendations for locating edge trim and closing off sound-flanking paths around or through gypsum board assemblies including sealing partitions above acoustical ceilings.

L. Space fasteners in gypsum panels according to referenced gypsum board application and finishing standard and manufacturer's written recommendations.
   1. Space screws a maximum of 12 inches (304.8 mm) o.c. for vertical applications.

M. Space fasteners in panels that are tile substrates a maximum of 8 inches (203.2 mm) o.c.

## 3.07 PANEL APPLICATION METHODS

A. Single-Layer Non-Rated:
   1. Ceilings: Apply wallboard with long dimension at right angles to framing. Terminate edges of wallboard running parallel to framing on framing members.
   2. Walls: On partitions/walls, apply gypsum panels in direction to minimize end joints, unless otherwise required by fire-resistance-rated assembly.
      a. Apply wallboard vertically or horizontally at Contractor's option, except as required by wallboard manufacturer's product data for system designs, including fire-rated and acoustically-rated partitions.
      b. Stagger joints in opposite sides of partitions.
      c. At stairwells and other high walls, install panels horizontally, unless otherwise required by fire-resistance-rated assembly.
      d. Terminate edges of wallboard running parallel to framing, furring on framing or furring members.
      e. On Z-furring members, apply gypsum panels vertically (parallel to framing) with no end joints. Locate edge joints over furring members.
      f. Fastening: Attach wallboard using fasteners specified, at spacings required by manufacturer's product data.

B. Multi-Layer Non-Rated:
   1. Base layer:
      a. Ceilings: Apply base layer with long dimension at right angle to framing. Terminate edges of wallboard running parallel to framing on framing members.
      b. Walls: Apply base layer vertically. Terminate edges of wallboard running parallel to framing, furring on framing or furring members. Stagger vertical joints on opposite sides of partitions.
      c. Fastening: Attach wallboard using fasteners specified, at spacings required by manufacturer's product data.
   2. Face Layer:
      a. Apply face layer at right angle to base layer with minimum 10" offset in parallel base and face layer joints.
      b. Fastening: Attach wallboard using fasteners specified, at spacings required by manufacturer's product data.

C. Curved Construction:
   1. Install panels horizontally and unbroken, to the extent possible, across curved surface plus 12-inch (300-mm) long straight sections at ends of curves and tangent to them.
   2. Wet gypsum panels on surfaces that will become compressed where curve radius prevents using dry panels. Comply with gypsum board manufacturer's written recommendations for curved radii, wetting methods, stacking panels after wetting, and other preparations that precede installing wetted gypsum panels.
   3. On convex sides of partitions, begin installation at one end of curved surface and fasten gypsum panels to studs as they are wrapped around curve. On concave side, start fastening panels to stud at center of curve and work outward to panel ends. Fasten panels to framing with screws spaced 12 inches (300 mm) o.c.
   4. For multi-layer construction, fasten base layer to studs with screws 16 inches (400 mm) o.c. Center gypsum board face layer over joints in base layer, and fasten to studs with screws spaced 12 inches (300 mm) o.c.
   5. Allow wetted gypsum panels to dry before applying joint treatment.

D. Tile Backing Panels:
   1. Water-Resistant Gypsum Backing Board: Install at plumbing fixture walls and where indicated. Install with 1/4-inch (6.4-mm) gap where panels abut other construction or penetrations.
   2. Backer Units: ANSI A108.11, at showers, tubs, and where indicated.
   3. Areas Not Subject to Wetting: Install standard gypsum board panels to produce a flat surface except at showers, tubs, kitchens, and other wet locations indicated to receive water-resistant panels.

E. Fire-Rated Construction: Install gypsum board in strict compliance with requirements of assembly listing.
   1. For fire-rated and acoustically rated construction, comply with requirements of tested assemblies scheduled on the drawings.
   2. Continue all required components of fire-rated and acoustically rated wall assembly to overhead structure. Apply joint tape and one coat of compound to wallboard joints concealed from view in completed work.
   3. Seal openings and penetrations in fire-rated construction as specified in Firestopping section.
   4. Identify fire-rated partitions above finished ceiling line with stenciled red lettering reading, "FIRE AND SMOKE BARRIER - PROTECT ALL OPENINGS". Apply lettering in approximately 1-1/2" high letters. Space approximately 10'-0" o.c. Apply to both sides of partitions.

F. Exterior Sheathing: Comply with ASTM C1280. Install sheathing horizontally, with edges butted tight and ends occurring over firm bearing.

G. Cementitious Backing Board: Install over steel framing members and plywood substrate where indicated, in accordance with ANSI A108/A118/A136.1 and manufacturer's instructions.

**3.08 INSTALLATION OF TRIM AND ACCESSORIES**

A. General: For trim with back flanges intended for fasteners, attach to framing with same fasteners used for panels. Otherwise attach trim according to manufacturer's written instructions.

B. Control Joints: Place control joints consistent with lines of building spaces and as indicated. Provide supplementary framing and materials as required.
   1. Not more than 30 feet apart on walls and ceilings over 50 feet long.
   2. Construct control joints in fire rated partitions in accordance with manufacturer's details.
   3. Install control joints according to ASTM C 840 and in specific locations shown by Gardner Spencer Smith Tench and Jarbeau, PC as well as approved locations by Gardner Spencer Smith Tench and Jarbeau, PC for visual effect.
   4. At exterior soffits, not more than 30 feet apart in both directions.

C. Corner Beads: Install at external corners, using longest practical lengths.

D. Radiused Corner Trim: Install at external corners where indicated on the drawings.

E. Edge Trim: Install at locations where gypsum board abuts dissimilar materials.

F. Ceiling Transition Cove: Install at locations where ceiling heights change and suspended acoustical tiles abut gypsum board ceilings or masonry walls and as indicated on the drawings. Install as recommended by the cove manufacturer.

**3.09 JOINT TREATMENT**

A. Tape, fill, and sand exposed joints, edges, and corners to produce smooth surface ready to receive finishes.
   1. Feather coats of joint compound so that camber is maximum 1/32 inch.

B. Where Level 5 finish is indicated, spray apply high build drywall surfacer over entire surface after joints have been properly treated; achieve a flat and tool mark-free finish.

C. Fill and finish joints and corners of cementitious backing board as recommended by manufacturer.

**3.10 TOLERANCES**

A. Maximum Variation of Finished Gypsum Board Surface from True Flatness: 1/8 inch in 10 feet in any direction.

**3.11 FIELD QUALITY CONTROL**

A. Above Ceiling Observation: Before Contractor installs gypsum board ceilings, Gardner Spencer Smith Tench and Jarbeau, PC will conduct an above ceiling observation and report deficiencies in the Work observed. Do not proceed with installation of gypsum board ceiling support framing until deficiencies have been corrected.
   1. Notify Gardner Spencer Smith Tench and Jarbeau, PC seven days in advance of date and time when Project, or part of Project, will be ready for above ceiling observation.
   2. Before notifying Gardner Spencer Smith Tench and Jarbeau, PC, complete the following in areas to receive gypsum board ceilings.
      a. Installation of 80 percent of lighting fixtures, powered for operation.
      b. Installation, insulation, and leak and pressure testing of water piping system.
      c. Installation of air-duct system.
      d. Installation of air devices.
      e. Installation of mechanical system control-air tubing.
      f. Installation of ceiling support framing.

**3.12 FINISH LEVEL SCHEDULE**

A. Level 1: Above finished ceilings concealed from view.
   1. Embed tape at joints in ceiling plenum areas, concealed areas, and where indicated, unless a higher level of finish is required for fire-resistance-rated assemblies and sound assemblies.
   2. Surface shall be free of excess joint compound. Tool marks and ridges are acceptable.

B. Level 2: Utility and tile areas and areas behind cabinetry.
   1. Embed tape and apply separate first coat of joint compound to tape, fasteners, and trim flanges for at least 12 inches in width.
   2. Surface shall be free of excess joint compound. Tool marks and ridges are acceptable.

C. Level 3: Walls scheduled to receive textured wall finish.
   1. Embed tape and apply separate first, and finish coats of joint compound to tape, fasteners, and trim flanges for at least 18 inches in width.
   2. All joint compound shall be smooth and free of tool marks and ridges.

D. Level 4: Walls and ceilings scheduled to receive flat, eggshell or semi-gloss paint finish.
   1. Embed tape and apply separate first, fill, and finish coats of joint compound to tape, fasteners, and trim flanges for at least 24 inches in width, where light-textured finish

wallcoverings and flat eggshell or semi-gloss paints are indicated.

2. All joint compound shall be smooth and free of tool marks and ridges.

E. Level 5: Walls and ceilings scheduled to receive gloss paint finish.

1. Embed tape and apply separate first, fill, and finish coats of joint compound to tape, fasteners, and trim flanges for at least 24 inches in width, and apply skim coat of joint compound over entire surface where semigloss or gloss paint and surfaces subject to severe lighting are indicated.

**END OF SECTION**

# SECTION 09 5100
# ACOUSTICAL CEILINGS

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Suspended metal grid ceiling system.

B. Acoustical units.

C. Supplementary acoustical insulation above ceiling.

### 1.02 RELATED REQUIREMENTS

A. Section 09 2116 - Gypsum Board Assemblies: Acoustical insulation.

B. Division 23: Mechanical.

C. Division 26: Electrical.

### 1.03 REFERENCE STANDARDS

A. ASTM C635/C635M - Standard Specification for Manufacture, Performance, and Testing of Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings 2022.

B. ASTM C636/C636M - Standard Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-In Panels 2019.

C. ASTM E580/E580M - Standard Practice for Installation of Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels in Areas Subject to Earthquake Ground Motions 2022.

D. ASTM E1264 - Standard Classification for Acoustical Ceiling Products 2022.

E. UL (FRD) - Fire Resistance Directory Current Edition.

### 1.04 ADMINISTRATIVE REQUIREMENTS

A. Sequence work to ensure acoustical ceilings are not installed until building is enclosed, sufficient heat is provided, dust generating activities have terminated, and overhead work is completed, tested, and approved.

B. Do not install acoustical units until after interior wet work is dry.

### 1.05 SUBMITTALS

A. See Division 01 - Administrative Requirements, for submittal procedures.

B. Shop Drawings: Indicate grid layout and related dimensioning, junctions with other ceiling finishes, and based on field-verified dimensions.
   1. Indicate complete plan layouts and installation details.
   2. Indicate related Work of other sections which is installed in, attached to, or penetrates ceiling areas, such as air distribution and electrical devices.
   3. Include all edge tile dimensions, show locations of all in-ceiling items required for the project, and dimension all in-tile items which will not be centered in the tile units.
   4. The Contractor is alerted to the possibility that the Contract Drawing Reflected Ceiling Plans may not necessarily show every in-ceiling item required for the project.
   5. The Contractor will be allowed to utilize the Contract Drawing Reflected Ceiling Plans as basis for formulation of the required complete shop drawings for Gardner Spencer Smith Tench and Jarbeau, PC's approval.

C. Product Data: Provide data on suspension system components and acoustical units.
   1. Suspension System for Lay in Ceiling: Printed data for all suspension system components, including load tests and manufacturer's recommended methods for fixture support and wind uplift bracing.

D. Samples: Submit two samples 6 by 6 inch in size illustrating material and finish of acoustical units.

E. Samples: Submit two samples each, 12 inches long, of suspension system main runner.

F. Manufacturer's Installation Instructions: Indicate special procedures.

**1.06 QUALITY ASSURANCE**

A. Source Limitations:
   1. Acoustical Ceiling Panel: Obtain each type through one source from a single manufacturer.
   2. Suspension System: Obtain each type through one source from a single manufacturer.

B. Seismic Standard: Provide acoustical panel ceilings designed and installed to withstand the effects of earthquake motions according to the following:
   1. Standard for Ceiling Suspension Systems Requiring Seismic Restraint: Comply with ASTM E 580.

C. Suspension System Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

D. Acoustical Unit Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

E. Each type of acoustical panel and painted grid shall be from a single production run.

**1.07 DELIVERY, STORAGE AND HANDLING**

A. Deliver materials in original packages, containers, or bundles bearing brand name and identification of manufacturer or supplier.

B. Storage:
   1. Stack ceiling tiles off floor on pallets or similar platforms providing continuous support for ceiling tiles and prevent sagging.
   2. Do not overload floor systems.

**1.08 MOCK-UP**

A. Install a minimum 12' x 12' area of each ceiling type specified, in spaces designated by Gardner Spencer Smith Tench and Jarbeau, PC. Include a 12' length of panels field-cut along wall line to illustrate proposed edge tile technique and workmanship. Include a mock-up of each type of tile, cut-in for installation of each type of light fixture, exit light, sprinkler head, speaker, monitor, diffuser, and all other in-ceiling-tile items.

B. Notify Gardner Spencer Smith Tench and Jarbeau, PC when spaces are ready for observation.

C. Following Gardner Spencer Smith Tench and Jarbeau, PC's acceptance, retain mock-up as a standard of quality for ceiling installations. Accepted mock-ups may remain as part of finished work.

**1.09 FIELD CONDITIONS**

A. Maintain uniform temperature of minimum 60 degrees F, and maximum humidity of 40 percent prior to, during, and after acoustical unit installation.

**1.10 PROJECT CONDITIONS**

A. Sequence work to ensure acoustical ceilings are not installed until building is enclosed, sufficient heat is provided, dust generating activities have terminated, and overhead work is completed, tested, and approved.

B. Install acoustical units after interior wet work is dry.

C. Schedule acoustical material installation to minimize need for removal and replacement of acoustical units to accommodate work of other trades.
   1. Before concealing Work of other sections, verify required tests and inspections have been completed.

D. Coordinate with related Work of other sections. Coordinate location and symmetrical placement of air distribution devices, electrical devices, and all penetrations with related Work section.

**1.11 COORDINATION**

A. Coordinate layout and installation of acoustical panels and suspension system with other construction that penetrates ceilings or is supported by them, including light fixtures, HVAC equipment, fire-suppression system, and partition assemblies.

**1.12 EXTRA MATERIALS**

A. See Division 01 - Product Requirements, for additional provisions.

B. Maintenance Materials: Provide extra panels equal to 1 percent of the area of each typical module size of acoustical panel, but not less than 8 of each specified size, style and color.

**1.13 WARRANTY**

A. See Closeout Submittals, for additional warranty requirements.

B. Manufacturer shall provide a 10 year material warranty from Date of Substantial Completion.

C. Installer shall provide a 2 year labor warranty from Date of Substantial Completion.

**PART 2 PRODUCTS**

**2.01 ACOUSTICAL UNITS**

A. Manufacturers:
   1. Basis of design: Armstrong World Industries, Inc: www.armstrong.com.
   2. BPB America Inc.: www.certainteed.com.
   3. USG: www.usg.com.
   4. Substitutions: See Division 01 - Product Requirements.

B. Acoustical Units - General: ASTM E1264, Class A.

C. Acoustical Panels Type ACT-1: Typical acoustical panel unless noted otherwise on the Drawings. Painted mineral fiber, ASTM E1264 Type III, with the following characteristics:
   1. Acceptable products, subject to compliance with all criteria:
      a. Armstrong World Industries, Inc.; Product, Cirrus High NRC #558.
      b. BPB America; Product, Symphony M High NRC #1222BB-80-1.
      c. USG; Mars Healthcare Acoustical Panel #86684.
   2. Characteristics:
      a. Size: 24 by 24 inches.
      b. Thickness: Minimum 3/4 inches.
      c. NRC Range: 75 to 80, determined in accordance with ASTM E1264.
      d. Edge: Angled Tegular.

**2.02 SUSPENSION SYSTEMS**

A. Manufacturers:
   1. Armstrong World Industries, Inc: www.armstrong.com.
   2. Chicago Metallic Corporation: www.chicagometallic.com.
   3. USG: www.usg.com.
   4. Substitutions: See Division 01 - Product Requirements.

B. Suspension Systems - General: Complying with ASTM C635/C635M; die cut and interlocking components, with stabilizer bars, clips, splices, perimeter moldings, and hold down clips as required.

C. Standard Exposed Grid System: Typical unless otherwise indicated on the Drawings.
   1. Structural classification: ASTM C635-86, Intermediate duty for all components.
   2. Modules:
      a. Standard: 2'-0" by 2'-0".
      b. Other: As indicated on the Drawings.
   3. Main and cross tees:
      a. Tee material: Galvanized, cold-rolled steel.
      b. Cap material: Galvanized, cold-rolled steel.

c. Design: Double web.
d. Tee size: 15/16" flange width; 1-1/2" nominal height main tees and cross tees; material thickness as required to meet specified structural classifications.

4. Edge molding:
   a. Standard: Ceilings: minimum .020" thickness steel angle with minimum 3/4" flange width, hemmed edge.
   b. Main Corridor: Minimum .020" thickness steel, shadowline molding with minimum 15/16" flange width, hemmed edge.
5. Finish on exposed components: Chemically treated for paint adhesion with factory applied, low-gloss white paint finish.

**2.03 ACCESSORIES**

A. Support Channels and Hangers: Galvanized steel; size and type to suit application, seismic requirements, and ceiling system flatness requirement specified.

B. Perimeter Moldings: Same material and finish as grid.

C. Seismic Struts: Manufacturer’s standard compression struts designed to accommodate seismic forces.

D. Seismic Clips: Manufacturer’s standard seismic clips designed and spaced to secure acoustical panels in-place.

E. Acoustical Insulation: Specified in Section 09 2116 - Gypsum Board Assemblies.
   1. Thickness: 2 inch minimum or as indicated in the drawings.

F. Acoustical Sealant For Perimeter Moldings: Specified in Section 07 9005 - Joint Sealers.

G. Touch-up Paint: Type and color to match acoustical and grid units.

**PART 3 EXECUTION**

**3.01 EXAMINATION**

A. With Installer present, 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. Verify existing conditions before starting work.

C. Verify that layout of hangers will not interfere with other work.

**3.02 PREPARATION**

A. Furnish layouts for inserts, clips or other supports and struts required to be installed by the Work of other trades that depend on the suspended ceiling system for support.

B. Coordinate related Work to ensure completion prior to installation of clips or fasteners.

C. Lay-In Ceiling Systems: Compare layouts with construction conditions. Tile shall be spaced symmetrically about the centerlines of the room or space, and shall start with a tile or joint line as required to avoid narrow tiles at the finish edges unless indicated otherwise. Joints shall be tight with joint lines straight and aligned with the walls. Ceiling moldings shall be provided where tile abuts wall with matching caulking to eliminate any space.

**3.03 INSTALLATION - SUSPENSION SYSTEM**

A. Install suspension system in accordance with ASTM C 636, ASTM E 580, and manufacturer's instructions and as supplemented in this section.

B. Rigidly secure system, including integral mechanical and electrical components, for maximum deflection of 1:360.

C. System shall be complete; with all joints neatly and tightly joined and securely fastened; suspension members shall be installed in a true, flat, level plane.

D. Hanger Wires: 12 gauge minimum; larger sizes as indicated or required.
   1. Fasten wires to panel points and structure above per most stringent requirements of fabricator and IBC and as indicated on Drawings.
   2. Wires exceeding 1:6 out-of-plumb shall be braced with counter-sloping wires.
   3. Maintain wires 6 inches minimum clear of non -braced ducts, pipes, and other items.
   4. Install wire within 6 inches of ends of all main runners and cross-tees at ceiling perimeters.
   5. Where obstructions prevent direct suspension, provide trapezes or equivalent devices; 1-1/2 inches minimum cold-rolled channels back to back may be installed for spans to 6 feet max.
   6. Wire to be straight, without extraneous kinks or bends and tolerate a 200 - pound pull without stretching or shifting the suspension clip.

E. Bracing Wires to Resist Seismic Forces: 12 gauge minimum, larger sizes as indicated or required.
   1. System for Bracing Ceilings: Lay-In Ceiling Systems: Install one four-wire set of sway-bracing wires and a vertical strut for each 144 square feet maximum of ceiling area. Locate wire-sets and struts at 12 feet maximum on center. At ceiling perimeters, wire-sets shall be installed within 6 feet of walls.
   2. Install four-wire sets and struts within 2 inches of cross-runner intersection with main runner; space wires 90 degrees from each other.
   3. Do not install sway bracing wires at an angle greater than 45 degrees with the ceiling plane.
   4. Wires shall be tight, without causing ceiling to lift.
   5. Fasten struts in accordance with IBC requirements.

F. Suspension:
   1. Suspension members shall be fastened to 2 adjacent walls; but shall be 1/2 inches minimum clear of other walls.
   2. Any suspension members not fastened to walls shall be interconnected to prevent spreading, near their free end, with a horizontal metal strut or 7445 stabilizer bar or 16 gauge taut tie wire.
   3. Provide additional tees or sub-tees to frame openings for lights, air distribution devices, electrical devices, and other items penetrating through ceiling, which do not have an integral flange to support and conceal cut edges of acoustic panels. Provide cross-bracing necessary to securely support any surface mounted fixtures or other items.

G. Attachment of Wires:
   1. To Metal Deck or Steel Framing Members: Install as required by current code.
   2. To Suspension Members: Insert through holes in members or supporting clips.
   3. All wires to be fastened with tight turns; three tight turns minimum for hanger wires; four tight turns minimum for bracing wires. All turns to be made in a 1-1/2 inches maximum distance.

