# Specifications for

# KIA OF NEW BERN
# MAZDA OF NEW BERN

## New Bern, North Carolina

20 November 2018

**Coastal Architecture**
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Project No.
16034
17038

# Project Manual

**including**

**Contract Documents & Specifications**

**for the Construction of**

**KIA OF NEW BERN**
**MAZDA OF NEW BERN**
**NEW BERN, NORTH CAROLINA**

**PREPARED BY:**

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**Architect's Project Number: 16034, 17038**
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FOR

KIA OF NEW BERN / MAZDA OF NEW BERN
PROJECT # 16034 / 17038

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# INVITATION TO BIDS

Negotiated BIDS for the construction of the Kia of New Bern Dealership, will be received by email to Lee@coastalarchitecture.net – Coastal Architecture, 4206 Bridges Street Extension, Suite C, Morehead City, NC 28557.

The CONTRACT DOCUMENTS may be obtained from Architects website, www.coastalarchitecture.net or purchased from the Architect for a sum of $200.00 per set.

The Owner reserves the unqualified right to reject any and/or all bids.

Bids are to be emailed to the architect. Email bids to Lee@coastalarchitecture.net or can be hand delivered or mailed to the office of the architect.

Coastal Architecture
4206 Bridges Street
Suite C
Morehead City, NC 28557

A Bid Bond will not be required.

SINGLE PRIME
FORM OF PROPOSAL FOR:

Date: _____
Bid: **Single Prime**
Contractor: _____
License #: _____
Addenda Received: _____

# KIA OF NEW BERN / MAZDA OF NEW BERN

**Indicate your firm's name and date by filling in the above blanks and note the same items on your Proposal envelope or email transmittal.**

The undersigned, as Bidder, hereby declares that the only person or persons interested in this Proposal as Principal or Principals is or are named herein and that no other person than herein mentioned has any interest in this Proposal or in the Contract to be entered into; that this Proposal is made without connection with any other person, company or parties making a bid or proposal; and that it is in all respects fair and in good faith without collusion or fraud.

The Bidder further declares that he has examined the site of the work and informed himself fully in regard to all conditions pertaining to the place where the work is to be done; that he has examined the Specifications for the work and the Contract Documents relative thereto, and has read all special provisions furnished prior to the opening of bids; that he has satisfied himself relative to the work to be performed. The Bidder proposes and agrees if this Proposal is accepted to contract with the Owner in the form of Contract specified, to furnish all necessary materials, equipment, machinery, tools, apparatus, means of transportation and labor necessary to complete the construction of KIA OF NEW BERN as defined in these Contract Documents, in full and in complete accordance with the plans and specifications of the Owner and the Architect/Engineer, with a definite understanding that no money will be allowed for extra work except as set forth in the General Conditions and Contract Documents for the sum of:

**Base Bid- Item 1: Site Work** **SINGLE PRIME CONTRACT**

_____ Dollars $_____
(written amount) (number amount)

**Base Bid- Item 2: Kia Building** **SINGLE PRIME CONTRACT**

_____ Dollars $_____
(written amount) (number amount)

**Base Bid- Item 3: Mazda Building** **SINGLE PRIME CONTRACT**

_____ Dollars $_____
(written amount) (number amount)

**********

**ALTERNATES:**

Should any of the alternates as described in the contract documents be accepted, the amount written below shall be the amount to be "added to" or “deleted from” the base bid. (*Strike out “Add or “Deduct” as appropriate.)*

Alternate 1: Payment and Performance Bonds

(Add) (Deduct)

_____ Dollars($_____)
(written amount) (number amount)

The Bidder further proposes and agrees hereby to commence work under his Contract on a date to be specified in a written order of the Architect/Engineer and shall fully complete all work within 280 consecutive calendar days from and including said date. Applicable liquidated damages shall be as stated in Supplementary General Conditions.

The Bidder furthermore agrees to hold all prices for a period of 60 days from bid date.

Respectfully submitted this _____ day of _____, 2018

**WITNESS:**

_____
(Name of Firm or Corporation making Bid)

By: _____

_____
(Proprietorship or Partnership)

Title: _____
(Owner, Partner, or Corporate President or Vice President only)

**ATTEST:**

Address: _____

By: _____

Title: _____ License No.: _____
(Corporate Secretary or Assistant Secretary only)

(Corporate Seal)

Addenda Received and Used in Computing Bids: (Initial as Appropriate)

Addendum No.1 _____

Addendum No.2 _____

Addendum No.3 _____

Addendum No.4 _____

End of Proposal Form

## SECTION 00800 - SUPPLEMENTARY GENERAL CONDITIONS AND GENERAL REQUIREMENTS

**SUPPLEMENTS TO AIA DOCUMENT A-201: 2007 Edition**

The following supplements modify, delete from or add to the "General Conditions of the Contract for Construction", AIA Document A-201, 2007. Where any Article of the General Conditions is modified or any Paragraph, Subparagraph or Clause thereof is modified or deleted by these Supplementary Conditions, the unaltered provisions of that Article, Paragraph, Subparagraph or Clause shall remain in effect. If in the event any articles of the Construction Contract are in direct conflict with Articles of the General Conditions, the Contract shall override for that portion that may be in conflict.

**ARTICLE 1:**

Add the following definitions:

- ”Product” includes materials, systems, and equipment.
- "Provide" shall mean furnish and install complete in place, operational and ready for use.
- “Building Code” and “Code” refer to regulations of governmental agencies having jurisdiction
- "Or approved equal" and "equal to" shall mean substitute products by manufacturers other than those specified in the project manual, addenda, and on the drawings and which may be incorporated in the work after review and concurrence by the designer and the Owner.
- “Approved”, “required”, and “as directed” refer to and indicate the work or materials that may be approved, required or directed by the Architect acting as the agent for the “Owner
- "Indicated" and "shown" shall mean as detailed, or called for and reasonably implied in the contract documents.
- "Latest edition" shall mean the current printed document issued up to 30 calendar days prior to date of receipt of bids, unless specified otherwise.
- "Drawings" or "plans" mean the drawings enumerated in the contract documents, as well as all the information in the detail manual when applicable, addenda, and designer prepared field drawings and clarification drawings.
- "Specifications" mean this project manual and addenda thereto.
- “Similar” means in its general sense and not necessarily identical.
- “Shown”, “indicated”, “detailed”, “noted”, “scheduled” and terms of similar import, refer to the requirements contained in the Contract Documents.

**ARTICLE 2:**

2.2.5 Add: Drawings and Specification furnished to contractors:

Final Plans, Specifications and any Addendum will be posted on the Architect’s website.

**ARTICLE 3**:

3.1.1 Add: The General Contractor shall be the “Project Expediter” and shall be responsible for proper coordination of all work.

3.12.11 Add: Product Data, and Samples - Each contractor shall submit electronic copies of all shop drawings, and any required samples for approval.

3.12.12 Add: The contractor shall make any corrections required by the Architect and file with him electronic) copies, when requested. Additional copies shall be furnished to other trades and prime contractors where necessary to coordinate their work.

3.12.13 Add: The Contractor shall keep at the site a current set of shop drawings that bear the stamped approval of the Architect or Engineer.

3.15.1 Add: Prior to final inspection and acceptance of the building, the General Contractor shall clean the building, including but not limited to, glass, hardware, fixtures, equipment, masonry, clean floors as specified, and completely prepare the building for use by the Owner with no cleaning required by the Owner.

**Article 5:**

**ARTICLE 7**:

7.2.1 Add: The allowances for overhead and profit combined shall not exceed fifteen (15)% of net cost except where the change involves a subcontractor; allowances shall not exceed fifteen (15)% for the subcontractor and five (5)% for the prime contractor. No allowances shall be made for overhead and profit. In the case of deductible change orders, the contractor shall include not less than seven (7)% profit, but no allowance for overhead.

At the time of signing a change order, the contractor shall certify as follows, "I certify that my bonding company will be notified forthwith that my contract has been increased or decreased by the amount of this change order, and that a copy of the approved change order will be mailed upon receipt by me to my surety".

All requests for Change Orders must be in writing and be supported by a breakdown showing method of arriving at net costs. Breakdown shall include materials, labor, taxes, profit & overhead.

**ARTICLE 8:**

8.1.2 Add: The Contractor shall commence work to be performed under this agreement on a date to be specified in a written Notice to Proceed and shall fully complete work hereunder within **270** consecutive calendar days from said date. For each day in excess of the above number of days, the Contractor(s) shall pay to the Owner the sum of as $250.00 per consecutive calendar day liquidated damages, reasonably estimated in advance to cover losses to be incurred by the Owner by reason of failure of said Contractor(s) to complete work within the time specified, such time being in the essence of this Contract and a material consideration thereof.

8.2.1 Add: In planning his construction schedule within the agreed Contract Time, it shall be assumed that the Contractor has anticipated the amount of adverse weather conditions normal to site of the Work for the season or seasons of the year involved. Only those weather delays attributable to other than normal weather conditions will be considered by the Architect, which affect the critical path schedule.

**ARTICLE 9**:

9.2 Add: Schedule of Values shall separate labor and material for each phase of the work.

The phases of work shall be broken down per each section of the specifications. Where a section includes two or more major items of work, they shall also be broken out separately including labor and material.

Each item in the Schedule of Values and Application for Payment shall be complete including its total cost and proportionate share of general overhead and profit margin.

At the Contractor's option, temporary facilities and other major cost items that are not direct cost of actual work-in-place may be shown as separate line items in the Schedule of Values or distributed as general overhead expense.

Submit five (5) copies, within 10 days of Notice to Proceed.

9.3.1 Add: Type of Form: Application and Certificate for Payment AIA Document G 702 and Continuation Sheet G 702A, latest edition. (The contractor may purchase these certificates from the American Institute of Architects, 1735 New York Avenue, NW, Washington, D.C.).

Number of copies: Five (5) unless otherwise noted. Must have original signatures.

Cut off for each application shall be the 25th of each month.

Application shall be in Architect's office no later than the last day of each month and shall be signed and notarized.

Retainage: Each certificate shall show, and the Owner will retain 10% of the amount of each estimate until final completion and acceptance of all work covered by the contract.

9.6.1 Add: The Owner shall make payment of each certificate no later than the last day of the following month.

**ARTICLE 11:**

Add: All Certificates of Insurance required by the Contract Documents shall contain a provision that coverage's afforded under the policies will not be canceled, reduced in amount or coverage's eliminated until at least thirty (30) days after mailing written notice, by certified mail, return receipt requested, to the insured and the Owner of such alteration or cancellation.

Full contract amount shall appear on each document as necessary.

Effective date on each document shall be the same as the contract document date.

Expiration date shall be sufficient to complete the project.

An authorized individual agent, licensed to do business in North Carolina, shall countersign each policy.

The title "Licensed Resident Agent" shall appear after the signature.

11.1 Add:

Shall be furnished and maintained by contractor as outlined with the following adjustments and additions.

General Liability shall include: Comprehensive forms, premises- operations, independent contractor's protective, products and completed operations broad form property damaged, and explosion and collapse hazard.

Automobile liability shall include: Comprehensive form, owned, hired, and non-owned.

Worker's Compensation and Employer's Liability in accordance with North Carolina Statutory requirements.

11.1.2 Limits shall be as follows:

Combined Single Limit
General Liability - For Bodily Injury and Property Damage
Each Occurrence = $1,000,000
General Aggregate = $2,000,000

Auto Liability - For Bodily Injury and Property Damage
Combined Single Limit = $300,000

Employer Liability for each accident = $100,000

Subcontractor's Insurance Coverage - The Contractor shall either:

1. Require each of his subcontractors to procure and to maintain during the life of his subcontract, Subcontractor's Comprehensive General Liability, Automobile Liability, and Property Insurance of the type and the same amount as specified in paragraph above; or

2. Insure the activity of his subcontractors in his own policy.

11.4.1

Performance bond and payment bond will be required for 100% of the contract price.

**ARTICLE 13: MISCELLANOUS PROVISIONS**

The Project Expediter shall provide temporary power required for construction for all trades and disciplines unless otherwise stated in the specifications.

The Contractor will pay for electricity and water usage. The Contractor shall assure that temporary power and water are used in a responsible manner.

**ARTICLE 15:**

15.1.5.1 Add: When Contract Time has been extended, as provided under this Paragraph 4.3.7.1, such extension of time shall not be considered as justifying extra compensation to the Contractor for Administrative costs or other such reasons.

15.1.5.2 Add: In planning his construction schedule within the agreed Contract Time, it shall be assumed that the Contractor has anticipated the amount of adverse weather conditions normal to site of the Work for the season or seasons of the year involved. Only those weather delays attributable to other than normal weather conditions will be considered by the Architect if critical path of schedule is affected. A five year average will be used for calculating adverse weather. The Newport Weather Station will be used as a reporting station.

15.1.2 Add: Mediation will be the first step in solving claims. Arbitration shall be used to settle disputes or claims only if both parties agree to arbitration, otherwise, all disputes and claims shall be settled by normal legal means.

If arbitration is agreed by both parties, then after appointment of the arbitrator or arbitrators, the parties to the arbitration shall have the right to take depositions and to obtain discovery regarding the subject matter of the arbitration and, to that end, to use and exercise all of the same rights, remedies, and procedures, and be subject to all of

the same duties, liabilities, and obligations in the arbitration with respect to the subject matter thereof, as if the matter of the arbitration were pending in a civil action before a Superior Court of the State.

END OF SECTION 00800

**SECTION 00820 – SPECIAL CONDITIONS**

1. **General:** The existing buildings are to be demolished. All contractors shall conduct their operations so as to cause the least possible interference with the normal operations of the facility. All contractors shall limit use of the site for access and storage of materials to those areas approved by the Owner. All access to the area of work must be through designated areas approved by the Owner.

2. **On Site Parking:** Parking is not permitted on the Owner's property except for construction vehicles used in the performance of the work and only where approved by the Owner.

3. **Site Security:** The present level of security for the existing site shall not be reduced in any way, due to work of this contract.

4. **Personnel Safety:** Contractor shall provide barricades and similar types of safety items required to protect anyone in the area of work from the hazards of construction activities. Roadways, walks, paths, entrances, exits, etc. shall remain unobstructed and shall be maintained in a safe and satisfactory manner.

5. **Site Protection**: Contractor shall be responsible for and shall protect adjacent site features. Any damage shall be fully corrected to the satisfaction of the Architect. Sidewalks and paved areas shall be protected from damage prior to vehicular traffic use. If during the construction, public or private property is damaged or destroyed, during the course of the work, the responsible contractor shall, at his own expense, restore such property to a condition equal to that existing before such damage or injury was done, by repairing, rebuilding or replacing it, or otherwise making good such damage or destruction in an acceptable manner.

6. Access to the building and site shall be only between the hours of 7:00 am – 8:00 pm, Monday through Saturday unless otherwise approved in advance. The owner will operate out of the existing Mazda Building until the new Kia is constructed. After the Owner occupies Kia the selected Mazda demolition and renovation can begin.

END OF SECTION 00820

**SECTION 01010 - SUMMARY OF WORK**

PART 1 - GENERAL

1.1 DESCRIPTION

A. The Contractor shall, unless otherwise specified, supply all labor, transportation, materials, apparatus, fuel, water, energy, light and tools necessary for entire, proper and substantial completion of his work and shall install, maintain, and remove all equipment for the construction, other utensils or things and shall be responsible for the safe, proper and lawful construction, maintenance and use of same and shall construct in the best and most workmanlike manner a complete structure and everything properly incidental thereto as shown on plans, stated in specifications or reasonably implied there from, all in accordance with the Contract Documents.

B. Contract type

The work will be accomplished under:

1. A single lump sum prime general contract covering general, mechanical, plumbing and electrical construction contract.

C. Scope of Work - scope of the work is, but not limited to as follows:

1. General Construction
2. Plumbing System
3. HVAC System
4. Electrical work
5. Site Work
6. Demolition of existing structures
7. All related work

PART 2 & 3 - NOT USED.

END OF SECTION 01010

**SECTION 01020 - ALLOWANCES**

PART 1 - GENERAL

1.1 DESCRIPTION

A. General: All allowances considered in the Contract Price shall be clearly identified in the Contract and approved before signing. If the actual cost is more than, or less than the allowance, the Contract Price will be adjusted up or down accordingly when the actual cost is determined. Adjustments in the Allowances will be made by Change Order. Unless specified otherwise, the allowance amounts include the net cost of materials, and shipping charges.

B. Cash Allowance: The Contractor's overhead, profit and taxes shall be included in the Contract Price, but not in the allowance. All allowances agreed upon shall clearly indicate materials only or materials and labor included as the case may be. For allowance listed as materials only, the Contractor shall include labor and installation in his base bid price. The contractor shall submit to the Architect for approval all bills for materials under Cash Allowances.

1.2 SCHEDULE OF CASH ALLOWANCES (KIA)

The Respective Bidder shall clearly identify allowances within the contract.

| | | |
|---|---|---|
| A. | Contingency Allowance: | $ 35,000.00 |
| B. | Tele Data System (conduits are in the base bid) | $ 20,000.00 (materials and installation) |
| C. | Security System | $ 10,000.00 (materials and installation) |
| D. | Hardware | $ 50,000.00 (materials only) |
| E. | Interior Signage | $ 3,000.00 (materials only) |
| F. | Appliances | $ 6,000.00 (materials only) |
| G. | Landscaping Sprinkler System | $ 7,500.00 |
| H. | Parking Lot Lights | $ 150,000 (material and labor) |

1.3 SCHEDULE OF CASH ALLOWANCES (MAZDA)

The Respective Bidder shall clearly identify allowances within the contract.

| | | |
|---|---|---|
| A. | Contingency Allowance: | $ 20,000.00 |
| B. | Tele Data System (conduits are in the base bid) | $ 10,000.00 (materials and installation) |
| C. | Security System | $ 10,000.00 (materials and installation) |
| D. | Hardware | $ 10,000.00 (materials only) |
| E. | Interior Signage | $ 2,000.00 (materials only) |
| F. | Appliances | $ 3,500.00 (materials only) |

PARTS 2 & 3 - NOT USED.

END OF SECTION 01020

## SECTION 01027 – APPLICATIONS FOR PAYMENT

PART 1 – GENERAL

1.1 DESCRIPTION

A. Work included: Comply with procedures described in this Section when applying for progress payment and final payment under the Contract.

B. Related work
1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.

1.2 QUALITY ASSURANCE

A. Prior to start of construction, secure the Architect's approval of the Schedule of Values required to be submitted under Paragraph 9.2 of the General conditions, and further described in Section 01370 of these Specifications.

B. During progress of the work the Schedule of Value are to remain unchanged as approved by the Architect. Changes in the Contract Sum due to Change Orders or other modifications of the Contract shall be added to the Schedule of Values as Change Orders.

C. Base requests for payment on the approved schedule of values.

1.3 SUBMITTALS

1. Make submittal of request for payment by filling in the agreed data on AIA Document G702, "Application and Certificate for Payment," plus continuation sheet or sheets.
2. Sign and notarize the Application and Certificate for Payment.
3. Submit (5) originals of the Application and Certificate for Payment (Electronic copies if agreed upon by all parties.)
4. Cut off period is the 25th of the month.
5. Submittals are due in Architect's office by the last day of each month.

END OF SECTION 01027

**SECTION 01045 – CUTTING AND PATCHING**

PART 1 – GENERAL

1.1 DESCRIPTION

A. Work included: This Section establishes general requirements pertaining to cutting (including excavating), fitting, and patching of the work required to:
   1. Make the several parts fit properly.
   2. Uncover work to provide for installing, inspecting, or both, of ill-timed work.
   3. Remove and replace work not conforming to requirements of the Contract Documents.
   4. Remove and replace defective work.

B. Related work
   1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
   2. In addition to other requirements specified, upon the Architect's request uncover work to provide for inspection by the Architect of covered work, and remove samples of installed materials for testing.
   3. Do not cut or alter work performed under separate contracts without the Architect's written permission.

1.2 QUALITY ASSURANCE

A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.

1.3 SUBMITTALS

A. Request for Architect's consent
   1. Prior to cutting which effects structural safety, submit written request to the Architect for permission to proceed with cutting.
   2. Should conditions of the work, or schedule, indicate a required change of materials or methods for cutting and patching, so notify the Architect and secure his written permission and any required Change Order prior to proceeding.

B. Notices to the Architect
   1. Prior to cutting and patching performed pursuant to the Architect's instructions, submit cost estimate to the Architect. Secure the Architect's approval of cost estimates and type of reimbursement before proceeding with cutting and patching.
   2. Submit written notice to the Architect designating the time the work will be uncovered, to provide for the Architect's observation.

PART 2 – PRODUCTS

2.1 MATERIALS

A. For replacement of items removed, use materials complying with pertinent Sections of these Specifications.

PART 3 – EXECUTION

3.1 SURFACE CONDITIONS

A. Inspection
   1. Inspect existing conditions, including elements subject to movement or damage during cutting, excavating, patching, and backfilling.
   2. After uncovering the work, inspect conditions affecting installation of new work.

B. Discrepancies
   1. If uncovered conditions are not as anticipated, immediately notify the Architect and secure needed directions.
   2. Do not proceed until unsatisfactory conditions are corrected.

3.2 PREPARATION PRIOR TO CUTTING

A. Provide required protection including, but not necessarily limited to, shoring, bracing, and support to maintain structural integrity of the work.

3.3 PERFORMANCE

A. Perform required excavating and backfilling as required under pertinent other Sections of these Specifications.
   1. Perform cutting and demolition by methods, which will prevent damage to other portions of the work and provide proper surfaces to receive installation of repair and new work.
   2. Perform fitting and adjusting of products to provide finished installation complying with the specified tolerances and finishes.

END OF SECTION 01045

**SECTION 01050 - FIELD ENGINEERING**

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work included: Provide such field engineering services as are required for proper completion of the Work including, but not necessarily limited to:
   1. Establishing and maintaining lines and levels.
   2. Structural design of shores, forms, and similar items provided by the Contractor as a part of his means and methods of construction.

B. Related work:
   1. Additional requirements for field engineering also may be described in other Section of these Specifications.
   2. See also General Conditions.

1.2 SUBMITTALS

A. Comply with pertinent provisions of Section 01340.

B. Upon request of the Architect, submit:
   1. Certification, signed by the Contractor's retained field engineer, certifying that elevations and locations of improvements are in conformance or non-conformance with requirements of the Contract Documents.

1.3 PROCEDURES

A. In addition to procedures directed by the Contractor for proper performance of the Contractor's responsibilities:
   1. Locate and protect control points before starting work on the site.
   2. Preserve permanent reference points during progress of the Work.
   3. Do not change or relocate reference points or items of the Work without specific approval from the Architect.
   4. Promptly advise the Architect when a reference point is lost or destroyed or requires relocation because of other changes in the Work.
      a. Upon direction of the Architect, require the field engineer to replace reference stakes or markers.
      b. Locate such replacements according to the original survey control.

B. The General Contractor shall employ a locator service to locate and mark all underground utilities as required.

PART 2 & 3 - NOT USED.

END OF SECTION 01050

**SECTION 01090 - ABBREVIATIONS AND SYMBOLS**

PART 1 - GENERAL

1.1 REFERENCE TO APPLICABLE STANDARDS

A. Wherever reference is made to Codes, Standards Specifications or other data published by regulating agencies or accepted organizations, it shall be understood that such reference is made to the latest edition, (including addenda) published prior to the date of Contract Documents, except as noted specifically otherwise by date in the contract documents.

B. Abbreviations and symbols used in the Specifications can be grouped into three (3) basic categories:
1. Abbreviations of reference symbols.
2. Abbreviations of words and phrases.
3. Symbols.

C. Among those, which may be used in the Contract Documents, are the following (with respective abbreviation used):

| | |
|---|---|
| AA | Aluminum Association |
| AAMA | Architectural Aluminum Manufacturers Association |
| AASHTO | American Association of State Highway and Transportation Officials |
| ABMA | American Boiler Manufacturers Association |
| ACI | American Concrete Institute |
| ACRI | Air Conditioning and Refrigeration Institute |
| ADC | Air Diffusion Council |
| AFI | Air Filter Institute |
| AGA | American Gas Association |
| AGCA | Associated General Contractors of America, Inc. |
| AIA | American Institute of Architects |
| AIMA | Acoustical and Insulating Materials Association |
| AISC | American Institute of Steel Construction |
| AISI | American Iron and Steel Institute |
| AITC | American Institute of Timber Construction |
| ALS | American Lumber Standards |
| AMCA | Air Moving and Conditioning Association |
| ANSI | American National Standards Institute, Inc. |
| APA | American Plywood Association |
| API | American Petroleum Institute |
| ARI | Air Conditioning and Refrigeration Institute |
| ASAHC | American Society of Architectural Hardware Consultants |
| ASCE | American Society of Civil Engineers |
| ASHRAE | American Society of Heating, Refrigeration and Air Conditioning Engineers |
| ASME | American Society of Mechanical Engineers |
| ASTM | American Society for testing and Materials |
| ATI | Asphalt Tile Institute |
| AWI | Architectural Woodwork Institute |
| AWPA | American Wood Preservers Association |
| AWPI | American Wood Preservers Institute |
| AWS | American Welding Society |
| BHMA | Builders Hardware Manufacturers Association |
| BIA | Brick Institute of America |
| BRI | Building Research Institute |
| CABRA | Copper and Brass Research Association |
| CAGI | Compressed Air and Gas Institute |

| | |
|---|---|
| CE | Corps of Engineers (Army) |
| CRSI | Concrete Reinforcing Steel Institute |
| CSI | Construction Specifications Institute |
| CTI | Cooling Tower Institute |
| DFPA | Douglas Fir Plywood Association |
| ETL | Electrical Testing Laboratories |
| FGMA | Flat Glass Marketing Association |
| FHA | Federal Housing Administration |
| FM | Factory Mutual Engineering Division, Association of Factory Mutual Fire Insurance Companies |
| FPL | Forest Products Laboratory |
| FS | Federal Specifications |
| FTI | Facing Tile Institute |
| GA | Gypsum Association |
| GTA | Glass Tempering Association |
| HPMA | Hardwood Plywood Manufacturers Association |
| IBRM | Institute of Boiler and Radiator Manufacturers |
| IEEE | Institute of Electrical and Electronics Engineering |
| IES | Illuminating Engineering Society |
| JAN | Joint Army-Navy Specifications |
| MAC | Masonry Advisory Council |
| MIA | Marble Institute of America |
| MLMA | Metal Lath Manufacturers Association |
| MS | Military Specifications |
| MSS | Manufacturers Standardization Society of the Valves and Fitting Industries |
| MSTD | Military Standard |
| NAAMM | National Association of Architectural Metal Manufacturers |
| NAFM | National Association of Fan Manufacturers |
| NAPF | National Association of Plastic Manufacturers |
| NBHA | National Builders Hardware Association |
| NBS | National Bureau of Standards |
| NCMA | National Concrete Masonry Association |
| NEC | National Electric Code (NFPA Pamphlet No. 70) |
| NEMA | National Electric Manufacturers Association |
| NEMI | National Elevator Manufacturing Industry, Inc. |
| NFC | National Fire Code |
| NFPA | National Fire Protection Association |
| NFPA | National Forest Products Association |
| NHLA | National Hardwood Lumber Association |
| NHPMA | Northern Hardwood and Pine Manufacturers Association |
| NPA | National Particleboard Association |
| NPCA | National Paint and Coatings Association |
| NRMCA | National Ready Mixed Concrete Association |
| NSC | National Safety Council |
| NSF | National Sanitation Foundation |
| NTMA | The National Terrazzo and Mosaic Association, Inc. |
| NWMA | National Woodwork Manufacturers Association |
| OSHA | Occupational Safety and Health Administration |
| PCA | Portland Cement Association |
| PCI | Prestressed Concrete Institute |
| PEI | Porcelain Enamel Institute, Inc. |
| PS | Product Standard, U.S. Department of Commerce |
| RIS | Redwood Inspection Service |
| RTI | Resilient Tile Institute |
| SAE | Society of Automotive Engineers |
| SBI | Steel Boiler Institute |
| SCMA | Southern Cypress Manufacturers Association |
| SDI | Steel Deck Institute |

| | |
|---|---|
| SDI | Steel Door Institute |
| SJI | Steel Joint Institute |
| SMACCNA | Sheet Metal and Air Conditioning Contractors National Association |
| SMFMA | Sprayed Mineral Fiber Manufacturers Association, Inc. |
| SPIB | Southern Pine Inspection Bureau |
| SSPC | Steel Structures Painting Council |
| SWFPA | Structural Wood Fiber Products Association |
| TCA | Tile Council of America |
| TEMA | Tubular Exchange Manufacturing Association |
| TIMA | Thermal Insulation Manufacturers Association |
| TPI | Truss Plate Institute |
| UL | Underwriter's Laboratories, Inc. |
| UPC | Uniform Plumbing Code |
| WRI | Wire Reinforcement Institute |
| WWPA | Western Wood Products Association |

1.2 ABBREVIATIONS OF WORDS AND PHRASES

A. Abbreviations of words and phrases applicable to this Project; other than listed above for reference standards, shall be as shown on the Drawings.

1.3 SYMBOLS

A. Symbols representing construction materials and the equipment applicable to this Project shall be as shown on the Drawings.

PART 2 & 3 - NOT USED.

END OF SECTION 01090

**SECTION 01200 - PROJECT MEETINGS**

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work included: To enable orderly review during progress of the Work, and to provide for systematic discussion of problems, the Architect will conduct project meetings throughout the construction period.

B. Related work:
1. The Contractor's relations with his subcontractors and materials suppliers, and discussions relative thereto, are the Contractor's responsibility and normally are not part of project meetings content. If subcontractor's issues are of a concern, it can be communicated at this meeting, but management of the subcontractor will remain the responsibility of the Contractor.