H. Locate system on room axis according to reflected plan.

I. Install after major above-ceiling work is complete. Coordinate the location of hangers with other work.

J. Hang suspension system independent of walls, columns, ducts, pipes and conduit. Where carrying members are spliced, avoid visible displacement of face plane of adjacent members.

K. Where ducts or other equipment prevent the regular spacing of hangers, reinforce the nearest affected hangers and related carrying channels to span the extra distance.

L. Do not support components on main runners or cross runners if weight causes total dead load to exceed deflection capability.

M. Support fixture loads using supplementary hangers located within 6 inches of each corner, or support components independently.

N. Do not eccentrically load system or induce rotation of runners.

O. Touch up damaged or cut galvanized components as recommended by the manufacturer to prevent rusting.

P. Perimeter Molding: Install at intersection of ceiling and vertical surfaces and at junctions with other interruptions.
   1. Install in bed of acoustical sealant.
   2. Use longest practical lengths.
   3. Overlap and rivet corners.

Q. Form expansion joints as detailed. Form to accommodate plus or minus 1 inch movement. Maintain visual closure.

**3.04 INSTALLATION - ACOUSTICAL UNITS**

A. Install acoustical units in accordance with manufacturer's instructions.

B. Fit acoustical units in place, free from damaged edges or other defects detrimental to appearance and function.

C. Fit border trim neatly against abutting surfaces.

D. Install units after above-ceiling work is complete.

E. Install acoustical units level, in uniform plane, and free from twist, warp, and dents.

F. Cutting Acoustical Units:
   1. Make field cut edges of same profile as factory edges.

G. Where round obstructions occur, provide preformed closures to match perimeter molding.

H. Install hold-down clips on panels within 20 ft of an exterior door.

**3.05 AIR DISTRIBUTION DEVICES**

A. Refer to and coordinate with Division 23: Mechanical.

B. Install air distribution grilles and other devices into suspension system. Install 4 taut wires, each 12 gauge minimum, to each device within 3 inches of device corners, to support their weight independent of the suspension system.

**3.06 LIGHT FIXTURES**

A. Refer to and coordinate with Division 26: Electrical.

B. Fixtures weighing less than 56 pounds: Install fixtures into suspension systems and fasten earthquake clips to suspension members. Install minimum 2 slack safety wires, each 12 gauge minimum, to each fixture at diagonally opposite corners, to support their weight independent of the system.

C. Fixtures weighing 56 Pounds or more: Install fixtures into suspension system and fasten earthquake clips to suspension system members as required by the Drawings and/or code. Install not less than 4 taut 2 gauge wires capable of supporting four times the fixture load.

**3.07 CLEANING**

A. General: After installation of acoustical material has been completed, clean all surfaces of the material, removing any dirt or discolorations. Replace panels as required.

B. Acoustical Panels: Minor abraded spots and cut edges shall be touched up with the same paint as was used for factory applied finish of the lay-in panels.

**3.08 CLEAN UP**

A. Remove rubbish, debris, and waste materials and legally dispose off of the Project site.

B. Remove and replace damaged and stained acoustical ceiling panels with new panels.

**3.09 PROTECTION**

A. Protect the Work of this section until Substantial Completion.

**3.10 TOLERANCES**

A. Maximum Variation from Flat and Level Surface: 1/8 inch in 10 feet.

B. Maximum Variation from Plumb of Grid Members Caused by Eccentric Loads: 2 degrees.

**END OF SECTION**

# SECTION 09 6566
# RESILIENT ATHLETIC FLOORING

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Vinyl Composition Rubber Back Sheet Vinyl.

B. Welding Rod.

C. Painted game lines.

### 1.02 RELATED REQUIREMENTS

A. Section 01 6116 - Volatile Organic Compound (VOC) Content Restrictions.

B. Section 03 3000 - Cast-in-Place Concrete: Restrictions on curing compounds for concrete slabs and floors to receive adhesive-applied flooring.

### 1.03 REFERENCE STANDARDS

A. ASTM D412 - Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers--Tension 2016 (Reapproved 2021).

B. ASTM D2240 - Standard Test Method for Rubber Property--Durometer Hardness 2015 (Reapproved 2021).

C. ASTM F710 - Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring 2022.

D. ASTM F1869 - Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride 2022.

E. ASTM F2170 - Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes 2019a.

F. ASTM F2772 - Standard Specification for Athletic Performance Properties of Indoor Sports Floor Systems 2011 (Reapproved 2019).

G. CHPS (HPPD) - High Performance Products Database Current Edition.

H. DIN EN 14904 - Surfaces for Sports Areas – Indoor Surfaces for Multi-Sports Use – Specification 2006.

I. SCS (CPD) - SCS Certified Products Current Edition.

J. UL (GGG) - GREENGUARD Gold Certified Products Current Edition.

### 1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Manufacturer's printed data sheets for products specified.

C. Shop Drawings: Fabrication and installation details, and layout, colors, and widths of game lines and equipment locations.

D. Selection Samples: Manufacturer's color charts for flooring materials specified and game line paints, indicating full range of colors and textures available.

E. Verification Samples: Actual flooring material specified, not less than 12 inch square, mounted on solid backing.
   1. Include samples of game lines, illustrating colors selected.

F. Test Reports: Submit test reports showing compliance with DIN EN 14904.

G. Quality Assurance Submittals: Submit the following:
   1. Certificates: If required, certification of performance characteristics specified in this document shall be provided by the manufacturer.
   2. Manufacturer’s Instructions: Manufacturer’s installation instructions.

H. Concrete Subfloor Test Report: Submit a copy of the moisture and alkalinity (pH) test reports.

I. Installer's Qualification Statement.

**1.05 QUALITY ASSURANCE**

A. Installer Qualifications: An experienced installer certified in writing by the flooring manufacturer to be qualified for installation of specified flooring system.
   1. Certificate: When requested, submit certificate indicating qualification.

B. Testing Agency Qualifications: Independent firm specializing in performing testing and inspections of the type specified in this section.

C. Mock-Ups: Install at project site a job mock-up using acceptable products and manufacturer-approved installation methods. Obtain Owner and Architect's acceptance of finish color, texture and pattern, and workmanship standard. Comply with Division 01 Quality Control (Mock-Up Requirements) Section.
   1. Mock-Up Size: [specify mock-up size].
   2. Maintenance: Maintain mock-up during construction for workmanship comparison; remove and legally dispose of mock-up when no longer required.
   3. Incorporation: Mock-up may be incorporated into final construction upon Owner's approval.

D. Pre-installation Meetings: Conduct pre-installation meeting to verify project requirements, substrate conditions, manufacturer's instructions and manufacturer's warranty requirements. Comply with Division 01 Project Management and Coordination (Project Meetings) Section.

E. Pre-installation Testing: Conduct pre-installation testing as follows: [specify substrate testing; consult with flooring manufacturer].

**1.06 DELIVERY, STORAGE, AND HANDLING**

A. Deliver materials to project site in unopened containers clearly labeled with manufacturer's name and identification of contents.

B. Store materials in dry and clean location until needed for installation. During installation, handle in a manner that will prevent marring and soiling of finished surfaces.

**1.07 FIELD CONDITIONS**

A. Maintain temperature in spaces to receive adhesively installed resilient flooring within range of 70 to 95 degrees F for not less than 48 hours before the beginning of installation and for not less than 48 hours after installation has been completed. Subsequently, do not allow temperature in installed spaces to drop below 50 degrees F or to go above 100 degrees F.

B. Field Measurements: Verify actual measurements/openings by field measurements before fabrication; show recorded measurements on shop drawings. Coordinate field measurements and fabrication schedule with construction progress to avoid construction delays.

**1.08 MAINTENANCE**

A. Extra Materials: Deliver to Owner extra materials from same production run as products installed. Package products with protective covering and identify with descriptive labels. Comply with Division 01 Closeout Submittals (Maintenance Materials) Section.
   1. Quantity: Furnish quantity of resilient flooring units equal to 5% of amount installed.
   2. Delivery, Storage and Protection: Comply with Owner's requirements for delivery, storage and protection of extra materials.
   3. Cleaning: Furnish flooring manufacturer's neutral cleaner for initial cleaning and maintenance of finished floor surface.

**PART 2 PRODUCTS**

**2.01 PREFORMED ATHLETIC FLOORING**

A. Manufacturers: All products by the same manufacturer.
   1. Centaur Floor Systems; Triple Threat: www.centaurfloors.com.
   2. Substitutions: See Section 01 6000 - Product Requirements.

B. Vinyl Sheet Flooring:
   1. Wearing Surface: Pure polyvinyl chloride, mechanically extruded and uniformly resilient material with uniform color throughout thickness.
   2. Backing: Vulcanized Composition Rubber.
   3. VOC Content: As specified in Section 01 6116.
   4. VOC Content: Certified as Low Emission by one of the following :
      a. Product listing in UL (GGG).
   5. Sheet Thickness: Minimum 1/4 inch (7 mm).
   6. Sheet Width: Minimum 72 inches.
   7. Sheet Lengths: As necessary to minimize transverse seams.
   8. Tensile Strength: Minimum 1000 psi, per ASTM D412.
   9. Durometer Hardness, Type A: Minimum of 65, when tested in accordance with ASTM D2240.
   10. Seaming Method: Welding with heat.
   11. Surface Texture: Smooth.
   12. Color: As selected from manufacturer's standard range.
   13. Game Lines: Paint as approved by manufacturer of vinyl sheet flooring.
   14. Top Coat: If required by manufacturer, a clear polyurethane coating that protects game lines and wearing surface.

## PART 3 EXECUTION

### 3.01 EXAMINATION

A. Examine substrates for conditions detrimental to installation of athletic flooring. Proceed with installation only after unsatisfactory conditions have been corrected.

B. Verify that surfaces are flat to tolerances acceptable to flooring manufacturer, free of cracks that might telegraph through flooring, clean, dry, and free of curing compounds, surface hardeners, and other chemicals that might interfere with bonding of athletic flooring to substrate.

C. Cementitious Subfloor Surfaces: Verify that substrates are ready for resilient flooring installation by testing for moisture and alkalinity (pH).
   1. Conduct tests by an independent testing agency acceptable to Owner.

### 3.02 PREPARATION

A. Concrete: Use leveling compound as necessary to achieve substrate flatness of plus or minus 1/8 inch within 10 ft radius.

B. Remove coatings that are incompatible with flooring adhesives, using methods recommended by flooring manufacturer.

C. Broom clean areas to receive athletic flooring immediately before beginning installation.

### 3.03 INSTALLATION

A. Starting installation constitutes acceptance of subfloor conditions.

B. Install in accordance with manufacturer's written instructions.

C. Resilient Sheet Flooring:
   1. Unroll flooring and allow to relax before beginning installation.
   2. Weld seams using techniques and equipment recommended by manufacturer.
   3. Lay out game lines using tape and taping machine approved by flooring manufacturer. Apply game line paint with roller, and allow to dry before removing tape.
   4. Apply transparent top coat over flooring if recommended by manufacturer, to achieve a uniform finished appearance.

### 3.04 CLEANING

A. Clean flooring using methods recommended by manufacturer.

**3.05 PROTECTION**

A. Protect finished athletic flooring from construction traffic to ensure that it is without damage upon Date of Substantial Completion.

**END OF SECTION**

# SECTION 09 9000
# PAINTING AND COATING

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Surface preparation.

B. Field application of paints and other coatings.

C. Scope: Finish all interior and exterior surfaces exposed to view, unless fully factory-finished

D. Paint exposed surfaces, except where these Specifications indicate that the surface or material is not to be painted or is to remain natural. If an item or a surface is not specifically mentioned, paint the item or surface the same as similar adjacent materials or surfaces. If a color of finish is not indicated, Gardner Spencer Smith Tench and Jarbeau, PC will select from standard colors and finishes available.
   1. Painting includes field painting of exposed bare and covered pipes and ducts (including color coding), hangers, exposed steel and iron supports, and surfaces of mechanical and electrical equipment that do not have a factory-applied final finish.

E. Do Not Paint or Finish the Following Items:
   1. Items fully factory-finished unless specifically so indicated; materials and products having factory-applied primers are not considered factory finished.
   2. Items indicated to receive other finishes.
   3. Items indicated to remain unfinished.
   4. Fire rating labels, equipment serial number and capacity labels, and operating parts of equipment.
   5. Non-metallic roofing and flashing.
   6. Stainless steel, anodized aluminum, bronze, terne, and lead items.
   7. Marble, granite, slate, and other natural stones.
   8. Floors, unless specifically so indicated.
   9. Ceramic and other tiles.
   10. Exterior insulation and finish system (EIFS).
   11. Glass.
   12. Acoustical materials, unless specifically so indicated.
   13. Concealed pipes, ducts, and conduits.

F. See Schedule - Surfaces to be Finished, at end of Section.

### 1.02 RELATED REQUIREMENTS

A. Section 05 5000 - Metal Fabrications: Shop-primed items.

### 1.03 DEFINITIONS

A. Conform to ASTM D16 for interpretation of terms used in this section.

B. Exposed Surfaces: Includes areas visible when permanent or built-in components are in place. Extend coatings in these areas, as required, to maintain system integrity and provide desired protection.

C. Standard coating terms defined in ASTM D 16 apply to this Section.
   1. Flat refers to a lusterless or matte finish with a gloss range below 15 when measured at an 85-degree meter.
   2. Eggshell refers to low-sheen finish with a gloss range between 20 and 35 when measured at a 60-degree meter.
   3. Semigloss refers to medium-sheen finish with a gloss range between 35 and 70 when measured at a 60-degree meter.
   4. Full gloss refers to high-sheen finish with a gloss range more than 70 when measured at a 60-degree meter.

## 1.04 REFERENCE STANDARDS

A. 40 CFR 59, Subpart D - National Volatile Organic Compound Emission Standards for Architectural Coatings; U.S. Environmental Protection Agency current edition.

B. ASTM D16 - Standard Terminology for Paint, Related Coatings, Materials, and Applications 2019.

C. ASTM D4442 - Standard Test Methods for Direct Moisture Content Measurement of Wood and Wood-Based Materials 2020.

D. NACE (IMP) - Industrial Maintenance Painting; NACE International; Edition date unknown.

E. SSPC (PM1) - Good Painting Practice: SSPC Painting Manual, Vol. 1; Society for Protective Coatings; Fourth Edition.

## 1.05 SUBMITTALS

A. See Division 01 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data on all finishing products, including VOC content.
   1. Provide cross-referenced data indicating equivalency of any proposed paint systems other than basis of design paint systems. Provide data indicating substrate material, vehicle type, per cent solids by weight, per cent solids by volume, dry film thickness, viscosity, specular gloss, and VOC/VOS content for each type material.

C. Samples: Submit two paper chip samples, 12 x 12 inch in size illustrating range of colors and textures available for each surface finishing product scheduled.

D. Samples for Verification: For each color and material to be applied, with texture to simulate actual conditions, on representative Samples of the actual substrate.
   1. Provide stepped Samples, defining each separate coat, including block fillers and primers. Use representative colors when preparing Samples for review. Resubmit until required sheen, color and texture are achieved.
   2. Provide a list of materials and applications for each coat of each Sample. Label each Sample for location and application.
   3. Submit Samples on the following substrates for Gardner Spencer Smith Tench and Jarbeau, PC's review of color and texture only:
      a. Concrete: 4-inch square Samples for each color and finish.
      b. Concrete Unit Masonry: 4-inch square Samples of masonry, with mortar joint in the center, for each finish and color.
      c. Painted Wood: 8-inch square Samples for each color and material on hardboard.
      d. Stained or Natural Wood: 4-inch square Samples of natural or stained wood finish on representative surfaces.
      e. Ferrous Metal: 4-inch square Samples of flat metal and 8-inch long Samples of solid metal for each color and finish.

E. Manufacturer's Instructions: Indicate special surface preparation procedures.

F. Maintenance Data: Submit data on cleaning, touch-up, and repair of painted and coated surfaces.

## 1.06 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the products specified, with minimum three years documented experience.

B. Applicator Qualifications: Company specializing in performing the type of work specified with minimum five years experience.

C. Source Limitations: Obtain block fillers and primers for each coating system from the same manufacturer as the finish coats.

## 1.07 REGULATORY REQUIREMENTS

A. Conform to applicable code for flame and smoke rating requirements for products and finishes.

B. Existing paint surfaces may contain lead. Prior to execution of the work, test existing paint materials to be removed and abate all contaminated materials. Conform to applicable codes and regulations for the legal removal and disposal of existing lead based paints. Protect all persons, structures, and building systems from exposure to contaminants.

**1.08 DELIVERY, STORAGE, AND HANDLING**

A. Deliver products to site in sealed and labeled containers; inspect to verify acceptability.

B. Container Label: Include manufacturer's name, type of paint, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.

C. Paint Materials: Store at minimum ambient temperature of 45 degrees F and a maximum of 90 degrees F, in ventilated area, and as required by manufacturer's instructions.

**1.09 FIELD CONDITIONS**

A. Do not apply materials when surface and ambient temperatures are outside the temperature ranges required by the paint product manufacturer.

B. Follow manufacturer's recommended procedures for producing best results, including testing of substrates, moisture in substrates, and humidity and temperature limitations.

C. Do not apply exterior coatings during rain or snow, or when relative humidity is outside the humidity ranges required by the paint product manufacturer.

D. Minimum Application Temperatures for Latex Paints: 45 degrees F for interiors; 50 degrees F for exterior; unless required otherwise by manufacturer's instructions.

E. Minimum Application Temperature for Varnish Finishes: 65 degrees F for interior or exterior, unless required otherwise by manufacturer's instructions.

F. Provide lighting level of 80 ft candles measured mid-height at substrate surface.

**1.10 COORDINATION**

A. Coordination of Work: Review other Sections in which primers are provided to ensure compatibility of the total system for various substrates. On request, furnish information on characteristics of finish materials to ensure use of compatible primers.
   1. Notify Gardner Spencer Smith Tench and Jarbeau, PC about anticipated problems when using the materials specified over substrates primed by others.

**1.11 EXTRA MATERIALS**

A. See Division 01 - Product Requirements, for additional provisions.

B. Supply 5 gallons of each color; store where directed.

C. Label each container with color in addition to the manufacturer's label.

**PART 2 PRODUCTS**

**2.01 MANUFACTURERS**

A. Provide all paint and coating products used in any individual system from the same manufacturer; no exceptions.

B. Paints:
   1. PPG Architectural Coatings (PPG): www.ppgpro.com.
   2. Benjamin Moore & Co (BM): www.benjaminmoore.com.
   3. Basis of design: Sherwin-Williams Company (SW): www.sherwin-williams.com.

C. Substitutions: See Division 01 - Product Requirements.

**2.02 PAINTS AND COATINGS - GENERAL**

A. Paints and Coatings: Ready mixed, unless intended to be a field-catalyzed coating.
   1. Provide paints and coatings of a soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating, with good flow and brushing properties,

and capable of drying or curing free of streaks or sags.
2. Provide materials that are compatible with one another and the substrates indicated under conditions of service and application, as demonstrated by manufacturer based on testing and field experience.
3. Supply each coating material in quantity required to complete entire project's work from a single production run.
4. Do not reduce, thin, or dilute coatings or add materials to coatings unless such procedure is specifically described in manufacturer's product instructions.

B. Material Quality: Provide manufacturer's best-quality paint material of the various coating types specified that are factory formulated and recommended by manufacturer for application indicated. Paint-material containers not displaying manufacturer's product identification will not be acceptable.

C. Colors: Match Gardner Spencer Smith Tench and Jarbeau, PC's samples.
1. Proprietary Names: Use of manufacturer's proprietary product color names and product numbers to designate colors is not intended to imply that products named are required to be used to the exclusion of other listed manufacturers.
2. Acceptance of colors, as an aesthetic effect, is judged solely by Gardner Spencer Smith Tench and Jarbeau, PC.

D. Primers: As follows unless other primer is required or recommended by manufacturer of top coats; where the manufacturer offers options on primers for a particular substrate, use primer categorized as "best" by the manufacturer.

E. Volatile Organic Compound (VOC) Content:
1. Provide coatings that comply with the most stringent requirements specified in the following:
a. 40 CFR 59, Subpart D--National Volatile Organic Compound Emission Standards for Architectural Coatings.
2. Determination of VOC Content: Testing and calculation in accordance with 40 CFR 59, Subpart D (EPA Method 24), exclusive of colorants added to a tint base and water added at project site; or other method acceptable to authorities having jurisdiction.

**2.03 PAINT SYSTEMS - EXTERIOR**

A. Concrete, Portland Cement Plaster and Masonry other than CMU and Brick (Semi-gloss):
1. Primer (New) - 1 coat applied at DFT of no less than 1.5 mils or as recommended by manufacturer:
a. PPG: 4-603 Perma Crete Int/Ext Alkaline Resistant Primer.
b. BM: Moore’s High Build Acrylic Masonry Primer 068.
c. SW: Loxon Masonry Primer A24W300.
2. Primer (Previously Painted) - 1 coat applied at DFT of no less than 1.6 mils or as recommended by manufacturer:
a. PPG: 17-921 Seal Grip Interior Exterior Acrylic Universal Primer.
b. BM: Moore’s Fresh Start Interior Exterior Acrylic Primer 023.
c. SW:PrepRite ProBlock Interior/Exterior Latex Primer/Sealer B51-600 Series.
3. Finish - 2 coats applied at total DFT of no less than 2.8 mils or as recommended by manufacturer:
a. PPG: 6-900XI Speedhide Exterior Acrylic Semi-Gloss.
b. BM: Super Spec Latex Semi Gloss House & Trim paint K170 Series.
c. SW:A-100 Exterior Acrylic Latex Gloss A8 Series.

B. Concrete Masonry Units (Semi-gloss):
1. Block Filler (New) - 1 coat applied at DFT of no less than 7.1 mils or as recommended by manufacturer:
a. PPG: 6-7 Speedhide Interior Exterior Latex Block Filler.
b. BM: Latex Block Filler M88 Series.
c. SW: Prep-Rite Latex Block FillerB25W25.

2. Primer (Previously Painted) - 1 coat applied at DFT of no less than 1.6 mils or as recommended by manufacturer:
   a. PPG: 17-921 Seal Grip Interior Exterior Acrylic Universal Primer.
   b. BM: Moore's Fresh Start Interior Exterior Acrylic Primer 023.
   c. SW:PrepRite ProBlock Interior/Exterior Latex Primer/Sealer B51-600 Series.
3. Finish - 2 coats applied at total DFT of no less than 2.8 mils or as recommended by manufacturer:
   a. PPG: 6-900XI Speedhide Exterior Acrylic Semi-Gloss.
   b. BM: Super Spec Latex Semi Gloss House & Trim paint K170 Series.
   c. SW: A-100 Exterior Acrylic Latex Gloss A8 Series.

C. Ferrous Metal (Semi-gloss):
1. Primer (New or Shop Primed) - 1 coat applied at DFT of no less than 2.3 mils or as recommended by manufacturer:
   a. PPG: 6-208 Speedhide Int/Ext Rust Inhibitive Steel Primer.
   b. BM: Super Spec HP Alkyd Metal Primer P06 Series.
   c. SW: Kromik Alkyd Metal Primer E41 Series.
2. Primer (Previously Painted) - 1 coat applied at DFT of no less than 1.6 mils or as recommended by manufacturer:
   a. PPG: 17-921 Seal Grip Interior Exterior Universal Acrylic Primer.
   b. BM: Moore's Fresh Start Interior Exterior Acrylic Primer 023.
   c. SW: PrepRite ProBlock Interior/Exterior Latex Primer/Sealer B51-600 Series.
3. Finish - 2 coats applied at total DFT of no less than 4.0 mils or as recommended by manufacturer:
   a. PPG: 90-474Pitt-Tech Waterborne Acrylic DTM Satin Enamel.
   b. BM: Super Spec HP DTM Acrylic Semi-Gloss Enamel P29 Series.
   c. SW: DTM Acrylic Semi-Gloss Enamel B66W200.

D. Galvanized Metal (Semi-gloss):
1. Primer (New and Previously Painted) - 1 coat applied at DFT of no less than 2.0 mils or as recommended by manufacturer:
   a. PPG: 90-712 Pitt-Tech DTM Acrylic Metal Primer Finish.
   b. BM: Super Spec HP Acrylic Metal Primer P04.
   c. SW: DTM Acrylic Primer Finish B66W1 Series.
2. Finish - 2 coats applied at total DFT of no less than 4.0 mils or as recommended by manufacturer:
   a. PPG: 90-474Pitt-Tech Waterborne Acrylic DTM Satin Enamel.
   b. BM: Super Spec HP DTM Acrylic Semi-Gloss Enamel P29 Series.
   c. SW: DTM Acrylic Semi-Gloss Enamel B66W200.

**2.04 PAINT SYSTEMS - INTERIOR**

A. Concrete Masonry Units (Semi-gloss):
1. Block Filler (New) - 1 coat applied at DFT of no less than 7.1 mils or as recommended by manufacturer:
   a. PPG: 6-7 Speedhide Interior Exterior Latex Block Filler.
   b. BM: Latex Block Filler M88 Series.
   c. SW: Prep-Rite Latex Block FillerB25W25.
2. Primer (Previously Painted) - 1 coat applied at DFT of no less than 1.6 mils or as recommended by manufacturer:
   a. PPG: 17-921 Seal Grip Interior Exterior Universal Acrylic Primer.
   b. BM: Moore's Fresh Start Interior Exterior Acrylic Primer 023.
   c. SW: PrepRite ProBlock Interior/Exterior Latex Primer/Sealer B51-600 Series.
3. Finish - 2 coats applied at total DFT of no less than 3.0 mils or as recommended by manufacturer:
   a. PPG: PP919 Advantage 900 Interior Exterior Acrylic Semi-Gloss Enamel.

b. BM: Moore's Kitchen & Bath Acrylic Enamel 322.
c. SW: ProClassic Acrylic Semi-Gloss Enamel B31 series.

B. Plywood/T1-11 (Semi-gloss):
1. Primer (New and Previously Painted) - 1 coat applied at DFT of no less than 1.6 mils or as recommended by manufacturer:
a. PPG: 17-921 Seal Grip Interior Exterior Universal Acrylic Primer.
b. BM: Moore’s Fresh Start Interior Exterior Acrylic Primer 023.
c. SW: PrepRite ProBlock Interior/Exterior Latex Primer/Sealer B51-600 Series.
2. Finish - 2 coats applied at total DFT of no less than 3.0 mils or as recommended by manufacturer:
a. PPG: PP919 Advantage 900 Interior Exterior Acrylic Semi-Gloss Enamel.
b. BM: Moore's Kitchen & Bath Acrylic Enamel 322.
c. SW: ProClassic Acrylic Semi-Gloss Enamel B31 series.

C. Ferrous Metal (Semi-gloss):
1. Primer (New and Previously Painted) - 1 coat applied at DFT of no less than 2.3 mils or as recommended by manufacturer:
a. PPG: 6-208 Speedhide Int/Ext Rust Inhibitive Steel Primer.
b. BM: Super Spec HP Alkyd Metal Primer P06 Series.
c. SW: Kromik Alkyd Metal Primer E41 Series.
2. Finish - 2 coats applied at total DFT of no less than 3.0 mils or as recommended by manufacturer:
a. PPG: PP919 Advantage 900 Interior Exterior Acrylic Semi-Gloss Enamel.
b. BM: Moore's Kitchen & Bath Acrylic Enamel 322.
c. SW: ProClassic Acrylic Semi-Gloss Enamel B31 series.

D. Galvanized Metal (Semi-gloss):
1. Primer (New and Previously Painted) - 1 coat applied at DFT of no less than 2.0 mils or as recommended by manufacturer:
a. PPG: 90-712 Pitt-Tech DTM Acrylic Metal Primer Finish.
b. BM: Super Spec HP Acrylic Metal Primer P04.
c. SW: DTM Acrylic Primer Finish B66W1 Series.
2. Finish: 2 coats applied at total DFT of no less than 3.0 mils or as recommended by manufacturer:
a. PPG: PP919 Advantage 900 Interior Exterior Acrylic Semi-Gloss Enamel.
b. BM: Moore's Kitchen & Bath Acrylic Enamel 322.
c. SW: ProClassic Acrylic Semi-Gloss Enamel B31 series.

E. Metal Dry-Fog Coating (Flat waterborne acrylic dry fog for exposed ceiling structural, mechanical electrical, fireproofing systems not otherwise indicated):
1. Primer (New and Previously Painted Ferrous and Galvanized Metal): 1 coat applied at DFT of no less than 2.0 mils or as recommended by manufacturer:
a. PPG: 90-712 Pitt Tech DTM Acrylic Primer Finish.
b. BM: Super Spec HP Acrylic Metal Primer P04.
c. SW: DTM Acrylic Primer Finish B66W1 Series.
2. Finish: 1 coat applied at DFT of no less than 2.2 mils or as recommended by manufacturer:
a. PPG: 6-725XI Speedhide Super Tech WB Interior Waterborne Flat Dry Fog.
b. BM: Super Spec Sweep Up Spray Latex Flat 153/K153.
c. SW: Waterborne Acrylic Flat Dryfall, B42W1 series.

F. Gypsum Board (Flat):
1. Primer (New) - 1 coat applied at DFT of no less than 1.0 mils or as recommended by manufacturer:
a. PPG: 6-2 Speedhide Interior Latex Drywall Primer/Sealer.
b. BM: Super Spec Interior Latex Primer 253.

c. SW: Prep-Rite 200 Interior Latex Primer B28W200.
2. Primer (Previously Painted) - 1 coat applied at DFT of no less than 1.6 mils or as recommended by manufacturer:
   a. PPG: 17-921 Seal Grip Interior Exterior Universal Acrylic Primer.
   b. BM: Moore's Fresh Start Interior Exterior Acrylic Primer 023.
   c. SW: PrepRite ProBlock Interior/Exterior Latex Primer/Sealer B51-600 Series.
3. Finish - 2 coats applied at total DFT of no less than 2.6 mils or as recommended by manufacturer:
   a. PPG: 6-70 Speedhide Interior Latex Flat Wall Paint.
   b. BM: Super Spec Interior Latex Flat Wall Paint 275.
   c. SW: Pro-Mar 200 Interior Flat Latex Wall Paint B30 Series.

G. Gypsum Board (Eggshell):
1. Primer (New) - 1 coat applied at DFT of no less than 1.0 mils or as recommended by manufacturer:
   a. PPG: 6-2 Speedhide Interior Latex Drywall Primer/Sealer.
   b. BM: Super Spec Interior Latex Primer 253.
   c. SW: Prep-Rite 200 Interior Latex Primer B28W200.
2. Primer (Previously Painted) - 1 coat applied at DFT of no less than 1.6 mils or as recommended by manufacturer:
   a. PPG: 17-921 Seal Grip Interior Exterior Universal Acrylic Primer.
   b. BM: Moore's Fresh Start Interior Exterior Acrylic Primer 023.
   c. SW: PrepRite ProBlock Interior/Exterior Latex Primer/Sealer B51-600 Series.
3. Finish - 2 coats applied at total DFT of no less than 3.0 mils or as recommended by manufacturer:
   a. PPG: 6-411 Speedhide Interior Latex Eggshell Enamel.
   b. BM: Super Spec Interior Latex Eggshell Enamel 274.
   c. SW: Pro-Mar 200 Interior Lo-Sheen Latex Enamel B20 Series.

H. Gypsum Board (Semi-gloss):
1. Primer (New) - 1 coat applied at DFT of no less than 1.0 mils or as recommended by manufacturer:
   a. PPG: 6-2 Speedhide Interior Latex Drywall Primer/Sealer.
   b. BM: Super Spec Interior Latex Primer 253.
   c. SW: Prep-Rite 200 Interior Latex Primer B28W200.
2. Primer (Previously Painted) - 1 coat applied at DFT of no less than 1.6 mils or as recommended by manufacturer:
   a. PPG: 17-921 Seal Grip Interior Exterior Universal Acrylic Primer.
   b. BM: Moore's Fresh Start Interior Exterior Acrylic Primer 023.
   c. SW: PrepRite ProBlock Interior/Exterior Latex Primer/Sealer B51-600 Series.
3. Finish - 2 coats applied at total DFT of no less than 3.0 mils or as recommended by manufacturer:
   a. PPG: PP919 Advantage 900 Interior Exterior Acrylic Semi-Gloss Enamel.
   b. BM: Moore's Kitchen & Bath Acrylic Enamel 322.
   c. SW: ProClassic Acrylic Semi-Gloss Enamel B31 series.

I. Wood Trim - Staining Woods:
1. Stain Coat:
   a. PPG: 44500 Olympic Interior Oil Based Wood Stain.
   b. BM: Benwood Interior Oil Wood Stain 241.
   c. SW: Wood Classics Interior Oil Stain A48-200 series.
2. Sealer Coat:
   a. PPG: 41060 Olympic Interior Oil Based Sanding Sealer.
   b. BM: Benwood Quick Drying Sanding Sealer 413.
   c. SW: Wood Classics FD Sanding Sealer B26 series.

3. Finish - (2 coats):
   a. PPG: 43887 (Satin) 43888 (Gloss) Olympic Interior Fast Dry Varnish.
   b. BM: Benwood Interior Satin Varnish C404, Gloss Impervo C440.
   c. SW: Wood Classics FD Varnish A66 Series.

**2.05 ACCESSORY MATERIALS**

A. Accessory Materials: Provide all primers, sealers, cleaning agents, cleaning cloths, sanding materials, and clean-up materials required to achieve the finishes specified whether specifically indicated or not; commercial quality.

B. Patching Material: Latex filler.

C. Fastener Head Cover Material: Latex filler.

**PART 3 EXECUTION**

**3.01 EXAMINATION**

A. Verify that surfaces are ready to receive work as instructed by the product manufacturer.

B. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially affect proper application.
   1. Proceed with paint application only after unsatisfactory conditions have been corrected and surfaces receiving paint are thoroughly dry.
   2. Start of painting will be construed as Applicator's acceptance of surfaces and conditions within a particular area.

C. Test shop-applied primer for compatibility with subsequent cover materials.

D. Coordination of Work: Review other Sections in which primers are provided to ensure compatibility of the tobil system for various substrates. On request, furnish information on characteristics of finish materials to ensure use of compatible primers.
   1. Notify Gardner Spencer Smith Tench and Jarbeau, PC about anticipated problems when using the materials specified over substrates primed by others.

E. Measure moisture content of surfaces using an electronic moisture meter. Do not apply finishes unless moisture content of surfaces are below the following maximums:
   1. Gypsum Wallboard: 12 percent.
   2. Masonry, Concrete, and Concrete Unit Masonry: 12 percent.
   3. Interior Wood: 15 percent, measured in accordance with ASTM D4442.

**3.02 PREPARATION**

A. Clean surfaces thoroughly and correct defects prior to coating application.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

C. General: For all existing surfaces to be repainted, prepare mockup area for prior approval. Area shall be minimum 8' x 8' and retained for duration of the work as example of acceptable workmanship. Methods for preparation of the existing surfaces shall be as recommended by the paint manufacturer and Architect to produce acceptable results and by any means necessary including, but not limited to, chemical and mechanical treatments.

D. Remove or mask surface appurtenances, including electrical plates, hardware, light fixture trim, escutcheons, and fittings, prior to preparing surfaces or finishing.

E. Surfaces: Correct defects and clean surfaces which affect work of this section. Remove or repair existing coatings that exhibit surface defects.

F. Seal surfaces that might cause bleed through or staining of topcoat.

G. Remove mildew from impervious surfaces by scrubbing with solution of tetra-sodium phosphate and bleach. Rinse with clean water and allow surface to dry.

H. Concrete and Unit Masonry Surfaces to be Painted: Remove dirt, loose mortar, scale, salt or alkali powder, and other foreign matter. Remove oil and grease with a solution of tri-sodium

phosphate; rinse well and allow to dry. Remove stains caused by weathering of corroding metals with a solution of sodium metasilicate after thoroughly wetting with water. Allow to dry.

I. Gypsum Board Surfaces to be Painted: Fill minor defects with filler compound. Spot prime defects after repair.

J. Aluminum Surfaces to be Painted: Remove surface contamination by steam or high pressure water. Remove oxidation with acid etch and solvent washing. Apply etching primer immediately following cleaning.

K. Galvanized Surfaces to be Painted: Remove surface contamination and oils and wash with solvent. Apply coat of etching primer.

L. Uncorroded Uncoated Steel and Iron Surfaces to be Painted: Remove grease, mill scale, weld splatter, dirt, and rust. Where heavy coatings of scale are evident, remove by hand wire brushing or sandblasting; clean by washing with solvent. Apply a treatment of phosphoric acid solution, ensuring weld joints, bolts, and nuts are similarly cleaned. Prime paint entire surface; spot prime after repairs.

M. Shop-Primed Steel Surfaces to be Finish Painted: Sand and scrape to remove loose primer and rust. Feather edges to make touch-up patches inconspicuous. Clean surfaces with solvent. Prime bare steel surfaces. Re-prime entire shop-primed item.

N. Metal Doors to be Painted: Prime metal door top and bottom edge surfaces.

O. Previously Painted Surfaces:
   1. Paint only clean, dry surfaces.
   2. Remove all surface contaminants to include mold, mildew, dirt, dust, oil, grease, mill scale, wax, chalk or oxidation, efflorescence, rust, mortar, and any other foreign matter existing on the surface.
   3. Scrape or use appropriate means to remove all loose, peeling, flaking, or marginally adhering paint from the surface. Feather sand edges as necessary.
   4. Repair or replace caulking where needed.
   5. After cleaning, glossy surfaces shall be dulled by sanding. Remove all sanding dust from the surface after sanding has taken place. Prepare bare areas as new surfaces, and spot prime or fill those bare areas with the appropriate primer or filler.
   6. Patch or repair any cracks or voids with the appropriate patching compound and sand smooth as necessary.
   7. Spot prime any patched areas with the appropriate primer prior to finishing.
   8. If after cleaning chalky surfaces chalk residue is still present, prime the entire surface with the proper bonding primer to insure good adhesion of the topcoat to the substrate.

**3.03 APPLICATION**

A. General: Apply paint according to manufacturer's written instructions. Use applicators and techniques best suited for substrate and type of material being applied.
   1. Paint colors, surface treatments, and finishes are indicated in the paint schedules.
   2. Do not paint over dirt, rust, scale, grease, moisture, scuffed surfaces, or conditions detrimental to formation of a durable paint film.
   3. Provide finish coats that are compatible with primers used.
   4. Paint surfaces behind movable equipment and furniture the same as similar exposed surfaces. Before final installation of equipment, paint surfaces behind permanently fixed equipment or furniture with prime coat only.
   5. Paint interior surfaces of ducts with a flat, nonspecular black paint where visible through registers or grilles.
   6. Paint back sides of access panels and removable or hinged covers to match exposed surfaces.
   7. Finish exterior doors on tops, bottoms, and side edges the same as exterior faces.
   8. Sand lightly between each succeeding enamel or varnish coat.

B. Scheduling Painting: Apply first coat to surfaces that have been cleaned, pretreated, or otherwise prepared for painting as soon as practicable after preparation and before subsequent surface deterioration.
   1. The number of coats arid film thickness required are the same regardless of application method. Do not apply succeeding coats until previous coat has cured as recommended by manufacturer. If sanding is required to produce a smooth, even surface according to manufacturer's written instructions, sand between applications.
   2. Omit primer over metal surfaces that have been shop primed and touchup painted.
   3. If undercoats, stains, or other conditions show through final coat of paint, apply additional coats until paint film is of uniform finish, color, and appearance. Give special attention to ensure that edges, corners, crevices, welds, and exposed fasteners receive a dry film thickness equivalent to that of flat surfaces.
   4. Allow sufficient time between successive coats to permit proper drying. Do not recoat surfaces until paint has dried to where it feels firm, and does not deform or feel sticky under moderate thumb pressure, and until application of another coat of paint does not cause undercoat to lift or lose adhesion.

C. Application Procedures: Apply paints and coatings by brush, roller, spray, or other applicators according to manufacturer's written instructions.
   1. Brushes: Use brushes best suited for type of material applied. Use brush of appropriate size for surface or item being painted.
   2. Rollers: Use rollers of carpet, velvet-back, or high-pile sheep's wool as recommended by manufacturer for material and texture required.
   3. Spray Equipment: Use airless spray equipment with orifice size as recommended by manufacturer for material and texture required.

D. Minimum Coating Thickness: Apply paint materials no thinner than manufacturer's recommended spreading rate to achieve dry film thickness indicated. Provide total dry film thickness of the entire system as recommended by manufacturer.

E. Fire Walls: Where fire walls run above suspended ceilings, paint by stenciling "Fire and Smoke Barrier-Protect All Openings" on wall surfaces.
   1. Make height of characters 6-inches high or as required by governing authorities.
   2. Space stenciling at 20'-0" o.c but not less than one stenciling on each wall or as required by governing authorities.

F. Apply products in accordance with manufacturer's instructions.

G. Do not apply finishes to surfaces that are not dry. Allow applied coats to dry before next coat is applied.

H. Apply each coat to uniform appearance.

I. Sand wood and metal surfaces lightly between coats to achieve required finish.

J. Vacuum clean surfaces of loose particles. Use tack cloth to remove dust and particles just prior to applying next coat.

K. Reinstall electrical cover plates, hardware, light fixture trim, escutcheons, and fittings removed prior to finishing.

**3.04 FINISHING MECHANICAL AND ELECTRICAL EQUIPMENT**

A. Refer to Division 15 and Division 16 for schedule of color coding of equipment, duct work, piping, and conduit.

B. Remove unfinished louvers, grilles, covers, and access panels on mechanical and electrical components and paint separately.

C. Finish equipment, piping, conduit, and exposed duct work in utility areas in colors according to the color coding scheme indicated.

D. Reinstall electrical cover plates, hardware, light fixture trim, escutcheons, and fittings removed prior to finishing.

**3.05 CLEANING**

A. Collect waste material that could constitute a fire hazard, place in closed metal containers, and remove daily from site.