1.2 SUBMITTALS

A. Agenda items: To the maximum extent practicable, advise the Architect at least 24 hours in advance of project meetings regarding items to be included in or added to the agenda.

B. Minutes:
1. The Architect or Owner's representative will compile minutes of each project meeting, and will furnish one copy to Contractor and required copies to the Owner.
2. Recipients of copies may make and distribute such other copies as they wish.

1.3 QUALITY ASSURANCE

A. For those persons designated by the Contractor to attend and participate in project meetings, provide required authority to commit the Contractor to solutions agreed upon in the project meetings.

PART 2 - PRODUCTS

(No products are required in this Section)

PART 3 - EXECUTION

3.1 GENERAL

A. Except as noted below for Pre-construction Meeting, project meetings will be held monthly, unless project dictates differently.

B. Coordinate as necessary to establish mutually acceptable schedule for meetings.

3.2 PRECONSTRUCTION MEETING

A. Pre-construction Meeting will be held as soon as possible after the written Notice to Proceed.
1. Provide attendance by authorized representatives of the Contractors and major subcontractors.
2. The Architect or Owner's representative will advise other interested parties, including the Owner, and request their attendance.

B. Minimum agenda: Data will be distributed and discussed on at least the following items:

1. Organizational arrangement of Contractor's forces and personnel, and those of subcontractors, materials suppliers, and Architect.
2. Channels and procedures for communication.
3. Construction schedule, including sequence of critical work.
4. Contract Documents, including distribution of required copies of original Documents and revisions.
5. Processing of Shop Drawings and revisions.
6. Processing of Bulletins, field decisions, and Change Orders.
7. Rules and regulations governing performance of the Work
8. Procedures for safety and first aid, security, quality control, housekeeping, and related matters.

3.3 PROJECT MEETINGS

A. Attendance:
1. To the maximum extent practical, assign the same person or persons to represent the Contractor at project meetings throughout progress of the Work.
2. Subcontractors, materials suppliers, and others may be invited to attend those project meetings in which their aspect of the Work is involved.

B. Minimum agenda:
1. Review progress of the Work since last meeting, including status of submittals for approval.
2. Identify problems, which impede planned progress.
3. Develop corrective measures and procedures to regain planned schedule.
4. Complete other current business.

END OF SECTION 01200

**SECTION 01310 - SCHEDULES AND REPORTS**

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General Conditions and other Division 1 specifications sections, apply to work of this section.

1.2 DESCRIPTION

A. Post Award Requirements
1. Draft of Construction Schedule: Within two weeks of Date of Commencement of the Work, Contractor shall complete draft of time-scaled CPM Construction Schedule. (Bar chart is acceptable.)
2. Level of Detail: Except for procurement and General Conditions requirements, differentiate activities on schedule so that no single activity shown requires more than twenty-one (21) calendar days to complete.

B. Schedule of Values
1. Within seven (7) days after completion of CPM Construction Schedule and before first pay request, Contractor shall submit Schedule of Values (see Section 01370) for review by the Architect allocating a dollar value for each activity on Construction Schedule. Dollar value for each activity will include cost broken into labor, materials, and pro rata contribution to overhead and profit. Subcontract sums will be identified on the Schedule of Values and broken down as described above.

C. Approval
1. Approval of Construction Schedule and Schedule of Values will be signified by the Architect and Contractor's joint signatures on one copy of each document. Thereafter, Project will be monitored with Construction Schedule, which Contractor shall use in planning, organizing, directing, coordinating, and executing the Work and which shall be the basis for evaluating the progress of the Work.

D. Schedule Revisions
1. General: Revisions to approved Construction Schedule must be approved in writing by Architect and Contractor.
2. Contractor: Submit requests for revisions to schedule to Architect together with written rationale and description of logic for rescheduling work to maintain Specific Contractual Milestone Dates.
a. Proposed revisions acceptable to the Architect will be incorporated into next update of Construction Schedule by the Contractor.
3. Owner: Changes initiated by Owner and implemented by Change Orders which have potential to affect critical dates will require Contractor to prepare revised schedule for the Architect's concurrence. The Architect's approved revisions will be incorporated into the Construction Schedule. Adjustments in scheduled completion dates, either for intermediate activities or for Contract as a whole, will be considered only to extent that there is not sufficient float to absorb the revisions accepted.

E. Recovery Schedule
1. General: Should updated Construction Schedule show Contractor to be four-teen (14) or more days behind schedule at any time during construction, the Architect may require Contractor to prepare Recovery Schedule, displayed in

CPM format, which will display Contractor's plan for returning to schedule within subsequent pay period.

2. Schedule Preparation: Within seven (7) days after notice from the Architect, prepare and submit to the Architect a Recovery Schedule, incorporating best available information from Subcontractors and others which will permit return to Construction Schedule within subsequent pay period. Prepare Recovery Schedule to same level of detail as Construction Schedule.
3. Schedule Assessment: Seven (7) days prior to expiration of Recovery Schedule, confer with the Architect to assess effectiveness of Recovery Schedule. As a result of this conference, the Architect will direct Contractor as follows:
4. Behind Schedule: If the Architect determines Contractor is still behind schedule, the Architect will direct Contractor to prepare another Recovery Schedule for subsequent pay period.
5. On Schedule: If the Architect determines Contractor has successfully complied with provisions of Recovery Schedule, the Architect will direct Contractor to return to use of Construction Schedule.

PARTS 2 & 3 - NOT USED.

END OF SECTION 01310

**SECTION 01340 - SUBMITTALS AND SUBSTITUTIONS**

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work included: Make submittals required by the Contract Documents, and revise and resubmit as necessary to establish compliance with the specified requirements.

B. Related work:
1. Documents affecting work of this Section include, but are not necessarily limited to General Conditions Amendments to General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
2. Individual requirements for submittals also may be deceived in pertinent Sections of these Specifications.

C. Work not included:
1. Unrequired submittals will not be reviewed by the Architect.
2. The Contractor may require his subcontractors to provide drawings, setting diagrams, and similar information to help coordinate the Work, but such data shall remain between the Contractor and his subcontractors and will not be reviewed by the Architect.

1.2 SUBMITTALS

A. Make submittals of Shop Drawings, Samples, substitution requests, and other items in accordance with the provisions of this Section.

B. Coordination of Submittals:
1. Prior to each submittal, carefully review and coordinate all aspects of each item being submitted.
2. Verify that each item and the submittal for it CONFORMS IN ALL RESPECTS to the specified requirements.
3. By affixing his signature to each submittal, the Contractor certifies that THIS COORDINATION HAS BEEN PERFORMED.
4. The Contractor shall stamp the shop drawings as "Approved" or "Approved as Noted" before submitting to Architect or Owner’s representative for review.

1.3 QUALITY ASSURANCE

A. "Equals" and "Substitutions"
1. The Contract is based on the standards of quality established in the Contract Documents. Requests for substitutions will be considered when submitted according to the procedures set forth below.
a. Particularly with regard to MAJOR materials, equipment or methods proposed for the Work as set forth in the Contract Documents, Contractor's request(s) for approvals of "equals" not specifically named in the Contract Documents MUST BE SUBMITTED IN WRITING with supporting documentation, and in the hands of the Architect prior to contract award. Telephone requests for consideration of proposed "equals" will not be accepted.

b. On other items of Work, Contractor may request consideration of substitution, when submitted in writing with supporting documentation within thirty (30) days following the Notice to Proceed.

B. Where the phrase "or equal" or "equal as approved by Architect" occurs in the Contract Documents, do not assume that the Contractor's choice of materials, equipment, or

methods will be approved as equal unless the item has been specifically approved for this Work by the Architect.

C. Do not substitute materials, equipment, or methods unless such substitution has be specifically approved in writing for this Work by the Architect.

PART 2 - PRODUCTS

2.1 SHOP DRAWINGS

A. Scale and Measurements: Make Shop Drawings accurately to a scale sufficiently large to show all pertinent aspects of the item and its methods of connection to the Work.

B. Types of prints required:
1. Submit Shop Drawings in electronic format.

C. Review comments of the Architect will be shown in red on prints and returned to the Contractor. The Contractor may make and distribute such copies as are required for his purposes.

2.2 MANUFACTURER'S LITERATURE

A. Where contents of submitted literature from the manufacturers includes data not pertinent to the submittal, clearly show which portions of the contents are being submitted for review.

B. Submit three copies of each which are required to be returned, plus one copy which will be retained by the Architect.

2.3 SAMPLES

A. Provide Sample or Samples identical to the precise article proposed to be provided. Identify as described under "Identification of Submittals" below.

B. Number of Samples required:
1. Unless otherwise specified, submit one sample in the quantity, which is required to be returned, plus on which will be retained by the Architect.
2. By prearrangement in specific cases, a single Sample may be submitted for review and, when approved, be installed in the Work at a location agreed upon by the Architect.
3. Except as noted in 2.3.B.2 above, no selections of color, texture or finish will be approved by the Architect until ALL substitutions have been approved by the Architect, and ALL necessary samples and color, texture, finish proposals have been submitted in their entirety by the Contractor, in order that a coordinated, total scheme may be developed by the Architect.

PART 3 - EXECUTION

3.1 IDENTIFICATION OF SUBMITTALS

A. Consecutively number all submittals. (ie: G-1, G-2.....etc. for General Construction, P-1, P-2, .... etc. for Plumbing; M-1, M-2, .....etc. for Mechanical (HVAC); E-1, E-2, ....etc. for Electrical; SP-1, SP-2....etc for Sprinkler System; SU-1, SU-2, ... etc. for Site/Utilities.

1. When material is resubmitted of any reason, transmit under a new letter of transmittal and with a shop drawing number. (G-1r)

2. On resubmittals, cite the original submittal number for reference.

B. Accompany each submittal with a letter of transmittal showing all information required for identification and checking.

C. On at least the first page of each submittal, and elsewhere as required for positive identification, show the submittal number in which the item was included.

D. Maintain an accurate submittal log for the duration of the Work, showing current status of all submittals at all times. Make the submittal log available to the Architect for his review upon request.

3.2 GROUPING OF SUBMITTALS

A. Unless otherwise specified, make submittals in groups containing all associated items to assure that information is available for checking each item when it is received.
1. Partial submittals may be rejected as not complying with the provisions of the Contract.

3.3 TIMING OF SUBMITTALS

A. Make submittals far enough in advance of schedule dated for installation to provide time required for reviews, for securing necessary approvals, for possible revisions and resubmittals, and for placing orders and securing delivery. All submittals shall be submitted within ninety (90) days of the notice to proceed.

3.4 ARCHITECT'S REVIEW

A. Review by the Architect or Owner’s representative does not relieve the Contractor from responsibility for errors, which may exist in the submitted data.

B. Revisions
1. Make revisions required by Architect or Owner’s representative.
2. If the Contractor considers any required revision to be a change, he shall so notify the Architect or Owner’s representative as provided in the General Conditions.
3. Make only those revisions directed or approved by the Architect.

END OF SECTION 01340

**SECTION 01370 - SCHEDULE OF VALUES**

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work included: Provide a detailed breakdown of the agreed Contract sum showing values allocated to each of the various parts of the Work, as specified herein and in other provisions of the Contract Documents.

B. Related work:
1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Amendments to General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
2. Schedule of values may be described on the continuation sheet of AIA document G702 accompanying applications for payment.
3. Schedule of values is required under Paragraph 9.2 of the General Conditions.

1.2 QUALITY ASSURANCE

A. Use required means to assure arithmetical accuracy of the sums described.

B. When so required by the Architect or Owner's representative, provide copies of the subcontracts or other data acceptable to the Architect or Owner's representative, substantiating the sums described.

1.3 SUBMITTALS

A. Prior to first application for payment, submit a proposed schedule of values to the Architect. See Section 01310.
1. Meet with the Architect and determine additional data, if any, required to be submitted.
a. Mobilization, Submittal Review, Material Delivery, Execution of the Work, and Punchlisting shall be included in the schedule.
b. Mobilization shall be billed on a monthly basis equally distributed throughout construction contract time.
c. Materials and Labor breakdowns should be provided for each portion of work.
d. All General Conditions items shall be broken out separately,

2. Secure the Architect or Owner's representative's approval of the schedule of values prior to submitting first application for payment.

PART 2 & 3 - NOT USED.

END OF SECTION 01370

**SECTION 01410 - TESTING LABORATORY SERVICES**

PART 1 - GENERAL

1.1 DESCRIPTION

A. The Owner shall select a testing laboratory qualified in accordance with ASTM E329.

B. The Owner shall pay for all testing and inspection services as are specified in this Section and/or elsewhere in the Contract Documents, except as otherwise noted.

C. Related work:
1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Amendments to General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
2. Requirements for testing may be described in various Sections of these Specifications.
3. Where no testing requirements are described, but the Owner decides that testing is required, the Owner may require such testing to be performed under current pertinent standards for testing. Payment for such testing will be made as described in this Section.

D. Work not included:
1. Selection of testing laboratory: The Owner will select a prequalified independent testing laboratory.
2. Payment for initial testing: The Owner will pay for all initial services of the testing laboratory as further described in Artcle 2.1 of this Section.

1.2 QUALITY ASSURANCE

A. The testing laboratory will be qualified to the Owner's approval in accordance with ASTM E329.

B. Testing, when required, will be in accordance with all pertinent codes and regulations, and with selected standards of the American Society for Testing and Materials.

1.3 PRODUCT HANDLING

A. Promptly process and distribute required copies of test reports and related instructions to assure necessary retesting and replacement of materials with the least possible delay in progress of the Work.

PART 2 - PRODUCTS

2.1 PAYMENT FOR TESTING

A. The Owner will pay for initial testing services required.

B. When initial tests indicate non-compliance with the Contract Documents, subsequent retesting occasioned by the non-compliance shall be performed by the same testing agency, and costs shall be the sole responsibility of the Contractor.

C. Where no testing requirements are described, but the Owner decides that testing is required, the Owner may require such testing be performed under current pertinent standards for testing. If testing reveals the work to be in compliance with Contract requirements, Owner will pay for these testing services. If work is found to be in non-compliance with Contract requirements, Contractor shall pay for these testing services.

D. Inspections and tests required by codes or ordinances, or by a plan approval authority, and which are made by a legally constituted authority, shall be the responsibility of and shall be paid for by the Contractor, unless otherwise provided in the Contract Documents.

2.2 CONTRACTOR'S CONVENIENCE TESTING

A. Inspecting and testing performed exclusively for the Contractor's convenience shall be the sole responsibility of the Contractor.

PART 3 - EXECUTION

3.1 COOPERATION WITH TESTING LABORATORY

A. Representatives of the testing laboratory shall have access to the Work at all times and at all locations where the Work is in progress. Provide facilities for such access to enable the laboratory to perform its function properly. All testing shall be coordinated by the Architect.

3.2 TAKING SPECIMENS

A. All specimens and samples for testing, unless otherwise provided in the Contract Documents, shall be taken by the testing personnel. All sampling equipment and personnel will be provided by the testing laboratory. All deliveries of specimens and samples to the testing laboratory will be performed by the testing laboratory.

3.3 SCHEDULES FOR TESTING

A. Establishing schedule: (Contractor shall be responsible for scheduling Testing Laboratory.)
   1. By advance discussion with the testing laboratory approved by the Owner, determine the time required for the laboratory to perform its tests and to issue each of its findings.
   2. Provide all required time within the construction schedule.

B. Revising schedule: When changes of construction schedule are necessary during construction, coordinate all such changes with the testing laboratory as required.

C. Adherence to schedule: When the testing laboratory is ready to test according to the established schedule, but is prevented from testing or taking specimens due to incompleteness of the Work, all extra charges for testing attributable to the delay may be back-charged to the Contractor and shall not be borne by the Owner.

END OF SECTION 01410

## SECTION 01500 - TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work included: Provide temporary facilities and controls needed for the Work including, but not necessarily limited to:

1. Temporary utilities such as heat, water, electricity, facsimile machine and telephone
2. Sanitary facilities
3. Enclosures such as tarpaulins, barricades, and canopies
4. Project sign
5. Field office for the Contractor's personnel
6. Temporary fencing of the construction site

B. Related work:

1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Amendments to General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.

2. Except that equipment furnished by subcontractors shall comply with requirements of pertinent safety regulations, such equipment normally furnished by the individual trades in execution of their own portions of the Work are not part of this Section.

3. Permanent installation and hookup of the various utility lines are described in other Sections.

1.2 PRODUCT HANDLING

A. Maintain temporary facilities and controls in proper and safe condition throughout progress of the Work.

1.3 LOCAL REGULATIONS

A. Comply with all local ordinances including local and temporary facilities, parking and storage.

PART 2 - PRODUCTS

2.1 UTILITIES

A. Water:

1. The Contractor and his Plumbing Subcontractor to provide necessary temporary piping and water supply and, upon completion, remove such temporary facilities.

2. Contractor will pay for water used in construction.

B. Electricity:

1. The Contractor and his Electrical Subcontractor to provide necessary temporary wiring and, upon completion of the Work, remove such temporary facility.

2. Provide area distribution boxes so located that the individual trades may furnish and use 100’ maximum length extension cords to obtain power and lighting at points where needed for work, inspection, and safety.

3. Amounts of electricity during the construction will be paid for by the Contractor.

C. Heating: Provide and maintain temporary heat necessary for proper conduct of operations needed in the Work.

D. Telephone:

1. Make necessary arrangements and pay costs for installation and operation of telephone service to the Contractor's office at the site.

2. Make the telephone available to the Architect or Owner’s representative for use in connection with the Work.

E. Facsimile Machine: (or Document Scanner)

1. Make necessary arrangements and pay costs for installation and operation of facsimile machine to the Contractors office at the site.

2. Make the facsimile machine available to the Architect or Owner’s representative for use in connection with the Work.

F. E-MAIL:

1. Make necessary arrangements and pay costs for installation and operation of email to the contractor’s office at the site.
2. Contractor shall maintain a digital camera at the site for progress photos to be emailed to Architect or Owner’s representative. Photos to be submitted on at least a weekly basis.

G. Temporary Fire Protection:

1. Contractor to provide any and all temporary construction fire extinguishers and stanpipes required for the duration construction.

2.2 FIELD OFFICES AND SHEDS

A. Contractors facilities:

1. Provide a field office building and sheds adequate in size and accommodation for Contractors offices, supply and storage.

2. Within the Contractor's facilities, provide enclosed space adequate for holding project meetings. Furnish with table, chairs, and utilities.

B. Sanitary facilities:

1. Provide temporary sanitary facilities in the quantity required for use by all personnel.

2. Maintain in a sanitary condition at all times.

2.3 ENCLOSURES

A. Provide and maintain for the duration of construction all scaffolds, tarpaulins, canopies, warning signs, steps, platforms, bridges, and other temporary construction necessary for proper completion of the Work in compliance with pertinent safety and other regulations.

1. All apparatus, equipment, temporary and permanent construction shall meet all local and State labor laws and safety regulations applicable thereto.

2.4 TEMPORARY FENCING

A. Owner will provide a temporary fence of design and type needed to prevent entry onto the Work by the public. Contractor shall coordinate installation and location. It shall be the Contractor's responsibility to maintain the fence for the duration of the construction.

2.5 PROJECT SIGN

A. Project signs shall only be installed where approved by Owner.
B. Upon completion of the Work, demount the project signs.
C. Except as otherwise specifically approved by the Architect, do not permit other signs or advertising on the job site.

PART 3 - EXECUTION

3.1 MAINTENANCE AND REMOVAL

A. Maintain temporary facilities and controls as long as needed for safe and proper completion of the Work.

B. Remove such temporary facilities and controls as rapidly as progress of the Work will permit, or as directed by the Architect or Owner's representative.

3.2 TRAFFIC COORDINATION

A. Any construction related activities, such as receiving, loading, unloading, or other activities which may be an interruption to normal vehicular traffic flow on the site shall be coordinated in advance by the Contractor with the Owner or public authority having jurisdiction.

END OF SECTION 01500

**SECTION 01620 - PRODUCT HANDLING**

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work Included: Protect products scheduled for use in the Work by means including, but not necessarily limited to, those described in this Section.

B. Related work:

1. Documents affecting work of this Section include, but are not necessarily limited to the General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
2. Additional procedures also may be prescribed in other Sections of these Specifications.

1.2 QUALITY ASSURANCE

A. Include within the Contractor’s quality assurance program such procedures as are required to assure full protection of work and materials.

1.3 MANUFACTURER'S RECOMMENDATIONS

A. Except as otherwise approved by the Architect, determine and comply with manufacturer's recommendations on product handling, storage and protection.

1.4 PACKAGING

A. Deliver products to the job site in the manufacturer's original containers with labels intact and legible.

1. Maintain packaged materials with seals unbroken and labels intact until time of use.
2. Promptly remove damaged material and unsuitable items from the job site, and promptly replace with material meeting the specified requirements at no additional cost to the Owner.

B. The Architect may reject as non-complying, material and products that do not bear identification satisfactory to the Architect as to manufacturer, grade, quality, and other pertinent information.

1.5 PROTECTION

A. Protect finished surfaces, including jambs and soffits of openings used as passageways, through which equipment and materials are handled.

B. Provide protection for finished floor surfaces in traffic are prior to allowing equipment or materials to be moved over such surfaces.

C. Maintain finished surfaces clean, unmarred, and suitably protected until accepted by the Owner.

1.6 REPAIRS AND REPLACEMENTS

A. In the event of damage, promptly make replacement sand repairs to the approval of the Architect, and at no additional cost to the Owner.

B. Additional time required to secure replacements and to make repairs will not be considered by the Architect to justify an extension in the Contract Time of Completion.

END OF SECTION 01620

**SECTION 01710 - CLEANING**

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work included: Throughout the construction period, maintain the building and site in a standard of cleanliness as described in this Section.

B. Related work:
1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Amendments to General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
2. In addition to standards described in this Section, comply with requirements for cleaning as described in pertinent other Sections of these Specifications.

1.2 QUALITY ASSURANCE

A. Conduct daily inspection to verify that requirements for cleanliness are being met.

B. In addition to the standards described in this Section. Comply with pertinent requirements of governmental agencies having jurisdiction.

PART 2 - PRODUCTS

2.1 COMPATIBILITY

A. Use only the cleaning materials and equipment, which are compatible with the surface being cleaned, as recommended by the manufacturer of the material.

PART 3 - EXECUTION

3.1 PROGRESS CLEANING

A. General:
1. Retain stored items in an orderly arrangement allowing maximum access, not impeding traffic or drainage, and providing required protection of materials.
2. Do not allow accumulation of scrap, debris, waste material, and other items not required for construction of this Work.
3. At least twice each month, and more often if necessary, completely remove all scrap, debris, and waste material from the job site.
4. Provide adequate storage for all items awaiting removal from the job site, observing requirements for fire protection and protection of the ecology.
5. The building shall be cleaned daily of all debris and waste material resulting from the construction operations.

END OF SECTION 01710

**SECTION 01720 - PROJECT RECORD DOCUMENTS**

PART 1 - GENERAL

1.1 RECORD DRAWINGS

A. Contractors shall maintain a set of Record Drawings at the project site. These shall be kept legible and current, and shall be available at all times for the inspection of the Architect. All differences or changes in the contract work, or work added, shall be recorded daily on these Record Drawings in a contrasting color.
B. The Architect or Owner's representative shall approve the Record Drawings.
C. Receipt and approval of Record Drawings are prerequisites for final payment.

1.2 MANUALS

A. Each Contractor shall submit to the Architect or Owner's representative before final acceptance three copies of all installation, operating instructions, and maintenance instructions on the equipment and materials furnished under his contract. Each set of copies shall be bound in a 3-ring, loose-leaf binder for 8-1/2" x 11 " paper. Label binder designating the name of the project, the names of the Owner, the name of the Contractor, and the equipment or materials included in the manual.

1.3 GUARANTEES AND WARRANTIES

A. Contractors shall submit to the Architect or Owner's representative before final acceptance three originals of all warranties, guarantees, and surety bonds. All such documents shall show the name and location of the project and the name of the Owner.

PART 2 & 3 - NOT USED.

END OF SECTION 01720

**SECTION 05500 - METAL FABRICATIONS**

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:
   1. Steel lintels and shelf angles.
   2. Pipe and tube railings.
   3. Steel framing and supports for applications where framing and supports are not specified in other Sections.

1.3 SUBMITTALS

A. Shop Drawings: For each fabricated item, show the following:
   1. Plans and elevations.
   2. Jointing and connections. Indicate welded connections using standard AWS symbols; indicate net weld length.
   3. Profiles of sections and reinforcing.
   4. Fasteners and anchors.
   5. Accessories.
   6. Location of each finish.

B. Product Data: Manufacturer's specifications and installation instructions. Submit for:
   1. All manufactured products used in fabrications.

C. Samples of products and materials when requested.

1.4 QUALITY ASSURANCE

A. Definitions in ASTM E 985 for railing-related terms apply to this section.

B. Structural Performance of Handrails and Railing Systems: Comply with ASTM E 985 based on testing per ASTM E 894 and E 935.

C. Structural Performance of Handrails and Railing Systems: Provide handrails and railing systems capable of withstanding the following structural loads without exceeding the allowable design working stress of the materials involved.
   1. Top Rail of Guardrail Systems: Concentrated load of 200 lbf (890 N) applied at any point and in any direction and a uniform load of 50 lbf per linear foot (730 N/m) applied horizontally and concurrently with a uniform load of 100 lbf per linear foot (1460 N/m) applied vertically downward. Concentrated and uniform loads need not be assumed to act concurrently.
   2. Handrails Not Serving as Top Rails: Concentrated load of 200 lbf (890 N) applied at any point and in any direction and a uniform load of 50 lbf per linear foot (730 N/m) applied in any direction. Concentrated and uniform loads need not be assumed to act concurrently.
   3. Infill Area of Guardrail Systems: Horizontal concentrated load of 200 lbf (890 N) applied to 1 sq. ft. (0.09 sq. m) at any point in the system including panels, intermediate rails, balusters, or other elements composing the infill area. Loads on infill area need not be assumed to act concurrently with loads on top rails.

D. Where fabrications are specified to comply with specific structural performance

requirements, provide design sealed by a professional engineer registered in the state in which the project is located.

1.5 PROJECT CONDITIONS

A. Where metal fabrications are indicated to fit walls and other construction, verify dimensions by field measurements before fabrication and indicate measurements on Shop Drawings. Coordinated fabrication schedule with construction progress to avoid delaying the Work.

B. Coordinate installation of anchorages for metal fabrications. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

PART 2 - PRODUCTS

2.1. MATERIALS - METALS

A. Steel Shapes:
1. Plates, bars, angles, channels, and H-sections: ASTM A 36.
2. Grating bars: ASTM A 36 or ASTM A 569.
3. Galvanizing: Hot-dip galvanizing after fabrication in accordance with ASTM A 123.
4. Tube: Cold-formed: ASTM A 500, Grade B.
5. Pipe: ASTM A 53, standard weight.

B. Steel Sheet:
1. For structural uses: Hot-rolled, ASTM A 570; cold-rolled, ASTM A 611.
2. For nonstructural uses: Cold-rolled, ASTM A 366; hot-rolled, ASTM A 569.

C. Galvanized Steel Sheet:
1. For structural uses: ASTM A 446.
2. For nonstructural uses: ASTM A 526.
3. Galvanizing: In accordance with ASTM A 525, G90, unless otherwise indicated.

D. For metal fabrications 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.

2.2 MANUFACTURED COMPONENTS

A. Bar Gratings: Manufacture in accordance with "Standard Specifications for Metal Bar Grating and Metal Bar Grating Treads" (part of NAAMM MBG 531), except for specific requirements specified here.
1. Where load and deflection requirements are indicated, select member sizes and materials using manufacturer's published load tables.
2. Spacing: 1-1/2 inches
3. Cross bar spacing: 4 inches.
4. Top surface: Plain.

2.3 MATERIALS - MISCELLANEOUS

A. Grout: Nonmetallic, noncorrodible, nonshrink, factory blended and packaged; complying with ASTM C 1107. Use type recommended by manufacturer for exterior use where required.

B. Fasteners: Use fasteners suitable for the material being fastened and for the type of connection required.

1. For exterior use or built into exterior walls: Nonferrous stainless steel, zinc coated or cadmium plated.
2. Use fasteners of same material as items being fastened unless otherwise indicated.
3. Bolts and studs: ASTM A 307.
4. Nuts: ASTM A 563.
5. Plain washers: Round, carbon steel, ASME B18.22.1 (ASME B18.22M).
6. Lock washers: Helical, spring type, carbon steel, ASME B18.21.1 (ASME B18.21M).
7. Expansion shields: FS FF-S-325.

C. Galvanizing Repair Paint: Zinc dust paint complying with SSPC-Paint 20 or MIL P-21035B, Type I or II.

D. Shop Primer: Fabricator's standard, fast-curing, lead-free, universal modified alkyd primer; resistant to normal atmospheric corrosion, compatible with finish paint systems indicated, capable of providing a sound foundation for field-applied topcoats despite prolonged exposure; complying with performance requirements of FS TT-P-645.

2.4 FABRICATION - GENERAL

A. Fabricate and shop-assemble in largest practical sections for delivery to site.
1. Prepare and reinforce fabrications as required to receive applied items.
2. Fabricate items with joints tightly fitted and secured.
3. Make exposed joints tight, flush, and hairline.

B. Fasteners: Use concealed fasteners if possible.
1. Exposed fasteners: Flathead, countersunk type unless otherwise indicated.

C. Anchors: Fabricate to suit conditions indicated; use anchors of same material and finish as item except where specifically indicated otherwise.

D. Welding:
1. Welding of steel: Comply with AWS D1.1 recommendations.
2. Provide continuous welds at welded corners and seams.
3. Exposed welds: Grind flush and smooth.

E. Joints Exposed to Weather: Fabricate to keep water out or provide adequate drainage of water that penetrates.

2.5 FABRICATION - SHEET METAL

A. Comply with general fabrication requirements.

B. Bend sheet metal corners to smallest practical radius.

C. Welding Steel Sheet: Comply with AWS D1.3 recommendations.

2.6 FABRICATION - GRATINGS

A. Metal Bar Gratings: Produce metal bar gratings indicated per NAAMM marking system that comply with the following:
1. Metal Bar Grating Standard "Standard Specifications for Metal Bar Grating and Metal Bar Grating Treads" published in ANSI/NAAMM A202.1 "Metal Bar Grating Manual."

2. Heavy Duty Metal Bar Grating Standard: "Guide Specifications for Heavy Duty Metal Bar Grating" published in NAAMM "Heavy Duty Metal Bar Grating Manual."

3. Welded Steel Gratings: W-15-4 (welded with bearing bars 15/16 inch o.c. and cross bars 4 inches o.c.)/bearing bar sizes as indicated.
4. Welded Heavy Duty Steel Gratings: W-19-4 (welded with bearing bars 1-3/16 inch o.c. and cross bars 4 inches o.c.)/bearing bar sizes as indicated.
5. Traffic Surface for Steel Bar Gratings: As follows:
   a. Plain.
   b. Serrated.
   c. Knurled.
   d. Applied abrasive finish consisting of aluminum oxide aggregate in an epoxy resin adhesive.
6. Steel Finish: As follows:
   a. Shop prime paint applied in accordance with manufacturer's standard practice.
   b. Hot-dip galvanized with a coating weight of not less than 1.8 oz. per sq. ft. of coated surface.

2.7 FABRICATION - SHOP COATINGS

A. Hot-dip galvanize steel and iron assemblies set in concrete and masonry.

B. Shop prime all iron and steel fabrications.

C. Prepare surfaces to be coated as follows:
1. Solvent-clean in accordance with SSPC-SP 1.
2. Exterior fabrications: Clean in accordance with SSPC-SP 5.
3. Interior fabrications: Clean in accordance with SSPC-SP 5.

D. Shop Priming: Comply with SSPC-PA 1.
1. Apply primer immediately following surface preparation.
2. Do not prime surfaces to be welded.
3. Do not prime surfaces in direct contact bond with concrete.
4. Apply extra coat to corners, welds, edges, and fasteners.

E. Shop Painting: Apply shop primer to surface of metal fabrications except those embedded in concrete or galvanized; comply with SSPC-PA1 and requirements indicated below:
1. Surface Preparation: Comply with SSPC-SP6 "Commercial Blast Cleaning" for exterior work, and with SSPC-SP3 "Power Tool Cleaning" for interior work.
2. Stripe paint edges, corners, crevices, bolts, welds and sharp edges.

F. Galvanizing: ASTM A 123 for fabricated and unfabricated steel products made of uncoated rolled, pressed and forged steel shapes, plates, bars and strip 0.0229 inch and thicker.

2.8 FABRICATION - MISCELLANEOUS

A. Loose Bearing and Leveling Plates: Provide for steel items bearing on masonry or concrete, as indicated. Drill plates to receive anchor bolts.

B. Loose Steel Lintels: Fabricate from shapes and to sizes indicated. Galvanize after fabrication.

C. Miscellaneous Framing and Supports: Provide as required to complete work and not included with structural steel framework. Fabricate of welded construction in as large units as possible; drill and tap as required to receive hardware and similar items. Include required anchors for building into other work.

D. Miscellaneous Steel Trim: Fabricate to shapes and sizes as required for profiles shown; continuous welded joints and smooth exposed edges. Use concealed field splices

wherever possible. Provide cutouts, fittings, and anchorages; coordinate assembly and installation with other work.

E. Nosings: Fabricate of shapes as indicated; miter corners and weld joints. Provide anchors 6 inches from ends of corners and 24 inches o.c.

F. Shelf and Relieving Angles: Fabricate to sizes indicated for attachment to support framing. Provide slotted holes to receive anchor bolts, spaced not more than 6 inches from ends and 24 inches o.c. Galvanize shelf angles to be installed on exterior concrete.

G. Steel Pipe Railings: Fabricate to dimensions shown, with smooth bends and welded joints using steel pipe of diameter and finish indicated. Secure posts and rail ends to building construction as indicated.
   1. Galvanize exterior steel railings, including pipe, fittings, brackets, fasteners and other ferrous metal components.
   2. Provide steel pipe with black finish for interior railings, primed after fabrication.

H. Cast Treads and Thresholds: Cast-iron units with integral abrasive finish, of size and configuration indicated; with manufacturer's standard anchors for type of application indicated.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Perform cutting, drilling and fitting required for installation; set work accurately in location, alignment and elevation, measured from established lines and levels. Provide anchorage devices and fasteners where necessary for installation to other work.

B. Set loose items on cleaned bearing surfaces, using wedges or other adjustments as required. Solidly pack open spaces with bedding mortar, consisting of 1-part portland cement to 3-parts sand and only enough water for packing and hydration, or use commercial non-shrink grout material.

C. Touch-up shop paint after installation. Clean field welds, bolted connections and abraded areas, and apply same type paint as used in shop. Use galvanizing repair paint on damaged galvanized surfaces.

D. Perform all welding in accordance with AWS requirements and procedures for appearance, quality of welds, and correction of welding work.

E. Allow for thermal movement resulting from the following maximum change (range) in ambient and surface temperatures by preventing buckling, opening up of joints, overstressing of components, failure of connections, and other detrimental effects. Base engineering calculation on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.

F. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners where possible. Use exposed fasteners of type indicated or, if not indicated, Phillips flat-head (countersunk) screws or bolts. Locate joints where least conspicuous.

G. Verify handrail and railing dimensions by field measurements before fabrication and indicate measurements on shop drawings. Coordinate fabrication schedule with construction progress to avoid delaying the work.

H. Coordinate installation of anchorages for handrails and railings. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

I. Anchor posts in concrete by inserting into preset sleeves or core-drilled holes and grouting space between post and sleeve.

J. Secure handrails to wall with wall brackets and end fittings.
   1. Use brackets with flange tapped for concealed hanger bolt.
   2. Use brackets with predrilled hole for exposed bolt anchorage.

END OF SECTION 05500

**SECTION 06100 - ROUGH CARPENTRY**

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes
1. Carpentry work not specified as part of other sections and which generally is not exposed, except as otherwise indicated.
2. Rough carpentry for:
a) Miscellaneous lumber for attachment and support of other work.
b) Construction panels for miscellaneous uses.
3. Preservative treatment.

1.2 SUBMITTALS

A. Treated Wood: Treating plant's instructions for use, including storage, cutting, and finishing.
1. Pressure preservative treatment
a) Treating plant's certification of compliance with specified standards and stating process employed and preservative retention values.
b) Treatment for above-ground use
c) Certification of kiln drying after treatment.

1.3 QUALITY ASSURANCE

A. Lumber
1. Comply with NIST PS 20 and approved grading rules and inspection agencies.

B. Grade Stamps for Concealed Lumber
1. Each piece of lumber, applied by inspection agency and showing compliance with each specified requirement. (All lumber/blocking, etc. concealed in wall or partition construction shall be fire retardant.

C. Construction Panels
1. Comply with NBS PS 1 where veneer plywood is specified; comply with APA PRP-108 where APA rated panels are specified; bearing APA trademark showing compliance with each specified requirement.

1.4 DELIVERY STORAGE AND HANDLING

A. Protect wood products against moisture and dimensional changes. Support stacks at several uniformly spaced points to prevent deformation. Store stacks raised above ground. Cover to protect from rain and snow. Select and arrange cover to allow air circulation under and all around stacks to prevent condensation. Maintain and restore displaced coverings. Remove from the site any wood products that have been subjected to moisture or that do not comply with the specified moisture requirements.

PART 2 - PRODUCTS

2.1 DIMENSION LUMBER

A. Size
1. Provide nominal sizes indicated, complying with NIST PS 20 except where actual sizes are specifically required.

B. Miscellaneous Lumber

1. Provide dimension lumber and boards necessary for the support of work specified in other sections, whether or not specifically indicated, and including but not limited to blocking, nailers, etc.
   a) Moisture content: 19 percent maximum (kiln-dry).
   b) Lumber: S4S, No. 2 or standard grade.
   c) Boards: Standard, 3 common, or No. 3 grade.

2.2 CONSTRUCTION PANELS

A. Construction Panels/Plywood:
   1. Miscellaneous uses
      a) C-C Plugged exterior.

2.3 MISCELLANEOUS MATERIALS

A. Fasteners
   1. Provide as required by applicable codes and as otherwise indicated.

2.4 WOOD TREATMENT BY PRESSURE PROCESS

A. Aboveground Lumber: AWPB LP-2 (waterborne preservatives).
   1. Kiln dried after treatment to 19 percent maximum moisture content.
   2. Treat the following:
      a) Wood in contact with roofing or flashing.
      b) Wood in contact with masonry or concrete.
      c) Other members indicated.

B. Fasteners for Preservative Treated Wood: Hot-dip galvanized steel (ASTM A153).

PART 2 - EXECUTION

2.1 INSTALLATION - GENERAL

A. Arrange work to use full-length pieces except where lengths would exceed commercially available lengths. Discard pieces with defects that would lower the required strength or appearance of the work.

B. Cut and fit members accurately. Install plumb and true to line and level.

C. Fasten carpentry in accordance with applicable codes and recognized standards.

D. Where exposed, countersink nails and fill flush with suitable wood filler.

E. Use fasteners of appropriate type and length. Predrill members when necessary to avoid splitting wood.

2.2 MISCELLANEOUS CARPENTRY

A. Provide miscellaneous blocking, nailers, and framing as shown and as required for support of facing materials, fixtures, specialty items, and trim. Cut and shape to the required size. Provide in locations required by other work.

B. Use countersunk fasteners appropriate to applied loading.

END OF SECTION 06100

**SECTION 06200 - FINISH CARPENTRY**

PART 1 - PUBLICATIONS:

1.1 Applicable publications: The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

A. Federal Specification (Fed.Spec.):
1. FF-N-105B; Nails, Brads, Staples and Spikes: Notice 1 Wire, Cut and Wrought

B. U. S. Department of Commerce, National Bureau of Standards, Product Standards (Prod. Std.):
1. PS 20-70 American Softwood Lumber Standard Amended 1986

C. Architectural Woodwork Institute (AWI) Publication:
1. Architectural Woodwork Quality Standards, Guide Specifications and Quality Certification Program (1984)

D. Northern Hardwood and Pine Manufacturers Association, Inc. (NHPMA) Publication:
1. Standard Grading Rules for Northern and Eastern Lumber (Dec 1978: Rev Mar 10, 1982)

E. Southern Pine Inspection Bureau (SPIB) Publication:
1. Grading Rules (Mar 15,1977; including Suppl. 1 through 12)

1.2 GENERAL REQUIREMENTS:

A. Grading and Marking: Materials shall bear the grade mark, stamp or other identifying marks indicating grades of material and rules or standards under which produced. Such identifying marks on a material shall be in accordance with the rule or standard under which the material is produced, including requirements for qualifications and authority of the inspection organization, usage of authorized identification, and information included in the identification. The inspection agency for lumber shall be certified by the Board of Review, American Lumber Standards Committee, to grade the species used. Except for plywood and lumber, bundle marking or certificates will be permitted in lieu of marking each individual piece.

B. Sizes and Patterns: Lumber sizes and patterns shall conform to Prod. Std. PS 20, and unless otherwise specified, shall be surfaced on four sides. Sizes and patterns for materials other than lumber shall conform to requirements of the rules or standards under which produced. Size references, unless otherwise specified, are nominal sizes, and actual sizes shall be within manufacturing tolerances allowed by the standard under which the product is produced.

C. Moisture Content: The maximum moisture content of trim shall be 8% to 12% at the time of delivery to the job site and when installed. Moisture content of all other materials shall be in accordance with the standard under which the product is produced.

1.3 SUBMTTALS:

A. Samples: Samples of each design of wood trim shall be submitted for approval. Samples shall be of sufficient size to show pattern, as applicable.

1.4 DELIVERY AND STORAGE:

A. Materials shall be delivered to the site in undamaged condition, stored in fully covered, well-ventilated areas, and protected from extreme changes in temperature and humidity.

1.5 MATERIALS:

A. Nails: Nails shall be the size and type best suited for the project requirements, hot-dip galvanized or aluminum for exterior use, in accordance with Fed. Spec. FF-N-105B when applicable. Screws for use where nailing is impracticable shall be size best suited for purpose.

B. Trim: Trim shall be species and grade in accordance with paragraph 1.6. Design shall be as shown on the drawings. Trim shall be assembled and sanded at the mill in so far as practicable in maximum practicable lengths. Finger joints are permitted when finish is paint.

1.6 INSTALLATION OF TRIM:

A. Interior Trim: Trim shall be installed straight, plumb, level and with closely fitted joints. Exposed surfaces shall be machine sanded at the mill. Molded work shall be coped at returns and interior angles and mitered at external corners. Provide all miscellaneous blocking or attachments. Note: non-combustible or fire retardant block required within all partitions.
Trim to be: No. 1 Popular.

B. Contractor shall be responsible for field measurements of all dimensions required.

C. Any chipped, split or damaged trim to be replaced at no additional cost to the Owner.

D. Install trim with respect to adjoining finishes so no gaps result.

END OF SECTION 06200

**SECTION 06400 - ARCHITECTURAL WOODWORK**

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Interior architectural woodwork.
      a. Cabinets.
      b. Cabinet hardware.
      c. Countertops.
      d. Shelving.

1.2 REFERENCES

A. Architectural Woodwork Quality Standards; Architectural Woodwork Institute; 1994.

1.3 SUBMITTALS

A. Shop Drawings: Plans and elevations; details at a large scale; show location of each item, identify components used, and indicate method of attachment.

B. Factory Finishes:
   1. Samples: 8- by 10-inch step samples, finished, for each finish and color, showing each coat required.

C. Solid Surfacing and Cultured:
   1. Product data.
   2. Samples for selection: Approximately 2- by 3-inch pieces of manufacturer's full type, pattern, and color range.

D. Cabinet Hardware:
   1. Product data.
   2. Samples showing each finish on each item of hardware exposed to view.

E. Fabricator Qualifications: For information only.

1.4 QUALITY ASSURANCE

A. Quality of Materials and Workmanship: Provide woodwork that complies with requirements of "Architectural Woodwork Quality Standards," published by Architectural Woodwork Institute (AWI) (hereinafter referred to as "woodworking standard").

B. Quality of Factory Finishing: Provide factory finishes that comply with Section 01500, "Architectural Woodwork Quality Standards."

C. Where contract documents indicate requirements, which are less restrictive than the woodworking standard, comply with the minimum requirements of the woodworking standard.

D. Fabricator Qualifications:
   1. A single firm shall fabricate all work of this section.

E. Installer Qualifications: Experienced in installing woodwork of similar quality.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Store materials for interior woodwork indoors in air-conditioned spaces maintained within design temperature and humidity range.

1.6 PROJECT CONDITIONS

A. Maintain final design temperature and humidity in areas where woodwork is installed.

B. Fit woodwork to actual construction. Take field measurements before fabricating.

C. Coordinate installation of woodwork with other work to avoid damage.

PART 2 - PRODUCTS

2.1 WOOD MATERIALS

A. Lumber - General: Species and grade as specified in woodworking standard, unless otherwise indicated.
   1. Comply with applicable requirements of AWI Section 100.
   2. Moisture content at time of fabrication: Not greater than optimum moisture content as specified in woodworking standard.
   3. Provide lumber dressed on all exposed faces, unless otherwise indicated.
   4. Do not use twisted, warped, bowed, or otherwise defective lumber.
   5. Sizes indicated are nominal, unless otherwise indicated.
   6. Do not mark or color lumber, except where such marking will be concealed in finish work.

B. Trim, Molding and Finish Lumber: No. 1 Popular or approved substitution. Exposed edges of boards shall be eased. Trim to receive opaque finish may be finger jointed.

C. Plywood: Types, grades, and cores as specified in the woodworking standard, except as otherwise specified in this section.
   1. Comply with applicable requirements of AWI Section 200.
   2. Face grade for plywood to receive laminates: Grade A, minimum.
   3. Plywood for Shelving: A-B or B-B Grade, Exterior.

2.2 MISCELLANEOUS MATERIALS

A. Laminate Wilsonart or equal for fronts, countertops and splashes..

B. Fasteners: Style, size, material, and finish as required for the purpose.

2.3 CABINET HARDWARE

A. Cabinet Hardware: Provide hardware and accessories.
   1. Finishes on exposed hardware: Comply with BHMA A156.18.
   2. Concealed hardware: Manufacturer's standard finish, complying with applicable requirements of BHMA A156.9.
   3. Hinges: Totally concealed style, self-closing, and opening 180 degrees.
   4. Pulls: As selected.
   5. Catches: Heavy duty.
   6. Drawer slides: Side-mounted, 75-pound capacity, full extension, with nylon ball-bearing rollers; positive pullout stop, self-closing, lift-out feature.
   7. Cabinet-mounted adjustable shelf supports: Full height of cabinet, with adjustable shelf support clips.

B. Hardware Quantities:
   1. Hinges: Two per door up to 36 inches high; three per door over 36 inches high.
   2. Pulls: One per door, drawer.
   3. Catches: One per door.
   4. Drawer slides, side mounted: Two per drawer.
   5. Locks: Where requested by Owner.
   6. Cabinet-mounted adjustable shelf supports: Four standards for each cabinet to receive adjustable shelving and four shelf support clips for each shelf.

2.4 FABRICATION

A. Wall and Base Cabinets: See Drawings.

2.5 FACTORY FINISHING

A. Factory Finish: As specified for individual item.

B. Apply entire finish in shop; touch-up and cleaning only may be performed after installation.

C. Prepare for finishing in accordance with the woodworking standard.

PART 3 - EXECUTION

3.1 PREPARATION

A. Verify that blocking and backings have been installed at appropriate locations for anchorage.

B. If shop-fabricated items are not fully fabricated, complete fabrication.

3.2 INSTALLATION - GENERAL

A. Do not begin installation of interior woodwork until potentially damaging construction operations are complete in the installation area.

B. Field Joinery: Comply with requirements of the woodworking standard for shop joinery.

C. Make joints neatly, with uniform appearance.

D. Install woodwork in correct location, plumb and level, without rack or warp.
   1. Install with no variation in flushness of adjoining surfaces.

E. Shim as required with concealed shims.

F. Where cabinets abut other finished work, scribe and cut for accurate fit. Provide filler strips, scribe strips and moldings as indicated or required for a complete finished installation.

G. Touch-up shop finishes at field cuts.

H. Secure woodwork to structural support members or use anchors required.
   1. Where anchorage method is not indicated, conceal all fasteners where possible.
   2. Where exposed nailing is required or indicated, use finishing nails, countersink, and fill.

I. Repair damaged and defective woodwork to eliminate visual and functional defects; where repair is not possible, replace woodwork.

J. Touch up shop-applied finishes where damaged or soiled.

K. Cabinets:
1. Install so drawers operate smoothly.
2. Install all hardware not installed in shop.
3. Anchor tops securely.
4. Install tops level, within 1/8 inch in 8 feet.

L. Countertops: Attach countertops securely to base units. Conceal fastenings where practicable, fit the counter level, install in a rigid manner, and scribe to adjoining surfaces. Provide counter sections in the longest lengths practicable; keep joints in tops to a minimum. Provide cutouts for fixtures and appliances; drill pilot holes at corners before making cutouts. Install back and end splashes with concealed fastening.

M. Adjustable Shelving: Set standards at 32 inches on-center maximum and not greater than 6 inches from each end of shelf. Set top of standards at 7.5 feet above floor, unless otherwise indicated.

N. Anchorage of Millwork: Anchor securely in place with appropriate fasteners, anchored into structural support members of wall construction.

## 3.3 ADJUSTING

A. Adjust and lubricate cabinet hardware for smooth operation.

## 3.4 CLEANING

A. Clean exposed and semi-exposed surfaces.

## 3.5 PROTECTION

A. Protect woodwork from damage and maintain design environmental conditions.

END OF SECTION 06400

**SECTION 07210 - BUILDING INSULATION**

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
1. EXT. Partition wall insulation.
2. Sound Insulation
3. Roof insulation.
4. See also drawings for other requirements.

1.2 DEFINITIONS

A. Thermal Resistance (R-value): The temperature difference in degrees F between the two surfaces of a material of given thickness, required to make 1 BTU of energy flow through 1 square foot of the material in 1 hour.

1.3 SUBMITTALS

A. Product Data: Submit for each product specified in this section.

1.4 DELIVERIES, STORAGE, AND HANDLING

A. Insulation: Minimize period between product delivery and actual installation. Protect against exposure to flame, sparks, or excessive heat. Minimize exposure to sunlight.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Provide manufacturer's standard preformed insulation units, sized for proper fit in indicated applications.

B. Exterior Partition Wall Insulation:
1. Exterior Walls R-19 minimum. Insulations suitable for Type II Building Construction and any required UL Ratings.

C. Unfaced Sound Insulation Batts
1. Provide unfaced sound batt insulation in all toilet partitions floor to ceiling, and ceiling.

D. Roof Insulation:
1. To be Simple Saver with Grid; R-35.

2.2 ACCESSORIES

A. Provide accessories as necessary to properly install specified products.
1. Adhesive: Insulation manufacturer’s recommended adhesive, complying with fire performance requirements.
1. Clips: Attachments as required to support the insulation as required.

PART 3- EXECUTION

3.1 EXAMINATION

A. Verify that conditions conform to requirements of contract documents.

B. Verify that related work to be performed within indicated spaces before installation of insulation has been completed.

C. Verify that substrates are in satisfactory condition to receive insulation.

D. Do not proceed until unsatisfactory conditions have been corrected. Commencement of installation indicates acceptance of conditions.

3.2 PREPARATION

A. Clean substrates of any substances, which might damage materials to be installed.

B. Remove harmful projections capable of puncturing vapor retarder.

3.3 INSTALLATION

A. Do not install insulation which is damaged, wet, soiled, or which has been covered at any time with ice or snow.

B. Comply with insulation manufacturer's recommendations and installation sequence. Provide permanent placement and support of insulation.

C. Install materials in a manner, which will maximize continuity of thermal or sound attenuation envelope, as applicable. Use a single layer of insulation wherever possible to achieve indicated requirements, unless otherwise indicated.

D. Insulation Blankets/Batts:
1. Unfaced Sound Attenuation Insulation, Stud Partitions: Friction-fit blanket insulation between partition framing members and extended from floor slab to ceiling. Stuff pieces of insulation into cracks between framing and into miscellaneous voids and cavity spaces (e.g., perimeter of wall openings).

3.4 PROTECTION

A. Protect installed materials from damage until permanent concealing work is completed.

B. Where concealing work is not performed immediately after installation work of this section is completed, erect suitable temporary coverings or enclosures to prevent damage.

END OF SECTION 07210

**SECTION 07600 - FLASHING AND SHEET METAL**

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General Conditions, Amendments to General Conditions, and Supplementary Conditions and Sections in Division I of the Specifications apply to work of this section.

1.2 DESCRIPTION

A. Extent of each type of flashing and sheet metal work is indicated on drawings and by provisions of this Section.

B. Types of work specified in this Section include the following:

1. Metal counter flashing and base flashing.
2. Exposed metal trim.
3. Miscellaneous sheet metal accessories.

C. Related Work:

1. Section 07900 - Joint Sealants

1.3 SUBMITTALS

A. Comply with pertinent provisions of Section 01620.

B. Product Data; Sheet Metal, Accessories: Submit manufacturer's product data, installation instructions and general recommendations for each specified sheet material and fabricated product.

C. Samples; Flashing, Sheet Metal, Accessories: Submit 8" square samples of specified sheet materials to be exposed as finished surfaces.

1. Submit 12" long, completely finished units of specified factory-fabricated products exposed as finished work.

D. Shop Drawings; Flashing, Sheet Metal, Accessories: Submit shop drawings showing layout, joining, profiles, and anchorages of fabricated work, including major counter flashing, trim/fascia units, etc.; layouts at 1/4" scale, detail at 3" scale.

1.4 QUALITY ASSURANCE

A. Comply with industry standards and recommendations of SMACNA Architectural Sheet Metal Manual except as specifically indicated otherwise.

1.5 JOB CONDITIONS

A. Coordinate work of this Section with interfacing and adjoining work for proper sequencing of each installation. Insure best possible weather resistance and durability of work and protection of materials and finishes.

B. Surfaces to which flashing and sheet metal are applied shall be even, smooth, sound, thoroughly clean and dry and free from all defects that might affect the application. Report any unsatisfactory surfaces to the General Contractor.

C. Do not proceed with installation of sheet metal work until curb and substrate construction, blocking, roofing, regrets, and other construction that will receive the work are completed. Proceeding with application of sheet metal work will be evidence of substrate acceptance by Installer.

1.6 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Comply with pertinent provisions of Section 01620.

B. Materials furnished by this Section, which are to be built-in by other trades, shall be delivered to the Site in time to avoid delays in construction schedule.

PART 2 - PRODUCTS

2.1 FLASHING AND SHEET METAL MATERIALS

A. .032 Aluminum minimum
B. Flashing exposed to view, color to be selected to match surrounding conditions. (Prefinished white at doors, windows, etc. )

2.2 MISCELLANEOUS MATERIALS AND ACCESSORIES

A. Fasteners: Same metal as flashing/sheet metal or other noncorrosive metal as recommended by sheet manufacturer. Match finish of exposed heads with material being fastened.

B. Bituminous Coating: SSPC-Paint 12, solvent type bituminous mastic, nominally free of sulfur, compounded for 15-mil dry film thickness per coat.

C. Mastic Sealant: Polyisobutylene; nonhardening nonskinning, noncorrosive metal seam cementing compound, recommended by metal manufacturer for exterior/interior non-moving joints including riveted joints.

D. Adhesives: Type recommended by flashing sheet manufacturer for waterproof weather-resistant seaming and adhesive application of flashing sheet.

E. Metal Accessories: Provide sheet metal clips, straps, anchoring devices and similar accessory units as required for installation work, matching or comparable with material being installed. They shall be noncorrosive, in sizes and gauges required for proper performance.

PART 3 - EXECUTION

3.1 INSTALLATION REQUIREMENTS

A. General: Except as otherwise indicated, comply with manufacturer’s installation instructions and recommendations, and with SMACNA "Architectural Sheet Metal Manual". Anchor units of work securely in place by methods indicated. Provide for thermal expansion of metal units. Conceal fasteners where possible, and set units true to line and level as indicated. Install work with laps, joints and seams, which will be permanently watertight and weatherproof.

B. Underlayment: Where aluminum is to be installed directly on cementitious or wood substrates, apply a coating or other permanent separation as recommended by manufacturer/fabricator to concealed aluminum surfaces.

3.2 CLEANING AND PROTECTION

A. Clean exposed metal surfaces, removing substances, which might cause corrosion of metal or deterioration of finishes.

B. Protection: Installer shall advise Contractor of required procedures for surveillance and protection of flashing and sheet metal work during construction, to ensure that work be without damage or deterioration, other than natural weathering, at time of substantial completion.

END OF SECTION 07600

## SECTION 07840 - FIRE STOPPING

### PART 1 - GENERAL

1.1 SUMMARY

A. Section includes: Fire Stopping Materials.

B. Related Documents: Division 0 - Bidding & General Conditions; Division 1, General Requirements, all applicable provisions in the Technical Sections of Division 2 through 16 and applicable drawings apply to this Section.

C. Related Sections:
1. Section 07900 - Joint Sealants.
2. Section 09260 - Gypsum Wallboard Systems.

D. Description of Work in this Section: Only tested fire stop systems shall be used in specific locations as follows:
1. Penetrations for the passage of duct, cable, cable tray, conduit, piping, electrical bus ways and raceways through fire-rated vertical barriers (walls and partitions), horizontal barriers (floor/ceiling assemblies), and vertical service shaft walls and partitions.
2. Safing slot gaps between edge of floor slabs and curtain walls.
3. Openings between structurally separate sections of wall or floors.
4. Gaps between the top of walls and ceilings or roof assemblies.
5. Expansion joints in walls and floors.
6. Openings and penetrations in fire-rated partitions or walls containing fire doors.
7. Openings around structural members which penetrate floors or walls.

1.2 SUBMITTALS

A. Product Data: Manufacturer's Specifications and Technical Data for each material including the composition and limitations, documentation of UL Fire Stop Systems to be submitted.

1.3 QUALITY ASSURANCE

A. Engage an experienced installer who is certified, licensed, or otherwise qualified by the fire stopping manufacturer as having been provided the necessary training to install the manufacturer's products per requirements.

1.4 REFERENCE STANDARDS

A. Test Requirements: ASTM E-814, "Standard Method of Fire Tests of Through Penetration Fire Stops". (July 1997).

B. Underwriters Laboratories (UL) of Northbrook, IL runs ASTM E-814 under their designation of UL 1479 and publishes the results in their "FIRE RESISTANCE DIRECTORY" that is updated annually.

1. UL Fire Resistance Directory:
    a. Firestop Devices (XHJI).
    b. Fire Resistance Ratings (BXUV).
    c. Through-Penetration Firestop Systems (XHEZ).
    d. Fill, Voids or Cavity Material (XHHW).
    e. Forming Materials (XHKU).