B. After completing painting, clean glass and paint-spattered surfaces. Remove spattered paint by washing and scraping without scratching or damaging adjacent finished surfaces.

**3.06 PROTECTION**

A. Protect finished coatings until completion of project.

B. Touch-up damaged coatings after Substantial Completion.

C. Provide “Wet Paint” signs to protect newly painted finishes. After completing painting operations, remove temporary protective wrappings provided by others to protect their work.

**3.07 SCHEDULE - SURFACES TO BE FINISHED**

A. Do Not Paint or Finish the Following Items:
   1. Items fully factory-finished unless specifically noted.
   2. Fire rating labels, equipment serial number and capacity labels.
   3. Stainless steel items.

B. Paint the surfaces described below under Schedule - Paint Systems.

C. Mechanical and Electrical: Use paint systems defined for the substrates to be finished.
   1. Paint all insulated and exposed pipes, conduit, boxes, insulated and exposed ducts, hangers, brackets, collars and supports, and mechanical equipment, electrical equipment, and tanks that do not have factory-applied finishes occurring in finished areas to match background surfaces, unless otherwise indicated.
   2. Paint all equipment, including that which is factory-finished, exposed to weather or to view on the roof and outdoors.
   3. Paint shop-primed items occurring in finished areas.
   4. Paint interior surfaces of air ducts that are visible through grilles and louvers with one coat of flat black paint to visible surfaces.
   5. Paint dampers exposed behind louvers, grilles, to match face panels.
   6. Paint electrical switchgear, panelboards and miscellaneous equipment that is indicated to have a factory-primed finish for field painting.

D. Paint both sides and edges of plywood backboards for electrical and telephone equipment before installing equipment.

E. Block Fillers: Apply block fillers to concrete masonry block at a rate to ensure complete coverage with pores filled.

F. Prime Coats: Before applying finish coats, apply a prime coat, as recommended by manufacturer, to material that is required to be painted or finished and that has not been prime coated by others. Recoat primed and sealed surfaces where evidence of suction spots or unsealed areas in first coat appears, to ensure a finish coat with no burn-through or other defects due to insufficient sealing.

G. Pigmented (Opaque) Finishes: Completely cover surfaces as necessary to provide a smooth, opaque surface of uniform finish, color, appearance, and coverage. cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness, or other surface imperfections will not be acceptable.

H. Transparent (Clear) Finishes: Use multiple coats to produce a glass-smooth surface film of even luster. Provide a finish free of laps, runs, cloudiness, color irregularity, brush marks, orange peel, nail holes, or other surface imperfections.
   1. Provide satin finish for final coats.

I. Completed Work: Match approved samples for color, texture, and coverage. Remove, refinish, or repaint work not complying with requirements.

J. A maximum of (20) twenty paint colors will be selected by Gardner Spencer Smith Tench and Jarbeau, PC.

**3.08 MAINTENANCE MATERIALS**

A. Furnish a minimum of 5 gallons of each paint color, type and finish used on the Project as Union County Commissioner's Office's Attic Stock. Store materials at location designated by Gardner Spencer Smith Tench and Jarbeau, PC.

B. Properly Identify each container with manufacturer, color name, product number, color formula and general location in the Project.

**3.09 SCHEDULE - PAINT SYSTEMS**

A. Concrete, Concrete Block, Brick Masonry: Finish all surfaces exposed to view.
   1. Exterior: Semi-gloss.
   2. Interior: Semi-gloss.
      a. Interior Restroom: Gloss.

B. Gypsum Board: Finish all surfaces exposed to view.
   1. Walls: Semi-gloss.
   2. Interior Soffits: Flat.
   3. Interior Ceilings at Toilet Areas: Semi-gloss.

C. Wood: Finish all surfaces exposed to view.
   1. Waterborne Stain Satin-Varnish Finish: Two finish coats of waterbome clear satin varnish over a sealer coat and waterborne interior wood stain. Wipe wood filler before applying stain.
      a. Filler Coat: Open-grain wood filler.
      b. Stain Coat: Interior wood stain.
      c. Sealer Coat: Clear sanding sealer.
      d. Finish Coats: Interior waterborne clear satin varnish.

D. Steel Doors and Frames: Finish all surfaces exposed to view.
   1. Exterior: Semi-gloss.
   2. Interior: Semi-gloss.

E. Steel Fabrications: Finish all surfaces exposed to view.
   1. Exterior: Gloss; finish all surfaces, including concealed surfaces, before installation.
   2. Interior: Gloss.
   3. Interior exposed ceiling structural, mechanical, electrical systems: Flat.

F. Galvanized Steel: Finish all surfaces exposed to view.
   1. Exterior: Semi-gloss.
   2. Interior: Semi-gloss.

G. Shop-Primed Metal Items: Finish all surfaces exposed to view.
   1. Finish the following items:
      a. Exposed surfaces of lintels.
      b. Elevator pit ladders.
      c. Exposed surfaces of steel stairs and railings.
      d. Mechanical equipment.
      e. Electrical equipment.
   2. Exterior: Gloss.
   3. Interior: Gloss.

**END OF SECTION**

# SECTION 10 1200
# TROPHY AND DISPLAY CASES

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Trophy and Display Cases.

### 1.02 RELATED SECTIONS

A. Section 04 2200 - Concrete Unit Masonry

B. Section 06 1000 - Rough Carpentry: Concealed supports in wood stud walls.

C. Section 09 2116 - Gypsum Board Assemblies: Concealed supports in metal stud walls.

### 1.03 REFERENCES

A. ASTM B221

B. ASTM-E 84 - Conform to applicable code for flame/smoke rating in tackboards.

C. NFPA 70 - National Electrical Code; National Fire Protection Association; 2005.

### 1.04 SUBMITTALS

A. See Division 01 - Administrative Requirements, for submittal procedures.

B. Shop Drawings: Provide shop drawings for each type of recessed display or trophy case required.
   1. Show location of panel joints.
   2. Show location of special-purpose graphics for visual display surfaces.
   3. Include sections of typical trim members.

C. Product Data: Provide technical data for materials specified. Include Material Safety Data Sheets, when applicable.

D. Samples for Verification: Submit color charts for selection of color and texture of trophy and display cases.
   1. Trophy and Display Cases: Not less than 8-1/2 by 11-inches, mounted on substrate indicated for final Work. Include one panel for each type, color, and texture required.
   2. Trim: 6-inch long sections of each trim profile.
   3. Accessories: Full-size Sample of each type of accessory.

E. Qualification Data: For Installer.

F. Manufacturer's printed installation instructions.

G. Maintenance Data: Include data on regular cleaning, stain removal .

### 1.05 REGULATORY REQUIREMENTS

A. Conform to applicable code for flame/smoke rating in tackboards in accordance with ASTM E84.

### 1.06 QUALITY ASSURANCE

A. Source Limitations: Obtain each type of trophy and display case through one source from a single manufacturer.

B. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than three years of documented experience.

C. Installer Qualifications: Company specializing in performing the work of this section with minimum three years of experience.

D. Products Requiring Electrical Connection: Listed and classified by UL as suitable for the purpose specified and indicated.

E. Product Options: Drawings indicate size, profiles, and dimensional requirements of trophy and display cases and are based on the specific system indicated.

F. Do not modify intended aesthetic effects, as judged solely by Gardner Spencer Smith Tench and Jarbeau, PC, except with Gardner Spencer Smith Tench and Jarbeau, PC's approval. If modifications are proposed, submit comprehensive explanatory data to for Gardner Spencer Smith Tench and Jarbeau, PC review.

**1.07 DELIVERY, STORAGE, AND PROTECTION**

A. Deliver factory-built trophy and display cases, including factory applied trim where indicated, completely assembled in one piece without joints, where possible. If dimensions exceed maximum manufactured panel size, provide two or more pieces of equal length as acceptable to Gardner Spencer Smith Tench and Jarbeau, PC. When overall dimensions require delivery in separate units, prefit components at the factory, disassemble for delivery, and make final joints at the site.

B. Store trophy and display cases vertically with packing materials between each unit.

**1.08 PROJECT CONDITIONS**

A. Field measure prior to preparation of shop drawings and fabrication to ensure proper fit.

B. Sequence installation to ensure utility connections are achieved in an orderly and expeditious manner.

**1.09 WARRANTY**

A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.

**PART 2 PRODUCTS**

**2.01 MANUFACTURERS**

A. In other Part 2 articles where title below introduce lists, the following requirements apply to product selection:
   1. Manufacturers: Subject to compliance with requirements, provide products by one of the manufacturers specified.
   2. Basis-of-Design Product: The design for each visual display surface is based on the product specified. Subject to compliance with requirements, provide either the named product or a comparable product by one of the other manufacturers specified.

**2.02 MATERIALS, GENERAL**

A. Vinyl Face Sheets: Vinyl surface will be Type II self-healing, weighing not less than 21 ounces per lineal yard.
   1. Vinyl shall be washable and mildew resistant.

B. Core Material: 1/4 inch natural cork underlayment.

C. Wood Box Material: 3/4 inch plywood with Birch veneer.

D. Metal Trim: 6063 aluminum alloy with a T5 temper.

E. Glass: 1/4 inch tempered safety glass.

F. Adhesive: As recommended by manufacturer for project conditions.

**2.03 TROPHY AND DISPLAY CASES**

A. Trophy and Display Cases: Factory-fabricated units consisting of extruded-aluminum frame, fixed tackable back panel, and aluminum-framed vertical-sliding tempered glass doors. Provide panels that operate smoothly without vibration or chatter, fitted with flat key tumbler locks.
   1. Acceptable products; subject to compliance with specified requirements:
      a. Claridge Products & Equipment, Inc; www.claridgeproducts.com.
      b. Platinum Visual Systems; a division of ABC School Equipment, Inc; www.pvsusa.com.
      c. PolyVision Corporation; www.polyvision.com.
   2. Provide Display Cases with Sliding Glass Doors for project from manufacturer’s standard series.

a. Metal trim and accessories: Manufacturer standard wall aluminum extrusions with clear satin anodized finish.
   1) Housing: One piece aluminum 2” x 2” angle perimeter housing.
   2) Door Frame: Channel frame with plastic seal at glass. Channel to have integrated wheels.
   3) Top Door Track: One piece aluminum channel with plastic guides at top of glass.
   4) Bottom Door Track: One piece aluminum channel with roller guide.
   5) Lock: Sliding ratchet lock.
   6) Tackable Back Panels: Gardner Spencer Smith Tench and Jarbeau, PC to select from manufacturers standard materials.
   7) Laminate Back Panels: Gardner Spencer Smith Tench and Jarbeau, PC to select from manufacturers standard finishes.
   8) Sizes:5'-6" x 5' standard.
   9) Floor leveling glides.

B. Glass Doors: Glass doors are 3/16” tempered, unless otherwise specified.
   1. Sliding door cases have ground-in finger pulls, doors slide on glides; and are fitted with flat key tumbler locks.
   2. Three Adjustable Glass Shelves, shelf standards and brackets.
      a. Size: 10" wide and 12" wide

C. Legs or Bases: Freestanding cases are 5’-6” O.A.; legs or bases are 18” high.
   1. Legs: Aluminum
   2. Bases: Gardner Spencer Smith Tench and Jarbeau, PC to select from manufacturers standard finish base.

D. Metal Trim and Accessories: Provide aluminum extrusions. Trim shall be heavy gauge extruded aluminum and shall meet or exceed ASTM B221 alloy standards. Finish to be etched and anodized satin finish.
   1. Color: Anodized.

E. Tackboard Colors: As selected from manufacturer’s standard colors.

F. Options: Lights.

**2.04 FABRICATION**

A. Laminate facing sheet and backing sheet to core material under pressure, using manufacturer’s recommended adhesive.

B. Provide factory-assembled units, except where sizes demand partial field assembly.

C. Assemble units in one piece without joints, wherever possible. Where required dimensions exceed maximum panel size available, provide two or more pieces of equal length, as indicated on approved shop drawings. Assemble to verify fit at factory, then disassemble for delivery and final assembly at project site.

**PART 3 EXECUTION**

**3.01 EXAMINATION**

A. Verify that field measurements are as indicated.

B. Verify that internal wall blocking is ready to receive work and positioning dimensions are as indicated on shop drawings.

C. Examine substrates and conditions, with Installer present, for compliance with requirements for installation tolerances, surface conditions of wall, and other conditions affecting performance.

D. Examine walls and partitions for proper backing for visual display surfaces.

E. Proceed with installation only after unsatisfactory conditions have been corrected.

**3.02 PREPARATION**

A. Remove dirt, scaling paint, projections, and depressions that will affect smooth, finished surfaces.

B. Prepare recesses for trophy and display cases as required by type and size of unit.

**3.03 INSTALLATION**

A. Install display cases in accordance with manufacturer's instructions for concealed non-adhesive fastenings.

B. Attach using manufacturer's standard mounting clips for intended substrate.

C. General: Install display cases in locations and at mounting heights indicated on Drawings, or if not indicated, at heights indicated below. Keep perimeter lines straight, level, and plumb. Provide grounds, clips, backing materials, adhesives, brackets, anchors, trim, and accessories necessary for complete installation.

1. Trophy and Display Cases.
   a. Install where shown on the Drawings.
2. Secure units level and plumb.
3. Tolerance: Maximum 1/8' in 12'-0" from level.

**3.04 ADJUSTING**

A. Verify that all accessories are installed as required for each unit.

**3.05 CLEANING AND PROTECTION**

A. Upon completion of installation, clean surfaces and trim in accordance with manufacturer's recommendations, leaving all materials ready for use.

B. Cover with protective cover, taped to frame.

C. Remove temporary protective cover at date of Substantial Completion.

**END OF SECTION**

# SECTION 10 1440
# BUILDING SIGNAGE

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Signage of the following types:
   1. Chemically welded signs.
   2. ADA compliant interior signage, custom construction.
   3. Building Signage.

### 1.02 REFERENCES

A. ANSI/ICC A117.1 - Accessible and Useable Buildings and Facilities; 2003.

B. ATBCB ADAAG - Americans with Disabilities Act (ADA), Accessibility Guidelines for Buildings and Facilities (ADAAG); U.S. Architectural Transportation Barriers Compliance Board; 2004.

### 1.03 SUBMITTALS

A. See Division 01 - Administrative Requirements, for submittal procedures.

B. Product Data: Manufacturer's descriptive literature.
   1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each type of sign.

C. Shop Drawings: List sign styles, lettering, locations and dimensions of each interior sign.
   1. Include plans, elevations, and large-scale sections of typical members and other components. Show mounting methods, grounds, mounting heights, layout, spacing, reinforcement, accessories, and installation details.
      a. Provide message list for each sign, including large-scale details of wording, lettering, artwork, and braille layout.

D. Selection Samples: One complete set of color chips representing manufacturer's full range of available colors.
   1. For each type of sign material indicated that involves color selection.

E. Verification Samples: Two full size samples, representing type, style and color specified including method of attachment.
   1. Panel Signs: Full-size Samples of each type of sign required.
   2. Approved samples will not be returned for installation into Project.

F. Manufacturer's Installation Instructions: Include installation template and attachment devices.

G. Maintenance Data: For signage cleaning and maintenance requirements to include in maintenance manuals.

### 1.04 QUALITY ASSURANCE

A. Regulatory Requirements: Comply with requirements of ANSI/ICC A117.1 and ADAAG.

B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years of documented experience.

C. Fabricator Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years of documented experience.

D. Source Limitations: Obtain each sign type through one source from a single manufacturer.

E. Edges: Are to be finished smooth, true and straight unless specifically noted otherwise.

### 1.05 DELIVERY, STORAGE, AND HANDLING

A. Inspect products upon receipt. Store products in manufacturer's packaging until ready for installation.

B. Cover or otherwise protect finished surfaces from damage or stains for remainder of work.

**1.06 PROJECT CONDITIONS**

A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results.

B. Field Measurements: Where sizes of signs are determined by dimensions of surfaces on which they are installed, verify dimensions by field measurement before fabrication and indicate measurements on Shop Drawings.

**1.07 COORDINATION**

A. For signs supported by or anchored to permanent construction, advise installers of anchorage devices about specific requirements for placement of anchorage devices and similar items to be used for attaching signs.

B. No fabrication or installation materials or procedure will be used that will in any way change the visual quality or in any manner have an adverse effect on existing materials and surfaces.

C. All adhesives and other materials will be used in accordance with recommendations made by the manufacturer of the materials specified to be laminated or adhered. No adhesive or other materials that will fade, discolor, or cause other laminated material(s) bonding or adhesive to fail as a result of proximity, ultraviolet light or extreme temperatures will be used, and no adhesives or other materials will be used that will change the color of or deteriorate the materials to which they are applied. All adhesives will be of non-staining, non-yellowing quality, and all visible joints will be free from air bubbles and other defects.

D. If sign messages do not fit in a specific format shown in the drawings, Sign Contractor is to submit layouts of the message in questions to Gardner Spencer Smith Tench and Jarbeau, PC for approval.

**PART 2 PRODUCTS**

**2.01 INTERIOR ROOM SIGNS**

A. Interior Room Signage:
   1. See Interior Sign Schedule and Drawings for additional information.
   2. Basis of Design: EmBoss single-piece embossed ADA monolithic tactile plaque raised 1/32 inch minimum from plaque first surface; as manufactured by ASI Sign Systems, Inc. or a comparable product of one of the following manufacturers:
      a. APCO Graphics, Inc: www.apcographics.com.
      b. ASI Sign Systems, Inc: www.asisignage.com.
      c. Avalis Wayfinding Solutions, Inc: www.avalisway.com.
      d. Best Sign Systems: www.bestsigns.com.
      e. Bayuk Graphic Systems, Inc:
      f. Henry Graphics, Inc: www.henrygraphics.com.
      g. Image Makers Marketing:
      h. Innerface Sign Systems, Inc: www.innerface-signage.com.
      i. Mohawk Sign Systems, Inc: www.mohawksign.com.
      j. Substitutions: See Division 01 - Product Requirements.
   3. Sign Types:
      a. Type A: 6"x6"; located at entrance to each room unless noted otherwise.
         1) Graphic layout: Single line 1/2" high Braille II graphics located 1" from bottom edge of sign and 1/2" from left edge of sign. Single line 3/4" high upper case arial lettering and numbers; located 2" from bottom edge of sign to bottom of room number and 1/2" from left edge of sign to edge of room number.
      b. Type B: 1'-0" high x 6" wide; located at entrance to handicapped toilets.
         1) Graphic layout: Single line 1/2" high Braille II graphics located 1" from bottom edge of sign and 1/2" from left edge of sign. Single line 3/4" high upper case arial lettering; located 2" from bottom edge of sign to bottom of room name 1/8" wide x 5" long bar/stripe centered at 6" from bottom edge of sign and 1/2" from left edge of sign. 3-1/2" high wheelchair pictogram located 7-1/4" from bottom

edge of sign and visually positioned left to right.

4. Material Thickness: Two panels of 1/8" thick acrylic plastic for a total approximate thickness of 1/4". Sign and copy panel to be chemically welded to back panel leaving a 3/16" recessed perimeter border.
5. Surface texture: Matte.
6. Graphics:
   a. Sign Copy: Sign copy shall be relieved from face of plaque 1/32" minimum. Graphics, numbers, letters, and symbols shall comply with ADA requirements; type faces as selected by Gardner Spencer Smith Tench and Jarbeau, PC.
   b. Braille Copy: Braille copy shall be relieved from face of plaque 1/32" minimum. Braille symbols shall comply with ADA requirements; translation shall be provided by the sign manufacturer.
   c. Colors: Signs shall be minimum 2 color, contrasting between graphics and background in compliance with ADA, and as selected from the manufacturer's full line selection, minimum 60 colors.
      1) Alphabetic, numeric text, graphics and back panel: Color 1.
      2) Braille and background: Color 2.
7. Mounting methods:
   a. Over masonry: Flush. Vandal resistant screws with substrate and conditions prepared and ready for product installation. Proceeding with installation implies installer's acceptance of substrate and conditions.
      1) Over split face or off-set concrete masonry units provide stainless steel spacers to allow for a plumb and flush installation.
   b. Over gypsum board: Flush. Vandal resistant screws with substrate and conditions prepared and ready for product installation. Proceeding with installation implies installer's acceptance of substrate and conditions.
   c. Over glass: Flush. Silastic adhesive.
8. Positioning: Mount signage at 5'-0" to center of sign with edge of sign 2" from edge of adjacent door frame unless noted otherwise.

## 2.02 BUILDING SIGNS

A. Exterior Building Identification Signage:
   1. See Drawings for additional information.
   2. Manufacturer's: Subject to compliance with requirements, provide products by one of the following:
      a. Andco Industries Corp: www.andco.com.
      b. ARK Ramos Foundry and Mfg., Inc: www.arkramos.com.
      c. ASI Sign System, Inc: www.asisign.com.
      d. Gemini, Inc: www.signletters.com.
      e. Henry Graphics, Inc: www.henrygraphics.com.
      f. Image Makers Marketing:
      g. Metal Art: www.metalartslettersandplaques.com.
      h. Mohawk Sign Systems, Inc: www.mohawksign.com.
      i. Show and Tell Products, Inc: www.showandtellproducts.biz.
      j. The Southwell Co: www.southwellco.com.
      k. Substitutions: See Division 01 - Product Requirements.
   3. Characteristics:
      a. Type: Cast aluminum letters and numbers.
      b. Letter style: Optima, all upper case letters.
      c. Height: As shown on drawings for each specific location.
      d. Depth: 1 1/2 inch.
      e. Base material: Cast-aluminum alloy.
      f. Finish: Acrylic urethane enamel face and edges, in colors selected by Gardner Spencer Smith Tench and Jarbeau, PC from manufacturer's standard selection.