2. Alternate “Omega Point Laboratories Directory” (updated annually).

C. Test Requirements: UL 2079, “Tests for Fire Resistance of Building Joint Systems” (July 1998.)

D. Test Requirements: ASTM E 1966, “Standard test method for Fire Resistive Joint Systems” (July 2000).

E. Inspection Requirements: ASTM E 2174 – 01, “Standard Practice for On-site Inspection of Installed Fire Stops”.

F. International Fire Stop Council Guidelines for Evaluating Firestop Systems Engineering Judgments

G. ASTM E-84, Standard Test Method for Surface Burning Characteristics of Building Materials.

H. All major building codes: ICBO, SBCCI, BOCA, and IBC. (Note to Specifier: Retain or delete building codes listed above as applicable)

I. NFPA 101 - Life Safety Code

J. NFPA 70 - National Electric Code

## 1.5 DELIVERY, STORAGE AND HANDLING

A. Deliver materials undamaged in manufacturer's clearly labeled, unopened containers, identified with brand, type, and UL label where applicable.

B. Coordinate delivery of materials with scheduled installation date to allow minimum storage time at job-site.

C. Store materials under cover and protect from weather and damage in compliance with manufacturer's requirements, including temperature restrictions.

D. Comply with recommended procedures, precautions or remedies described in material safety data sheets as applicable.

E. Do not use damaged or expired materials.

## 1.6 PROJECT CONDITIONS

A. Do not use materials that contain flammable solvents.

B. Schedule installation of firestopping after completion of penetrating item installation but prior to covering or concealing of openings.

C. Verify existing conditions and substrates before starting work. Correct unsatisfactory conditions before proceeding.

D. Weather conditions: Do not proceed with installation of firestop materials when temperatures exceed the manufacturer's recommended limitations for installation printed on product label and product data sheet.

E. During installation, provide masking and drop cloths to prevent firestopping materials from contaminating any adjacent surfaces.

**PART 2 - PRODUCTS**

2.1 FIRE STOPPING - GENERAL

A. Provide fire stopping composed of components that are compatible with each other, the substrates forming openings, and the items, if any, penetrating the fire stopping under conditions of service and application, as demonstrated by the firestopping manufacturer based on testing and field experience.

B. Provide components for each firestopping system that are needed to install fill material. Use only components specified by the firestopping manufacturer and approved by the qualified testing agency for the designated fire-resistance-rated systems.

C. Firestopping Materials are either “cast-in-place” (integral with concrete placement) or “post installed”. Provide cast-in-place fire stop devices prior to concrete placement.

2.2 ACCEPTABLE MANUFACTURERS

A. Subject to compliance with through penetration firestop systems (XHEZ) and joint systems (XHBN) listed in Volume 2 of the UL Fire Resistance Directory, provide products of the following manufacturers as identified below:

1. Hilti, Inc., Tulsa, Oklahoma 1-800-879-8000.
2. STI Fire Protection Products.
3. Approved equal.

2.3 MATERIALS

A. Use only fire stop products that have been UL 1479, ASTM E-814, or UL 2079 tested for specific fire-rated construction conditions conforming to construction assembly type, penetrating item type, annular space requirements, and fire-rating involved for each separate instance.

B. Cast-in place fire stop devices for use with non-combustible and combustible plastic pipe (closed and open piping systems) penetrating concrete floors, the following products are acceptable:
1. Hilti CP 680 Cast-In Place Firestop Device.

C. Sealants, caulking materials, or foams for use with non-combustible items including steel pipe, copper pipe, rigid steel conduit and electrical metallic tubing (EMT), the following products are acceptable:

1. Hilti FS-ONE Intumescent Firestop Sealant.
2. Hilti CP 604 Self-leveling Firestop Sealant.
3. Hilti CP 620 Fire Foam.

D. Sealants or caulking materials for use with sheet metal ducts, the following products are acceptable:

1. Hilti CP 601s Elastomeric Firestop Sealant.
2. Hilti CP 606 Flexible Firestop Sealant.
3. Hilti FS-ONE Intumescent Firestop Sealant.
4. Hilti CP 604 Self-leveling Firestop Sealant.

E. Sealants, caulking or spray materials for use with fire-rated construction joints and other gaps, the following products are acceptable:

1. Hilti CP 672 Speed Spray.
2. Hilti CP 601s Elastomeric Firestop Sealant.
3. Hilti CP 606 Flexible Firestop Sealant.
4. Hilti CP 604 Self-leveling Firestop Sealant.

F. Pre-formed mineral wool designed to fit flutes of metal profile deck; as a backer for spray material.
1. Hilti CP 677 Speed Plugs.

G. Intumesent sealants, caulking materials for use with combustible items (penetrants consumed by high heat and flame) including insulated metal pipe, PVC jacketed, flexible cable or cable bundles and plastic pipe, the following products are acceptable:
1. Hilti FS-ONE Intumescent Firestop Sealant.

H. Foams, intumesent sealants, caulking or putty materials for use with flexible cable or cable bundles, the following products are acceptable:
1. Hilti FS-ONE Intumescent Fire Stop Sealant.
2. Hilti CP 618 Fire Stop Putty Stick.
3. Hilti CP 620 Fire Foam.

I. Non-curing, re-penetrable intumesent sealants, caulking or putty materials for use with flexible cable or cable bundles, the following products are acceptable:
1. Hilti CP 618 Fire Stop Putty Stick.

J. Wall opening protective materials for use with U.L. listed metallic and specified non-metallic outlet boxes, the following products are acceptable:

1. Hilti CP 617 Firestop Putty Pad.

K. Firestop collar or wrap devices attached to assembly around combustible plastic pipe (closed and open piping systems), the following products are acceptable:

1. Hilti CP 642 Firestop Collar.
2. Hilti CP 643 Firestop Collar.
3. Hilti CP 645 Wrap Strips.

L. Materials used for complex penetrations made to accommodate cable trays, multiple steel and copper pipes, electrical busways in raceways, the following products are acceptable:

1. Hilti CP 637 Trowelable Fire Stop Compound.
2. Hilti FS 657 FIRE BLOCK.
3. Hilti CP 620 Fire Foam.

M. Non-curing, re-penetrable materials used for large size/complex penetrations made to accommodate cable trays, multiple steel and copper pipes, electrical busways in raceways, the following products are acceptable:

1. Hilti FS 657 FIRE BLOCK.

N. Sealants or caulking materials used for openings between structurally separate sections of wall and floors, the following products are acceptable:

1. Hilti CP 672 Speed Spray.
2. Hilti CP 601s Elastomeric Fire Stop Sealant.
3. Hilti CP 606 Flexible Fire Stop Sealant.
4. Hilti CP 604 Self-Leveling Fire Stop Sealant.

O. Provide a fire stop system with an "F" Rating as determined by UL 1479 or ASTM E814 which is equal to the time rating of construction being penetrated.

P. Provide a fire stop system with an Assembly Rating as determined by UL 2079 which is equal to the time rating of construction being penetrated.

**PART 3 - EXECUTION**

3.1 PREPARATION

A. Verification of Conditions: Examine areas and conditions under which work is to be performed and identify conditions detrimental to proper or timely completion.

1. Verify penetrations are properly sized and in suitable condition for application of materials.
2. Surfaces to which firestop materials will be applied shall be free of dirt, grease, oil, rust, laitance, release agents, water repellents, and any other substances that may affect proper adhesion.
3. Provide masking and temporary covering to prevent soiling of adjacent surfaces by firestopping materials.
4. Comply with manufacturer's recommendations for temperature and humidity conditions before, during and after installation of firestopping.
5. Do not proceed until unsatisfactory conditions have been corrected.

3.2 COORDINATION

A. Coordinate location and proper selection of cast-in-place Firestop Devices with trade responsible for the work. Ensure device is installed before placement of concrete.

B. Responsible trade to provide adequate spacing of field run pipes to allow for installation of cast-in-place firestop devices without interferences.

3.3 INSTALLATION

A. Regulatory Requirements: Install fire stop materials in accordance with UL Fire Resistance Directory or Omega Point Laboratories Directory.

B. Manufacturer's Instructions: Comply with manufacturer's instructions for installation of through-penetration and construction joint materials.

1. Seal all holes or voids made by penetrations to ensure an air and water-resistant seal.

2. Consult with mechanical engineer, project manager, and damper manufacturer prior to installation of UL firestop systems that might hamper the performance of fire dampers as it pertains to duct work.

3. Protect materials from damage on surfaces subjected to traffic.

## 3.4 FIELD QUALITY CONTROL

A. Examine sealed penetration areas to ensure proper installation before concealing or enclosing areas.

B. Keep areas of work accessible until inspection by applicable code authorities.

C. Inspection of through-penetration fire stopping shall be performed in accordance with ASTM:

1. E 2174, “Standard Practice for On-Site Inspection of Installed Fire Stops” or other recognized standard.

D. Perform under this section patching and repairing of fire stopping caused by cutting or penetrating of existing fire stop systems already installed by other trades.

## 3.5 ADJUSTING AND CLEANING

A. Remove equipment, materials and debris, leaving area in undamaged, clean condition.

B. Clean all surfaces adjacent to sealed holes and joints to be free of excess firestop materials and soiling as work progresses.

END OF SECTION 07840

**SECTION 07900 - JOINT SEALANTS**

PART 1- GENERAL

1.1 SUMMARY

A. Section Includes:
1. The sealing of exterior and interior joints.

1.2 SUBMITTALS

A. Product Data: Manufacturer's data on each joint sealer, with instructions for substrate preparation and installation.

B. Samples for Color Selection: Cured samples of actual products showing manufacturer's full range of colors.

1.3 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.

1.4 PROJECT CONDITIONS

A. Environmental Limitations: Do not install sealers if any of the following conditions exist:
1. Air or substrate temperature exceeds the range recommended by sealer manufacturer or is below 40 degrees F (4.4 degrees C).
2. Substrate is wet, damp, or covered with snow, ice, or frost.

B. Dimensional Limitations: Do not install sealers if joint dimensions are less than or greater than that recommended by sealer manufacturer; notify the architect and get sealer manufacturer's recommendations for alternative procedures.

PART 2 - PRODUCTS

2.1 MATERIALS - GENERAL

A. General: Provide only products which are recommended and approved by their manufacturer for the specific use to which they are put and which comply with all requirements of the contract documents.
1. For each generic product, use only materials from one manufacturer.
2. Provide only materials which are compatible with each other and with joint substrates.
3. Colors of exposed sealers: As selected by the Architect from manufacturer's standard colors.

2.2 ELASTOMERIC SEALANTS

A. Elastomeric Sealants - General: Chemically curing elastomeric sealants of types indicated, complying with ASTM C 920, including specific Type, Grade, Class, and Uses indicated, as well as all other requirements specified.
1. Exterior, Non-Traffic Areas: Type S, Grade NS, Class 25, Use NT. Provide one of the following Polyurethane or Silicone Sealants or an approved substitution:
a. Polyurethane:
(1) Bostik/Chem-Calk 900.
(2) Pecora Corp./Dynatrol I.
(3) Sonneborn-ChemRex, Inc./Sonolast NPI.
(4) Tremco, Inc./Dymonic.

b. Silicone:
(1) Bostik/Chem-calk 2200.
(2) Pecora Corp./895 Silicone.
(3) Sonneborn-ChemRex, Inc./Sonolastic Omniseal.
(4) Tremco, Inc./Spectrum 2.

2. Exterior, Traffic Areas: Type S, Grade P, Class 25, Use T. Provide one of the following silicone sealants or an approved substitution:
a. Silicone:
(1) Bostik/Chem-calk 950.
(2) Pecora Corp./NR-201 Urexpan.
(3) Sonneborn-ChemRex, Inc./Sonolastic SLI.

3. Interior, Non-Traffic Areas: Type S, Grade NS, Class 12.5 or 25, Use NT. Provide one of the following polyurethane or silicone sealants or an approved substitution:
a. Polyurethane:
(1) Bostic/Chem-calk 915.
(2) Pecora Corp./Dynatrol I.
(3) Sonneborn-ChemRex, Inc./Sonolast NPI.
(4) Tremco, Inc./Dymonic.
b. Silicone:
(1) Bostik/Chem-calk 2200.
(2) Pecora Corp./895 Silicone.
(3) Sonneborn-ChemRex, Inc./Sonolastic Omniseal.
(4) Tremco, Inc./Spectrum 2.

4. Interior, Traffic Areas: Type S, Grade P, Class 25, Use T. Provide one of the following silicone sealants or an approved substitution:
a. Silicone:
(1) Bostik/Chem-calk 950.
(2) Pecora Corp./NR-201 Urexpan.
(3) Sonneborn-ChemRex, Inc./Sonolastic SLI.

5. Expansion/ Control Joints in Concrete walls: Pecora 890

2.2 LATEX SEALANTS

A. Latex Sealant - General: One-part, nonsag, mildew-resistant, paintable latex sealant complying with ASTM C 834.
1. Exterior: Do not use for exterior applications.
2. Interior: Use only on non-working joints. Provide one of the following or an approved substitution:
a. Pecora Corp./AC-20.
b. Sonneborn-ChemRex, Inc./Sonolac.
c. Tremco, Inc./Acrylic Latex 834.

2.3 SEALANT BACKERS

A. Backers - General: Nonstaining; recommended or approved by sealant manufacturer for specific use.

B. Backer Rods: Flexible, nonabsorbent, compressible polyurethane foam, either open-cell or non-gassing closed-cell, unless otherwise restricted by sealant manufacturer; preformed to appropriate size and shape.

C. Bond-Breaker Tape: Self-adhesive, polyethylene or other plastic tape, unless otherwise electricted by sealant manufacturer; suitable for preventing sealant adhesion.

2.4 MISCELLANEOUS MATERIALS

A. Primers: As recommended by sealer manufacturer.

B. Cleaners: As recommended by sealer manufacturer and not damaging to substrates.

C. Masking Tape: Nonabsorbent, nonstaining.

D. Tooling Agents: Approved by sealant manufacturer; nonstaining to sealant and substrate.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine joints for characteristics that may affect sealer performance, including configuration and dimensions.

B. Do not begin joint sealer work until unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Cleaning: Just before starting sealer installation, clean out joints in accord with recommendations of sealer manufacturers and as follows:
1. Remove all material that could impair adhesion, including dust, dirt, coatings, paint, oil, and grease. Exception: Materials tested to show acceptable adhesion and compatibility.
2. Dry out damp and wet substrates thoroughly.
3. Remove loose particles by vacuuming or by blowing with oil-free compressed air.
4. Concrete: Remove laitance and form-release coatings.
5. Clean substrates with methods recommended by sealant manufacturer which will not damage the substrate.
6. Use methods which will not leave residues that will impair adhesion.

B. Priming: Prime substrates as recommended by sealer manufacturer.

C. Masking Tape: Use masking tape to keep primers and sealers off of adjacent surfaces which would be damaged by contact or by cleanup. Remove tape as soon as practical.

D. Install fillers where needed to provide proper joint depth or support for sealant backers.

E. Provide caulk joints at all exterior exposed concrete construction/pour joints.

3.3 INSTALLATION

A. Comply with sealer manufacturers' installation instructions and recommendations, except where more restrictive requirements are specified.

B. Gunnable and Pourable Sealants: Comply with recommendations of ASTM C 1193.

C. Backers:
1. Install backers at depth required to result in shape and depth of installed sealant which allows the most joint movement without failure.
   a. Make backers continuous, without gaps, tears, or punctures.
   b. Do not stretch or twist backers.
2. If backers become wet or damp before installation of sealant, dry out thoroughly before proceeding.
3. Use bond-breaker tape where indicated and wherever it is necessary to keep sealant from adhering to back or third side of joint.

D. Sealants: Use methods recommended by manufacturer; completely fill the joint; make full contact with bond surfaces; tool nonsag sealants to smooth surface eliminating air pockets.
   1. Use concave joint shape shown in Figure 5A in ASTM C 1193, where not otherwise indicated.

3.4 PROTECTION AND CLEANING

A. Clean surfaces adjacent to joints as work progresses and before sealants set using methods and materials approved by manufacturers of sealers and of surfaces to be cleaned.

B. Protect joint sealers from contamination and damage.

C. Remove and replace damaged sealers.

3.5 WARRANTY

A. Provide 20-year caulking warranty.

END OF SECTION 07900

**SECTION 08100 - FIBERGLASS DOORS AND FRAMES**

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General Conditions, Amendments to General Conditions, Supplementary Conditions and Sections in Division 1 of the Specifications apply to work of this Section.

1.2 DESCRIPTION

A. This section applies to fiberglass reinforced plastic (FRP) doors, frames, or approved equal.

1.3 SUBMITTALS

A. Shop Drawings shall provide pertinent dimensions, hardware locations, transom and lite sizes, louver locations and dimensions, and door elevations. Mortises for hardware must be molded in at the factory as the door is built. Mortises shall not be routed or cut out of the stile structure or the jambs.

1.4 PRODUCT HANDLING

A. All materials shall be delivered to thee site in sealed, undamaged containers fully identified with the manufacturer's name, project number, the tag location, the door type, color and weight. The doors and frames must be shipped in wood crates with wood perimeters. Store materials in original cartons, on edge in such a way to prevent falling or damage to face, corners or edges.

PART 2 - PRODUCTS

2.1 DOORS

A. Door shall be made of fiberglass reinforced plastic (FRP) using resins tailored to a specific corrosive environment (stated by the purchaser at the time the order is placed) and have a fiberglass content of 25% by weight. The doors shall be flush construction, having no seams or cracks. All mortises shall be molded in at the factory. The doors shall be 1-3/4" thick with a 15mil (plus or minus 3 mil) color gelcoat and have an R-factor of 12. Secondary painting over pultrusions to achieve color is not acceptable.

B. Rated/labeled fiberglass door required where called for on plans and schedules.

C. STILES AND RAILS

1. Shall be constructed starting from the outside toward the inside of a 15-20 mil gel coat of the color specified followed by a matrix of at least three layers of 1.5 ounce per square foot of fiberglass mat. The tile and rail shall be molded in one continuous piece to a U-shaped configuration and to the exact dimensions of the door (patented). In this manner there will be no miter joints or disparate materials used to form the one-piece stile and rail. Pultrusions will not be acceptable for stiles and rails as (1) the color gel coat is not an integral part of the structure ( it must of necessity be applied as paint when the structure is assembled), and (2) mortises must be cut into the pultrusions, thus weakening by removing as much as two-thirds

of its thickness and (3) the practice of mitered joints in pultrusions leaves access areas for penetration of contaminants to the inside of the door.

D. DOOR PLATES

1. Shall be molded in one continuous piece, starting with a 15-20 mil gel coat of the color specified, integrally molded with at least two layers of 1.5 ounce per square foot fiberglass mat and layer of 16 ounce per square yard unidirectional glass roving.

E. REINFORCEMENT

1. Adequate reinforcing and compression members shall be used to accommodate surface hinges, closers, locksets, kickplates, or push or pull plates. When engineering considerations dictate, mild steel is buried in the fiberglass matrix to provide enhanced screw holding power. In no case should screws be used into fiberglass matrix to provide holding for hinges, locks or closers or any structured attachment.
2. Thrubolting is recommended for attachment of hinges, and closers in as much as the strength of thrubolting is five to six times as great as edge attaching with screws. When thrubolting is to occur, a compression member is to be located which will provide memory and resistance to the torquing of thrubolts.
3. All voids between the door plates shall be completely filled with the equivalent of 4-6 pounds expanded polyurethane foam, having a flame spread of 25 or less per ASTM E-84. A phenolic-coated kraft honeycomb may be substituted for urethane foam where engineering requirements dictate.

F. FLAME SPREAD

1. All reinforcing resins shall contain a halogenated additive or coreactant plus Antimony Trioxide to achieve a flame spread of 25 or less per ASTM E-84 and shall be self-extinguishing per ASTM D-635.

G. COLOR:

1. The color of the door or frame shall be integrally molded as the part is made.
2. The color is to be as selected by the Architect.
3. The deposit of 15-20 mils of gel coat is the equivalent of 50 to 60 coats of paint applied by spray.

2.2 FRAMES

A. Frames shall be similar to the doors in construction and materials except the frames shall be solid fiberglass. The stop and frame will be molded all in one piece. The frame shall be integrally gelcoated to the customer's color when molded. Mortises will be molded in. It is not permitted to rout in mortises or remove any material from the head or jambs, to provide mortises.

B. Reinforcement for mounting hinges, closers, etc., shall be of mild steel plates strategically located and buried in the resin-glass matrix so they will not be exposed to the elements.

C. The jamb shall be flat on the backside (against the openings) and uniform in thickness so as to provide a solid, uniform surface against the wall opening. No wood blocks or spacers are permitted.

D. Rated/labeled fiberglass door frame required where indicated on plans and schedules.

2.3 HARDWARE

A. See section 08710 for hardware

2.4 FIRE RATING

A. See Plans.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Installation shall be in strict compliance with manufacturer's written instructions using non-corrosive materials and methods.

3.2 GUARANTEE

A. Door Company shall unconditionally guarantee its registered doors for ten years against failure due to corrosion from the specific environment named at the time of purchase.

END OF SECTION 08100

**SECTION 08111 - STANDARD STEEL DOOR AND FRAMES**

PART 1 - GENERAL:

1.1 SUMMARY:

A. Work in this section includes:
   1. Hollow Metal Frames
   2. Hollow Metal Doors

B. Related work includes:
   1. Flush wood doors (section 08211)
   2. Glazing (section 08800)
   3. Joint sealers (section 07900)

1.2 SUBMITTALS: With manufacturer's standard details and specifications for steel doors and frames, submit shop drawings showing application to project, as required.

1.3 STANDARDS: In addition to other specified requirements, comply with Steel Door Institute "Recommended Specifications for Standard Steel Doors and Frames" ANSI/SDI-100.

PART 2 - PRODUCTS

2.1 MANUFACTURER: One of the following:

A. Ceco Corp.
B. Curries
C. Steelcraft Manufacturing Co.
D. Amweld
E. Or approved equal.

2.2 MATERIALS

A. Supports and Anchors: Fabricate of not less than 14-gage sheet steel.

B. Fire-Rated Assemblies: Provide units that display appropriate UL or FM labels for fire-rating indicated.

C. Fabrication: Fabricate units to be rigid, neat in appearance, and free from defects, warp or buckle. Weld exposed joints continuously, grind, dress, and make smooth, flush and invisible.

D. Prepare steel door frames to receive finish hardware, including cutouts, reinforcing, drilling and tapping, complying with ANSI A 115 "Specifications for Door and Frame Preparation for Hardware."

E. Frames: Comply with ANSI/SDI-100, of the types and styles indicated, for materials quality, metal gages, and construction details.
   1. Provide galvanized frames – typical.
   2. Fabricate frames with mitered, coped, or welded corners.
   3. Prepare frames to receive 3 silencers on strike jambs of single-door frames and on heads of double-door frames.
   4. Provide 26-gage steel plaster guards or mortar boxes, welded to frame, at back of hardware cutouts where installed in concrete, masonry or plaster openings.
   5. Protect inside faces of frames in plaster or masonry wall construction, which are placed with anti-freeze additives, using high-build fibered asphalt emulsion coating.
   6. See plans for Fire Ratings required.

PART 3 - EXECUTION

3.1 INSTALLATION: Install hollow-metal units in accordance with manufacturer's instructions and final shop drawings. Fit doors to frames and floors with clearances specified in ANSI/SDI-100.

A. Install frames in accordance with SDI 105.
B. Doors and frames shall be installed plumb, true and in alignment with each other. Frames shall be securely anchored, filled solid with grout and completely rigid in walls.
C. Install fire-rated units in accordance with NFPA Std. No. 80.
D. Finish hardware is specified in another Division 8 section. Coordinate all hardware requirements with shop drawings.

END OF SECTION 08111

**SECTION 08120 - ALUMINUM DOORS AND FRAMES**

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
1. Glazed aluminum swinging doors.
2. Aluminum door frames.

B. Related work includes:
1. Glazing (08800)

1.2 PERFORMANCE REQUIREMENTS

A. Exterior Assemblies: Design to comply with the D.P. Ratings as required and air infiltration requirements. Wind load required 140 mph.

1.3 SUBMITTALS

A. Product Data: Manufacturer's material specifications, drawings of standard components, and installation recommendations.

B. Shop Drawings: Show elevations, field measurements, composite members, reinforcement, anchorages, flashing, attachments, expansion provisions, hardware mounting, and glazing. Shop drawings should be approved by the manufacturer. Provides engineering calculations to meet 140 mph wind load.

C. Samples for Verification of Anodized Finishes: For each type and color of anodized finish, submit 12-inch-long sections of extrusions and formed sections and 6-inch-square sheets. Submit at least 2 pieces for each color showing full range of color variation.

1.4 QUALITY ASSURANCE

A. Standard for Air Infiltration Testing: ASTM E 283; report result as cubic feet per minute per unit of measurement indicated, at pressure differential indicated.

B. Standard for Condensation Resistance Testing: AAMA 1503.1; report result as CRF.

C. Standard for Thermal Transmission Testing: AAMA 1503.1; report result as U-value (Btu per hour per square foot per degree F).

D. Design Criteria: The drawings indicate the size, profile, and dimensional requirements of aluminum entrance and storefront work required and are based on the specific types and models indicated. Aluminum entrance by other manufacturers may be considered, provided deviations in dimensions and profiles are minor and do not change the design concept as judged by the Architect. The burden of proof of equality is on the proposer.

1.5 PROJECT CONDITIONS

A. Take field measurements as required for correct fit.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Aluminum Doors and Frames:
1. Provide products complying with requirements of the contract documents and made by one of the following or and approved equal:

a. Kawneer Company, Inc. (TRIFAB 451T or 1600 Series)

2.2 FRAMING SYSTEMS

A. Aluminum Door and Fames: Extruded tube or channel frames with either mechanical or welded joints.
1. Finish:
a. Clear Anodized finish.

2.3 SWINGING DOORS

A. Stile and Rail Doors: Glazed doors with tubular extruded aluminum frame members.
1. Frame joints: Either concealed mechanically fastened, using tie rods or j-bolts and reinforcing plates; or welded.
2. Thickness: 1-3/4 inches.
3. Stile width: 3-1/2 inches nominal.
4. Full glazed, with no intermediate mullions.
5. Gllazing stops: Snap-on extruded aluminum, designed to allow replacement of glazing without disassembly of frame. Provide nonremovable exterior stops.
6. Glaze doors in factory.
7. Finish:
a. Clear Anodized finish.

B. Weatherstripping:
1. At fixed stops: Replaceable, compression type molded gaskets of neoprene or EPDM rubber complying with ASTM C 864 or of polyvinyl chloride complying with ASTM D 2287.
2. At other edges: Replaceable woven polypropylene, wool, or nylon pile, with aluminum or nylon fabric backing, complying with AAMA 701.
3. At door bottom: Adjustable molded EPDM or vinyl sweep, continuously contacting threshold; concealed mounting.
4. Provide weatherstripping on all exterior doors.

C. Silencers: Neoprene bumpers.
1. Provide on all interior doors.

D. Hardware for Aluminum Doors: Provide all hardware as required for proper operation, in accordance with the schedule located at the end of this section.
1. Finish: Match doors.

E. Hardware: Closer required.

F. Thresholds: Extruded aluminum thresholds in mill finish, complete with anchors and clips. Verify type and size with field conditions prior to ordering. Threshold to be ADA accessible.

2.4 MATERIALS - GENERAL

A. Aluminum Members: Kawneer TriFab 451T – Clear Anodized Finish.

B. Fasteners: Compatible with aluminum; aluminum, nonmagnetic stainless steel, or other noncorrosive, noncorrodible material.
1. Do not use exposed fasteners.

C. Concealed Flashing: Fully annealed, soft stainless steel, 26 gage minimum; or extruded aluminum, 0.032 inch minimum.

D. Miscellaneous Concealed Metal Members: High-strength aluminum or nonmagnetic stainless steel; hot-dip galvanized steel complying with ASTM A 123 may be used for members which are not exposed to weather or abrasion.

E. Concrete Inserts: Cast iron, malleable iron, or steel hot-dip galvanized in accordance with ASTM A 123.

F. Dissimilar Metal Coating: Cold-applied asphalt mastic, or other nonconductive, nonabsorptive material.

G. Glass and Glazing Accessories: Provide products specified elsewhere in Division 8.
1. Use 1” insulated glass as specified in section 08800 at all locations

H. Joint Sealers: Provide products specified in Division 7.

J. Provide muntins/mullions as shown on drawing.

2.5 FABRICATION

A. Framing System: Pre-cut and perform all finishing in factory or shop.
1. When it is necessary to begin fabrication without actual field measurements, provide adequate fabrication tolerances for correct fit.
2. Fit joints tightly with adjacent members in correct relationship.
3. Select members for fabrication so that adjacent anodized extruded aluminum members do not have color or texture variation greater than half of the range indicated in the submitted samples.

B. Doors: Factory-fabricate doors and factory-install all hardware except surface-mounted items.
1. Perform fabrication required for hardware before finishing.

C. Welding: Perform welding before finishing; use methods which do not discolor metal; grind exposed welds flush; match original finish.

D. Reinforcing: Provide as required to comply with performance requirements for rigidity and to support hardware; isolate dissimilar metals as specified in "Installation."

E. Avoid damage to finishes.

PART 3 - EXECUTION

3.1 PREPARATION

A. Examine structures; report conditions in writing, which will adversely affect installation.

3.2 INSTALLATION

A. Install in accordance with manufacturer's recommendations and instructions.

B. Install plumb and level, square and true, in correct location; support adequately and securely anchor.

C. Separate aluminum exposed to weather from dissimilar metals; coat dissimilar metals that are in drainage cavities using one of the materials specified. Aluminum, stainless steel, zinc, cadmium, and small areas of white bronze are not considered dissimilar from each other.