4. Mounting methods:
   a. Over masonry: Flush. Threaded stud of aluminum set with non-staining cement.
   b. Over EIFS: Flush. Threaded stud of aluminum set through rigid insulation into solid substrate and seal with exterior sealant.
   c. Over wood: Flush. Threaded stud of aluminum set to two parallel flat aluminum bars or channels with stainless steel screws. Bars or channels shall be painted to match adjacent surfaces with baked enamel and attached to grilles with similarly painted stainless steel screws.

**2.03 FINISHES, GENERAL**

A. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of range of approved Samples. Noticeable variations in same piece are not acceptable. Variations in appearance of other components are acceptable if they are within range of approved Samples and are assembled or installed to minimize contrast.

**PART 3 EXECUTION**

**3.01 EXAMINATION**

A. Examine installation areas to ensure that conditions are suitable for installation.

B. Examine signage for defects prior to installation. Do not install damaged signage.

C. Verify that items provided under other sections of Work are sized and located to accommodate signs.

**3.02 PREPARATION**

A. Verify mounting heights and locations for interior signage will comply with referenced standards.

B. Examine supporting members to ensure that surfaces are at elevation indicated or required to comply with authorities having jurisdiction and are free from dirt and other deleterious matter.

C. Clean mounting locations of dirt, dust, grease or similar conditions that would prevent proper installation.

D. Proceed with installation only after unsatisfactory conditions have been corrected.

**3.03 INSTALLATION**

A. General: Locate signs and accessories where indicated, using mounting methods of types described and in compliance with manufacturer's written instructions.
   1. Install signs level, plumb, without distortion, and in proper relationship with adjacent surfaces using manufacturer's recommended standard mounting system.
   2. Interior Room Signage: Install signs on walls adjacent to latch side of door where applicable unless noted otherwise. Where not indicated or possible such as double doors, install signs on nearest adjacent walls. Locate to allow approach within 3 inches of sign without encountering protruding objects or standing within swing of door.
   3. Exterior and Interior Building Identification Signage: Install individual letters and numbers where indicated on the drawings. Where not indicated locate per the direction of Gardner Spencer Smith Tench and Jarbeau, PC.
   4. Interior Dedication Plaque Signage: Install plaque where indicated on the drawings. Where not indicated locate per the direction of Gardner Spencer Smith Tench and Jarbeau, PC.

B. Interior Room-Mounted Signs: Attach panel signs to wall surfaces using methods indicted below:
   1. Mechanical Mounting: Use combination sheet metal-wood vandal resistant torx pin head screws, full threaded.
      a. Install product in locations indicated using mounting methods for specific substrates as recommended by sign manufacturer and free from distortion, warp, or defect adversely affecting appearance.

1) 6"x6" signs minimum four screws per sign.
2) 6"x1'-0" signs minimum six screws per sign.

2. Where panel signs are scheduled or indicated to be mounted on glass, provide matching plate on opposite side of glass to conceal mounting materials.
   a. Use liquid-silicone adhesive recommended in writing by sign manufacturer to attach signs. Use double-sided vinyl tape where recommended in writing by sign manufacturer to hold sign in place until adhesive has fully cured.

**3.04 CLEANING AND PROTECTION**

A. Remove adhesive from exposed sign surfaces as recommended by manufacturer.

B. Clean signs after installation as recommended by manufacturer.

C. Protect signs from damage until accepted by Union County Commissioner's Office.

D. Replace damaged products before Substantial Completion.

**3.05 SIGNAGE SCHEDULE**

A. Refer to the list of interior signs required for the project as shown in the Drawings.

B. See building exterior elevations for extent of building signage.

**3.06 INTERIOR SIGNAGE SCHEDULE**

A. Refer to the list of interior signs required for the project as attached to this Section.

B.

C. SIGN DESIGNATION AND LOCATION

D.

| | DR NO | Sign Type | Room Name |
|---|---|---|---|
| E. | | | |
| F. | 04 | A | Office & Quarters #1 |
| G. | 09 | B | Rest Room |
| H. | 11 | A | Rest Room |
| I. | 12 | A | Quarters #2 |
| J. | 14 | A | Quarters #3 |

**END OF SECTION**

# SECTION 10 2175
# PHENOLIC CORE PARTITIONS

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Solid Phenolic Toilet Compartments.

B. Solid Phenolic Urinal Screens.

### 1.02 RELATED SECTIONS

A. Section 10 2810 - Toilet Accessories.

### 1.03 REFERENCES

A. ASTM A 666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar; 2003.

### 1.04 SYSTEM DESCRIPTION

A. Design Requirements: Design and fabrication shall conform to requirements of ADA.

B. Toilet Compartments:
   1. Floor supported overhead braced type units consisting of solid phenolic pilasters, panels and doors; plated steel leveling devices with stainless steel covers; aluminum overhead bracing, and stainless steel fittings, hardware and fastenings necessary for complete installation.

C. Urinal Screens:
   1. Floor supported overhead braced type units consisting of solid phenolic pilasters and screen panels; plated steel leveling devices with stainless steel covers; aluminum overhead bracing, and stainless steel fittings, hardware and fastenings necessary for complete installation.

### 1.05 SUBMITTALS

A. See Division 01 - Administrative Requirements, for submittal procedures.

B. Shop Drawings: Submit Shop Drawings indicating complete layout, elevations of partitions, thickness of solid phenolic panels, fastenings, proposed method of anchoring, size and spacing of anchors, details of construction, hardware, fittings, mountings, method of assembly, other related items, and installation details.

C. Product Data: Submit manufacturer's technical data for materials, fabrication, finishing, fastenings, hardware, and installation details.
   1. Manufacturer's complete range of colors.

D. Material Samples:
   1. Submit full range of Samples of phenolic chips for initial color selection. Chips shall be at least 2 inches x 3 inches.
   2. Submit Samples of hardware and fasteners.

E. Certificates: Furnish manufacturer's certification that materials meet or exceed Specification requirements.

### 1.06 QUALITY ASSURANCE

A. Comply with the following as a minimum requirement:
   1. ASTM A167-92b: Stainless and Heat Resisting Chromium Nickel Steel Plated
   2. ASTM E 84-91a: Surface Burning Characteristics of Building Materials
   3. Chemical Resistance: Panels to meet or exceed Scientific Equipment Furniture Association’s (S.E.F.A.) list of 49 standard chemicals.
   4. Consistency:
      a. Panels to have uniform thickness (+0.03”).
      b. Panels to have uniform flatness (maximum difference of 0.03”) for 10’ span.

**1.07 DELIVERY, STORAGE AND HANDLING**

A. Deliver materials to Project site with manufacturer's labels intact and legible, in sealed containers. Materials shall be kept dry.

B. Provide all means necessary to protect compartments and screens.

**1.08 PROJECT/SITE CODITIONS:**

A. Install toilet partitions after plumbing fixtures and floor, wall and ceiling finishes have been installed.

**1.09 COORDINATION**

A. Field Measurements: Secure field measurements before preparation of Shop Drawings and fabrication where possible, for proper and adequate fabrication and installation of the Work of this section.

B. Furnish inserts and anchorage built into other construction for installation of toilet compartments and urinal screens.

C. Coordinate masonry wall construction so that masonry unit cells are filled with grout at points where toilet partition mounting brackets, support framing and anchors in wall will be located.

**1.10 WARRANTY**

A. Manufacturer's Special Warranty: Written warranty made out to Union County Commissioner's Office and signed by manufacturer guaranteeing its plastic against breakage, corrosion, and delamination under normal conditions. If materials are found to be defective during the warranty period for reasons listed above, the materials will be replaced free of charge.
   1. Manufacturer shall provide a 10 year material warranty from date of substantial completion.

**PART 2 PRODUCTS**

**2.01 MANUFACTURER**

A. Solid Phenolic Panels:
   1. Accurate Partitions Corp: www.accuratepartitions.com.
   2. Ampco Products, Inc: www.ampco.com.
   3. Bobrick Washroom Equipment, Inc: www.bobrick.com.
   4. General Partitions MFG. Corp: www.generalpartitions.com.
   5. Global Products Corp: www.globalpartitions.com.
   6. Substitutions: See Division 01 - Product Requirements.

**2.02 COMPARTMENTS**

A. Toilet Compartments: Solid Phenolic.
   1. Floor/Wall Mounted: Overhead-braced partitions.

B. Urinal Screens: Solid Phenolic.
   1. Floor/Wall Mounted: Overhead-braced screens.

**2.03 MATERIALS**

A. Compartment panels:
   1. Core: Phenolic color-thru impregnated Kraft papers with consistent matching color throughout the core. Panel shall be at least 93 pounds per cubic foot to ensure full saturation of Kraft core.
   2. Fire Resistance: The panels shall have the following surface burning characteristics and smoke generation values in accordance with UL classification and labeling in accordance with ASTM E 84 tests and shall be self-extinguishing.
      a. Flame spread: Maximum 30 for 3/4 inch thick panels; 30 for 1/2 inch thick panels.
      b. Smoke developed: Maximum 70 for 3/4 inch thick panels; 85 for 1/2 inch thick panels.
   3. Panels shall be UL registered and labeled.
   4. Panel shall be resistant to cleaning solvents and uric acid.

5. Product/Material Specification:
   a. Modulus of Elasticity: 1.5 million psi minimum
   b. Shear Strength: 2,000 psi minimum
   c. Compressive strength: 24,000 psi minimum.
   d. Water Absorption: 3% maximum
   e. Use Temperature: 350° F maximum
   f. Surface and Edges: Non-porous
   g. Material Resistance: Will not support fungus or bacteria
   h. Uniform Load Deflection: 1/4” maximum

B. Stainless Steel: ASTM A167, Type 304.

C. Concealed Fasteners and Leveling Devices: Zinc or cadmium coated steel.

D. Shower Accessories and Seat: See Section 10 2810 - Toilet Accessories.

**2.04 CHARACTERISTICS**

A. Doors shall be minimum 3/4 inch thick, panels minimum 1/2 inch thick, pilasters minimum 3/4 inch thick and screens minimum 1/2 inch thick. Edges shall be machined to a radius of 0.125 inch; exposed surfaces shall be free of fabrication marks.

**2.05 FABRICATION**

A. Pilasters and Doors: Flush, formed of 3/4" thick solid phenolic panels.
   1. Door Dimensions: Unless otherwise indicated, furnish 24" wide in-swinging doors for standard toilet compartments, 36" wide clear opening out-swinging doors when located at the end, and 36" wide clear opening out-swinging doors when located at the side for stalls equipped for use by the physically disabled
   2. Anchorage Devices: Provide galvanized steel anchorage devices, complete and threaded rods, washers, and leveling adjustment nuts at pilasters, to permit connection to floor slab. Furnish devices, which are designed to support pilasters from structure without transmitting load to floor fill.
   3. Overhead Bracing: Provide anti-grip, decorative, heavy duty, extruded aluminum head rail with clear anodized finish.

B. Panels: Flush, formed of 1/2" thick solid phenolic panels. Height and width as indicated in drawings.

C. Urinal Screens: Flush, formed of 1/2" thick solid phenolic panels. Height and width as indicated in drawings.

**2.06 HARDWARE**

A. Hardware: Provide all hardware and fasteners for a complete installation.

B. Door hardware shall be cast Type 304 stainless steel, as follows:
   1. Hinges: 16 gauge Cast Stainless Steel Continuous Piano Hinge. Hinge shall be cast of type 304 stainless steel and shall have a Satin finish. Hinge shall be spring type for self-closing action and shall be fully adjustable up to 360 degrees. Only stainless steel components shall be used in the construction of the Hinge. Guide pin shall be 1/8 inch stainless steel. Six one-way head stainless steel machine screws per leaf on both door and pilaster, into threaded brass inserts or thru-bolted; inserts independent laboratory-tested to pull-out of 5,000 lb.
   2. Strike and Keeper with Emergency Access: Heavy duty cast stainless steel with a Satin finish. The strike and keeper shall be 2.50” high, with the mounting holes at 1.50” on center, and the wall thickness shall be a minimum of .125”. The strike and keeper shall have an integral rubber bumper door stop. The stock number shall be molded into the back of the strike and keeper for ease in identification. Furnish one per door. Stamped stainless steel is not acceptable.
   3. Slide Latch: Heavy Duty Cast Stainless steel with a Satin finish. The slide latch shall be surface mounted. The slide bar shall be .150” thick, 1.020” wide and 3.720” long. Latch shall have an internal stainless steel buffering spring to prevent damage when door is

inadvertently slammed against the latch. Mounting holes are to be spaced at 3.50” on center. Latch knob is to be riveted to the slide bar and then welded to insure that the knob will not come off. The stock number shall be molded into the back of the slide latch for ease identification. Furnish one per door. Stamped stainless steel is not acceptable.

4. Coat Hook: Heavy Duty Cast Stainless Steel with a Satin finish. Coat Hook and bumper shall be 2.340” high, 1.230” wide and shall protrudes out from the door 3.05”. The hook portion shall have a finished diameter of .250” thick. The stock number shall be molded into the back of the Coat Hook and Bumper for ease in identification. Furnish one per door. Stamped stainless steel is not acceptable. Mount at 48 inches maximum above finished floor in accessible toilet compartments.
5. Door Stop: Heavy Duty Cast Stainless Steel with a satin finish. Plated Zarnac Door stops are unacceptable. Door Stop shall have a 2.125” base diameter and shall protrude 1.80” from the Wall. The bumper at the end of the Door Stop shall be .250” thick. The diameter of the shaft shall be .6875”. The stock number shall be molded into the back of the Door Stop for ease in identification. Furnish one for each Disabled Accessible door. Stamped stainless steel is not acceptable.
6. Pull Handle: Heavy Duty Cast Stainless Steel with a Satin finish. Plated Zamac Door pulls are unacceptable. Pull Handle shall protrude from the face of the door .940” and shall be 4.735” long. The Pull Handle shall have mounting holes drilled and tapped for 10/24 threads at 3.50” on center. The Pull Handle shall be .655” wide and shall be mounted back to back with the Slide Latch. The stock number shall be molded into the back of the Pull Handle for ease in identification. Stamped stainless steel is not acceptable. Provide u-pull shape shape handle on each side of accessible toilet compartment doors.

C. Pilaster Shoes: ASTM A 1678, Type 302/304 Stainless Steel, minimum 3” high, 15 gauge, finish with #3 Directional polish, attached with Stainless Steel Through Bolts.

D. Continuous Brackets: Full height extruded 6063-T5 Aluminum with a satin anodized finish. The minimum weight shall be 1.685 pounds per lineal foot. Inside opening of Bracket shall be .50” for panels, .75” for pilasters. All holes for mounting to wall and panel/pilaster shall be pre-drilled. Holes are to be spaced at 9” on center along the full length of the Bracket for a total of twelve holes for mounting to the wall and seven holes for mounting to the panel/pilaster. Each Bracket is to have a minimum wall thickness of .125”.

E. Overhead Bracing (Headrail): Continuous heavy duty extruded 6063-T5 Aluminum Headrail with anti-grip profile. Head rail shall have integral reinforcing channel and curtain track. Head rail shall have Satin Anodized finish. Provide Head rail corner brackets, wall brackets, and herd rail end caps as required. The head rail and head rail brackets shall have a minimum wall height of 2”. The head rail and head rail brackets shall have a minimum wall height of 2”. The minimum wall thickness of the head rail and head rail brackets shall be .125”.

F. Chrome-plated, non-ferrous cast alloy material shall not be furnished for hinges, brackets, locks, latches and other fittings and accessories.

G. Fasteners:
1. Tamper-Proof: Zamac or equal stainless steel mushroom-shaped drive-in anchors, non-removable fasteners for anchors, and special tool for removal.
2. Floor and wall fasteners: No. 14 by 1-3/4 inch tamper-proof screws with conical plastic anchors.
3. All other fasteners: 5/8 inch Zamac or equal stainless steel tamper-proof screws or chrome plated brass tamper-proof brass thru-bolts.

## PART 3 EXECUTION

### 3.01 EXAMINATION

A. Before covering wall framing with finish materials, examine framing to ensure that backing plates and structural framing have been installed in such position as to receive all attachment screws.

B. Verify spacing of plumbing fixtures to ensure compatibility with installation of compartments.

C. Do not start the Work of this section until all deficiencies have been corrected.

**3.02 INSTALLATION**

A. Install panels and pilasters rigid, straight, plumb and level in accordance with manufacturer's instructions.

B. No evidence of drilling, cutting or patching shall be visible in finished Work.

C. Set units with not more than 1/2 inch between pilasters and panels and not more than 3/4 inch between panels and walls.

D. Overhead-Braced: Secure to structural concrete floor and concrete masonry walls.

E. Floor-Mounted: Secure to structural concrete floor.

F. Fasten panels and pilasters to brackets with through bolts and nuts.

G. Fasten urinal screen panels to walls with 2 panel brackets, minimum.

H. Provide for adjustment of floor variations with non-breakable plastic shoes on pilasters. Conceal floor fastenings in pilaster shoes.

I. Furnish each toilet compartment door with top and bottom hinges, and door latch.

J. Install door strike keeper on each pilaster in alignment with door latch.

K. Furnish each toilet compartment door with one coat hook and bumper.

**3.03 INSTALLED TOLERANCES**

A. Maximum Variation from Plumb or Level: 1/8 inch.

B. Maximum Displacement from Intended Position: 1/8 inch.

**3.04 CLEANING AND ADJUSTMENT**

A. Adjust doors to align with pilasters and overhead brace, operate freely without excessive force and stop 30 degrees from closed position when unlatched. Out-swinging handicapped partition doors shall return to closed position.

B. Adjust and align door hardware to uniform clearance at vertical edges of doors. Clearance space shall not exceed 1/4 inch.

C. Clean partitions and hardware using methods approved by panel manufacturer.

D. Coordinate installation of toilet accessories section.

E. Tighten anchors to ensure rigid installation.

F. Remove protective plastic coating.

**3.05 PROTECTION**

A. Protect the Work of this section until Substantial Completion.

**END OF SECTION**

# SECTION 10 2810
# TOILET ACCESSORIES

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Toilet Room Accessories.

B. Underlavatory Guards.

C. Utility Room Accessories.

### 1.02 RELATED SECTIONS

A. Section 061000 - Rough Carpentry.

B. Section 09 2116 - Gypsum Board Assemblies.

C. Section 09 3000 - Tiling.

### 1.03 REFERENCES

A. ATBCB ADAAG - Americans with Disabilities Act Accessibility Guidelines; US Architectural and Transportation Barriers Compliance Board; 2004.

B. ASTM A 240/A 240M - Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications; 2006.

C. ASTM A 554 - Standard Specification for Welded Stainless Steel Mechanical Tubing; 2003.

D. ASTM C 1036 - Standard Specification for Flat Glass; 2001.

E. ASTM F 446 - Standard Consumer Safety Specification for Grab Bars and Accessories Installed in the Bathing Area; 1985 (Reapproved 2004).

### 1.04 SUBMITTALS

A. See Division 01 - Administrative Requirements, for submittal procedures.

B. Product Data: Manufacturer's product data for products specified, indicating selected options and accessories.

C. Shop Drawings:
   1. Plans: Locate each specified unit in project.
   2. Elevations: Indicate mounting height of each specified unit in project.
   3. Details: Indicate anchoring and fastening details, required locations and types of anchors and reinforcement, and materials required for correct installation of specified products not supplied by manufacturer of products of this section.

D. Setting Drawings: For cutouts required in other work; include templates, substrate preparation instructions, and directions for preparing cutouts and installing anchoring devices.

E. Verification Samples: Two sample chips of each specified color and finish.

F. Product Schedule: Indicating types, quantities, sizes, and installation locations by room of each accessory required. Use designations indicated in the Toilet and Bath Accessory Schedule and room designations indicated on the Drawings in product schedule.

G. Quality Assurance Submittals:
   1. Manufacturer's printed installation instructions for each specified product.
   2. Documentation of manufacturer's qualifications, specified in QUALITY ASSURANCE Article of this section.

H. Maintenance Data: For accessories to include in maintenance manuals specified in Division 1. Provide lists of replacement parts and service recommendations.

I. Closeout Submittals: Warranty documents, issued and executed by manufacturer of products of this section, and countersigned by Contractor.

**1.05 QUALITY ASSURANCE**

A. Manufacturer Qualifications: Minimum five (5) years of documented experience producing products of the types specified in this section.

B. Regulatory Requirements: Conform to ADAAG requirements.

C. Source Limitations: Provide products of same manufacturer for each type of accessory unit and for units exposed to view in same areas, unless otherwise approved by Gardner Spencer Smith Tench and Jarbeau, PC.