D. Coat all metals that come into contact with masonry, concrete, and treated wood, using one of the materials specified.

E. Install surface-mounted hardware in accordance with hardware manufacturer's instructions.

F. Install glass using methods specified elsewhere in Division 8. Factory install to greatest extent possible.

G. Set threshold units level and accurately in seal strip of butyl rubber sealant or polyisobutylene mastic sealant. Cope and align with frames and doors, and at proper elevation for door operation. Shim, if necessary, for full continuous support of threshold at each edge and intermediate legs, if any. Use non-corrosive shims of metal or plastic, set in adhesive or otherwise anchored against dislocation from impact or traffic upon threshold.

3.3 ADJUST AND CLEAN

A. Adjust each operable unit for correct function and smooth, free operation and so doors close tightly.

B. Clean exterior and interior soon after installation of glass, taking care to avoid damage to finishes.

C. Clean glass surfaces as specified elsewhere.

END OF SECTION 08120

**SECTION 08211 - WOOD DOORS**

PART 1 - GENERAL

1.1 DESCRIPTION

A. Section includes:

1. Wood Doors

B. Related work

1. Standard steel door frames (08111)
2. Door Hardware (08710)
3. Painting (09900)

2.2 QUALITY STANDARDS:

A. Comply with NWWDA I.S.1 and AWI "Architectural Woodwork Quality Standards".

B. Comply with WIC "Manual of Millwork" for requirements in the door grade comparable to AWI grade indicated and exceeding those in other referenced standards.

1.3 SUBMITTALS: In addition to product data, submit the following:

A. Shop Drawings indicating location, size, face material, and finishes of each door required.

B. Samples 1-0" square, of each type of core construction, face material and finish required.

PART 2 - PRODUCTS:

2.1 MANUFACTURERS: Subject to compliance with requirements, provide wood doors by one of the following:

A. VT Industries (see plans)

PART 3 - INSTALLATION

3.1 Install doors to comply with manufacturer's instructions and of referenced AWI standard and as indicated.

3.2 Align and fit door uniform clearances and bevels. Prepare doors for hardware. Seal cut surfaces after fitting and machining.

END OF SECTION 08211

## SECTION 08331 – OVERHEAD COILING FIRE SERVICE DOORS

### PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Overhead coiling fire service doors.

1.2 RELATED SECTIONS

A. Section 05500 - Metal Fabrications: Support framing and framed opening.

B. Section 06200 - Finish Carpentry: Wood jamb and head trim.

C. Section 08710 - Door Hardware: Product Requirements for cylinder core and keys.

D. Section 09900 - Painting: Field applied finish.

E. Section 16130 - Raceway and Boxes: Conduit from electric circuit to door operator and from door operator to control station.

F. Section 16150 - Wiring Connections: Power to disconnect.

1.3 REFERENCES

A. ASTM A 653 - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

B. ASTM A 666 - Standard Specification for Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar.

C. ASTM A 924 - Standard Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process.

D. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum).

E. NEMA MG 1 - Motors and Generators.

F. NFPA-80 – Standard for Fire Doors and Fire Windows.

1.4 DESIGN / PERFORMANCE REQUIREMENTS

A. Fire Rated Assemblies: Provide assemblies complying with NFPA 80 and listed in UL Directory or Intertek Testing Services (Warnock Hersey Listed) Directory.

1.5 SUBMITTALS

A. Submit under provisions of Section 01300.

B. Product Data: Manufacturer's data sheets on each product to be used, including:
   1. Preparation instructions and recommendations.
   2. Storage and handling requirements and recommendations.
   3. Details of construction and fabrication.
   4. Installation methods.

C. Shop Drawings: Include detailed plans and elevations, details of framing members, anchoring methods, clearances, hardware, and accessories.

D. Selection Samples: For each finish product specified, two complete sets of color chips representing manufacturer's full range of available colors and patterns.

E. Verification Samples: For each finish product specified, two samples, minimum size 6 inches (150 mm) long, representing actual product, color, and patterns.

F. Manufacturer's Certificates: Certify products meet or exceed specified requirements.

G. Operation and Maintenance Data: Submit lubrication requirements and frequency, and periodic adjustments required.

1.6 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in performing Work of this section with a minimum of five years experience.

B. Installer Qualifications: Installer Qualifications: Company approved by manufacturer, specializing in performing Work of this section with minimum three years experience, with IDEA Certified Installers and service technicians on staff.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Store products in manufacturer's unopened packaging until ready for installation.

B. Protect materials from exposure to moisture. Do not deliver until after wet work is complete and dry.

C. Store materials in a dry, warm, ventilated weathertight location.

1.8 PROJECT CONDITIONS

A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

1.9 COORDINATION

A. Coordinate Work with other operations and installation of adjacent materials to avoid damage to installed materials.

1.10 WARRANTY

A. Manufacturer’s Warranty: Provide manufacturer’s two year limited warranty.

B. Warranty: Manufacturer’s limited door and operators System warranty of all parts and components of the system except counterbalance spring and finish for 3 years or 20,000 cycles, whichever comes first.

**PART 2 PRODUCTS**

2.1 MANUFACTURERS

A. Acceptable Manufacturer: Overhead Door Corp., 2501 S. State Hwy. 121, Suite 200, Lewisville, TX 75067. ASD. Tel. Toll Free: (800) 275-3290. Phone: (469) 549-7100. Fax: (972) 906-1499. Web Site: www.overheaddoor.com. E-mail: info@overheaddoor.com.

B. Substitutions: Not permitted.

C. Requests for substitutions will be considered in accordance with provisions of Section 01600.

2.2 OVERHEAD COILING FIRE SERVICE DOORS

A. Overhead Coiling Fire service Doors: FireKing Model 631 Fire Doors.
   1. Label: Provide fire doors certified with the following listing.
      a. Rolling fire doors up to 152 sf (14.12 sm) and not exceeding 13 feet 6 inches (4.11 m) in width or height shall receive the UL 4-Hour Class A Label when face mounted to masonry opening.
      b. Rolling fire doors up to 152 sf (14.12 sm) and not exceeding 13 feet 6 inches (4.11 m) in width or height shall receive the UL 3-Hour Class A Label for installation on masonry or steel jamb walls, face mounted or between jambs. Door may be welded to the face of steel jambs. Rolling fire doors up to 152 sf (14.12 sm) and not exceeding 13 feet 6 inches (4.11 m) in width or height shall receive the ULC 3-Hour Class A Label for installation on masonry or steel jamb walls, face mounted or between jambs. Door may be welded to the face of steel jambs.
      c. Rolling fire doors up to 152 sf (14.12 sm) and 13 feet 6 inches (4.11 m) in width or height shall receive the UL 1-1/2-Hour Class B Label for installation in non-masonry walls, face mounted or between jambs
      d. Rolling fire doors up to 152 sf (14.12 sm) and 13 feet 6 inches (4.11 m) in width or height shall receive the ULC 1-1/2-Hour Class B Label for installation in non-masonry walls, face mounted or between jamb.
      e. Rolling fire doors over 152 sf (14.12 sm) shall receive the UL Oversize Fire Door Label.
      f. Provide UL labeled smoke protection where indicated. Comply with with UL label for "Leakage Rated Assembly" or "S" label.
         1) Comply with NFPA 105 air leakage requirements.
         2) Pass UL test procedure 1784.
   2. Curtain: Interlocking roll-formed slats as specified following. Endlocks shall be attached to each end of alternate slats to prevent lateral movement.
      a. Curved profile type C-187 for doors thru 14 feet (4.27 m) wide by 12 feet (3.65 m) high, fabricated of 24 gauge galvanized steel.
      b. Flat profile type F-265 for doors thru 14 feet (4.27 m) wide by 12 feet (3.65 m) high, fabricated of 24 gauge galvanized steel.
   3. Glazing: Fire-rated vision panels, four glazing panels 3 inch by 5/8 inch (76 by 16 mm).
   4. Finish:
      a. Galvanized Steel: Slats and hood galvanized steel to ASTM A 653 finished with a rust-inhibitive roll coating process, including bonderizing, a 0.2 mils thick baked prime paint, and a 0.6 mils thick baked top coat.
         1) Polyester Top Coat.
            (a) Gray polyester.
            (b) Tan polyester.
            (c) White polyester.

(d) Brown polyester.

2) Powder coat: PowderGuard

(a) PowderGuard Premium: Weather resistant polyester powder coat color as selected by the Architect.

(b) PowderGuard Weathered Finish: Industrial textured powder coat provides a thicker, more scratch resistant coat. Applied to entire door system including slats, guides, bottom bar and head plate.

b. Non-galvanized exposed ferrous surfaces shall be black powder coated.

c. Stainless Steel slats shall be finished as follows.

1) Finish: 2B mill finish.

2) Finish: No. 4 satin finish.

5. Bottom Bar: Two black powder coated structural steel angles 1-1/2 inch by 1-1/2 inch by 1/8 inch (38 mm by 38 mm by 3 mm) minimum.

6. Bottom Bar: Two galvanized structural steel angles with PowderGuard Zinc Finish, 1-1/2 inch by 1-1/2 inch by 1/8 inch (38 mm by 38 mm by 3 mm) minimum.

7. Bottom Bar: Two stainless steel angles 1-1/2 inch by 1-1/2 inch by 1/8 inch (38 mm by 38 mm by 3 mm) minimum.

8. Guides: Roll-formed steel shapes attached to continuous steel wall angle for doors through 12 feet (3.65 m) wide. Three structural steel angles with minimum thickness of 3/16 inch (5 mm) for doors over 12 feet (3.65 m) wide. Guides for between jamb doors shall be structural angles.

a. Finish: PowderGuard Weathered finish with iron/black powder.

b. Finish: PowderGuard Zinc Finish for guides, bottom bar and head plate.

c. Fastening Guides to Masonry Fire Walls: UL listed for fire in accordance with manufacturer's listing.

d. Fastening Guides to Masonry Fire Walls: UL listed for fire and smoke in accordance with manufacturer's listing.

e. Fastening Guides to Non-Masonry Fire Walls: Comply with the manufacturer's listing.

9. Brackets: To support counterbalance, curtain and hood

a. Hot rolled steel with black powder coated finish.

b. Hot rolled steel with PowderGuard Zinc finish.

10. Counterbalance: Helical torsion spring type housed in a steel tube or pipe barrel, supporting the curtain with deflection limited to 0.03 inch per foot of span. Counterbalance is adjustable by means of an adjusting tension wheel.

11. Hood: 24 gauge galvanized primed steel. Provide one intermediate support bracket for wall openings over 13 feet 6 inches (4.11 m) wide.

12. Manual Operation:

a. Manual push.

b. Crank operation.

c. Floor resettable chain hoist.

13. Electric Motor Operation: Provide electric operator as listed in the door UL file, for size as recommended by manufacturer to move door in either direction.

a. Floor Resettable Electric Motor Operation.

b. Sensing Edge Protection:

1) Pneumatic sensing edge.

2) Electric sensing edge.

3) Monitored electric sensing edge for momentary contact controls.

c. Operator Controls:

1) Push-button control stations with open, close, and stop buttons.

2) Key operation with NEMA 1 interior, NEMA 4 exterior, surface and flush mounted open, close, and stop controls.

d. Special Operation:
1) Vehicle detector operation.
2) Radio control operation.
3) Card reader control.
4) Photocell operation.
5) Door timer operation.
6) Commercial light package.
7) Explosion and dust ignition proof control wiring.
8) Digital operation.

14. Automatic Closure Standard Fire Door: UL approved release mechanism equipped with a 165 degree fusible link.
a. Doors will be equipped with chain hoist release mechanism, requiring only one sash chain to be routed to the operated side (sash chain not required to be routed to adjusting wheel side.)
1) Release mechanism includes planetary gear differential system.
2) Door will close by a thermally actuated link rated @165 degrees F, or by an optional listed releasing device, or by manually activating the release handle.
3) All counterbalance spring tension shall be maintained when the release mechanism is activated.
4) After closing by manual activation of the release handle, the door shall be able to be reset by one person from one side of the door (re-engaging the release handle). No tools shall be required to reset the release mechanism.
b. Doors will be equipped with floor resettable electric motor operation system, requiring only one sash chain to be routed to the operated side (sash chain not required to be routed to adjusting wheel side.)
1) Release mechanism includes planetary gear differential system.
2) Door will close by a thermally actuated link rated @165 degrees F, or by an optional listed releasing device, or by manually activating the release handle.
3) All counterbalance spring tension shall be maintained when the release mechanism is activated.
4) After closing by manual activation of the release handle, the door shall be able to be reset by one person from one side of the door (re-engaging the release handle). No tools are required to reset the release mechanism.
5) After closing by alarm activation with power on the electric motor, the door shall be able to be reset by resetting the alarm system without additional tools required.
c. Fire Sentinel time-delay release mechanism provides an added measure of safety to control the doors' closure.

15. Governor: If required by the size for chain hoist doors, provide a viscous governor to regulate the rate of descent of door in a quiet manner. Use an engagement type that is not engaged during normal door operation, but after cable release, will retard the speed during automatic door closure to under 24 inches per second and not less than 6 inches per second per NFPA 80.

16. Locking:
a. Two interior bottom bar slide bolts for manually operated doors.
b. Cylinder lock for manually operated doors.
c. Interior slide bolt lock for electric operation with interlock switch.
d. Cylinder lock for electric operation with interlock switch.

17. Wall Mounting Condition:

a. Face-of-wall mounting.
b. Between jambs mounting.

2.3 FIRE SENTINEL TIME-DELAY RELEASE

A. Model FSAX24V Release Device: For non-motorized doors with voltage input of 24VDC.
1. Voltage of 24VDC supplied by a UL 1481 regulated power supply with a battery backup system with a red, enclosure-mounted LED to indicate power to the device.
2. Capable of holding and releasing up to a 40 lb. load imposed by a fusible link/sash chain assembly attached to a release mechanism within the door construction.
3. Includes DIP-switch selectable delay settings of 10, 20, or 60 seconds upon alarm activation to allow for passageway clearance before initiating door closure.
4. Capable of receiving an alarm input from compatible 2-wire normally open smoke detectors, 4-wire normally open smoke detectors, or normally open heat detectors, or input from a fire alarm control panel via a relay module providing a Form C dry contact output to the release device.
a. Capable of receiving input from a maximum of two smoke detectors.
b. Use with a supervisory resistor on 2-wire; End-of-Line relay on 4-wire to ensure the integrity of the wiring.
5. Provide with optional audible and visual signaling appliances to operate during the alarm closing cycle. Device shall be capable of activating and powering a maximum of two audible/visible notification devices, e.g. strobes, horns or horn/strobes. Device shall recognize that the door is in the closed position via input received from a proximity switch, located underneath the door and activated when the door is in the closed position and resting upon the switch, to prevent accidental release of the fusible link/sash chain (or 1/16th cable) assembly; an amber, enclosure-mounted LED shall indicate activation of the proximity switch.
6. Provide with relay and trouble outputs to provide notification to a fire alarm control panel when an alarm or trouble state exists.
7. Circuit board shall have diagnostic LEDs to assist with field installation by indicating alarm or trouble conditions present within the smoke detector loops, as well as activation of the proximity switch.
8. Includes an enclosure-mounted test switch that simulates an alarm condition when depressed and held for a length of time equal to the DIP-switch selectable delay setting, either 10, 20, or 60 seconds. A remote key test switch is also provided to simulate an alarm condition during testing procedures.

B. Model FSBX24V Release Device with Battery Back-Up: For non-motorized doors with voltage input of 24VDC.
1. Capable of holding and releasing up to a 40 lb. load imposed by a fusible link/sash chain assembly attached to a release mechanism within the door construction.
2. Provide with an internal battery backup system capable of providing up to 24 hours of battery power to support alarm logic, smoke detector, release capability and audible and visible signaling appliances. Device shall monitor battery charge and annunciate the need for battery replacement via an integral sounder; a green, enclosure-mounted LED that indicates the presence of the battery backup system.

a. Battery backup/power system shall contain a management system providing trickle charge capabilities.
b. During a power outage, and upon depletion of the battery, the device will initiate door closure by releasing the fusible link/sash chain assembly and initiating gravity closure of the door.
c. A DIP-switch selectable feature shall provide the capability of operating on battery power upon loss of line power or closing the door through the release of the fusible link assembly initiating gravity closure of the door

3. Includes DIP-switch selectable delay settings of 10, 20, or 60 seconds upon alarm activation to allow for passageway clearance before initiating door closure.
4. Capable of receiving an alarm input from compatible 2-wire normally open smoke detectors, 4-wire normally open smoke detectors, or normally open heat detectors, or input from a fire alarm control panel via a relay module providing a Form C dry contact output to the release device.
   a. Capable of receiving input from a maximum of two smoke detectors.
   b. Use with an End-of-Line (EOL) device to ensure the integrity of the wiring
5. Provide with optional audible and visual signaling appliances to operate during the alarm closing cycle. Device shall be capable of activating and powering a maximum of two audible/visible notification devices, e.g. strobes, horns or horn/strobes. Device shall recognize that the door is in the closed position via input received from a proximity switch, located underneath the door and activated when the door is in the closed position and resting upon the switch, to prevent accidental release of the fusible link/sash chain (or 1/16th cable) assembly; an amber, enclosure-mounted LED shall indicate activation of the proximity switch.
6. Provide with relay and trouble outputs to provide notification to a fire alarm control panel when an alarm or trouble state exists.
7. Circuit board shall have diagnostic LEDs to assist with field installation by indicating alarm or trouble conditions present within the smoke detector loops, as well as activation of the proximity switch.
8. Includes an enclosure-mounted test switch that simulates an alarm condition when depressed and held for a length of time equal to the DIP-switch selectable delay setting, either 10, 20, or 60 seconds. A remote key test switch is also provided to simulate an alarm condition during testing procedures.

C. Model FSBX120V Release Device: For non-motorized doors with voltage input 120VAC with battery backup.
   1. Capable of operating on a voltage of 120VAC, and contain internal fuse and transient protection to guard against power surges; a red, enclosure-mounted LED shall indicate power to the device.
   2. Capable of holding and releasing up to a 40 lb. load imposed by a fusible link/sash chain assembly attached to a release mechanism within the door construction.
   3. Provide with an internal battery backup system capable of providing up to 24 hours of battery power to support alarm logic, smoke detector, release capability and audible and visible signaling appliances. Device shall monitor battery charge and annunciate the need for battery replacement via an integral sounder; a green, enclosure-mounted LED that indicates the presence of the battery backup system.
      a. Battery backup/power system shall contain a management system providing trickle charge capabilities.

b. During a power outage, and upon depletion of the battery, the device will initiate door closure by releasing the fusible link/sash chain assembly and initiating gravity closure of the door.
c. A DIP-switch selectable feature shall provide the capability of operating on battery power upon loss of line power or closing the door through the release of the fusible link assembly initiating gravity closure of the door

4. Includes DIP-switch selectable delay settings of 10, 20, or 60 seconds upon alarm activation to allow for passageway clearance before initiating door closure.
5. Capable of receiving an alarm input from compatible 2-wire normally open smoke detectors, 4-wire normally open smoke detectors, or normally open heat detectors, or input from a fire alarm control panel via a relay module providing a Form C dry contact output to the release device.
   a. Capable of receiving input from a maximum of two smoke detectors.
   b. Use with an End-of-Line (EOL) device to ensure the integrity of the wiring
6. Provide with optional audible and visual signaling appliances to operate during the alarm closing cycle. Device shall be capable of activating and powering a maximum of two audible/visible notification devices, e.g. strobes, horns or horn/strobes. Device shall recognize that the door is in the closed position via input received from a proximity switch, located underneath the door and activated when the door is in the closed position and resting upon the switch, to prevent accidental release of the fusible link/sash chain (or 1/16th cable) assembly; an amber, enclosure-mounted LED shall indicate activation of the proximity switch.
7. Provide with relay and trouble outputs to provide notification to a fire alarm control panel when an alarm or trouble state exists.
8. Circuit board shall have diagnostic LEDs to assist with field installation by indicating alarm or trouble conditions present within the smoke detector loops, as well as activation of the proximity switch.
9. Includes an enclosure-mounted test switch that simulates an alarm condition when depressed and held for a length of time equal to the DIP-switch selectable delay setting, either 10, 20, or 60 seconds. A remote key test switch is also provided to simulate an alarm condition during testing procedures.

D. Model FSCX24V Release Device: For motorized doors operating on a voltage of 24VDC with battery backup.
   1. Release device shall be used in conjunction with an appropriate UL 325-rated commercial door operator, either a gearhead, jackshaft, or hoist operator equipped with auxiliary open and close limit switches, to create a door closing system.
   2. Release device shall be used in conjunction with an NEMA 4/4X commercial door operator, either a gearhead, jackshaft, or hoist operator equipped with auxiliary open and close limit switches, to create a door closing system.
   3. Capable of holding and releasing up to a 40 lb. load imposed by a fusible link/sash chain assembly attached to a release mechanism within the door construction.
   4. Provide with an internal battery backup system capable of providing up to 24 hours of battery power to support alarm logic, smoke detector, release capability and audible and visible signaling appliances. Device shall monitor battery charge and annunciate the need for battery replacement via an integral sounder; a green, enclosure-mounted LED that indicates the presence of the battery backup system.

a. Battery backup/power system shall contain a management system providing trickle charge capabilities.
b. During a power outage, and upon depletion of the battery, the device will initiate door closure by releasing the fusible link/sash chain assembly and initiating gravity closure of the door.
c. A DIP-switch selectable feature shall provide the capability of operating on battery power upon loss of line power or closing the door through the release of the fusible link assembly initiating gravity closure of the door

5. Includes DIP-switch selectable delay settings of 10, 20, or 60 seconds upon alarm activation to allow for passageway clearance before initiating door closure.
6. Capable of receiving an alarm input from compatible 2-wire normally open smoke detectors, 4-wire normally open smoke detectors, or normally open heat detectors, or input from a fire alarm control panel via a relay module providing a Form C dry contact output to the release device.
   a. Capable of receiving input from a maximum of two smoke detectors.
   b. Use with an End-of-Line (EOL) device to ensure the integrity of the wiring
7. Provide with optional audible and visual signaling appliances to operate during the alarm closing cycle. Device shall be capable of activating and powering a maximum of two audible/visible notification devices, e.g. strobes, horns or horn/strobes. Device shall recognize that the door is in the closed position via input received from a proximity switch, located underneath the door and activated when the door is in the closed position and resting upon the switch, to prevent accidental release of the fusible link/sash chain (or 1/16th cable) assembly; an amber, enclosure-mounted LED shall indicate activation of the proximity switch.
8. Provide with relay and trouble outputs to provide notification to a fire alarm control panel when an alarm or trouble state exists.
9. Circuit board shall have diagnostic LEDs to assist with field installation by indicating alarm or trouble conditions present within the smoke detector loops, as well as activation of the auxiliary close limit switch.
10. Includes an enclosure-mounted test switch that simulates an alarm condition when depressed and held for a length of time equal to the DIP-switch selectable delay setting, either 10, 20, or 60 seconds. A remote key test switch is also provided to simulate an alarm condition during testing procedures.
11. Hold open/release device shall recognize that the door is in the closed position and where motor driven, be capable of sensing that power is available to the motor. The device may be wired to close on alarm.
12. Upon alarm, the device shall offer the DIP-switch selectable feature of motorized door closure through the operator or bypassing the operator and initiating gravity door closure by releasing the fusible link assembly and engaging the door's release mechanism.
13. Audible and visual signaling appliances shall be provided to annunciate closure due to alarm or power loss conditions.
14. Device shall provide three-time obstruction cycling of the door through the operator
    a. An electric sensing edge (by others) attached to the bottom edge of the door, and connected to both the device and the operator.
    b. Upon contact by the sensing edge with an obstruction, the closing door shall reverse and the device will instruct the operator to repeat the attempt at closure two additional cycles.

c. Failure to reach the closed position will activate the one of two selectable actions:

15. Release device shall reverse the direction of the door through the operator upon the sensing edge making contact with an obstruction and repeat the attempt to achieve closure for two additional cycles.
    a. Mode of operation upon failure to close the door shall be one of two DIP-switch selectable options
        1) Failure to reach the closed position upon completion of the closure cycle or within a factory set time limit will result in the door being lowered by the operator upon the object. The door will rest on the obstruction until the obstruction is removed, at which point the door will resume closure through the operator to a fully closed position.
        2) Failure to reach the closed position upon completion of the closure cycle or within a factory selected time limit will result in gravity closure of the door. The door will rest on the obstruction until the obstruction is removed, at which point door closure shall be achieved through gravity drop.
    b. Device shall provide a DIP-switch selectable 4-minute or 2-minute safety timer setting that will initiate gravity door closure if the operator close limit is not completed with the selected time or one of the modes of operation upon encountering an obstruction is not completed.
    c. Loss of power to the operator or release device an alarm condition will result in gravity closure of the door.
16. Upon successful test completion of door closure through the operator with no obstructions encountered, the release device shall offer the DIP-switch selectable feature of allowing automatic open after the test input is cleared.
17. Release device shall offer a dry contact relay that may be used to activate signaling appliances or other external signaling functions.

E. Model FSCX120 Release Device: For motorized doors operating on a voltage of 120VAC with battery backup.
    1. Release device shall be used in conjunction with an appropriate UL 325-rated commercial door operator, either a gearhead, jackshaft, or hoist operator equipped with auxiliary open and close limit switches, to create a door closing system.
    2. Release device shall be used in conjunction with an NEMA 4/4X commercial door operator, either a gearhead, jackshaft, or hoist operator equipped with auxiliary open and close limit switches, to create a door closing system.
    3. Capable of operating on a voltage of 120VAC, and shall contain internal fuse and transient protection to guard against power surges; a red, enclosure-mounted LED shall indicate power to the device.
    4. Capable of holding and releasing up to a 40 lb. load imposed by a fusible link/sash chain assembly attached to a release mechanism within the door construction.
    5. Provide with an internal battery backup system capable of providing up to 24 hours of battery power to support alarm logic, smoke detector, release capability and audible and visible signaling appliances. Device shall monitor battery charge and annunciate the need for battery replacement via an integral sounder; a green, enclosure-mounted LED that indicates the presence of the battery backup system.
        a. Battery backup/power system shall contain a management system providing trickle charge capabilities.

b. During a power outage, and upon depletion of the battery, the device will initiate door closure by releasing the fusible link/sash chain assembly and initiating gravity closure of the door.
c. A DIP-switch selectable feature shall provide the capability of operating on battery power upon loss of line power or closing the door through the release of the fusible link assembly initiating gravity closure of the door.
d. Hold open/release device shall recognize that the door is in the closed position and where motor driven, be capable of sensing that power is available to the motor. The device will be wired to close on alarm.

6. Includes DIP-switch selectable delay settings of 10, 20, or 60 seconds upon alarm activation to allow for passageway clearance before initiating door closure.
7. Capable of receiving an alarm input from compatible 2-wire normally open smoke detectors, 4-wire normally open smoke detectors, or normally open heat detectors, or input from a fire alarm control panel via a relay module providing a Form C dry contact output to the release device.
   a. Capable of receiving input from a maximum of two smoke detectors.
   b. Use with an End-of-Line (EOL) device to ensure the integrity of the wiring
8. Provide with optional audible and visual signaling appliances to operate during the alarm closing cycle. Device shall be capable of activating and powering a maximum of two audible/visible notification devices, e.g. strobes, horns or horn/strobes. Device shall recognize that the door is in the closed position via input received from a proximity switch, located underneath the door and activated when the door is in the closed position and resting upon the switch, to prevent accidental release of the fusible link/sash chain (or 1/16th cable) assembly; an amber, enclosure-mounted LED shall indicate activation of the proximity switch.
9. Provide with relay and trouble outputs to provide notification to a fire alarm control panel when an alarm or trouble state exists.
10. Circuit board shall have diagnostic LEDs to assist with field installation by indicating alarm or trouble conditions present within the smoke detector loops, as well as activation of the auxiliary close limit switch.
11. Includes an enclosure-mounted test switch that simulates an alarm condition when depressed and held for a length of time equal to the DIP-switch selectable delay setting, either 10, 20, or 60 seconds. A remote key test switch is also provided to simulate an alarm condition during testing procedures.
12. Upon alarm, the device shall offer the DIP-switch selectable feature of motorized door closure through the operator or bypassing the operator and initiating gravity door closure by releasing the fusible link assembly and engaging the door's release mechanism.
13. Audible and visual signaling appliances shall be provided to annunciate closure due to alarm or power loss conditions.
14. Device shall provide three-time obstruction cycling of the door through the operator
   a. An electric sensing edge (by others) attached to the bottom edge of the door, and connected to both the device and the operator.
   b. Upon contact by the sensing edge with an obstruction, the closing door shall reverse and the device will instruct the operator to repeat the attempt at closure two additional cycles.
   c. Failure to reach the closed position will activate the one of two selectable actions:

15. Release device shall reverse the direction of the door through the operator upon the sensing edge making contact with an obstruction and repeat the attempt to achieve closure for two additional cycles.
    a. Mode of operation upon failure to close the door shall be one of two DIP-switch selectable options
        1) Failure to reach the closed position upon completion of the closure cycle or within a factory set time limit will result in the door being lowered by the operator upon the object. The door will rest on the obstruction until the obstruction is removed, at which point the door will resume closure through the operator to a fully closed position.
        2) Failure to reach the closed position upon completion of the closure cycle or within a factory selected time limit will result in gravity closure of the door. The door will rest on the obstruction until the obstruction is removed, at which point door closure shall be achieved through gravity drop.
    b. Device shall provide a DIP-switch selectable 4-minute or 2-minute safety timer setting that will initiate gravity door closure if the operator close limit is not completed with the selected time or one of the modes of operation upon encountering an obstruction is not completed.
    c. Loss of power to the operator or release device an alarm condition will result in gravity closure of the door.
16. Upon successful test completion of door closure through the operator with no obstructions encountered, the release device shall offer the DIP-switch selectable feature of allowing automatic open after the test input is cleared.
17. Release device shall offer a dry contact relay that may be used to activate signaling appliances or other external signaling functions.

## PART 3 EXECUTION

3.1 EXAMINATION

A. Verify opening sizes, tolerances and conditions are acceptable.

B. Examine conditions of substrates, supports, and other conditions under which this work is to be performed.

C. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 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.

3.3 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Install rolling counter fire doors in compliance with requirements of NFPA 80. Test fire-release system and reset components after testing.

C. Use anchorage devices to securely fasten assembly to wall construction and building framing without distortion or stress.

D. Securely and rigidly brace components suspended from structure. Secure guides to structural members only.

E. Fit and align assembly including hardware; level and plumb, to provide smooth operation.

F. Coordinate installation of electrical service with Section 16150. Complete wiring from disconnect to unit components.

G. Install and test Fire Sentinel release device(s) in accordance with the manufacturer's instructions and in compliance with applicable regulations and codes of the local authority having jurisdiction.

H. Coordinate installation of sealants and backing materials at frame perimeter as specified in Section 07900.

I. Install perimeter trim and closures.

3.4 ADJUSTING

A. Test for proper operation and adjust as necessary to provide proper operation without binding or distortion.

B. Release device(s) shall be tested and witnessed for proper operation with the door manufacturer recommendations

C. Adjust hardware and operating assemblies for smooth and noiseless operation.

3.5 FIELD QUALITY CONTROL

A. Functional testing of fire door and window assemblies shall be performed by IDEA Certified personnel with knowledge and understanding of the operating components of the type of door being subject to testing.

3.6 CLEANING

A. Clean curtain and components using non-abrasive materials and methods recommended by manufacturer.

B. Remove labels and visible markings.

C. Touch-up, repair or replace damaged products before Substantial Completion.

3.7 PROTECTION

A. Protect installed products until completion of project.

END OF SECTION

## SECTION 08333 – SECURITY GRILLES

## PART 1 GENERAL

1.1 SECTION INCLUDES

A. Upcoiling Security Grilles, manually operated.

B. Upcoiling Security Grilles, power operated.

1.2 RELATED SECTIONS

A. Section 05500 - Metal Fabrications: Support framing and framed opening.

B. Section 06200 - Finish Carpentry: Wood jamb and head trim.

C. Section 08332 - Overhead Coiling Counter Doors.

D. Section 08710 - Door Hardware: Product Requirements for cylinder core and keys.

E. Section 16130 - Raceway and Boxes: Conduit from electric circuit to grille operator and from grille operator to control station.

F. Section 16150 - Wiring Connections: Power to disconnect.

1.3 REFERENCES

A. ASTM A 653 - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

B. ASTM A 666 - Standard Specification for Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar.

C. ASTM A 924 - Standard Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process.

D. ASTM B 221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.

E. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum).

F. NEMA ICS 2 - Industrial Control and Systems: Controllers, Contactors, and Overload Relays, Rated Not More Than 2000 Volts AC or 750 Volts DC.

G. NEMA MG 1 - Motors and Generators.

1.4 SUBMITTALS

A. Submit under provisions of Section 01300.

B. Product Data: Manufacturer's data sheets on each product to be used, including:
   1. Preparation instructions and recommendations.
   2. Storage and handling requirements and recommendations.
   3. Installation methods.

C. Shop Drawings: Include detailed plans, elevations, details of framing members, required clearances, anchors, and accessories. Include relationship with adjacent materials.

D. Selection Samples: For each finish product specified, two complete sets of color chips representing manufacturer's full range of available colors and patterns.

E. Verification Samples: For each finish product specified, two samples, representing actual product, color, and patterns.

F. Manufacturer's Certificates: Certify products meet or exceed specified requirements.

1.5 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in performing Work of this section with a minimum of five years experience in the fabrication and installation of security closures.

B. Installer Qualifications: Company specializing in performing Work of this section with minimum three years and approved by manufacturer.

C. Mock-Up: Provide a mock-up for evaluation of surface preparation techniques and application workmanship.
   1. Install in areas designated by Architect.
   2. Do not proceed with remaining work until workmanship and installation is approved by Architect.
   3. Refinish mock-up area as required to produce acceptable work.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Store products in manufacturer's unopened packaging until ready for installation.

B. Protect materials from exposure to moisture. Do not deliver until after wet work is complete and dry.

C. Store materials in a dry, warm, ventilated weathertight location.

1.7 COORDINATION

A. Coordinate Work with other operations and installation of adjacent finish materials to avoid damage to installed materials.

**PART 2 PRODUCTS**

2.1 MANUFACTURERS

A. Acceptable Manufacturer: Overhead Door Corp., 2501 S. State Hwy. 121, Suite 200, Lewisville, TX 75067. ASD. Tel. Toll Free: (800) 275-3290. Phone: (469) 549-7100. Fax: (972) 906-1499. Web Site: www.overheaddoor.com. E-mail: info@overheaddoor.com.

B. Substitutions: Not permitted.

C. Requests for substitutions will be considered in accordance with provisions of Section 01600.

2.2 UPCOILING SECURITY GRILLES

A. Overhead Coiling Aluminum Grilles: Overhead Door Corporation Model 670 with an Automatic Release for power operated doors.
   1. Curtain: Horizontal 5/16 inch (7.8 mm) diameter rods with network of vertically interlocking links to form a pattern. Bottom bar extruded aluminum tubular shape.
      a. Material: Aluminum.
      b. Vertical Rod Spacing:
         1) 2 inches (51 mm) on center.
      c. Pattern:
         1) Straight lattice; horizontal spacing 3 inches (76 mm) on center.
         2) Straight lattice; horizontal spacing 6 inches (152 mm) on center.
         3) Straight lattice; horizontal spacing 9 inches (228 mm) on center.
   2. Finish:
      a. Aluminum mill finish.
      b. Aluminum clear anodized.
      c. Aluminum bronze anodized.
      d. Aluminum black anodized.
      e. Aluminum color as selected by Architect.
      f. Prime all non-galvanized, exposed ferrous surfaces with black powder coat finish.
   3. Bottom Bar:
      a. Tubular extruded aluminum, mill finish.
      b. Tubular extruded aluminum, clear anodized.
      c. Tubular extruded aluminum, bronze anodized.
      d. Tubular extruded aluminum, black anodized.
   4. Guides:
      a. Extruded aluminum shapes with retainer grooves and continuous silicone treated wool-pile strips or PVC inserts to reduce noise and assist operation.
      b. Guides face mounted on adjacent construction.
      c. Guides free standing with tubular steel support frames supplied with grilles.
   5. Brackets: Minimum 3/16 inch (4.8 mm) steel to support barrel, counterbalance and hood as applicable.
   6. Counterbalance: Helical torsion spring type housed in a steel tube or pipe barrel, supporting the curtain with maximum deflection of 0.03 inches per foot of span. Counterbalance adjustable by means of an adjusting tension wheel.
   7. Hood:
      a. Aluminum, mill finish with intermediate supports as required.
      b. Aluminum, clear anodized with intermediate supports as required.
      c. Aluminum, bronze anodized with intermediate supports as required.
      a. Aluminum, black anodized with intermediate supports as required.
   8. Electric Motor with Emergency Egress: Provide code compliant emergency egress operator system with self-locking mechanism that automatically unlocks, automatically releases, and opens grille fully to permit passage if power is not available. Provide UL listed electric operator, size as recommended by manufacturer to move door in either direction at not less than 2/3 foot nor more than 1 foot per second.
      1) 1/2 horsepower single phase.
         (a) 115 V
         (b) 230 V
      2) 1 horsepower three phase.
         (a) 230 V.
         (b) 460 V.

9. Mounting:
    1) Front of hood.
    2) Mounting Left Hand or Right Hand.
10. Release: Push/Pull Emergency Release Button.
    a. Surface mount.
    b. Flush mount.
11. Entrapment Protection:
    a. 2 wire electric sensing edge
    b. Photo cell operation.
12. Control accessories: Control Panel is to be supplied at same voltage as operator selected.
13. Locking: Model 670 egress grille self-locking mechanism to prevent forced opening of a closed grille that does not interfere with normal electric operation but fail safe for emergency operation.

## PART 3 EXECUTION

3.1 EXAMINATION

A. Verify opening sizes, tolerances and conditions are acceptable.

B. Examine conditions of substrates, supports, and other conditions under which this work is to be performed.

C. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 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.

3.3 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Use anchorage devices to securely fasten assembly to wall construction and building framing without distortion or stress.

C. Securely and rigidly brace components suspended from structure. Secure guides to structural members only.

D. Fit and align assembly including hardware; level and plumb, to provide smooth operation.

E. Coordinate installation of electrical service with Section 16150. Complete wiring from disconnect to unit components.

F. Coordinate installation of sealants and backing materials at frame perimeter as specified in Section 07900.

G. Install perimeter trim and closures.

3.4 ADJUSTING

A. Test security grilles for proper operation and adjust as necessary to provide proper operation without binding or distortion.

B. Adjust hardware and operating assemblies for smooth and noiseless operation.

3.5 CLEANING

A. Clean curtain and components using non-abrasive materials and methods recommended by manufacturer.

B. Remove labels and visible markings.

C. Touch-up, repair or replace damaged products before Substantial Completion.

3.6 PROTECTION

A. Protect installed products until completion of project.

END OF SECTION

## SECTION 08360 OVERHEAD DOORS

## PART 1 GENERAL

1.1 SECTION INCLUDES

A. Insulated Sectional Overhead Doors.

B. Electric Operators and Controls.

C. Operating Hardware, tracks, and support.

1.2 RELATED SECTIONS

A. Section 03300 - Cast-In-Place Concrete: Prepared opening in concrete. Execution requirements for placement of anchors in concrete wall construction.

B. Section 04810 - Unit Masonry Assemblies: Prepared opening in masonry. Execution requirements for placement of anchors in masonry wall construction.

C. Section 05500 - Metal Fabrications: Steel frame and supports.

D. Section 06114 - Wood Blocking and Curbing: Rough wood framing and blocking for door opening.

E. Section 07900 - Joint Sealers: Perimeter sealant and backup materials.

F. Section 08710 - Door Hardware: Cylinder locks.

G. Section 09900 - Paints and Coatings: Field painting.

H. Section 11150 – Parking Control Equipment: Remote door control.

I. Section 16130 - Raceway and Boxes: Empty conduit from control station to door operator.

J. Section 16150 - Wiring Connections: Electrical service to door operator.

1.3 REFERENCES

A. ANSI/DASMA 102 - American National Standard Specifications for Sectional Overhead Type Doors.

1.4 DESIGN / PERFORMANCE REQUIREMENTS

A. Wind Loads: Design and size components to withstand loads caused by pressure and suction of wind acting normal to plane of wall as calculated in accordance with applicable code.
   1. Design pressure of _____ lb/sq ft (_____kPa).

B. Wiring Connections: Requirements for electrical characteristics.
   1. 115 volts, single phase, 60 Hz.
   2. 230 volts, single phase, 60 Hz.
   3. 230 volts, three phase, 60 Hz.
   4. 460 volts, three phase, 60 Hz.

C. Single-Source Responsibility: Provide doors, tracks, motors, and accessories from one manufacturer for each type of door. Provide secondary components from source acceptable to manufacturer of primary components.

1.5 SUBMITTALS

A. Submit under provisions of Section 01300.

B. Product Data: Manufacturer's data sheets on each product to be used, including:
1. Preparation instructions and recommendations.
2. Storage and handling requirements and recommendations.
3. Installation methods.

C. Shop Drawings: Indicate plans and elevations including opening dimensions and required tolerances, connection details, anchorage spacing, hardware locations, and installation details.

D. Manufacturer's Certificates: Certify products meet or exceed specified requirements.

E. Operation and Maintenance Data.

1.6 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with minimum five years documented experience.

B. Installer Qualifications: Authorized representative of the manufacturer with minimum five years documented experience.

C. Products Requiring Electrical Connection: Listed and classified by Underwriters Laboratories, Inc. acceptable to authority having jurisdiction as suitable for purpose specified.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Store products in manufacturer's unopened labeled packaging until ready for installation.

B. Protect materials from exposure to moisture until ready for installation.

C. Store materials in a dry, ventilated weathertight location.

1.8 PROJECT CONDITIONS

A. Pre-Installation Conference: Convene a pre-installation conference just prior to commencement of field operations, to establish procedures to maintain optimum working conditions and to coordinate this work with related and adjacent work.

1.9 WARRANTY

A. Warranty: Manufacturer’s limited door and operators System warranty for 10 year against delamination of polyurethane foam from steel face and all other components for 3 years or 20,000 cycles, whichever comes first.

**PART 2 PRODUCTS**

## 2.1 MANUFACTURERS

A. Acceptable Manufacturer: Overhead Door Corp., 2501 S. State Hwy. 121, Suite 200, Lewisville, TX 75067. ASD. Tel. Toll Free: (800) 275-3290. Phone: (469) 549-7100. Fax: (972) 906-1499. Web Site: www.overheaddoor.com. E-mail: sales@overheaddoor.com.

B. Substitutions: Not permitted.

C. Requests for substitutions will be considered in accordance with provisions of Section 01600.

## 2.2 INSULATED SECTIONAL OVERHEAD DOORS

A. Insulated Steel Sectional Overhead Doors: 591 Series Thermacore Insulated Steel Doors by Overhead Door Corporation. Units shall have the following characteristics:
   1. Door Assembly: Metal/foam/metal sandwich panel construction, with PVC thermal break and weather-tight ship-lap design meeting joints.
      a. Panel Thickness: 1-5/8 inches (41 mm).
      b. Exterior Surface: Ribbed, textured.
      c. Exterior Steel: .015 inch (.38 mm), hot-dipped galvanized.
      d. End Stiles: 16 gauge.
      e. Spring Counterbalance: Sized to weight of the door, with a helically wound, oil tempered torsion spring mounted on a steel shaft; cable drum of diecast aluminum with high strength galvanized aircraft cable. Sized with a minimum 7 to 1 safety factor.
         1) Standard cycle spring: 10,000 cycles.
         2) High cycle spring: 25,000 cycles.
         3) High cycle spring: 50,000 cycles.
         4) High cycle spring: 75,000 cycles.
         5) High cycle spring: 100,000 cycles.
      f. Insulation: CFC-free and HCFC-free polyurethane, fully encapsulated.
      g. Thermal Values: R-value of 14.86; U-value of 0.067.
      h. Air Infiltration: 0.08 cfm at 15 mph; 0.08 cfm at 25 mph.
      i. Pass-Door:
         1) Provide with optional pass door.
      j. High-Usage Package: Provide with optional high-usage package.
      k. Partial Glazing of Steel Panels:
         1) 1/8 inch (3 mm) Acrylic glazing.
         2) 1/4 inch (6 mm) Acrylic glazing.
         3) 1/8 inch (3 mm) Clear Lexan glazing.
         4) 1/4 inch (6 mm) Clear Lexan glazing.
         5) 1/2 inch (12.5 mm) Clear Lexan Insulated glazing.
         6) 1/8 inch (3 mm) Tempered glass.
         7) 1/4 inch (6 mm) Tempered glass.
         8) 1/2 inch (12.5 mm) Tempered Insulating Glass.
         9) 1/4 inch (6 mm) Wire glass.
         10) 1/8 inch (3 mm) Double Strength glass.
         11) 1/2 inch (12.5 mm) Double Strength Insulating Glass.
         12) 1/8 inch (3 mm) Low E glazing.
         13) 1/4 inch (6 mm) Low E glazing.
         14) 1/2 inch (12.5 mm) Low E Insulated glazing.
         15) 1/8 inch (3 mm) Solar Bronze glazing.
         16) 1/4 inch (6 mm) Solar Bronze glazing.
         17) 1/2 inch (12.5 mm) Solar Bronze Insulated glazing.
         18) 1/8 inch (3 mm) Obscure glazing.

19) 1/4 inch (6 mm) Obscure glazing.
20) 1/2 inch (12.5 mm) Obscure Insulated glazing.
21) 1/4 inch (6 mm) Twin-Wall Polycarbonate (clear, bronze, white).
22) 3/8 inch (9.5 mm) Twin-Wall Polycarbonate (clear, bronze, white).
23) 5/8 inch (15.87 mm) Triple-Wall Polycarbonate (clear, bronze, white).

l. Full Glazed Aluminum Sash Panels:
1) 1/8 inch (3 mm) Acrylic glazing.
2) 1/4 inch (6 mm) Acrylic glazing.
3) 1/8 inch (3 mm) Clear Lexan glazing.
4) 1/4 inch (6 mm) Clear Lexan glazing.
5) 1/2 inch (12.5 mm) Clear Lexan Insulated glazing.
6) 1/8 inch (3 mm) Tempered glass.
7) 1/4 inch (6 mm) Tempered glass.
8) 1/2 inch (12.5 mm) Tempered Insulating Glass.
9) 1/4 inch (6 mm) Wire glass.
10) 1/8 inch (3 mm) Double Strength glass.
11) 1/2 inch (12.5 mm) Double Strength Insulating Glass.
12) 1/8 inch (3 mm) Low E glazing.
13) 1/4 inch (6 mm) Low E glazing.
14) 1/2 inch (12.5 mm) Low E Insulated glazing.
15) 1/8 inch (3 mm) Solar Bronze glazing.
16) 1/4 inch (6 mm) Solar Bronze glazing.
17) 1/2 inch (12.5 mm) Solar Bronze Insulated glazing.
18) 1/8 inch (3 mm) Obscure glazing.
19) 1/4 inch (6 mm) Obscure glazing.
20) 1/2 inch (12.5 mm) Obscure Insulated glazing.
21) 1/4 inch (6 mm) Twin-Wall Polycarbonate (clear, bronze, white).
22) 3/8 inch (9.5 mm) Twin-Wall Polycarbonate (clear, bronze, white).
23) 5/8 inch (15.87 mm) Triple-Wall Polycarbonate (clear, bronze, white).

2. Finish and Color:
a. Two coat baked-on polyester:
1) Interior color, white.
2) Exterior color, white.
3) Exterior color, brown.
4) Exterior color, tan.
5) Exterior color, gray.

b. Baked-on Kynar polyvinylidene floruoride high performance coating:
1) Exterior color, white.
2) Exterior color, brown.
3) Exterior color, beige.

3. Windload Design: Provide to meet the Design/Performance requirements specified.
4. Hardware: Galvanized steel hinges and fixtures. Ball bearing rollers with hardened steel races.
5. Lock:
a. Interior mounted slide lock.
b. Interior mounted slide lock with interlock switch for automatic operator.
c. Keyed lock.
d. Keyed lock with interlock switch for automatic operator.
e. Locking mechanism designed to maintain security for exterior while permitting break out when impacted from the inside.

6. Weatherstripping:
a. EPDM bulb-type strip at bottom section.
b. Flexible Jamb seals.
c. Flexible Header seal.

7. Track: Provide track as recommended by manufacturer to suit loading required and clearances available.

a. Size:
   1) 2 inch (51 mm).
   2) 3 inch (76 mm).
b. Type:
   1) Standard lift.
   2) Vertical lift.
   3) High lift.
   4) Low headroom.
   5) Follow roof slope.

8. Manual Operation: Pull rope.
9. Manual Operation: Chain hoist.
10. Electric Motor Operation: Provide UL listed electric operator, size and type as recommended by manufacturer to move door in either direction at not less than 2/3 foot nor more than 1 foot per second. Operator shall meet UL325/2010 requirements for continuous monitoring of safety devices.
    a. Entrapment Protection: Required for momentary contact, includes radio control operation.
       1) Pneumatic sensing edge up to 18 feet (5.5 m) wide. Constant contact only complying with UL 325/2010.
       2) Electric sensing edge monitored to meet UL 325/2010.
       3) Photoelectric sensors monitored to meet UL 325/2010.
    b. Operator Controls:
       1) Push-button operated control stations with open, close, and stop buttons.
       2) Key operated control stations with open, close, and stop buttons.
       3) Push-button and key operated control stations with open, close, and stop buttons.
       4) Flush mounting.
       5) Surface mounting.
       6) Interior location.
       7) Exterior location.
       8) Both interior and exterior location.
    c. Special Operation:
       1) Pull switch.
       2) Vehicle detector operation.
       3) Radio control operation.
       4) Card reader control.
       5) Photocell operation.
       6) Door timer operation.
       7) Commercial light package.
          Explosion and dust ignition proof control wiring.

**PART 3 EXECUTION**

3.1 EXAMINATION

A. Do not begin installation until openings have been properly prepared.

B. Verify wall openings are ready to receive work and opening dimensions and tolerances are within specified limits.

C. Verify electric power is available and of correct characteristics.

D. If preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 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.

3.3 INSTALLATION

A. Install overhead doors and track in accordance with approved shop drawings and the manufacturer's printed instructions.

B. Coordinate installation with adjacent work to ensure proper clearances and allow for maintenance.

C. Anchor assembly to wall construction and building framing without distortion or stress.

D. Securely brace door tracks suspended from structure. Secure tracks to structural members only.

E. Fit and align door assembly including hardware.

F. Coordinate installation of electrical service. Complete power and control wiring from disconnect to unit components.

3.4 CLEANING AND ADJUSTING

A. Adjust door assembly to smooth operation and in full contact with weatherstripping.

B. Clean doors, frames and glass.

C. Remove temporary labels and visible markings.

3.5 PROTECTION

A. Do not permit construction traffic through overhead door openings after adjustment and cleaning.

B. Protect installed products until completion of project.

C. Touch-up, damaged coatings and finishes and repair minor damage before Substantial Completion.

**END OF SECTION**

## SECTION 08520 - ALUMINUM WINDOWS/STOREFRONT

### PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Fixed windows

B. Operational windows as indicated.

C. This Section includes Architectural Grade aluminum windows of the performance class indicated. Window types required include the following:

1.3 PERFORMANCE REQUIREMENTS

A. General: Provide aluminum windows engineered, fabricated, and installed to withstand normal thermal movement, wind loading, and impact loading without failure, as demonstrated by testing manufacturer's standard window assemblies representing types, grades, classes, and sizes required for Project according to test methods indicated.

B. Test Criteria: Testing shall be performed by a qualified independent testing agency based on the following criteria:

1. Design wind velocity at Project site is 120 mi/h.

2. Heights of window units above grade at window centerline are indicated on or can be determined from the Drawings. Consult with the Architect, if necessary, to confirm required l loading and test pressures.

3. Test Procedures: Test window units according to ASTM E 283 for air infiltration, both ASTM E 331 for water penetration, and ASTM E 330 for uniform load deflection and structural performance.

C. Performance Requirements: Testing shall demonstrate compliance with requirements indicated in AAMA 101 for air infiltration, water penetration, and structural performance for type, grade, and performance class of window units required. Where required design pressure exceeds the minimum for the specified window grade, comply with requirements of AAMA 101, Section 3, "Optional Performance Classes" , for higher than minimum performance class.

D. Air-Infiltration Rate : Not more than 0.15 cfm/ft. (1.67 cu. m/h per m) of area for an inward test pressure of 6.24 lbf/sq. ft. (299 Pa).

E. Water Penetration: No water penetration as defined in the test method at an inward test pressure of 20 percent of the design pressure.

F. Uniform Load Deflection: No deflection in excess of 1/175 of any member's span during the imposed load, for a positive (inward) and negative (outward) test pressure of 60 lbf/sq. ft. (2873 Pa).

G. Thermal Movements: Provide window units that allow thermal movement resulting from the following maximum change (range) in ambient temperature when engineering, fabricating, and installing aluminum windows to prevent buckling, opening of joints, and overstressing of

components, connections, and other detrimental effects. Base engineering calculation on actual surface temperatures of materials due to solar heat gain and nighttime sky heat loss.

H. Temperature Change (Range): 120 degrees F (67 degrees C), ambient; 180 degrees F (100 degrees C), material surfaces.

I. Design Criteria: The drawings indicate the size, profile, and dimensional requirements of aluminum window work required and are to be field verified and coordinated with metal building structure.

1. Aluminum window: Kawneer TriFab 451-T

1.5 SUBMITTALS

A. General: Submit each item in this Article according to the Conditions of the Contract and Division 1 Specification Sections.

B. Product Data for each type of window required, including the following:

1. Construction details and fabrication methods.
2. Profiles and dimensions of individual components.
3. Data on hardware, accessories, and finishes.
4. Recommendations for maintaining and cleaning exterior surfaces.

C. Shop Drawings showing fabrication and installation of each type of window required including information not fully detailed in manufacturer's standard Product Data and the following:

D. Samples for initial color selection on 12-inch (300-mm) long sections of window members. Where finishes involve normal color variations, include Sample sets showing the full range of variations expected.

1.6 QUALITY ASSURANCE

A. Installer Qualifications: Engage an experienced Installer has completed installation of aluminum windows similar in material, design, and extent to those required for this Project and with a record of successful in-service performance.

B. Single-Source Responsibility: Obtain aluminum windows from one source and by a single manufacturer.

1.7 PROJECT CONDITION

A. Field Measurements: Check window openings by field measurements before fabrication and show recorded measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

1.8 WARRANTY

A. General Warranty: The special warranty specified in this Article shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by the Contractor under requirements of the Contract Documents. For:

1. Structural failures including excessive deflection, water leakage, air infiltration, or condensation.

2. Faulty operation of sash and hardware.

3. Deterioration of metals, metal finishes, and other materials beyond normal weathering.

B. Warranty Period for Metal Finishes and Glass: Five (5) years after date of Substantial Completion.

**PART 2 - PRODUCTS**

2.1 MANUFACTURERS

A. Available manufacturer: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the Work include, but are not limited to, the following: (See also window schedule on drawings.)

B. Fixed Windows: Storefront.
1. Kawneer Company, Inc. (TRIFAB 451T or 1600)

2.2 MATERIALS

A. Aluminum Extrusions: Provide alloy and temper recommended by manufacturer for strength, corrosion resistance, and application of required finish, but not less than 22,000-psi (150-MPa) ultimate tensile strength and not less than 0.062 inch (1.6mm) thick at any location for main frame and sash members.

B. Fasteners: Provide aluminum, nonmagnetic stainless steel, epoxy adhesive, or other materials warranted by manufacturer to be non-corrosive and compatible with aluminum window members, trim, hardware, anchors, and other components of window units.

C. Reinforcement: Where fasteners screw anchor into aluminum less than 0.125 inch (3.2 mm) thick, reinforce interior with aluminum or nonmagnetic stainless steel to receive screw threads or provide standard, non-corrosive, pressed-in, splined grommet nuts.

D. Exposed Fasteners: Except where unavoidable for application of hardware, do not use exposed fasteners. For application of hardware, use fasteners that match finish of member or hardware being fastened, as appropriate.

E. Anchors, Clips, and Window Accessories: Fabricate anchors, clips, and window accessories of aluminum, non-magnetic stainless steel, or hot-dip zinc-coated steel or iron complying with requirements of ASTM B 633; provide sufficient strength to withstand design pressure indicated.

1. Provide stripping with integral centerline barrier fin of semi-rigid plastic sheet of polypropylene.

F. Sealant: For sealants required within fabricated window units, provide type recommended by manufacturer for joint size and movement. Sealant shall remain permanently elastic, non-shrinking, and non-migrating. Comply with Division 7 Section “Joint Sealants: of these Specifications for selection and installation of sealants.

G. Glass and Glazing Accessories: Use 1” insulated glass as specified in Section 08800 at all locations.

2.3 ACCESSORIES

A. Provide operators and locks.

2.4 FINISHES

A. Comply with NAAMM “Metal Finishes Manual” for recommendations relative to applying and designating finishes.

B. Finish designations prefixed by AA conform to the system established by the Aluminum Association for designating aluminum finishes.

C. Class I, Color Anodic Finish: AA-M12C22A42/42 (Mechanical Finish: non-specular as fabricated; Chemical Finish: etched, medium matte: Anodic Coating: Architectural Class I, integrally colored or electrolytically deposited color coating 0.018 mm or thicker) complying AAMA 606.1 or AAMA 608.1.

1. Color to be Clear Anodized Aluminum.

**PART 3 - EXECUTION**

3.1 INSPECTION

A. Inspect openings before installation. Verify that rough or masonry opening is correct and sill plate is level.

3.2 INSTALLATION

A. Comply with manufacturer’s specifications and recommendations for installing window units, hardware operators, and other components of the Work.

B. Set window units plumb, level, and true to line, without warp or rack of frames or sash. Provide proper support and anchor securely in place.

1. Separate aluminum and other corrodible surfaces from sources of corrosion or electrolytic action at points of contact with other materials by complying with requirements specified under “Dissimilar Materials” Paragraph in appendix to AAMA 101.

C. Sealants, joint fillers, and gaskets to be installed after installation of window units are specified in another Division 7 Section.

3.3 CLEANING

A. Cleaning aluminum surfaces promptly after installing windows. Exercise care to avoid damage to protective coatings and finishes. Remove excess glazing and sealant compounds, dirt, and other substances. Lubricate hardware and other moving parts.

B. Clean glass of pre-glazed units promptly after installing windows. Comply with requirements of Division 8 Section “Glazing” for cleaning and maintenance.

3.4 PROTECTION

A. Provide final protection and maintain conditions, in a manner acceptable to aluminum window manufacturer, that ensure window units are without damage or deterioration at the time of Substantial Completion.