D. Product Options: Accessory requirements, including those for materials, finishes, dimensions, capacities, and performance, are established by specific products indicated in the Toilet and Bath Accessory Schedule.
   1. Other manufacturers' products with equal characteristics may be considered. See Division 01 Section " Substitutions."
   2. Do not modify aesthetic effects, as judged solely by Gardner Spencer Smith Tench and Jarbeau, PC, except with Gardner Spencer Smith Tench and Jarbeau, PC's written approval. Where modifications are proposed, submit comprehensive explanatory data to Gardner Spencer Smith Tench and Jarbeau, PCfor review.

**1.06 DELIVERY, STORAGE, AND HANDLING**

A. Factory-apply strippable protective vinyl coating to sight-exposed surfaces after finishing of products; ship products in manufacturer's standard protective packaging.

B. Storage and Protection: Store products in manufacturer's protective packaging until installation.

**1.07 SEQUENCING**

A. Supply locating and sizing templates, and other requirements, to fabricators and installers of products referenced in RELATED SECTIONS Article for building in products of this section.

B. Supply reinforcing and anchoring devices required for installation of products of this section to fabricators and installers of products referenced in RELATED SECTIONS Article.

**1.08 WARRANTY**

A. See Division 01 - Closeout Submittals, for additional warranty requirements.

B. Manufacturer's standard warranty against defects in product workmanship and materials.

**PART 2 PRODUCTS**

**2.01 MANUFACTURERS**

A. Acceptable manufacturers; subject to compliance with specified design criteria, provide accessories fabricated by single manufacturer.

B. Basis-of-Design Product: The design is based on each toilet accessory specified. Subject to compliance with requirements, provide either named product or a comparable product by one of the manufacturers specified.
   1. Toilet and Bath Accessories:
      a. Basis of design: ASI-American Specialties, Inc; www.americanspecialties.com.
      b. A&J Washroom Accessories; ajwashroom.com.
      c. Bobrick Washroom Equipment, Inc; www.bobrick.com.
      d. Bradley/Washfountain Co; www.bradleycorp.com.
      e. McKinney/Parker, Div./Essex Industries.
      f. Substitutions: Division 01 - Product Requirements.
         1) Supply all products of this section from a single manufacturer.
   2. Underlavatory Guards:
      a. Basis of design: Brocar Products, Inc.
      b. Other acceptable manufacturers: Truebro Inc. and Plumberex Specialty Products Inc.
      c. Substitutions: Division 01 - Product Requirements.

## 2.02 MATERIALS

A. Stainless Steel Sheet: ASTM A 240/A 240M, Type 304, 18-8 alloy.

B. Brass: ASTM B 19, leaded and unleaded flat products; ASTM B 16 (ASTM B 16M), rods, shapes, forgings, and flat products with finished edges; ASTM B 30, castings.

C. Stainless Steel Tubing: ASTM A 269, Type 304 or 316.

D. Galvanized Sheet Steel: Hot-dipped galvanized steel sheet, ASTM A 653/A 653M, with G90/Z275 coating.

E. Mirror Glass: Float glass, ASTM C 1036 Type I, Class 1, Quality Q2, with silvering, copper coating, and suitable protective organic coating to copper backing in accordance with GSA CID A-A-3002.

F. Adhesive: Two component epoxy type, waterproof.

G. Fasteners, Screws, and Bolts: Hot dip galvanized, tamper-proof, security type.

H. Expansion Shields: Fiber, lead, or rubber as recommended by accessory manufacturer for component and substrate.

## 2.03 FABRICATION

A. Names or labels are not permitted on exposed faces of accessories. On interior surface not exposed to view or on back surface of each accessory, provide printed, waterproof label or stamped nameplate indicating manufacturer's name and product model number.

B. Surface-Mounted Toilet Accessories: Unless otherwise indicated fabricate units with tight seams and joints, and exposed edges rolled. Hang doors and access panels with continuous stainless-steel hinge. Provide concealed anchorage where possible.

C. Recessed Toilet Accessories: Unless otherwise indicated,fabricate units of all-welded construction, without mitered corners. Hang doors and access panels with full-length, stainless-steel hinge. Provide concealed anchorage that fully concealed when unit is closed.

D. Framed Glass-Mirror Units: Fabricate frames for glass-mirror units to accommodate glass edge protection material. Provide mirror backing and support system that permits rigid, tamper-resistant glass installation and prevents moisture accumulation.
   1. Provide galvanized steel backing sheet, not less than 0.034-inch (0.85-mm) and full mirror size, with nonabsorptive filler material. Corrugated cardboard is not acceptable filler material.

E. Mirror-Unit Hangers: Provide mirror-unit mounting system that permits rigid, tamper and theft-resistant installation, as follows:
   1. One-piece, galvanized steel, wall-hanger device with spring-action locking mechanism to hold mirror unit in position with no exposed screws or bolts.
   2. Heavy-duty wall brackets of galvanized steel, equipped with concealed locking devices requiring a special tool to remove.

F. Keys: Provide universal keys for internal access to accessories for servicing and resupplying. Provide minimum of six keys to Union County Commissioner's Office's representative.

## 2.04 UTILITY ROOM ACCESSORIES

A. Basic Construction Requirements:
   1. Doors: Fabricated from minimum 0.0313 inch stainless steel sheet, formed hems at sight-exposed edges; welded corners, finished to match sheet finish.
   2. Cabinets: Fabricated from minimum 0.0313 inch stainless steel sheet, formed hems at sight-exposed edges; all joints welded, sight-exposed welds finished to match sheet finish.
   3. Hinges: Stainless steel piano hinge, 3/16 inch diameter barrel, full length of cabinet; hinge leaves spot-welded to door and cabinet body.
   4. Locks: Tumbler locks, keyed alike other toilet accessory locks, with two keys for each lock.
   5. Stainless Steel Finish: No.4 satin.

B. Sanitary Napkin Disposal (T08 & T09) : Model 0472 & 0473A as required or as indicated.

C. Toilet Paper Dispenser (T06) : Model 0264-1A2.

D. Soap Dispenser T05 : Model 0347.

E. Baby Changing Station (T15) : Model 9013-9.

F. Robe Hook with Bumper (T03) : Model By Toilet Partition Supplier.

G. Heavy Duty Towel Hook (T01): Model 7345-S.

H. Mop Holder (T10)<>: Model 1308-3.

I. Underlavatory Guard (Typical): Insulated pipe covering, white antimicrobial, molded-vinyl covered for supply and drain piping assemblies intended for use at accessible lavatories to prevent direct contact with burns from piping. Provide components as required for applications indicated with flip tops at valves that allow service access without removing coverings. Model #101 E-Z by Truebro, Inc or as specified in Plumbing Section.

**2.05 MIRRORS**

A. Mirror (T13 & T14): Model 0600 & 0600-T.
   1. Frame: Angle.
   2. Mirror: Tempered glass.
   3. Size: As indicated on drawings.
   4. Finish: No.4 satin stainless steel.

B. Angle Mirror Frames: Fabricated from 0.050 inch stainless steel, formed to 3/4 by 5/8 inch angle; heliarc-welded corners, finished to match sheet finish; concealed "H" type mounting bracket with tamper-proof fasteners.

**2.06 GRAB BARS**

A. Grab Bars - Basic Requirements: Fabricated to comply with ASTM F 446 and to withstand a 900 pound force, from ASTM A 554 stainless steel tubing, 0.050 inch, Type 304, 18-8 alloy; formed 1-1/2 inch radius return to wall at each end; each end heliarc-welded to minimum 11 gage stainless steel circular flange; welds finished to match tube finish.

B. Grab Bars (T02): Series 3800.
   1. Peened finish.
   2. Sizes and configurations: As indicated on drawings.
   3. Tubing size for adults: 1-1/2".

C. Grab Bar Snap-on Mounting Flanges: Snap-on stainless steel cover, 0.0313 inch, 3 inch diameter by 1/2 inch deep, for concealing grab bar mounting flange.

**2.07 ELECTRICAL ACCESSORIES**

A. Electric Hand Dryer (T04): Model 0199-1-93.
   1. Cast iron housing, single-piece construction, 1/4 inch thick, with acid-resistant porcelain enamel finish.
   2. Electric motor rated 1/4 horsepower, 7500 revolutions per minute.
      a. 17.6 Amps at 115 VAC.
   3. Heating element rated minimum 1700 watts.
   4. Fan capacity 186 cubic feet per minute.

**PART 3 EXECUTION**

**3.01 EXAMINATION**

A. Verification of Conditions:
   1. Prepared openings are sized and located in accordance with shop drawings.
   2. Reinforcement and anchoring devices are correct type and are located in accordance with shop drawings.

B. Installer's Examination:

1. Have installer of this section examine conditions under which construction activities of this section are to be performed, then submit written notification if such conditions are unacceptable.
2. Transmit two copies of installer's report to Gardner Spencer Smith Tench and Jarbeau, PC within 24 hours of receipt.
3. Beginning construction activities of this section before unacceptable conditions have been corrected is prohibited.
4. Beginning construction activities of this section indicates installer's acceptance of conditions.

**3.02 INSTALLATION**

A. Install toilet accessories plumb and level in accordance with shop drawings and manufacturer's printed installation instructions.

B. Locate toilet accessories at heights specified by Americans with Disabilities Act (ADA).

C. Secure mirrors to walls in concealed, tamper-resistant manner with special hangers, toggle bolts, or screws.

D. Install grab bars to withstand a downward load of at least 250 lbf (1112 N), when tested according to method in ASTM F 446.

**3.03 CLEANING**

A. Remove manufacturer's protective vinyl coating from sight-exposed surfaces 24 hours before final inspection.

B. Adjust accessories for unencumbered, smooth operation and verify that mechanisms function properly. Replace damaged or defective items.

C. Clean surfaces in accordance with manufacturer's recommendations.

**3.04 PROTECTION OF INSTALLED PRODUCTS**

A. Protect products from damage caused by subsequent construction activities.

B. Field repair of damaged product finishes is prohibited; replace products having damaged finishes caused by subsequent construction activities.

**END OF SECTION**

# SECTION 10 4400
# FIRE EXTINGUISHERS, CABINETS AND ACCESSORIES

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Fire extinguishers.

B. Fire extinguisher cabinets.

C. Accessories.

### 1.02 RELATED REQUIREMENTS

A. Section 06 1000 - Rough Carpentry: Wood blocking product and execution requirements.

### 1.03 REFERENCE STANDARDS

A. FM (AG) - FM Approval Guide Current Edition.

B. NFPA 10 - Standard for Portable Fire Extinguishers 2022.

C. UL (DIR) - Online Certifications Directory Current Edition.

### 1.04 PERFORMANCE REQUIREMENTS

A. Conform to NFPA 10.

B. Provide extinguishers classified and labeled by Underwriters Laboratories Inc. for the purpose specified and indicated.

### 1.05 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Shop Drawings: Indicate locations of cabinets and cabinet physical dimensions.

C. Product Data: Provide extinguisher operational features.

D. Manufacturer's Installation Instructions: Indicate special criteria and wall opening coordination requirements.

E. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

F. Maintenance Data: Include test, refill or recharge schedules and re-certification requirements.

### 1.06 FIELD CONDITIONS

A. Do not install extinguishers when ambient temperature may cause freezing of extinguisher ingredients.

## PART 2 PRODUCTS

### 2.01 MANUFACTURERS

A. Fire Extinguishers, Cabinets and Accessories:
   1. JL Industries, Inc: www.jlindustries.com.
   2. Basis of Design: Larsen's Manufacturing Co: www.larsensmfg.com.
   3. Potter-Roemer: www.potterroemer.com.
   4. Substitutions: See Division 01 - Product Requirements.

### 2.02 FIRE EXTINGUISHERS

A. Fire Extinguishers - General: Comply with product requirements of NFPA 10 and applicable codes, whichever is more stringent.
   1. Provide extinguishers labeled by UL (DIR) or FM (AG) for purpose specified and as indicated.

B. Dry Chemical Type: Cast steel tank, with pressure gage.
   1. Class A:B:C.
   2. Size 10.

3. Size and classification as scheduled.
4. Finish: Baked enamel, red color.

**2.03 FIRE EXTINGUISHER CABINETS**

A. Metal: Formed primed steel sheet; 0.036 inch thick base metal.

B. Cabinet Configuration: Semi-recessed
1. Model No. 2409-6R
2. Door Style: Vertical Duo
3. Size to accommodate accessories.
4. Trim: Returned to wall surface, with 1 1/2 inch projection, rolled edge face.

C. Cabinet Mounting Hardware: Appropriate to cabinet, with pre-drilled holes for placement of anchors.

D. Weld, fill, and grind components smooth.

E. Finish of Cabinet Exterior Trim and Door: No. 4 - Brushed stainless steel.

F. Finish of Cabinet Interior: White colored enamel.

**2.04 ACCESSORIES**

A. Extinguisher Brackets: Formed steel, chrome-plated.

B. Cabinet Signage: Manufacturer's standard vertical lettering identifying contents of cabinet.
1. Color: Black.

**PART 3 EXECUTION**

**3.01 EXAMINATION**

A. Verify existing conditions before starting work.

B. Verify rough openings for cabinet are correctly sized and located.

**3.02 INSTALLATION**

A. Install in accordance with manufacturer's instructions.

B. Secure rigidly in place.

C. Place extinguishers in cabinets.

**3.03 SCHEDULE**

A. See Drawings for locations.

**END OF SECTION**

# SECTION 10 7530
# PREFABRICATED CANOPIES

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Prefinished metal hanging rod canopy system.

### 1.02 RELATED SECTIONS

A. Section 033000 - Cast-In-Place Concrete: Footings.

B. Division 26: Lighting.

### 1.03 REFERENCES

A. ASTM B 137-95.

B. ASTM B 209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 1996.

C. ASTM B 244-79 (1993).

### 1.04 DESIGN REQUIREMENTS

A. Components: Design and size components to withstand dead and live loads caused by positive and negative wind pressure acting normal to plane of structure as calculated in the Standard Building Code, 1997 edition.

B. Maximum Allowable Deflection of Panel: 1/90 of span.

C. Movement: Accommodate movement within system without damage to components or deterioration of seals, movement within system; movement between system and perimeter components when subject to seasonal temperature cycling; dynamic loading and release of loads; and deflection of structural support framing.

D. Drainage: Provide positive drainage to exterior for moisture entering or condensation occurring within panel system.

### 1.05 SUBMITTALS

A. See Division 01 - Administrative Requirements, for submittal procedures.

B. Shop Drawings: Indicate dimensions, layout, joints, construction details, methods of anchorage.

C. Samples: Submit 3 samples of decking panel, 6 inches by 6 inches in size indicating finish color, sheen and texture.

D. Structural Design Calculations: Provide submittal indicating compliance with specified design criteria. Design calculations shall bear the seal of same engineer as shop drawings and registered in the State of Georgia.

E. Maintenance Data: Submit as part of closeout documents. Provide instructions for general maintenance and repair of surfaces and finishes.

### 1.06 FIELD MEASUREMENTS

A. Confirm dimensions prior to preparation of shop drawings.

### 1.07 QUALITY ASSURANCE

A. Manufacturer: Company specializing in manufacturing the products specified in this section with minimum three years of documented experience.

B. Installer: Company specializing in performing the work of this section with minimum five years of experience.

### 1.08 PRE-INSTALLATION MEETING

A. Convene one week before starting work of this section.

**1.09 DELIVERY, STORAGE, AND PROTECTION**

A. Protect panels from accelerated weathering by removing or venting sheet plastic shipping wrap.

B. Store prefinished material off ground and protected from weather. Prevent twisting, bending, or abrasion, and provide ventilation to stored materials. Slope metal sheets to ensure drainage.

C. Prevent contact with materials that may cause discoloration or staining of products.

**1.10 PROJECT CONDITIONS**

A. Sequence installation to ensure electrical connections are achieved in an orderly and expeditious manner.

**1.11 WARRANTY**

A. See Division 01 - Closeout Submittals, for additional warranty requirements.

B. Correct defective work within a five year period after Substantial Completion for degradation of panel finish, including color fading caused by exposure to weather.

C. Correct defective Work within a five year period after Date of Substantial Completion, including defects in water tightness and integrity of seals.

**PART 2 PRODUCTS**

**2.01 METAL HANGING ROD CANOPY SYSTEM**

A. Acceptable Manufacturers: The following manufacturers, subject to compliance with the specifications and approval by Gardner Spencer Smith Tench and Jarbeau, PC are acceptable manufacturers.
   1. Basis of Design - Peachtree Protective Covers: www.peachtreecovers.com.
   2. American Walkway Covers, LLC: www.americanwalkway.com.
   3. E.L. Burns Co: www.elburns.com.
   4. Dittmer Architectural Aluminum Co: www.dittdeck.com.
   5. Mapes Industries, Inc: www.mapes.com.
   6. Mason-Florida, LLC: www.masoncorp.com.
   7. Metals USA Protective Covers: www.buildingproductsusa.com.
   8. Mitchell Metals, LLC: www.mitchellmetals.net.
   9. Substitutions: See Division 01 - Product Requirements.

B. System Description:
   1. Extruded aluminum structural and decking system with overhead hanger rod style canopy. Roll-formed sheet decking and accessory components are not acceptable. Decking components shall interlock without visible joint lines on horizontal surfaces.
   2. System shall drain to continuous fascia-gutter sections providing a minimum 6" depth and ten square inches of gutter area.
   3. Provide internal concealed splices and factory mitered and welded corners.
   4. Expansion joints shall be included to accommodate temperature changes of 120oF. Expansion joints shall have no metal to metal contact.
   5. Beams: Beams shall be open-top tubular extrusion of size and shape shown on drawings, top edges thickened for strength and designed to receive deck members in self-flashing manner. Structural ties shall be installed in tops of all beams.
   6. Deck: Deck shall be extruded self-flashing sections interlocking into a composite unit. Closures at deck ends shall be welded plates.
   7. Escutcheon: Provide manufacturer's standard "star" escutcheon at each hanging rod.

C. Aluminum Materials:
   1. Aluminum extrusions: 6063-T6 aluminum alloy; minimum 0.125" wall thickness for structural components, and as indicated by approved engineering design.
   2. Aluminum sheet: 5005-H34 aluminum alloy; minimum 0.050" thick.
   3. Fasteners: Hardened aluminum or stainless steel. Exposed fasteners shall be countersunk and shall match canopy in color.

4. Grout: Grout shall be 2000 p.s.i. compressive strength, 1 part Portland cement and 3 parts masonry sand. Add water to produce pouring consistency.
5. Gaskets: Gaskets shall be dry seal santoprene pressure type.

D. Finish:
1. AA-A41, Class I, clear anodized finish.
2. Minimum coating weight: 32 mg/sq.in.
3. Minimum coating thickness: 0.70 mils.
4. Finish shall be selected by Gardner Spencer Smith Tench and Jarbeau, PC from the manufacturer's standard mechanical and chemical finishes, followed by anodic finish.

**2.02 FABRICATION**

A. Form work true to line and level with accurate angles and surfaces and straight sharp edges. Ease exposed edges to radius of approximately 1/32". Form bend metal corners to smallest radius possible without causing grain separation or otherwise impairing work. Perform fabrication work prior to anodizing.

B. Form profiles without waves or buckling in metal surfaces. Form glazing battens continuously.

C. Provide anchorage and superstructure of type shown on approved shop drawings and coordinated with supporting structure. Fabricate and space anchoring devices as indicated.

D. Fabricate all flashings, closures and similar components as required to prevent water migration between building and canopy at connection point.

E. Bent Construction: Beams and columns shall be factory welded with neatly mitered corners into one-piece rigid bents. All welds shall be smooth and uniform using an inert gas shielded arc. Suitable edge preparation shall be performed to assure 100% penetration. Grind welds only where interfering with adjoining structure to allow for flush connection. Field welding is not permitted. Rigid mechanical joints shall be used when shipping limitations prohibit the shipment of fully welded bents.

F. Deck Construction: Deck shall be manufactured of extruded modules that interlock in a self-flashing manner. Interlocking joints shall be positively fastened at 8" O.C. creating a monolithic structural unit capable of developing the full strength of the sections. The fastenings must have minimum shear strength of 350 pounds each. Deck shall be assembled with sufficient camber to offset dead load deflection.

**PART 3 EXECUTION**

**3.01 PREPARATION**

A. Inserts and Anchorages: Furnish inserts and anchoring devices which must be preset in adjacent work on a timely basis to avoid delay in the work. Set at locations as indicated on the approved shop drawings.

B. Coordinate setting drawings diagrams, templates, and instructions for installation of concrete inserts, anchor bolts and miscellaneous items having integral anchors cast in concrete construction.

**3.02 ERECTION**

A. Verify location and alignment of preset anchors. Report deviations and proposed method for correction to Architect prior to commencement of installation.

B. Fastening to In-Place construction: Provide anchorage devices and fasteners for securing items to in-place construction, including threaded fasteners for concrete inserts. Anchor bolts and erection bolts of types and sizes indicated on approved shop drawings.

C. Placement: Set work in location, alignment and elevation, plumb and level within specified tolerances, true and free of rack; measured from established lines and levels. Install work in accordance with approved shop drawings and manufacturer's instructions.