END OF SECTION 08520

**SECTION 08710 - DOOR HARDWARE**

PART 1 - GENERAL

1.1 SUMMARY

A. Related Documents: Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

B. Definition
1. "Finish Hardware" includes items known commercially as finish hardware which are required for swing, sliding and folding doors, except special types of unique and non-matching hardware specified in the same section as the door and door hardware. For any door not shown to receive hardware, provide hardware as shown for a similar opening. If there is no similar opening, provide three (3) butt hinges, one (1) mortise lockset, one (1) door closer, one (1) kick plate, and one (1) doorstop per leaf.

C. Submittals: Submit through Contractor required product data, final hardware schedule, separate keying schedule, and samples as specified in this Section, unless otherwise indicated.

D. Construction Schedule: Inform Contractor promptly of estimated times and dates that will be required to process submittals, to furnish templates, to deliver hardware, and to perform other work associated with furnishing door hardware for purposes of including this data in construction schedule. Comply with this schedule.

E. Coordination and Templates: Assist Contractor as required to coordinate hardware with other work in respect to both fabrication and installation. Furnish Contractor with templates and deliver hardware to proper locations.

F. Product Handling: Package, identify, deliver, and inventory door hardware specified in this Section.

G. Discrepancies: Based on requirements indicated in Contract Documents in effect at time of door hardware selection, furnish types, finishes, and quantities of door hardware, including fasteners, and Owner's maintenance tools required to comply with specified requirements and as needed to install and maintain hardware. Furnish or replace any items of door hardware resulting from shortages and incorrect items at no cost to the Owner or Contractor. Obtain signed receipts from Contractor for all delivered materials.

H. Fire-Rated Openings: Provide hardware for fire-rated openings in compliance with NFPA Standard No. 80 and local building code requirements. Provide only hardware, which has been tested and listed by UL or FM types and sizes of doors, required and complies with requirements of door and doorframe labels.
1. Where emergency exit devices are required on fire-rated doors (with supplementary marking on doors UL or FM labels indicating "fire door to be equipped with fire exit hardware") provide UL or FM label on exit devices indicating "fire exit hardware."
2. Provide hardware as required to meet label requirements whether scheduled or not.

1.2 CONTRACTOR'S RESPONSIBILITIES SHALL BE AS FOLLOWS:

A. Submittals: Coordinate and process submittals for door hardware in same manner as submittals for other work.

B. Construction Schedule: Cooperate with door hardware supplier in establishing schedules dates for submittals and delivery of templates and door hardware. Incorporate in

construction schedule the times and dates related to furnishing hardware by door hardware supplier.

C. Coordination: Coordinate door hardware with other Work. Furnish Hardware supplier or manufacturer with shop drawings of other work where required or requested. Verify completeness and suitability of hardware with supplier.

D. Product Handling: Provide secure lock-up for hardware delivered to the site. Inventory hardware jointly with representative of hardware supplier and issue signed receipts for all delivered materials.

E. Installation Information: The general types and approximate quantities of hardware required for this Project are indicated at the end of this Section in order to establish Contractor's costs for installation and other work not included in allowance.

1.3 SUBMITTALS

A. General: Submit the following in accordance with Conditions of Contract and Division 1 Specification section.
1. Product data including manufacturer's technical product data for each item of door hardware, installation instructions, maintenance of operating parts and finish, and other information necessary to show compliance with requirements.
2. Final hardware schedule coordinated with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.
3. Final Hardware Schedule Content: Based on hardware indicated, organize schedule into "hardware sets" indicating complete designations of every item required for each door or opening. Include the following information:
4. Type, style, function, size, and finish of each hardware item.
5. Name and manufacturer of each item.
6. Fastenings and other pertinent information.
7. Location of each hardware set cross-referenced to indications on Drawings both on floor plans and in door and frame schedule.
8. Explanation of all abbreviations, symbols, and codes contained in schedule.
9. Mounting locations for hardware.
10. Door and frame sizes and materials.
11. Keying information.

B. Submittal Sequence: Submit final schedule at earliest possible date particularly where acceptance of hardware schedule must precede fabrication of other work that is critical in the Project construction schedule. Include with schedule the product data, samples, shop drawings of other work affected by door hardware, and other information essential to the coordinated review of schedule.

C. Keying Schedule: Submit separate detailed schedule indicating clearly how the Owner's final instructions on keying of locks has been fulfilled.

D. Templates for doors, frames, and other work specified to be factory prepared for the installation of door hardware. Check shop drawing of other work to confirm that adequate provisions are made for locating and installing door hardware to comply with indicated requirements.

1.4 QUALITY ASSURANCE

A. Single Source Responsibility: Obtain each type of hardware (latch and lock sets, hinges, closers, etc.) from a single manufacturer.

B. Fire-Rated Openings: Provide door hardware for fire-rated openings that complies with NFPA Standard No. 80 and requirements of authorities having jurisdiction. Provide only items of door hardware that are listed and are identical to products tested by UL,

Warnock Hersey, FM, or other testing and inspecting organization acceptable to authorities having jurisdiction for use on types and sizes of doors indicated in compliance with requirements of fire-rated door and door frame labels.

1.5 PRODUCT HANDLING

A. Tag each item or package separately with identification related to final hardware schedule, and include basic installation instructions with each item or package.

B. Packaging of door hardware is responsibility of supplier. As material is received by hardware supplier from various manufacturers, sort and repackage in containers clearly marked with appropriate hardware set number to match set numbers of approved hardware schedule. Two more identical sets may be packed in same container.

C. Inventory door hardware jointly with representative of hardware supplier and hardware installer until each is satisfied that count is correct.

D. Deliver individually packaged door hardware items promptly to place of installation (shop or Project site).

E. Provide secure lock-up for door hardware delivered to the Project, but not yet installed. Control handling and installation of hardware items that are not immediately replaceable so that completion of the Work will not be delayed by hardware losses both before and after installation.

1.6 MAINTENANCE

A. Maintenance Tools and Instructions: Furnish a complete set of specialized tools and maintenance instructions as needed for Owner's continued adjustment, maintenance, and removal and replacement of door hardware.

PART 2 - PRODUCTS

2.1 The following types of hardware will be used generally, but are not restricted to same: All hardware to be approved by Architect and Owner.

A. Hardware Schedule:
AB ABH
GL Glynn Johnson
HA Hager Hinge
MA Markar
MC McKinney
NA National Guard
RO Rockwood
SA Sargent
YA Yale
SC Schlage

B. All interior doors are to be ADA lever type.

C. All exterior hardware used to be of appropriate material to resist rust.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Mount hardware units at heights indicated in following applicable publications, except as specifically indicated or required to comply with governing regulations and except as otherwise directed by Architect.

B. "Recommended Locations for Builders Hardware for Standard Steel doors and Frames" by the Door and Hardware Institute.

C. "Recommended Locations for Builders Hardware for Custom Steel Doors and Frames" by the Door and Hardware Institute. NWWDA Industry Standard I.S.1.7, "Hardware Locations for Wood Flush Doors".

D. Install each hardware item in compliance with the manufacturer's instructions and recommendations. Where cutting and fitting is required to install hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation or application of surface protection with finishing work specified in the Division 9 Sections. Do not install surface-mounted items until finishes have been completed on the substrates involved.

E. Set units level, plumb, and true to line and location. Adjust and reinforce the attachment substrate as necessary for proper installation and operation.

F. Drill and countersink units that are not factory prepared for anchorage fasteners. Space fasteners and anchors in accordance with industry standards.

G. Set thresholds for exterior doors in full bed of butyl-rubber or polyisobutylene mastic sealant complying with requirements specified in Division 7 Section "Joint Sealers".

H. Weather-stripping and Seals: Comply with manufacturer's instructions and recommendations to the extent installation requirements are not otherwise indicated.

3.2 ADJUSTING, CLEANING, AND DEMONSTRATING

A. Adjust and check each operating item of hardware and each door to ensure proper operation or function of every unit Replace units that cannot be adjusted to operate freely and smoothly or as intended for the application made. Where door hardware is installed more than one month prior to acceptance or occupancy of a space or area, return to the installation during the week prior to acceptance or occupancy and make final check and adjustment of all hardware items in such space or area. Clean operating items as necessary to restore proper function and finish of hardware and doors. Adjust door control devices to compensate for final operation of heating and ventilating equipment.

B. Clean adjacent surfaces soiled by hardware installation.

C. Instruct Owner's personnel in the proper adjustment and maintenance of door hardware and hardware finishes.

D. Six-Month Adjustment: Approximately six month after the date of Substantial Completion, the Installer, accompanied by representatives of the manufacturers of latch sets and locksets and of door control devices, and of other major hardware suppliers, shall return to the Project to perform the following work:

1. Examine and re-adjust each item of door hardware as necessary to restore function of doors and hardware to comply with specified requirements.

2. Consult with and instruct Owners personnel in recommended additions to the maintenance procedures.

3. Replace hardware items that have deteriorated or failed due to faulty design, materials, or installation of hardware units.

4. Prepare a written report of current and predictable problems (of substantial nature) in the performance of the hardware.

D. Hardware Schedule:
1. Submit for approval.

3.3 KEYING

A. Provide master keying system. Provide 4 keys to each door and 4 master keys.

3. 4 HARDWARE ALLOWANCE

A. See 01020 Allowances.

END OF SECTION 08710

**SECTION 08800 - GLAZING**

PART 1 -GENERAL

1.1 SUMMARY:

A. Work included in this section includes:
1. All glass as shown on drawings

B. Work related includes
1. Aluminum doors and frames (Section 08120)
2. Steel door frames (Section 08111)

1.2 STANDARDS:

A. Install glazing with dry glazing system.

B. Glazing Standard: Comply with FGMA "Glazing Manual" and "Sealant Manual".

C. Safety Glazing Standard: Comply with ANSI Z97.1 and testing requirements of 16 CFR Part 1201 for category II materials.

D. Fire Resistance Rated Wire Glass: Provide UL-labeled and listed products, identical with those tested per ASTM E 163 (UL 9).

E. Insulating Glass Certification Program: Provide insulating glass units complying with requirements indicated which are permanently marked with certification label of the following inspecting and testing agency:
1. Insulating Glass Certification Council.

F. Preconstruction Sealant-Substrate Tests: Submit glass and glazing substrate materials to manufacturer of glazing sealants for testing to determine if primers are required and for sealant compatibility.

1.3 SUBMITTALS: Submit shop drawings on dry glazing systems with physical sample 6" long.

A. Comply with requirements of section 01340

B. See below for 2.1 manufacturers

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS:

A. LOF, Libby-Ownes-Ford Co.

B. PPG Industries, Inc.

C. CE, Combustion Engineering, Inc.

D. Guardian Industries

2.2 GLAZING SCHEDULE:

A. Insulated Glass: Low E glass
1. 1" insulated glass shall be 2 pieces of clear 1/4" glass separated by air space. 5/8" insulated glass shall be two pieces of clear 3/6" thick glass separated by a desiccant and hermetically sealed with a structural sealant.
2. Insulating glass shall be assembled by the glass manufacturer.

3. Insulated glass shall meet the requirements of Federal Specification DD-G-451D.
4. Glass to be tempered where noted on drawings

B. Tempered Glass
1. Provide tempered glass where required by code.

C. Fire Rated Glass
1. Provide fire rated glass in rated walls as shown in plans.

D. Interior Glazing.
1. Clear Glass.

2.3 GLAZING SYSTEM:

A. Windows - glazing system shall be dry glazing as recommended by window manufacturer. Submit shop drawings and sample of proposed system per section 01340.

B. Fixed glass in Hollow Metal Frames and Doors shall be wet glazed with silicone sealant, color to match finish. Submit shop drawings and sample of proposed system per section 01340.

2.4 SETTING BLOCKS:

A. Neoprene or EPDM with a Shore A durometer hardness of 85, 0.1" per sq. ft. of glass supported, or min. of 4" in length. Lead blocks may only be used for single float glass.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Meter frame shall not be in contact with installed glass.

B. Setting blocks: Lites larger than 6 sq. ft., and all glass thicker than 1/8", shall be installed on 2 setting blocks at the bottom quarter points.

C. Edge Blocks: In dry glazing systems, one 3" neoprene edge block shall be installed in each jamb, allowing 1/8" space between edge block and glass edge.

D. Watershed: Glass shall be installed in frames with sealant forming a 1/16" watershed, both sides.

E. Glass shall be installed clean, free of chips, cracks, scratches, blemishes, oil, dirt, stains or visible waves or distortions.

F. All glass shall be cleaned immediately prior to final inspection.

3.2 PERFORMANCE:

A. System to provide for expansion and contraction within system components caused by a cycling temperature range of 170 F degrees without causing detrimental effects to system or components.

B. Design and size members to withstand dead loads and live loads caused by pressure and suction of wind acting normal to plane of wall as calculated in accordance with the requirements of the N. C. Building Code, and as measured in accordance with ANSI/ASTM E330.

C. Limit air infiltration through assembly of 0.06 cu. ft./min./sq. ft. of assembly surface area, measured at a reference differential pressure across assembly of 0.3 inches water gage, measured in accordance with ANSI/ASTM E283.

D. System to accommodate, without damage to system or components, or deterioration of perimeter seal: Movement within system; movement between system and perimeter framing components; dynamic loading and release of loads; and deflection of structural support framing.

E. Maintain continuous air and vapor barrier throughout assembly primarily in line with inside pane of glass.

F. Maintain: Vapor seal with Interior Atmospheric Pressure of One Inch (25 mm) sp, 72 degrees F (22 degrees C), 40 percent RH: no failure.

END OF SECTION 08800

**SECTION 09110 – METAL STUD SYSTEM (INTERIOR)**

PART 1 – GENERAL

1.1 DESCRIPTION

A. Work included: Provide metal studs and accessories as indicated on the Drawings, as specified herein, and as needed for a complete and proper installation.

B. Related work:
1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
2. See 09260 Gypsum Wallboard System.
3. See 0540 Cold Formed Steel Framing.
4. See Structural Drawings for exterior STUDS.

1.2 QUALITY ASSURANCE

A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.

B. In addition to complying the pertinent codes and regulations of governmental agencies having jurisdiction, comply with pertinent recommendations contained in “Specification for Metal Lathing and Furring” published by the Metal Lath/Steel Framing Association.

1.3 SUBMITTALS

A. Comply with pertinent provisions of Section 01340

B. Product data: Within 45 calendar days after the Contractor has received the Owner’s Notice to Proceed, submit:
1. Materials list of items proposed to be provided under this Section.
2. Manufacturer’s specifications and other data needed to prove compliance with the specified requirements.
3. Manufacturer’s recommended installation procedures which, when approved by the Architect, will become the basis for accepting or rejecting actual installation procedures used on the Work.

1.4 PRODUCT HANDLING

A. Comply with pertinent provisions of Section 01620.

PART 2 – PRODUCTS

2.1 METAL STUDS AND ACCESSORIES

A. Meet or exceed minimum requirements of Fed Spec QQ-S-698 and Fed Spec QQ-S-775d, class d, for the item and use intended.

B. Metal studs
1. At interior metal stud partitions, unless otherwise shown on the Drawings, provide standard punched steel studs 22 gauge or as otherwise shown on the Drawings, hot-dip galvanized.

C. Accessories: Provide all accessories including, but not necessarily limited to, tracks, clips, anchors, fastening devices, sound attenuation pencil rods and resilient clips,

and other accessories required for a complete and proper installation, and as recommended by the manufacturer of the steel studs used.

D. Stud Galvanized Finish
   1. 60 for interior studs

2.2 GROUT

A. Provide a good grade of commercial grout for leveling the floor runner member of steel stud partitions as required.

PART 3 – EXECUTION

3.1 SURFACE CONDITIONS

A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.

3.2 INSTALLATION

A. Accurately layout partition and wall lines from the dimensions shown on the Drawings. Contractor to inspect all partitions before drywall is applied.

B. Install metal studs and accessories in strict accordance with the manufacturer's recommendations as approved by the Architect, anchoring all components firmly into position.

C. Align partition and wall assemblies to a tolerance of one in 200 horizontally and one in 500 vertically.

D. Coordination:
   1. Space the studs as required for compliance with pertinent regulations, to give proper support for the covering material, and as indicated on the Drawings.
   2. Coordinate and provide required backing and other support for items to be mounted on the finished covering.
   3. Coordinate requirements for pipes and other items designed to be housed within the partition and wall systems.

3.3 LEVELING

A. By use of the specified grout, or by other means approved by the Architect, provide continuous solid bearing under floor runner members of steel stud partitions and walls.

B. Level in a manner to provide uniform interface with ceilings and other overhead construction.

3.4 SOUND ATTENUATING PARTITIONS

A. At sound attenuating partitions (at guest room separation walls), set floor runners in two ¼" diameter continuous beads of sealant complying with provisions of Section 07900 of these Specifications.

3.5 U.L.

A. Conform to all required U.L. requirements.

END OF SECTION 09110

**SECTION 09260 - GYPSUM WALLBOARD SYSTEMS**

PART 1- GENERAL:

1.1 SUMMARY

A. Work included in this section: Provide gypsum drywall and accessories where shown on the drawings, as specified herein, and as needed for a complete and proper installation.

B. Related work includes
1. Painting (section 09900)
2. Building insulation (section 07200)
3. Metal Studs (section 09110)
4. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.

1.2 QUALITY ASSURANCE

A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.

1.3 SUBMITTALS

A. Comply with pertinent provisions of Section 01340.

B. Product data: Within 45 calendar days after the Contractor has received the Owner's Notice to Proceed, submit:
1. Materials list of items proposed to be provided under this Section.
2. Manufacturer's specifications and other data needed to prove compliance with the specified requirements.
3. Manufacturer's recommended installation procedures which, when approved by the Architect, will become the basis for accepting or rejecting actual installation procedures used on the work.

C. Mock-ups
1. At an area on the site where approved by the Architect, provide a mock-up gypsum wallboard panel.
   a. Make the panel approximately 8'-0" x 8' - 0".
   b. Provide one mock-up panel for each gypsum wallboard finish used on the work.
   c. The mock-ups may be used as part of the work, and may be included in the finished work, when so approved by the Architect.
   d. Revise as necessary to secure the Architect's approval.
2. The mock-up panels, when approved by the Architect, will be used as datum points for comparison with the remainder of the work of this Section for the purpose of acceptance or rejection.
3. If the mock-up panels are not permitted to be part of the finished work, completely demolish and remove them from the job site upon completion and acceptance of the work of this Section.
4. The mock panel shall be completely finished including painting.

1.4 PRODUCT HANDLING

A. Comply with pertinent provisions of Section 01620.

PART 2 -PRODUCTS:

2.1 MANUFACTURERS: Subject to compliance with requirements, provide gypsum board and related products by one of the following, or pre-approved equal:

A. Domtar Gypsum Co.

B. Georgia-Pacific Corp.

C. Gold Bond Building Products Div., National Gypsum Co.

D. United States Gypsum Co.

E. Louisiana-Pacific

2.2 COMPONENTS FOR SUSPENDED CEILING:

A. Concrete Inserts: ASTM E 488
   1. Embedded type capable of sustaining a load equal to 3 times that imposed by ceiling construction.

B. Steel Rigid Furring Channels: ASTM C 645
   1. Where shown as “Furring” provide manufacturer’s 7/8” furring channels or as otherwise noted.

C. Steel Studs for Furring Channels: ASTM C 645.

2.3 GYPSUM BOARD: Provide gypsum board of types indicated in maximum lengths available to minimize end joints:

A. General
   1. Provide mildew resistant/water resistant gypsum wallboard complying with ASTM D3273, in 48” widths and in such lengths as will result in a minimum of joints.
   2. Regular wallboard: Provide mildew resistant/water resistant, 5/8” thick except as may be shown otherwise on the drawings.
   3. Fire-retardant wallboard: Provide grade XD, 5/8” thick.
   4. Ceilings/Interior Soffits: 5/8” mildew / water resistant or as shown on the drawings.

2.4 TRIM ACCESSORIES: ASTM C 840: Mfr's standard trim accessories, including cornerbead and edge trim of beaded type with face flanges for concealment in joint compound except where semi-finishing or exposed type is indicated.

A. Provide corner bead formed from zinc alloy, Series 800.

B. Provide one-piece control joints with 1/4 inch wide by 7/16 inch deep vee-shaped slot, covered with removable tape, of roll- formed zinc or extruded vinyl as recommended by gypsum board Mfr. space not more than 20 feet on centers.

C. Edge beads for use at perimeter of ceilings:
   1. Provide angle shapes with wings not less than ¾” wide.

2. Provide concealed wing perforated for nailing, and exposed wing edge folded flat.
3. Exposed wing may be factory finished in white color.

2.5 GYPSUM BOARD JOINT TREATMENT MATERIALS: ASTM C 475 and ASTM C 840, and as allows:

A. Joint Tape: Paper reinforcing tape, unless otherwise indicated.
   1. Use open-weave glass fiber tape where recommended by gypsum board Mfr. with use of setting-type joint compound.
   2. Provide a jointing system, including reinforcing tape and compound, designed as a system to be used together and as recommended for this use by the manufacturer of the gypsum wallboard approved for use on this work.

B. Drying-Type Joint Compounds: Factory-prepackaged vinyl-based products complying with the following requirements:
   1. Ready-Mix Formulation: Factory-premixed.
   2. All-purpose compound formulated for use as both taping and topping compound.
   3. Jointing compound may be used for finishing if so recommended by its manufacturer.

C. Miscellaneous Materials: As follows, recommended by gypsum board Mfr.
   1. Gypsum Board Screws: ASTM C 1002.
   2. Sound Attenuation Blankets: ASTM C 665, Type I, unfaced mineral fiber blanket insulation.

D. Expansion Joints: As recommended by manufacturer, Architect or Owner's representative to approve all recommended locations.

2.6 FASTENING DEVICES

A. For fastening gypsum wallboard in place on metal studs and metal channels, use flat-head screws, shouldered, specially designed for use with power-driven tools, not less than 1" long, with self-tapping threads and self-drilling points.

2.7 ACCESS DOORS

A. In partitions and ceilings installed under this Section, provide doors where required for access to mechanical installations and electrical installations. (Architect or Owner's representative to approve locations prior to installation.)

B. Types
   1. Unless otherwise required, provide 24" x 24" (or as required by code) metal access doors with concealed hinges to metal frame, and with Allen key lock.
   2. For piercing fire-rated surfaces, provide access doors having the same fire rating as the surface being pierced.
   3. For tile surfaces and toilet rooms, provide stainless steel access doors and frames, with satin finish.
   4. For other installations, provide prime-coated steel access doors and frames for finish painting to be performed at the job site under Section 09900 of these Specifications.

2.8 OTHER MATERIALS

A. Provide other materials, not specifically described but required for a complete and proper installation, as selected by the Contractor subject to the approval of the Architect.

PART 3 - EXECUTION:

3.1 SURFACE CONDITIONS

A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the work. Do not proceed until unsatisfactory conditions are corrected.

3.2 INSTALLATION

A. General
1. Install the gypsum wallboard to ceilings with the long dimension of the wallboard at right angles to the supporting members.
2. Wallboard may be installed with the long dimensions parallel to supporting members that are spaced 16” on centers when attachment members are provided at end joints.
3. Do not bridge building expansion joints. Leave space of the width indicated between boards, and trim both edges for installation of sealant or gasket.

B. Install and finish gypsum board to a level 5 finish and to comply with ASTM C 840 and as follows:
1. Form "Floating" construction for gypsum boards at internal corners, except where special isolation or edge trim is indicated.
2. Isolate drywall construction from abutting structural and masonry work; provide edge trim and acoustical sealant as recommended by Mfr.
3. Install sound attenuation blankets where indicated, without gaps; and support where necessary to prevent movement or dislocation.

C. Ceilings
1. Install the gypsum wallboard to ceilings with the long dimension of the wallboard at right angles to the supporting members. (Suspension System)
2. Wallboard may be installed with the long dimension parallel to supporting members that are spaced 16” on centers when attachment members are provided at end joints.

D. Walls
1. Install the gypsum wallboard to studs at right angles to the furring or framing members.
2. Make end joints, where required, over framing or furring members.

E. Attaching
1. Drive the specified screws with clutch-controlled power screwdrivers, spacing the screws 12” on centers at ceilings and 16” on centers at walls.
2. Where framing members are spaced 24” apart on walls, space screws 12” on centers.
3. Attach double layers in accordance with the pertinent codes and the manufacturer’s recommendations as approved by the Architect.
4. Screw gypsum board to metal supports.

F. Access doors
1. By careful coordination (All locations to be approved by Architect) with trades involved, install the required access doors where required.
2. Submit a location drawing for approval.
3. Anchor firmly into position, and align properly to achieve an installation flush with the finished surface.

3.3 JOINT TREATMENT

A. General

1. Inspect areas to be joint treated, verifying that the gypsum wallboard fits snugly against supporting framework.
2. In areas where joint treatment and compound finishing will be performed, maintain a temperature of not less than 55 degrees for 24 hours prior to commencing the treatment, and until joint and finishing compounds have dried.
3. Apply the joint treatment and finishing compound by machine or hand tool.
4. Provide a minimum drying time of 24 hours between coats, with additional drying time in poorly ventilated areas.

B. Embedding compounds
1. Apply to gypsum wallboard joints and fastener heads a thin uniform layer.
2. Spread the compound not less than 3" wide at joints, center the reinforcing tape in the joint, and embed the tape in the compound. Then spread a thin layer of compound over the tape.
3. After this treatment has dried, apply a second coat of embedding compound to joints and fastener heads, spreading in a thin uniform coat to not less than 6" wide at joints, and feather edged.
4. Sandpaper between coats as required.
5. When thoroughly dry, sandpaper to eliminate ridges and high points.

C. Finishing compounds
1. After embedding compound is thoroughly dry and has been completely sanded, apply a coat of finishing compound to joints and fastener beads.
2. Feather the finishing compound to not less than 12" wide.
3. When thoroughly dry, sandpaper to obtain a uniformly smooth surface, taking care to not scuff the paper surface of the wallboard.
4. Drywall Finishing: Apply joint tape and joint compound at joints between gypsum boards. Apply compounds indicated below at accessory flanges, penetrations, fastener heads and surface defects. All drywall to be a level 5 finish.

3.4 CORNER TREATMENT

A. Internal corners: Treat as specified for joints, except fold the reinforcing tape lengthwise through the middle and fit neatly into the corner.
B. External corers
1. Install the specified corner bead, fitting neatly over the corner and securing with the same type fasteners used for installing the wallboard.
2. Space the fasteners approximately 6" on centers, and drive through the wallboard into the framing or furring member.
3. After the corner bead has been secured into position, treat the corner with joint compound and reinforcing tape as specified for joints, feathering the joint compound out from 8" to 10" on each side of the corner.

3.5 OTHER METAL TRIM
A. General
1. The drawings do not purport to show all locations and requirements for metal trim.
2. Carefully study the drawings and the installation, and provide all metal trim normally recommended by the manufacturer of the gypsum wallboard approved for use in this work.

3.6 CLEANING UP
A. In addition to other requirements for cleaning, use necessary care to prevent scattering gypsum wallboard scraps and dust, and to prevent tracking gypsum and joint finishing compound onto floor surfaces.
B. At completion of each segment of installation in a room or space, promptly pick up and remove from the working area all scrap, debris, and surplus material of this Section.

END OF SECTION 09260

**SECTION 09310 - PORCELAIN TILE**

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:
   1. Ceramic mosaic tile.
   2. Stone thresholds installed as part of tile installations.

B. Related sections include the following:

C. Division 3 Section “Cast-in-Place Concrete” for monolithic slab finishes specified for tile substrates.

D. Division 7 Section “Joint Sealants” for sealing of expansion, contraction, control and isolation joints in tile surfaces.

1.3 DEFINITIONS

A. Module Size: Actual tile size (minor facial dimension as measured per ASTM C 499) plus joint width indicated.

B. Facial Dimension: Actual tile size (minor dimension as measured per ASTM C499).

1.4 PERFORMANCE REQUIREMENTS

A. Static Coefficient of Friction: For tile installed on walkway surfaces, provide products with the following values as determined by testing identical products per ASTM C1028:
   1. Level Surfaces: Minimum 0.6.

1.5 SUBMITTALS

A. Product Data: For each type of tile, mortar, grout, and other products specified.

B. Tile Samples for Initial Selection: Manufacturer’s color charts consisting of actual tiles or sections of tiles showing the selected colors, textures, and patterns for each type of tile indicated.
   1. Full-size units of each type of trim for each color required

C. Grout Samples for Initial Selection: Manufacturer’s color charts consisting of actual sections of grout showing the colors selected for each type of grout indicated..

1.6 QUALITY ASSURANCE

A. Installer Limitations for Tile: Engage an experienced installer who has completed tile installations similar in material, design, and extent to that indicated for this Project and with a record of successful in-service performance.

B. Source Limitations for Tile: Obtain each color, grade, finish, type, composition, and variety of tile from one source with resources to provide products from the same production run for each contiguous area of consistent quality in appearance and physical properties without delaying the Work.

C. Source Limitations for Settings and Grouting Materials: Obtain ingredients of a uniform quality for each mortar, adhesive, and grout component from a single manufacturer and each aggregate from one source or producer.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Deliver and store packaged materials in original containers with seals unbroken and labels intact until time of use. Comply with requirement of ANSI A137.1 for labeling sealed tile packages.

B. Prevent damage or contamination to materials by water, freezing, foreign matter, and other causes.

C. Handle tile with temporary protective coating on exposed surfaces to prevent coated surfaces from contacting backs or edges of other units. If coating does contact bonding surfaces of tile, remove coating from bonding surfaces before setting tile.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
   1. Tile Products:
      a. As selected – See Finish Schedule and Selections.
   2. Tile-Setting and -Grouting Materials:
      a. As selected.