D. Protection: Protect components from contact with dissimilar materials by separating with concealed neoprene gaskets or bituminous coating. Protect finishes from damage or scratching

during installation. Replace all damaged components to original condition.

E. Connection: Provide connections as indicated on approved shop drawings. Join dissimilar metals by bolting with galvanic separators.

F. Caulk perimeter of canopies using silicone sealant as specified . Flash abutting walls for watertight connection.

**3.03 CLEANING**

A. Cleaning: Maintain canopy assembly in reasonably clean condition during construction period. Immediately remove stains or materials having adverse effect on materials and finishes. Remove excess glazing and sealant compounds.

B. Final Cleaning: Just prior to Date of Substantial Completion clean entire canopy assembly using pretested detergent and water. Flush with clean water. Repair or replace work which cannot be cleaned of which has been damaged during construction operations.

**END OF SECTION**

# SECTION 11 3013
# RESIDENTIAL APPLIANCES

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Kitchen appliances.

### 1.02 RELATED REQUIREMENTS

A. Division 22 - Plumbing Piping: Plumbing connections for appliances.

B. Division 26 - Equipment Wiring: Electrical connections for appliances

### 1.03 REFERENCE STANDARDS

A. UL (DIR) - Online Certifications Directory Current Edition.

### 1.04 SUBMITTALS

A. See Division 01 - Administrative Requirements, for submittal procedures.

B. Product Data: Manufacturer's data indicating dimensions, capacity, and operating features of each piece of residential equipment specified.

C. Copies of Warranties: Submit manufacturer warranty and ensure that forms have been completed in Union County Commissioner's Office's name and registered with manufacturer.

### 1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than three years of documented experience.

B. Electric Appliances: Listed and labeled by UL (DIR) and complying with NEMA Standards (National Electrical Manufacturers Association).

### 1.06 WARRANTY

A. See Division 01 - Closeout Submittals, for additional warranty requirements.

B. Provide five (5) year manufacturer warranty on refrigeration system of refrigerators.

C. Provide ten (10) year manufacturer warranty on magnetron tube of microwave ovens.

D. Provide ten (10) year manufacturer warranty on tub and door liner of dishwashers.

### 1.07 KITCHEN APPLIANCES

A. Refrigerator : Free-standing, top-mounted freezer, frost-free.
   1. Capacity: Total minimum storage of 20 cubic ft; minimum 15 percent freezer capacity.
   2. Energy Usage: Minimum 20 percent more energy efficient than energy efficiency standards set by U.S. Department of Energy (DOE).
   3. Features: Include glass shelves and light in freezer compartment.
   4. Exterior Finish: Black.
   5. Manufacturers:
      a. Basis of Design: Frigidaire Home Products; FFHI2131QE: www.frigidaire.com.
      b. GE Appliances: www.geappliances.com.
      c. Whirlpool Corp: www.whirlpool.com.
      d. Substitutions: See Division 01 - Product Requirements.

B. Microwave : Countertop.
   1. Capacity: 2.2 cubic ft.
   2. Power: 1000 minimum watts.
   3. Features: Include turntable and 2-speed exhaust fan.
   4. Exterior Finish: Black.
   5. Manufacturers:
      a. Basis of Design: Frigidaire Home Products; Product FFCE2238LW: www.frigidaire.com.

b. GE Appliances: www.geappliances.com.
c. Whirlpool Corp: www.whirlpool.com.
d. Substitutions: See Division 01 - Product Requirements.

C. Garbage Disposer : Undercounter.
1. Power: 3/4 Horsepower Motor.
2. Type: Large Capacity Continuous Feed Disposer.
3. Grinding Action: 2700 RPM.
4. Features: Stainless Steel Jam Resistant, Dual Swivel Impellers
5. Power: Direct Wire Power Connection.
6. Manufacturers:
a. Basis of Design: Frigidaire Home Products; Product FGDI753DMS: www.frigidaire.com.
b. GE Appliances: www.geappliances.com.
c. Whirlpool Corp: www.whirlpool.com.
d. Substitutions: See Division 01 - Product Requirements.

**PART 3 EXECUTION**

**2.01 EXAMINATION**

A. Verify utility rough-ins are provided and correctly located.

**2.02 INSTALLATION**

A. Install in accordance with manufacturer's instructions.

B. Anchor built-in equipment in place.

**2.03 ADJUSTING**

A. Adjust equipment to provide efficient operation.

**2.04 CLEANING**

A. Remove packing materials from equipment and properly discard.

B. Wash and clean equipment.

# SECTION 12 4813
# ENTRANCE FLOOR MATS AND FRAMES

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Carpet mat.

### 1.02 SUBMITTALS

A. See Division 01 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data indicating properties of walk-off surface, component dimensions.

C. Shop Drawings: Indicate dimensions.

D. Samples: Submit two samples, 6 by 6 inch in size illustrating pattern, color, finish, edging.

E. Maintenance Data: Include cleaning instructions, stain removal procedures and _____.

## PART 2 PRODUCTS

### 2.01 MANUFACTURERS

A. Floor Mats:
   1. Basis of Design: R.C. Musson Rubber Co., Product; Spectra Chevron Polypropylene Carpet Mats: www.mussonrubber.com.
   2. Durable Corporation: www.durablecorp.com.
   3. Pawling Corporation: www.pawling.com.
   4. JCH International: www.jchinternational.com.
   5. Substitutions: See Division 01 - Product Requirements.

B. Mounting: Top of non-resilient members level with adjacent floor.

C. Design Characteristics:
   1. Material: 100% polypropolene; deep rib pattern carpet with rubber backing and tapered edging.
   2. Color: As selected by the Architect from the manufacturer's standard colors, minimum of 7 colors.
   3. Size and Location: As indicated on the drawings.

### 2.02 MATS

A. Carpet Mat: Cut polypropylene pile permanently bonded to vinyl backing; 48 inch wide by 48 and 72 inch long with one inch black matching vinyl border on all edges.
   1. Colors: To be selected by Gardner Spencer Smith Tench and Jarbeau, PC from manufacturer's standard range.

## PART 3 EXECUTION

### 3.01 EXAMINATION

A. Verify that floor opening for mats are ready to receive work.

### 3.02 PREPARATION

A. Vacuum clean floor area.

### 3.03 INSTALLATION

A. Install walk-off surface after cleaning of finish flooring.

### 3.04 SCHEDULES

A. Provide one (2) 4-foot by 7-foot walk-off mat, located as directed by Gardner Spencer Smith Tench and Jarbeau, PC.

B. Provide four (4) 4-foot by 4-foot walk-off mat(s), located as directed by Gardner Spencer Smith Tench and Jarbeau, PC.

**END OF SECTION**

# SECTION 12 6613
# TELESCOPING BLEACHERS

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Telescoping bleachers.

B. Electric motor operators, controls, and internal wiring.

### 1.02 RELATED SECTIONS

A. Division 09 - Flooring: Flooring support and levelness.

B. Division 26 - Electrical: Connection of electric motors and controls.

### 1.03 REFERENCES

A. NFPA 102 - Standard for Grandstands, Folding and Telescopic Seating, Tents, and Membrane Structures; National Fire Protection Association; 1995.

B. PS 1 - Construction and Industrial Plywood; National Institute of Standards and Technology; 1995.

C. AWS D1.1/D1.1M - Structural Welding Code - Steel; American Welding Society; 2004 and errata.

D. AWS D1.3 - Structural Welding Code - Sheet Steel; American Welding Society; 1998.

### 1.04 SYSTEM DESCRIPTION

A. Design Requirements:
   1. The bleacher system shall be comprised of multiple tiered, closed deck seating rows operating on the telescopic principle, and stacking vertically in minimal floor area when not in use.
   2. The first moving row shall be secured with both friction and mechanical locks.
   3. All other rows shall be mechanically locked, operable only upon unlocking and cycling the first row.
   4. Each bleacher row shall be comprised of risers, seat and deck components, and a complete set of supportive columns and braces.
   5. The operative system shall incorporate a locking system permitting the selective securing of one, multiple, or all, rows in the open or closed (stacked) position.

### 1.05 SUBMITTALS

A. See Division 01 - Administrative Requirements, for submittal procedures.

B. Product Data: Manufacturer's data sheets on each product to be used, including:
   1. Preparation instructions and recommendations.
   2. Storage handling and requirements.
   3. Installation methods.

C. Shop Drawings: Complete layout with dimensions, seat heights, row spacing and rise, aisle widths and locations, points of connection to substrate, assembly dimensions, and material types and finishes.
   1. Provide drawings customized to this project.
   2. Include Professional Engineer certification.
   3. Wiring Diagrams: Show locations of motors, electrical wiring, and rough-in connections.
   4. Graphics Layout Drawings: Indicate pattern of contrasting seat colors.

D. Selection Samples: For each material for which color selection is required, submit samples, 2 by 2 inches in size, illustrating colors and finishes available.

E. Verification Samples: For each custom colored finish, submit samples of actual finish or product, for verification of color selection.

F. Operation and Maintenance Data: Manufacturer's operation and maintenance instructions, including annual inspection and maintenance and bi-annual inspection by a Professional Engineer or manufacturer factory service personnel.

G. Closeout Submittals: Submit manufacturer's instructions for operation and maintenance.

**1.06 QUALITY ASSURANCE**

A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than five years of documented experience.

B. Installer Qualifications: Manufacturer's installation crew.

C. Welder Qualifications: Certified by AWS for the process employed.

**1.07 DEFERRED APPROVAL**

A. Installation of telescopic bleachers shall not be started until detailed plans, specifications and engineering calculations have been approved by Gardner Spencer Smith Tench and Jarbeau, PC.

**1.08 DELIVERY, STORAGE, AND PROTECTION**

A. Store, in original packaging, under cover and elevated above grade.

**1.09 WARRANTY**

A. See Division 01 - Closeout Submittals, for additional warranty requirements.

B. Correct defective Work within a five year period after Date of Substantial Completion. Replace parts that fail under normal use at no extra charge to Union County Commissioner's Office.
   1. Manufacturer shall provide a 5 year material warranty.
   2. Installer shall provide a 5 year labor warranty.

**PART 2 PRODUCTS**

**2.01 MANUFACTURERS**

A. Telescoping Bleachers:
   1. Basis of Design: Hussey Seating Company ; Model MAXAM: www.husseyseating.com.
   2. Interkal LLC : www.interkal.com.
   3. Irwin Telescopic Seating Company : www.irwintelescopicseating.com.
   4. Substitutions: See Division 01 - Product Requirements.

**2.02 TELESCOPING BLEACHERS**

A. Bleachers shall be model MXM 26 series Telescopic Bleachers, wall attached, equally spaced rise, 24 inches on center row spacing. Overall number of rows shall be as indicated.

B. Telescoping Bleachers: Factory assembled tiered benches that retract horizontally into depth approximately the same as a single row depth, with fixed seats mounted on leading edge of platforms.
   1. Design to comply with applicable requirements of NFPA 102 and requirements of code authorities having jurisdiction; where conflicts between requirements occur, comply with whichever is more stringent.
   2. Design with solid fascia (riser) or seat fronts that conceal interior mechanisms when fully retracted, fitting tightly enough to prevent climbing up face; at front row provide key locked, hinged fascia (skirt) to cover gap between seat riser/fascia and floor.
   3. Standard Extension: Top row fixed to floor, adjacent to wall , forward extension (away from wall); attachment to wall acceptable.
   4. Wheelchair Spaces: Allow portions of first row, as indicated, to be manually retracted without affecting other rows; provide removable railings at row two behind wheelchair spaces.
   5. Cutouts: Fit units to irregular wall surfaces, columns, pilasters, roof drain leaders, and other obstructions; take field measurements prior to fabrication.
   6. Operation: Motor operated.

C. Design Loads: Design to withstand the following loading conditions:
   1. Live Load on Structural Supports: 100 psf, minimum, of gross horizontal projection.
   2. Live Load on Seats and Walking Surfaces: 120 pounds per linear foot.
   3. Lateral Sway Stress on Structural Supports: 24 pounds per linear foot of seat plank.
   4. Perpendicular Sway Stress on Structural Supports: 10 pounds per linear foot of seat plank.

D. Dimensions:
   1. See Contract Drawings for overall dimensions.

E. Structural Supports: Steel or aluminum; manufacturer's standard wheeled carriages supporting each tier separately, with moving parts permanently lubricated and metal parts cushioned to prevent metal-to-metal contact during operation.
   1. Design so that each row carriage so that it will individually support the design loads and is self supporting when fully assembled without dependence on platform panels or boards, seats, or fascia.
   2. Welding: In accordance with AWS D1.1 and AWS D1.3.
   3. Bolting: Use lock-washers or locknuts.
   4. Wheels: Minimum 5 inch diameter by 1-1/4 inch wide, with non-marring rubber tires; ball, roller, or oil-impregnated metal bearings; minimum of 2 wheels at each floor support.
   5. Lower Track: Continuous Positive Interglide System interlocks each adjacent CPI unit using an integral, continuous, anti-drift feature and through-bolted guide at front to prevent separation and misalignment. Each CPI unit shall contain a Low Profile Posi-Lock LX to lock each row in open position and allow unlocking automatically. Provide adjustable stops to allow field adjustment of row spacing.
   6. Slant Columns: High tensile steel, tubular shape. Sway Bracing. High tensile steel members through-bolted to columns.
   7. Upper Guide: High tensile steel through-bolted to nose and riser. Interlocks with adjacent upper tier to prevent separation and misalignment. Provide adjustable stops to allow field adjustment of row spacing.
   8. Finish: Manufacturer's standard enamel or powder coating.
   9. Row Locking: Automatically mechanically lock each carriage to adjacent carriages when fully extended.
   10. Unlocking : Automatically unlock all rows before engaging retraction mechanism.

F. Motor Operation: Hussey PF2 integral automatic electro-mechanical propulsion system, using motor adequately sized for the purpose.
   1. Each PF2 unit shall consist of dual output shaft gear reducers with 6 inch diameter x 4 inch wide wheels covered with non-marring 1/2 inch thick rubber compound. Reducers shall be fitted with induction motors that will provide an average operating speed of 46 feet per minute. Motors shall be adjustable for floor variations. Motors shall be installed under the first moving row.
   2. Seating manufacturer will provide wiring within the seating bank including pendant control, and open/close limit control micro-switches to insure proper operation and prevent damage to telescopic bleacher mechanisms.
   3. All electrical components and wiring UL listed.
   4. Controls: Start, Stop, Forward, and Reverse in a single control unit.
   5. Control Station: Removable plug-in low-voltage pendant station, with first-row plug-in location for each motor.
   6. Limit Switches: Automatically stop operation when unit has reached fully open or fully closed position.
   7. Provide all wiring internal to bleacher units, to junction box located under first row; ensure that wiring is not energized except during operation.
   8. Electrical Characteristics: 120V, single phase, 60 Hz.
   9. Provide access to motor from front side of bleachers; a hinged front skirt or hinged section at least 30 inches wide is acceptable.

## 2.03 SEAT AND PLATFORM COMPONENTS

A. Seat/Fascia Assembly: Continuous, molded UV-stabilized high-density polyethylene plastic, seat minimum 1 inch thick, textured finish, homogeneous color throughout, color as selected from manufacturer's standard selection; approximately 18 inch long sections independently removable with tongue-and-groove or rabbeted interlock at end joints.
   1. Seats shall unitized, interlocking, engineered, high density, polyethylene modules providing a scuff-resistant, textured 10-inch wide anatomically contoured surface. Seats module shall be of two-piece construction with 1/2" minimum interlock on seat and face. Seat shall be designed with internal reinforcement ribs and cantilevered to the rear to provide not less than 3" smooth toe space beneath the seat. Each seat module support shall be secured against fore/aft movement by not less than (2) two longitudinally sited steel fasteners spaced no less than 2 1/4" on center, creating a steel to steel connection, tying the structure firmly to the steel nosing. Each row end shall be enclosed with matching end caps. End caps shall be designed with concealed attachment and provide indent for row letters. Color to match seat top.
   2. Shape: Ergonomically contoured, with internal ribs spaced for natural flexibility; rear edge cantilevered to provide toe room of not less than 3 inches; no openings to trap debris.
   3. Provide end caps of same material and finish on each exposed end.
   4. Supports: Internal steel reinforcement of each seat segment bolted to platform nose member; minimum two bolts per segment.
   5. Seat and Row Numbers: Provide recessed pockets and number plates.

B. Platform, Tread, and Step Structure: Plywood continuously supported on front and rear with side joints tongue-and-grooved.
   1. Plywood: PS 1, 5-ply southern pine or polyethylene-overlaid Douglas fir or southern pine, Grade AC, interior type with exterior glue.
   2. Plywood Thickness: 5/8 inch., minimum.
   3. Front (Nose), Rear, and Intermediate Supports: Steel channel or tube, hot-dipped galvanized.
   4. Provide end caps of same material and finish on each exposed end.
   5. Decking: Shall be Poly Deck high-density polyethylene overlay panel fabricated with a skid-resistant textured top surface of 100% moisture barrier bonded to a plywood substrate with an exterior glue. Panel thickness shall be 5/8" with top polyethylene surface colored weathered gray.
   6. Deck Support: Securely captures decking for entire length of section.
   7. Nosings: Formed steel, 14 gage, minimum, G60/Z275 hot-dipped galvanized.
   8. At aisles provide permanently attached intermediate steps of same construction and finish.
   9. At bottom of aisles provide step in front of first riser, hinged to first platform to fold for storage.

## 2.04 HANDRAILS AND RAILINGS

A. Provide the following railings:
   1. Aisle Handrails: Single post folding railing segment mounted in center of aisle at every other row beginning at row 2.
      a. Provide deck level full width vertical aisles located as indicated or in accordance with code requirements. Aisles shall be equipped with intermediate steps and handrails. Intermediate steps shall be boxed fully enclosed type construction with blow molded end caps with full radius on all four edges. Step shall have non-skid surfaces. Aisle handrails shall be 34" high with terminating mid rail. Handrails shall be attached to the socket and shall rotate 90 degrees for easy storage in socket. Aisle handrails that are detached from the socket for storage are unacceptable. Provide at the front edge of each aisle step, an adhesive-backed abrasive non-slip tread surface.
   2. End of Row Guardrails: Self-storing, at open ends of sections beginning at row 2.

a. Provide Ready-Rail steel self-storing 42" high above seat, end rail with tubular supports and intermediate members designed with 4" sphere passage requirements.

3. Height: 42 inches above adjacent platform or tread.

B. Design handrails and railings to withstand the following loads:
1. Concentrated Load on Handrails: 200 pounds in any direction.
2. Concentrated Load on Guardrails: 200 pounds in any direction along top rail.
3. Live Load on Handrails: 50 pounds per linear foot, applied in any direction.
4. Live Load on Guardrails:
a. Horizontal: 50 pounds per linear foot, applied at the guardrail height.
b. Vertical: 100 pounds per linear foot, applied vertically to top of guardrail.

C. Railing Construction: Round steel pipe or tube, with formed elbows at corners and caps at ends of straight runs.
1. Steel: 1-1/2 inch minimum outside diameter, with 11 gage minimum wall thickness; textured powder coat epoxy finish.

## 2.05 ACCESSORIES

A. Fillers and Closures:
1. Top Row: Provide seat level rear filler panels to close openings between top row seat and wall; finish to match platforms.
2. Sides of Extended Units: Vinyl curtains.
3. Vinyl Curtains: 18 ounce vinyl with grommets; color as selected from manufacturer's standard palette.
a. Safety End Closures, at each exposed bleacher end: Provide a self-storing end safety closure curtain to close off the underside of the bleachers. The curtain shall be designed to open and close with the bleachers, cut and welded to the precise contour of the bleachers. Curtain shall be attached to the rear wall and the first row of the bleacher, and shall be designed so as to maintain 3" clearance above the floor. The curtain shall be attached to each bleacher row by means of an offset bracket and support chain, which attaches through heavy duty brass grommets in the closure. The bottom of the curtain shall have a Link-Machine Chain in a welded pocket to prevent the closure from being lifted when in the open position.

B. Wheelchair Seating/Modular First Row: Provide Flex-Row manually configurable modular first tier. The first seating row shall consist of individual modular sections 2 to 5 seats wide, and shall be capable of being configured to provide ADA wheelchair seating spaces, team seating, scorer's areas, or other truncated clear areas, on an even-by-event basis. Each modular unit shall have an unlock lever for easy deployment of by either wheelchair-bound or able-bodied persons. Modules shall automatically lock into position when fully opened. Provide signage with a international symbol of accessibility pictogram for wheelchair spaces and a sign identifying a companion seat for each space.

C. Scorer's Table: 8 feet wide by 15 inches deep, wood grain high pressure laminate; relocatable to any row of any section without mounting brackets.

D. Fasteners: Provide hardware and fasteners in accordance with manufacturer’s recommendations.

E. Anchorage: As indicated on drawings; provide hardware in accordance with manufacturer’s recommendations.

## 2.06 FACTORY FINISHING

A. Steel: Understructure cleaned and finished with low gloss enamel. Steel risers and diagonal bracing finished with corrosion resistant silver gray, matte finish, zinc alloy plating. Columns shall be painted inside and out.

B. Lumber: Seat and riser boards to have exposed edges, ends and corners eased or rounded with use surfaces, triple-sanded to a smooth finish. Seats, front risers, and deck surfaces shall receive a moisture-repellent sealer coat. Front risers shall receive 2 coats of American natural

clear polyurethane finish. Deck surfaces shall receive 2 coats of clear polyurethane finish.

C. Plastic: Polyethylene plastic seat modules shall be pigmented and have a textured surface. Formulation to include color pigmentation with a minimum of 12 standard colors. Seats shall be available in solid color and/or 2-tone seat and base color combinations as standard.

D. Rails: End guardrails, front rails and aisle rails shall be powder-coated black.

## PART 3 EXECUTION

### 3.01 EXAMINATION

A. Verify that field measurements are consistent with those on the shop drawings.

B. Verify that electrical rough-ins have been installed and are accessible.

C. Do not begin installation until substrates have been properly prepared and area has been cleared of obstructions.

D. If substrate preparation is the responsibility of another installer, notify Gardner Spencer Smith Tench and Jarbeau, PC of unsatisfactory preparation before proceeding.

### 3.02 PREPARATION

A. Clean surfaces thoroughly prior to installation.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

### 3.03 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Do not field cut or alter seats, fascia, or structural members without approval.

C. Provide manufacturer's field representative to inspect completed installation.

### 3.04 DEMONSTRATION AND TRAINING

A. Provide manufacturer's field representative to demonstrate to and train Union County Commissioner's Office's operating personnel in proper operation of equipment.
   1. Location: On site using installed equipment.
   2. Time: As agreed between Union County Commissioner's Office and Contractor.

### 3.05 ADJUSTMENT AND CLEANING

A. Lubricate, test, and adjust each moving assembly to ensure proper operation in compliance with manufacturer's recommendations.

B. Clean exposed and semi-exposed assembly surfaces. Touch up finishes on damaged or soiled areas.

### 3.06 PROTECTION AND MAINTENANCE

A. Protect installed products until completion of project.

B. Touch-up, repair, or replace products damaged after Substantial Completion.

**END OF SECTION**

# SECTION 21 0001
# ARCHITECTURAL CRITERIA FOR DIV 21 SYSTEMS

## PART 1 GENERAL

### 1.01 ARCHITECTURAL CRITERIA

A. Scope: This section outlines architectural and aesthetic parameters as related to all fire suppression-type work primarily outlined in Division 21.

B. Precedence: In the event of a conflict, the criteria herein shall take precedence over that outlined elsewhere in Division 21 and/or shown on the Drawings only to the extent not to jeopardize the performance and/or function of the respective mechanical items.

C. Drawings: The contract drawings are diagrammatic and indicate generally the size and location of pipe distrubution and location. While pipe sizes shall not be decreased, it is recognized that job site conditions may require re-routing, and the Contractor shall be responsible for this coordination. Pipe resized shall be equivalent to that shown in the fire protection documents, and changes shall meet Gardner Spencer Smith Tench and Jarbeau, PC's approval.

D. General:
   1. The "White" color commonly used as factory finish on painted items shall be exposed-to-view conditions:
      a. Incorporate the number of coats necessary to provide total painted items in exposed-to-view conditions.
      b. All other mechanical items (e.g. diffusers, grilles, sprinkler discs, etc.), and other metallic components (e.g. grid members, edge mould, etc.) for wall, ceiling, and soffit assemblies to be similar to common "White".
   2. All exterior equipment, piping, and related supports, unless they are factory finished, shall be painted in color selected by Gardner Spencer Smith Tench and Jarbeau, PC. Exercise care not to paint over manufacturer's labels, instructions, and other printed data on the equipment. The purpose herein is to maintain Gardner Spencer Smith Tench and Jarbeau, PC's color scheme throughout the project. Contractor shall be responsible for assuring paint compatibilities, preparation of items to be painted, number of coats for cover and uniformity, and ultimate paint adhesion to surfaces.
   3. All ceiling mounted sprinkler heads shall be visually aligned within respective spaces unless indicated otherwise. All ceiling mounted sprinkler heads shall be centered in lay-in ceiling tiles unless indicated otherwise. All heads mounted in gypsum board ceilings shall be aligned to adjacent ceiling objects.
   4. Sprinkler head types: White semi-recessed in acoustical tile ceiling systems and fully concealed in gypsum board ceiling systems.
   5. All exposed-to-view portions of interior pipe distribution above ceiling shall be painted black. All exposed-to-view ductwork in spaces without ceilings shall be painted in a color as selected by Gardner Spencer Smith Tench and Jarbeau, PC.
   6. Installation of all domestic water piping systems shall incorporate proper pipe slopes and necessary valving to enable Union County Commissioner's Office to totally drain-down (evacuate all water from) these systems. Exercise care in supply pipe installations to avoid "trap" situations.

## PART 2 PRODUCTS

### 2.01 NOT USED

## PART 3 EXECUTION

### 3.01 NOT USED

**END OF SECTION**

# SECTION 22 0000
# ARCHITECTURAL CRITERIA FOR DIV 22 SYSTEMS

## PART 1 GENERAL

### 1.01 ARCHITECTURAL CRITERIA

A. Scope: This section outlines architectural and aesthetic parameters as related to all mechanical-type work primarily outlined in Division 22.

B. Precedence: In the event of a conflict, the criteria herein shall take precedence over that outlined elsewhere in Division 22 and/or shown on the Drawings only to the extent not to jeopardize the performance and/or function of the respective mechanical items.

C. Drawings: The contract drawings are diagrammatic and indicate generally the size and location of piping and fixtures. While pipe sizes shall not be decreased, it is recognized that job site conditions may require re-routing and the Contractor shall be responsible for this coordination. Pipe resized shall be equivalent to that shown in the plumbing documents, and changes shall meet Gardner Spencer Smith Tench and Jarbeau, PC's approval.

D. General:
   1. The "White" color commonly used as factory finish on painted items shall be exposed-to-view conditions:
      a. Incorporate the number of coats necessary to provide total painted items in exposed-to-view conditions.
      b. All other mechanical items (e.g. diffusers, grilles, sprinkler discs, etc.), and other metallic components (e.g. grid members, edge mould, etc.) for wall, ceiling, and soffit assemblies to be similar to common "White".
   2. All exterior equipment, piping, and related supports, unless they are factory finished, shall be painted in color selected by Gardner Spencer Smith Tench and Jarbeau, PC. Exercise care not to paint over manufacturer's labels, instructions, and other printed data on the equipment. The purpose herein is to maintain Gardner Spencer Smith Tench and Jarbeau, PC's color scheme throughout the project. Contractor shall be responsible for assuring paint compatibilities, preparation of items to be painted, number of coats for cover and uniformity, and ultimate paint adhesion to surfaces.
   3. All water closets and urinals shall be centered between respective toilet partitions unless dimensioned otherwise; Contractor shall coordinate roughing with the concrete masonry unit work.
   4. All exposed-to-view portions of interior ductwork and/or baffles above ceiling shall be painted black. All exposed-to-view ductwork in spaces without ceilings shall be painted in a color as selected by Gardner Spencer Smith Tench and Jarbeau, PC.
   5. Installation of all domestic water piping systems shall incorporate proper pipe slopes and necessary valving to enable Gardner Spencer Smith Tench and Jarbeau, PC to totally drain-down (evacuate all water from) these systems. Exercise care in supply pipe installations to avoid "trap" situations.
   6. Neatly install mildew-resistant silicone sealant bead around periphery of all plumbing fixtures in contact with wall and/or floors. The sealant color shall be selected by Gardner Spencer Smith Tench and Jarbeau, PC from manufacturer's standard color range.
   7. Piping exposed in spaces without ceilings shall be free of size marks or assembly code number. Keep stamped and marked surfaces inside. During fabrication and assembly, keep the outside surfaces clean. Threaded rods for hanger straps shall be neatly clipped and secured without excess. Greater attention to appearance in spaces without ceilings is expected and damaged piping will not be acceptable.

**PART 2 PRODUCTS**

**2.01 NOT USED**

**PART 3 EXECUTION**

**3.01 NOT USED**

**END OF SECTION**

# SECTION 23 0000
# ARCHITECTURAL CRITERIA FOR DIV 23 SYSTEMS

## PART 1 GENERAL

### 1.01 ARCHITECTURAL CRITERIA

A. Scope: This section outlines architectural and aesthetic parameters as related to all mechanical-type work primarily outlined in Division 23.

B. Precedence: In the event of a conflict, the criteria herein shall take precedence over that outlined elsewhere in Division 23 and/or shown on the Drawings only to the extent not to jeopardize the performance and/or function of the respective mechanical items.

C. Drawings: The contract drawings are diagrammatic and indicate generally the size and location of ductwork and equipment. While duct sizes shall not be decreased, it is recognized that job site conditions may require re-routing of ductwork, and the Contractor shall be responsible for this coordination. Ductwork resized shall be equivalent to that shown in the mechanical documents, and changes shall meet Gardner Spencer Smith Tench and Jarbeau, PC's approval.

D. General:
   1. The "White" color commonly used as factory finish on painted items shall be exposed-to-view conditions:
      a. Incorporate the number of coats necessary to provide total painted items in exposed-to-view conditions.
      b. All other mechanical items (e.g. diffusers, grilles, sprinkler discs, etc.), and other metallic components (e.g. grid members, edge mould, etc.) for wall, ceiling, and soffit assemblies to be similar to common "White".
   2. All exterior equipment, piping, and related supports, unless they are factory finished, shall be painted in color selected by Gardner Spencer Smith Tench and Jarbeau, PC. Exercise care not to paint over manufacturer's labels, instructions, and other printed data on the equipment. The purpose herein is to maintain Gardner Spencer Smith Tench and Jarbeau, PC's color scheme throughout the project. Contractor shall be responsible for assuring paint compatibilities, preparation of items to be painted, number of coats for cover and uniformity, and ultimate paint adhesion to surfaces.
   3. Concrete exterior equipment pads:
      a. Be set level with top elevation not less than four inches above finish or adjacent grade level.
      b. Have one inch chamfered edges.
      c. Be dressed smooth on all exposed faces/edges to present a uniform appearance.
      d. Be structurally sound to support required weight.
   4. Unless specifically dimensioned otherwise, all interior diffusers placed near exterior walls shall be centered over the centerline of the respective door or window and twelve inches inside the wall line.
   5. All exposed-to-view portions of interior ductwork and/or baffles above ceiling shall be painted black. All exposed-to-view ductwork in spaces without ceilings shall be painted in a color as selected by Gardner Spencer Smith Tench and Jarbeau, PC.
   6. Ductwork exposed in spaces without ceilings shall be free of size marks or assembly code number. Keep stamped and marked surfaces inside. During fabrication and assembly, keep the outside surfaces clean. Bands that join on top of duct and spirals shall be continuous. Threaded rods for hanger straps shall be neatly clipped and secured without excess. Greater attention to appearance in spaces without ceilings is expected and dented ducts will not be acceptable.

**PART 2 PRODUCTS**

**2.01 NOT USED**

**PART 3 EXECUTION**

**3.01 NOT USED**

**END OF SECTION**

# SECTION 26 0000
# ARCHITECTURAL CRITERIA FOR DIV 26 SYSTEMS

## PART 1 GENERAL

### 1.01 ARCHITECTURAL CRITERIA

A. Scope: This section outlines architectural and aesthetic parameters as related to all electrical-type work primarily outlined in Division 26.

B. Precedence: In the event of a conflict, the criteria herein shall take precedence over that outlined elsewhere in Division 26 and/or shown on the Drawings only to the extent not to jeopardize the performance and/or function of the respective electrical items.

C. Drawings: The contract drawings show the general run of conduits, raceways, busways, etc., and approximate location of apparatus. Do not scale the drawings to determine exact positions and clearances. Obtain from Gardner Spencer Smith Tench and Jarbeau, PC any necessary dimensions not shown. Notify Gardner Spencer Smith Tench and Jarbeau, PC immediately of any changes in the size or location of material or equipment, which may be necessary in order to meet field conditions, and/or in order to avoid conflict with equipment of other sections. Obtain Contractor's approval before such deviations are made.

D. General:
1. The "White" color commonly used as factory finish on painted items shall be exposed-to-view conditions:
   a. Incorporate the number of coats necessary to provide total painted items in exposed-to-view conditions.
   b. All other electrical items (e.g. lay-in lights, incandescent light trim, exit lights, etc.), and other metallic components (e.g. grid members, edge mould, etc.) for wall, ceiling, and soffit assemblies to be similar to common "White".
2. All exterior equipment, piping, and related supports, (e.g. meters, generators, transformers, sprinkler control cabinets, etc.) unless they are factory finished, shall be painted in color selected by Gardner Spencer Smith Tench and Jarbeau, PC. Exercise care not to paint over manufacturer's labels, instructions, and other printed data on the equipment. The purpose herein is to maintain Gardner Spencer Smith Tench and Jarbeau, PC's color scheme throughout the project. Contractor shall be responsible for assuring paint compatibilities, preparation of items to be painted, number of coats for cover and uniformity, and ultimate paint adhesion to surfaces.
3. Concrete exterior equipment pads:
   a. Be set level with top elevation not less than four inches above finish or adjacent grade level.
   b. Have one inch chamfered edges.
   c. Be dressed smooth on all exposed faces/edges to present a uniform appearance.
   d. Be structurally sound to support required weight.
4. All exposed-to-view portions of conduit and/or boxes above ceiling shall be painted black. All exposed-to-view conduit and/or boxes in spaces without ceilings shall be painted in a color as selected by Gardner Spencer Smith Tench and Jarbeau, PC.
5. Conduit and/or boxes exposed in spaces without ceilings shall be free of marks or other identification. During fabrication and assembly, keep the outside surfaces clean. Threaded rods for hanger straps shall be neatly clipped and secured without excess. Greater attention to appearance in spaces without ceilings is expected and unorganized conduit runs will not be acceptable.
6. Contractor shall submit full-scale details for proposed mounting of all switch and dimmer gangs having more than four units and/or over twenty square inches in exposed-to-view size area to Gardner Spencer Smith Tench and Jarbeau, PC for review and approval action.

7. Use "Jumbo" size plates at all conditions. Paint to make wall color if cover plate falls on accent painted wall.
8. All panelboard designation labels shall be black bakelite with integral white etched-in caricatures (18 point size minimum). All panelboard directories shall be neatly typed and orderly with respect to circuit breaker layout on the panelboard. All circuit breakers shall be identified with manufacturer's standard printed self-stick tab markers.

**PART 2 PRODUCTS**

**2.01 NOT USED**

**PART 3 EXECUTION**

**3.01 NOT USED**

**END OF SECTION**

# SECTION 31 3116
# TERMITE CONTROL

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Chemical soil treatment.

### 1.02 RELATED REQUIREMENTS

A. Section {\id\#1000060} - Cast-In-Place Concrete: Vapor barrier placement under concrete slab-on-grade.

### 1.03 REFERENCE STANDARDS

A. Title 7, United States Code, 136 through 136y - Federal Insecticide, Fungicide and Rodenticide Act 2019.

B. Agriculture Department of the State of Georgia: "Rules of the Georgia Structural Pest Control Commission", current edition.

### 1.04 SUBMITTALS

A. See Division 01 - Administrative Requirements, for submittal procedures.

B. Product Data: Indicate toxicants to be used, composition by percentage, dilution schedule, intended application rate.

C. Container Label: Submit copy of container label.

D. Test Reports: Indicate regulatory agency approval reports when required.

E. Manufacturer's Certificate: Certify that toxicants meet or exceed specified requirements.

F. Record and document moisture content of soil before application.

G. Warranty: Submit warranty and ensure that forms have been completed in Union County Commissioner's Office's name.

### 1.05 QUALITY ASSURANCE

A. Installer Qualifications: Company specializing in performing this type of work and:
   1. Having minimum of three (3) years documented experience.
   2. Approved by manufacturer of treatment materials.
   3. Certified by the State of Georgia in accordance with the requirements of the Department of Agriculture.
   4. Licensed in Georgia.

### 1.06 REGULATORY REQUIREMENTS

A. Conform to applicable code for requirements for application, and comply with EPA regulations.

B. Use only termiticides which bear a Federal registration number of the United States Environmental Protection Agency.

### 1.07 SEQUENCING

A. Give Gardner Spencer Smith Tench and Jarbeau, PC and Union County Commissioner's Office 48 hours notice prior to time that application of soil treatment is to commence.

B. Apply toxicant immediately prior to installation of vapor barrier under slabs-on-grade or as recommended by the certified installer.

C. Do not schedule application if rain is forecasted during or after application.

D. Make application at end of work day.

### 1.08 WARRANTY

A. See Division 01 - Closeout Submittals, for additional warranty requirements.

B. Provide five year installer's warranty against damage to building caused by termites.

C. Warrant effectiveness of treatment for period of Five (5) years, non-prorated from date of Substantial Completion against infestation and/or termite damage. without additional cost to the Owner during warranty period. Warranty shall be in the form of an insurance policy, written in the amount of 10% of the construction cost or One Hundred Thousand and NO/100 Dollars ($100,000.00), whichever is less, for damages to building and contents. Rating for insurance company shall be A-, IV (4). The warranty shall be submitted along with other documents in accordance with Contract Close-Out section.

D. Warranty shall state dates of application and chemicals used, including quantities and concentrations.

E. Warranty shall be renewable on a year-to-year basis at the end of a five year period, at Union County Commissioner's Office's option, for a fee to be mutually agreed upon at the time of renewal.

F. Contractor shall re-treat soil and repair or replace damage caused by termite infestation at no additional charge to Union County Commissioner's Office

## PART 2 PRODUCTS

### 2.01 CHEMICAL SOIL TREATMENT

A. Toxicant Chemical: EPA Title 7, United States Code, 136 through 136y approved; synthetically color dyed to permit visual identification of treated soil.

B. Diluent: Recommended by toxicant manufacturer.

C. Manufacturers:
   1. Bayer Environmental Science Corp: www.backedbybayer.com/pest-management.
   2. Control Solutions Inc: www.controlsolutionsinc.com.
   3. FMC Professional Solutions: www.fmcprosolutions.com.
   4. Syngenta Professional Products: www.syngentaprofessionalproducts.com.
   5. Substitutions: See Division 01 - Product Requirements.

D. Mixes: Mix toxicant to manufacturer's instructions.

E. Toxicant Chemical: EPA ({\rs\#1}) approved; synthetically color dyed to permit visual identification of treated soil.

F. Diluent: Recommended by toxicant manufacturer.

### 2.02 MIXES

A. Mix toxicant to manufacturer's instructions.

B. Mixtures of chemicals are prohibited, except as pre-mixed from manufacturer.

## PART 3 EXECUTION

### 3.01 EXAMINATION

A. Verify that soil surfaces are unfrozen, sufficiently dry to absorb toxicant, and ready to receive treatment.

B. Verify final grading is complete.

C. Remove foreign matter which could decrease effectiveness of treatment in areas too be treated.

### 3.02 APPLICATION - CHEMICAL TREATMENT

A. Comply with requirements of U.S. EPA and applicable state and local codes.

B. Spray apply toxicant in accordance with manufacturer's instructions.

C. Apply toxicant at following locations:
   1. Under Slabs-on-Grade.
   2. At Both Sides of Foundation Surface.
   3. Around plumbing pipes, electrical conduit, interior column footings, and slab penetrations.

4. Outside edge of building. Treat soil at outside edge of building. Dig a trench 8" wide along the outside of foundation to a depth of 1'-0" minimum. Punch holes to the top of footing at 1'-0" o.c. and apply treatment. Mix soil treatment with soil as it is replaced in trench.

D. Under slabs, apply toxicant 12 hours prior to installation of vapor barrier.

E. At foundation walls, apply toxicant 12 hours prior to finish grading work outside foundations.

F. Apply extra treatment to structure penetration surfaces such as pipe or ducts, and soil penetrations such as grounding rods or posts.

G. Re-treat disturbed treated soil with same toxicant as original treatment.

H. If inspection or testing identifies the presence of termites, re-treat soil and re-test.

I. Perform no treatment when soil is wet or after rains. Avoid flow of toxicant from treated surfaces.

**3.03 INSTALLATION - SITE-APPLIED TERMITICIDE**

**3.04 PROTECTION**

A. Do not permit soil grading over treated work.

B. Protect sheet materials from damage after completed installation. Repair damage with manufacturer's recommended products and according to the manufacturer's written instructions.

C. Post signs in areas of applications, warning that poison has been applied; leave signs in place for minimum 2 weeks following application.

**END OF SECTION**

# SECTION 32 3975
# SITE CLEANUP AND FINISH

## PART 1 GENERAL

### 1.01 DESCRIPTION

A. Furnish labor, materials, and equipment required to complete cleanup of all paving, building, ground, and all other areas outlined on the drawing.

B. Debris shall not be dumped on any part of the property or any unauthorized place. All debris, construction material, Contractor's buildings or equipment, stumps, roots, boulders or any other extraneous material deposited during construction shall be removed from the site.

## PART 2 PRODUCTS - NOT USED

## PART 3 EXECUTION - NOT USED

**END OF SECTION**