2.2 PRODUCTS, GENERAL

A. ANSI Ceramic Tile Standard: Provide tile that complies with ANSI A137.1, “Specifications for Ceramic Tile,” for types, compositions, and other characteristics indicated.

B. ANSI Standards for Tile Installation Materials: Provide materials complying with ANSI standards referenced in “Setting Materials” and “Grouting Materials” articles.

2.3 TILE PRODUCTS

A. Tile: As selected (See Finish Schedules)

2.4 MISCELLANEOUS MATERIALS

A. Trowelable Underlayments and Patching Compounds: Latex-modified, portland-cement-based formulation provided or approved by manufacturer of tile-setting materials for installations indicated.

B. Tile Cleaner: A neutral cleaner capable of removing soil and residue without harming tile and grout surfaces, specifically approved for materials and installations indicated by tile and grout manufacturers.

PART 3- EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions where tile will be installed, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of installed tile.
   1. Verify that substrates for setting tile are firm; dry; clean; free from oil, waxy films, and curing compounds; and within flatness tolerances required by referenced ANSI A108 series of tile installation standards for installations indicated.
   2. Verify that installation of anchors, and mechanical units of work, and similar items located in or behind tile have been completed before installing tile.
   3. Verify that joints and cracks in tile substrates are coordinated with tile joint locations; if not coordinated, adjust latter in consultation with Architect.

B. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Remove coatings, including curing compound, and other substances that contain soap, wax, oil, or silicone and are incompatible with tile-setting materials by using a terrazzo or concrete grinder, a drum sander, or a polishing machine equipped with a heavy-duty wire brush.

B. Provide concrete substrates for tile floors installed with dry-set or latex-Portland cement mortars that comply with flatness tolerances specified in referenced ANSI A108 series of tile installation standards for installations indicated.
   1. Use trowelable leveling and patching compounds per tile-setting material manufacturers written instructions to fill cracks, holes, and depressions.
   2. Remove protrusions, bumps, and ridges by sanding or grinding.

C. Blending: For tile exhibiting color variations within the ranges selected during Sample submittals, verify that tile has been blended in the factory and packaged so tile units taken from one package show the same range in colors as those taken from other packages and match approved Samples. If not factory blended, either return to manufacturer or blend tiles at Project site before installing.

3.3 INSTALLATION, GENERAL

A. ANSI Tile Installation Standards: Comply with parts of ANSI A108 series of tile installation standards in “Specifications for Installation of Ceramic Tile” that apply to types of setting and grouting materials and to methods indicated in ceramic tile installation schedules.

B. TCA Installation Guidelines: TCA’S “Handbook for Ceramic Tile Installation.” Comply with TCA installation methods indicated in ceramic tile installation schedules.

C. Extend tile work into recesses and under or behind equipment and fixtures to form a complete covering without interruptions, unless otherwise indicated. Terminate work neatly at obstructions, edges, and corners without disrupting pattern or joint alignments.

D. Accurately form intersections and returns. Perform cutting and drilling of tile without marring visible surfaces. Carefully grind cut edges of tile abutting trim, finish, or built-in items for straight aligned joints. Fit tile closely to piping, fixtures, and other penetrations so plates, collars, or covers overlap tile.

E. Jointing Pattern: Lay tile in grid pattern, unless otherwise indicated. Align joints when adjoining tiles on floor and base are the same size. Lay out tile work and center tile fields in both directions in each space. Adjust to minimize tile cutting. Provide uniform joint widths, unless otherwise indicated.
   1. For tile mounted in sheets, make joints between tile sheets the same width as joints within tile sheets so joints between sheets are not apparent in finished work.

F. Expansion Joints: Locate expansion joints and other sealant-filled joints, including control, contraction, and isolation joints, where indicated during installation of setting materials, mortar beds, and tile. Do not saw-cut joints after installing tiles.
   1. Locate joints in tile surfaces directly above joints in concrete substrates.
   2. Prepare joints and apply sealants to comply with requirements of Division 7 Section “Joint Sealants.

## 3.4 FLOOR TILE INSTALLATION

A. General: Install tile on floors with the joint widths indicated:

B. All tiles to be aligned straight and even.

## 3.5 CLEANING AND PROTECTING

A. Cleaning: On completion of placement and grouting, clean all ceramic tile surfaces and grout so they are free of foreign matter and clean. Grout to be sealed with mildew resistant sealer.

B. Remove latex-portland cement grout residue from tile as soon as possible.

C. Unglazed tile may be cleaned with acid solutions only when permitted by tile and grout manufacturer’s written instructions, but no sooner than 10 days after installation. Protect metal surfaces, cast iron, and vitreous plumbing fixtures from effects of acid cleaning. Flush surface with clean water before and after cleaning.

D. Finished Tile Work: Leave finished installation clean and free of cracked, chipped, broken, unbonded, and otherwise defective tile work. ( No sharp edges to remain.)
   1. When recommended by tile manufacturer, apply a protective coat of neutral protective cleaner to completed tile walls and floors. Protect installed tile work with kraft paper or other heavy covering during construction period to prevent staining, damage, and wear.
   2. Prohibit foot and wheel traffic from tiled floors for at least 7 days after grouting is completed.

END OF SECTION 09310

## SECTION 09511 - ACOUSTICAL PANEL CEILINGS

### PART 1 - GENERAL

1.1 Summary

A. Work included in this section:

1. Suspended acoustical tile and grid

1.2 Standards

A. Acoustical Ceiling Unit Standard: ASTM E 1264

B. Acoustical Suspension System Standard: ASTM C 635 for materials

C. Surface Burning Characteristics:

1. 25 or less for flame spread, 50 or less for smoke developed, per ASTM E 84.

D. Fire-Resistance-Ratings:

1. As determined per ASTM E 119 and as indicated by reference to design designations in UL "Fire Resistance Directory".

1.3 Submittals:

A. In addition to submission of product data for each type of acoustical ceiling unit and suspension system required, submit the following:

1. 6-inch square samples of each type of acoustical unit required.

2. Set of 12-inch long samples of exposed runners and moldings.

1.4 Extra Material: Provide the Owner with 2 unopened cartons of extra acoustical units of each type.

1.5 Warranty: Acoustical units displaying warping, shrinking, sagging, or discoloration shall be corrected during one year guarantee period.

### PART 2 - PRODUCTS

2.1 Armstrong Ceiling Tile, Style Dune #1775, size 2’ x 2’, Edge Beveled Tegular, color White.
Grid: interlude XL (9/16”) Dimensional Tee Grid, color: White

2.2 Non-Fire-Resistance-Rated Suspension Systems: As recommended by Tile Manufacturer, with hangers, attachment devices, and edge moldings and trim as required. (Color – White)

2.3 MANUFACTURER

A. Subject to compliance with requirements, provide products of one of the following:

1. Armstrong World Industries, Inc.

### PART 3 - EXECUTION

3.1 General

A. Install acoustical ceiling systems to comply with below per manufacturer's instructions and CISCA "Ceiling Systems Handbook".

1. ASTM C 636

3.2 Layout

A. Balance ceiling borders on opposite sides, using more-than-half-width acoustical units.

3.3 Suspension System

A. Secure to building structure, with hangers spaced 4'-0" along supported members.

3.4 Edge Moldings

A. Secure to substrate with screw anchors spaced 16 inches o.c. Miter corner joints.

B. Cope exposed edges of intersecting exposed suspension members to produce flush intersections.

END OF SECTION 09511

**SECTION 09660 - VINYL TILE FLOORING**

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
1. Vinyl Tile

1.2 SUBMITTALS

A. Comply with the requirements of section 01340.

B. Product Data: Submit technical data from each manufacturer of resilient products required.

C. Initial Samples: Submit manufacturer's standard color selection samples for resilient products required, including all available colors and patterns.

1.3 PROJECT CONDITIONS

A. Environmental Requirements: At least 48 hours prior to beginning work, move resilient flooring materials to areas of installation and maintain at minimum 70 degrees F until 48 hours after completing installation and at minimum 55 degrees F thereafter.

B. Sequencing: Do not begin installation of resilient flooring products until painting has been completed for each area.

C. Existing Conditions: Do not install resilient flooring on concrete substrates until testing has been conducted to assure that moisture levels are acceptable.

1.4 MAINTENANCE

A. Extra Materials: At time of completing installation, deliver stock of maintenance materials to the owner. Furnish products matching those actually installed, packaged for storage and clearly labeled.

B. Resilient tile: 1 carton of each variety installed.

PART 2 - PRODUCTS

2.1 VINYL TILE

A. Tile to be as per Finish Schedule.

2.2 COLORS AND PATTERNS

A. Provide colors and patterns of resilient flooring materials per the Finish Schedule.

PART 3 - EXECUTION

3.1 GENERAL INSTALLATION REQUIREMENTS

A. Comply with manufacturer's published recommendations for installation in each area, extending resilient flooring into spaces which are partially concealed. Cut and fit tightly to fixtures, pipes, and other obstructions, as well as to walls and partitions.

B. Tightly adhere flooring to substrate with no open joints or cracks, and without raised or blistered areas. Spread adhesive evenly, so that final installation will be without telegraphed markings from adhesive or substrate.

C. Verify conditions ready to receive all work of this section. Do not proceed until unsatisfactory conditions are corrected.

3.2 TILE INSTALLATION

A. Layout: Establish center of each space and lay tile from center point, so tiles at each edge will be not less than 1/2 tile and equal in width.

B. Matching: In each space, use tiles from same production run, and lay tiles in same sequence as removed from cartons. Discard broken, chipped, or otherwise damaged tiles.

C. Lay tile square to room axis.

D. Lay tile to achieve monolithic appearance, with pattern in all tiles oriented in same direction.

3.3 CLEANING

A. Initial Cleaning: Remove excess and waste materials promptly, and sweep or vacuum clean resilient flooring as soon as installation has been completed in each area. After adhesive has had adequate time to set, mop each area with damp mop and mild detergent.

B. Final Cleaning: Remove scuff marks, excess adhesive, and other foreign substances, using only cleaning products and techniques recommended by manufacturer of resilient products. The contractor shall provide final waxing and buffing at the completion of the project.

C. Provide Owner with manufacturer’s standard cleaning procedures.

END OF SECTION 09660

**SECTION 09680 – CARPETING**

PART 1 – GENERAL

1.1 DESCRIPTION

A. Work included: Provide carpeting accessories where shown on the Drawings, as specified herein, and as needed for a complete and proper glue-down installation.

B. Related work:
1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions Supplementary Conditions, and Sections in Division 1 of this Section.

1.2 QUALITY ASSURANCE

A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.

1.3 SUBMITTALS

A. Comply with pertinent provisions of Section 01340.

B. Product data: Within 60 calendar days after the Contractor has received the Owner's Notice to Proceed, submit:
1. Materials list of items proposed to be provided under this Section.
2. Manufacturer's specifications and other data needed to prove compliance with the specified requirements.
3. Shop Drawings showing location of seams and locations and types of carpet accessories.
4. Samples of the selected colors and patterns of carpet and of exposed accessories available from the proposed manufacturers in the specified qualities.
5. Manufacturer's recommended installation procedures which, when approved by the Architect, will become the basis for accepting or rejecting actual installation procedures used on the Work.

1.4 PRODUCT HANDLING

A. Comply with pertinent provisions of Section 01620.

PART 2 - PRODUCTS

2.1 CARPET

A. Carpet, pattern, colors and pad to be as per Finish Schedule.

PART 3 – EXECUTION

3.1 SURFACE CONDITIONS

A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completing of the work. Do not proceed until unsatisfactory conditions are corrected.

3.2 SURFACE PREPARATION

A. Immediately prior to installation of the work of this Section, thoroughly clean substrata and remove oil, grease, paint, varnish, hardeners, and other items, which would adversely affect the bond of adhesive.

B. Make substrata level and free from irregularities. Assure one constant floor height after carpet is installed, filling low spots and grinding high spots as required.

3.3 INSTALLATION

A. General:
1. Install as per manufacturers recommendations.
2. Scribe the carpet accurately to vertical surfaces.
3. Align the lines of carpet, as woven; using no fill strips less than 6” wide, laying all carpet in the same direction unless specifically directed otherwise by the Architect.

B. Seams:
1. Locate seams to the maximum extent practicable out of the way of traffic. Fabricate seams by the compression method, using a butt joint, and properly bead and seal.
2. Do not stretch seams.
3. No visible seams to the eye will be allowed.

C. In addition to the cleaning requirement stated elsewhere, thoroughly clean carpet and adjacent surfaces prior to final acceptance of the carpeted areas by the Owner.

3.4 PROTECTION

A. Carpet Installation: provide a heavy non-staining paper or plastic walkway as required over carpeting in direction of traffic, maintaining intact until carpet space is accepted by the Owner.

3.5 SURPLUS MATERIAL

A. Allow the Owner to inspect and select from scrap carpet remaining after the installation. Bundle, wrap in burlap and deliver to the Owner the carpet scraps selected by him.

END OF SECTION 09680

**SECTION 09900 - PAINTING**

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General Conditions, Amendments to General Conditions, and Supplementary Conditions and Sections in Division 1 of the Specifications apply to work of this section.

1.2 DESCRIPTION

A. Work included: Paint and finish the exterior and interior exposed surfaces listed on the Painting Schedule in Part 3 of this Section, as specified herein, and as needed for a complete and proper installation.

B. Related work:
   1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
   2. Priming or priming and finishing of certain surfaces may be specified to be factory-performed or installer-performed under pertinent other Sections.

C. Work not included:
   1. Unless otherwise indicated, painting is not required on surfaces in concealed areas and inaccessible areas such as furred spaces, foundation spaces, utility tunnels, pipe spaces, and duct shafts.
   2. Metal surfaces of anodized aluminum, stainless steel, chromium plate, copper, bronze, and similar finish materials will not require painting under this Section unless otherwise indicated.
   3. Do not paint moving parts of operating units; mechanical or electrical parts such as valve operators; linkages; sensing devices; and motor shafts, unless otherwise indicated.
   4. Do not paint over required labels or equipment identification, performance rating, name, or nomenclature plates.
   5. Do not paint concrete which has been sandblasted.

D. Definitions:
   1. "Paint," as used herein, means coating systems materials including primers, emulsions, epoxy, enamels, sealers, fillers, and other applied materials whether used as prime, intermediate, or finish coats.

1.3 SUBMITTALS

A. Comply with pertinent provisions of Section 01340.

B. Product data: Within 45 calendar days after the Contractor has received the Owner's Notice to Proceed, submit:
   1. Materials list of items proposed to be provided under this Section;
   2. Manufacturers specifications and other data needed to prove compliance with the specified requirements.

C. Samples:
   1. Colors as shown on Finish Schedule. Follow the selection of colors and glosses as shown on Finish Schedule.

1.4 QUALITY ASSURANCE

A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.

1. Paint shall be tinted by the Paint Company; on-site tinting is not permitted.

B. Paint coordination:
1. Provide finish coats which are compatible with the prime coats actually used.
2. Review other Sections of these specifications as required, verifying the prime coats to be used and assuring compatibility of the total coating system for the various substrate.
3. Upon request, furnish information on the characteristics of the specific finish materials to assure that compatible prime coats are used.
4. Provide barrier coats over non-compatible primers, or remove the primer and re-prime as required.
5. Notify the Architect in writing of anticipated problems in using the specified coating systems over prime-coatings supplied under other Sections.

C. Provide 8’ x8’ wall and 8’ x 8’ ceiling mock-up panel for approval of finishes.

1.5 PRODUCT HANDLING

A. Comply with pertinent provisions of Section 01620.

1.6 JOB CONDITIONS

A. Do not apply solvent-thinned paints when the temperature of surfaces to be painted and the surrounding air temperatures are below 45 degrees F, unless otherwise Permitted by the manufacturers' printed instructions as approved by the Architect.

B. Weather conditions:
1. Do not apply paint in snow, rain, fog, or mist; or when the relative humidity exceeds 85%; or to damp or wet surfaces, unless otherwise permitted by the manufacturers' printed instructions as approved by the Architect.
2. Applications may be continued during inclement weather only within the temperature and humidity limits specified by the paint manufacturer as being suitable for use during application and drying periods.

1. 7 EXTRA STOCK

A. Upon completion of the Work of this Section, deliver to the Owner an extra stock equaling one gallon of each color, type, and class of paint used in the Work. Tightly seal each container, and clearly label, stating contents and location(s) where used.

PART 2 - PRODUCTS

2.1 PAINT MATERIALS

A. Acceptable materials:
1. Benjamin Moore.

B. Undercoats and thinners:
1. Provide undercoat paint produced by the same manufacturer as the finish coat.
2. Use only the thinners recommended by the paint manufacturer, and use only to the recommended limits.
3. Insofar as practicable, use undercoat, finish coat, and thinner material as parts of a unified system of paint finish.

2.2 COLOR SCHEDULES

A. See Finish Schedule and Selections.

2.3 APPLICATION EQUIPMENT

A. For application of the approved paint, use only such equipment as is recommended for application of the particular paint by the manufacturer of the particular paint, and as approved by the Architect.

B. Prior to use of application equipment, verify that the proposed equipment is actually compatible with the material to be applied, and that integrity of the finish will not be jeopardized by use of the proposed equipment.

2.4 OTHER MATERIALS

A. Provide other materials, not specifically described but required for a complete and proper installation, as selected by the Contractor subject to the approval of the Architect.

PART 3 - EXECUTION

3.1 SURFACE CONDITIONS

A. General:
1. Mix and prepare paint materials in strict accordance with the manufacturers' recommendations as approved by the Architect.
2. When materials are not in use, store in tightly covered containers.
3. Maintain containers used in storage, mixing, and application of paint in a clean condition, free from foreign materials and residue.
4. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the work. Do not proceed until unsatisfactory conditions are corrected.

B. Stirring:
1. Stir materials before application, producing a mixture of uniform density.
2. Do not stir into the material any film which may form on the surface, but remove the film and, if necessary, strain, the material before using.

3.2 SURFACE PREPARATION

A. General:
1. Perform preparation and cleaning procedures in strict accordance with the paint manufacturers' recommendations as approved by the Architect.
2. Remove removable items which are in place and are not scheduled to receive paint finish; or provide surface-applied protection prior to surface preparation and painting operations.
3. Following completion of painting in each space or area, reinstall the removed items by using workmen who are skilled in the necessary trades.
4. Clean each surface to be painted prior to applying paint of surface treatment.
5. Remove oil and grease with clean cloths and cleaning solvent of low toxicity and

flash point in excess of 200 degrees F. prior to start of mechanical cleaning.

6. Schedule the cleaning and painting so that dust and other contaminants from the cleaning process will not fall onto wet newly painted surfaces.

B. Preparation of wood surfaces:
   1. Clean wood surfaces until free from dirt, oil, and other foreign substance.
   2. Smooth finish wood surfaces exposed to view, using the proper sandpaper. Where so required, use varying degrees of coarseness in sandpaper to produce a uniformly smooth and unmarred wood surface in preparation for the application of stain.
   3. Unless specifically approved by the Architect, no not proceed with painting of wood surfaces until the moisture content of the wood is 12% or less as measured by a moisture meter approved by the Architect.

C. Preparation of metal surfaces:
   1. Thoroughly clean surfaces until free from dirt, oil, and grease.
   2. On galvanized surfaces, use solvent for the initial cleaning, and then treat the surface thoroughly with phosphoric acid etch. Remove etching solution completely and allow to dry thoroughly before application of paint.
   2. Allow to dry thoroughly before application of paint.

3.3 PAINT APPLICATION

A. General:
   1. Touch-up shop-applied prime coats which have been damaged, and touch-up bare areas prior to start of finish coats application.
   2. Slightly vary the color of succeeding coats.
      a. Do not apply additional coats until the completed coat has been inspected and approved.
      b. Only the inspected and approved coats of paint will be considered in determining the number of coats applied.
   3. Sand and dust between coats to remove defects visible to the unaided eye
   4. On removable panels and hinged panels, paint the back sides to match the exposed sides.

B. Drying:
   1. Allow sufficient drying time between coats, modifying the period as recommended by the material manufacturer to suit adverse weather conditions.

C. Brush applications:
   1. Brush out and work the brush coats onto the surface in an even film.
   2. Cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness, and other surface imperfections will not be acceptable.

D. Spray application:
   1. Except as specifically otherwise approved by the Architect, confine spray application to concrete masonry surfaces, metal framework and similar surfaces where hand brush work would be inferior.
   2. Where spray application is used, apply each coat to provide the hiding equivalent of brush coats.
   3. Do not double back with spray equipment to build up film thickness of two coats in one pass.

E. For completed work, match the approved Samples as to texture, color, and coverage. Remove, refinish, or repaint work not in compliance with the specified requirements.

3.4 PAINTING SCHEDULE

A. Provide the paint finishes as indicated on Finish Schedule 1.

B. Number of coats Required:
   1. First coat: Primer.
   2. Second and Third coat: Finish Coats

C. Provide Block Filler on all Concrete Masonry Units and minimum 2 Finish Coats.:

END OF SECTION 09900

# Specifications

## Powder Coated Steel Partitions
## Floor Anchored / Overhead Braced
## 2.3

**Powder Coated Steel Partitions with Floor Anchored/Overhead Braced Mounting Style**

### Part 1 - General
**1.01 Work Included**
A. The toilet partitions shall be powder coated steel with floor anchored/overhead braced mounting style as manufactured by **ASI Accurate Partitions,** Burr Ridge, Illinois.
B. Furnish all labor and materials necessary for completion of work in this section as shown in the approved drawings and specified herein.
**1.02 Related Work –** Specified elsewhere shall include accessories and anchorage/blocking for attachment of partitions.

### Part 2 – Product
**2.01 Doors, Panels, and Urinal Screens –** Shall be 1" thick and fabricated from tension-leveled, cold rolled commercial quality 22 gauge galvannealed steel, bonded to sound deadening honeycomb core.
**2.02 Pilasters –** Shall be 1-¼ " thick, 82" high, and fabricated from tension-leveled, cold rolled commercial quality 22 gauge galvannealed steel, bonded to sound deadening honeycomb core.
**2.03 Material –** Doors, panels, pilasters and urinal screens shall be manufactured with a honeycomb core bonded to the steel with a non-toxic adhesive to ensure solid construction and sound attenuation. All four components shall be assembled with a continuous roll-formed interlocking crown molding, with the corners brazed and ground smooth.
**2.04 Finish –** Doors, panels, pilasters, and urinal screens shall be cleaned for maximum finish color adhesion. All components shall be finished with a hybrid epoxy/polyester powder, electrostatically applied to ensure uniform thickness and baked to cure.
**2.05 Color -** Shall be selected from **Accurate's** full range of standard designer colors.
**2.06 Door Hardware –** Shall be **Accurate** gravity actuated, cam-action hinges that permit door to remain at desired position when not in use. Hinges, one-piece strike and keeper and coat hook shall be chromium plated Zamac to resist corrosion. Hinges, strike and keeper shall be attached with tamper resistant barrel nuts and shoulder screws. Concealed latch assembly shall allow for emergency access. Doors for handicapped compartments shall be supplied with **Accurate** ADA paddle handles.
**2.07 Mounting Hardware –** Chrome plated Zamac stirrup brackets shall be used to mount panels and pilasters. Mounting hardware shall be secured with tamper resistant screws.
**2.08 Construction Design –** Compartments shall be floor anchored with L-shaped mounting forks and include integral leveling bolt to provide proper height adjustment. Floor anchoring system shall be concealed with a type 304 stainless steel trim shoe with a #4 finish. Aluminum headrail with anti-grip profile shall provide overhead bracing and span all compartments and brace the end pilaster to the back wall.

### Part 3 – Execution
**3.01 Installation –** Shall be installed in accordance to the **Accurate** installation instructions with partitions rigid, straight and plumb. Doors and panels shall be mounted 12" above the finished floor. **3.02 Warranty – ASI Accurate Partitions** guarantees its powder coated steel partitions, properly maintained, against chipping, flaking, cracking or discoloration for 3 YEARS from the date of receipt by the customer. If material is found defective during that period, the material shall be replaced free of charge. No credits or allowances shall be issued for any labor or expenses relating to the replacement of components covered under the warranty plan.

**SECTION 10520 – FIRE EXTINGUISHERS AND CABINETS**

PART 1 – GENERAL

1.1 DESCRIPTION

A. Work included: Provide fire extinguishes and cabinets where shown on the Drawings, as specified herein, and as needed for a complete and proper installation.

B. Related work:
1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.

1.2 QUALITY ASSURANCE

A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.

1.3 SUBMITTALS

A. Comply with pertinent provisions of Section 01340.

B. Product data: Within 45 calendar days after the Contractor has received the Owner's Notice to Proceed, submit:
1. Materials list of items proposed to be provided under this Section.
2. Manufacturer's specifications and other data needed to prove compliance with the specified requirements;
3. Dimensioned drawings as needed to depict the space required for these items, and their interface with the work of other trades.
4. Manufacturer's recommended installation procedures which, when approved by the Architect, will become the basis for accepting or rejecting actual installation procedures used on the work.

1.4 PRODUCT HANDLING

A. Comply with pertinent provisions of Section 01620.

PART 2 – PRODUCTS

2.1 CABINETS

A. Where shown on the Drawings (See sheets G-2 and G-3) or specified elsewhere, provide Larsen's, or equal products of other manufacturers approved in advance by the Architect.
1. Semi-Recessed, FS 2409-R3 complying with ADA requirements.
2. Brushed Chrome Finish.

2.2 FIRE EXTINGUISHERS

A. At each fire extinguisher cabinet, provide one multi-purpose chemical fire extinguisher with UL rating of 2A-10B; C, Larsen model, "MP5", (verify compatibility with cabinet) or equal products by J-L Industries or Potter Roemer.

B. Service, charge, and tag each fire extinguisher not more than five calendar days prior to the Date of Substantial Completion of the work as that date is established by the Architect.

PART 3 – EXECUTION

3.1 SURFACE CONDITIONS

A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the work. Do not proceed until unsatisfactory conditions are corrected.

3.2 INSTALLATION

A. Coordinate as required with other trades to assure proper and adequate provision in the work of those trades for interface with the work of this Section.

B. Install the work of this Section in strict accordance with the original design, the approved Shop Drawings, pertinent requirements of governmental agencies having jurisdiction, and the manufacturer's recommended installation procedures firmly into position for long life under hard use.

C. Coordinate all locations with local Fire Inspector before blocking out cabinet locations.

3.3 LOCATION:

A. Provide fire extinguishers and cabinets as located on drawings.

B. Provide fire extinguishers and standard mounting bracket located on drawings G-2 and G-3.

END OF SECTION 10520

**SECTION 10800 – TOILET ROOM ACCESSORIES**

PART 1 – GENERAL

1.1 DESCRIPTION

A. Work included: Provide toilet room accessories where indicated on the Drawings, as specified herein, and as needed for a compete and proper installation.

B. Related work

1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.

1.2 QUALITY ASSURANCE

A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.

1.3 PRODUCT HANDLING

A. Comply with pertinent provisions of Section 01620.

PART 2 - PRODUCTS

2.1 TOILET ROOM ACCESSORIES

See Drawings.

2.2 OTHER MATERIALS

A. Provide other materials, not specifically described but required for a complete and proper installation, as selected by the Contractor subject to the approval of the Architect.

PART 3 – EXECUTION

3.1 SURFACE CONDITIONS

A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the work. Do not proceed until unsatisfactory conditions are corrected.

3.2 INSTALLATION

A. Coordinate as required with other trades to assure proper and adequate provision in the work of those trades for interface with the work of this Section.

B. Install each item in its proper location, firmly anchored into position, level and plumb, and in accordance with the manufacturer's recommendations.

C. Provide non-combustible blocking in walls for toilet accessories and all handicap grab bars, etc. in all locations as required by code.

END OF SECTION 10800

# SECTION 13 34 19

# METAL BUILDING SYSTEMS

## PART 1 GENERAL

### 1.1 SECTION INCLUDES

A. Metal Framing Components.

B. Metal Roof Wall Panels and Trim.

C. Metal Building Accessories

### 1.2 REFERENCE STANDARDS

A. American Institute of Steel Construction (AISC):
   1. AISC Specification for Structural Steel Buildings.
   2. AISC Serviceability Design Considerations for Low-Rise Buildings

B. American Iron and Steel Institute (AISI):
   1. AISI North American Specification for the Design of Cold-Formed Steel Structural Members

C. American Welding Society (AWS):
   1. AWS D1.1 / D1.1M – Structural Welding Code – Steel.
   2. AWS D1.3 / D1.3M – Structural Welding Code – Sheet Steel

D. Association for Iron & Steel Technology (AISE):
   1. AISE 13 – Specifications for Design and Construction of Mill Buildings.

E. ASTM International (ASTM):
   1. ASTM A 36 – Standard Specification for Carbon Structural Steel
   2. ASTM A 48 – Specification for Gray Iron Castings
   3. ASTM A 123 – Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products
   4. ASTM A 307 – Specification for Carbon Steel Bolts and Studs, 60 000 psi Tensile Strength
   5. ASTM A 325 – Standard Specification for Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength.

6. ASTM A 354 – Standard Specification for Quenched and Tempered Alloy Steel Bolts, Studs, and Other Externally Threaded Fasteners
7. ASTM A 475 – Specification for Zinc-Coated Steel Wire Strand
8. ASTM A 490 – Specification for Structural Bolts, Alloy Steel, Heat Treated, 150 ksi Minimum Tensile Strength
9. ASTM A 500 – Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes
10. ASTM A 529 – Standard Specification for High-Strength Carbon-Manganese Steel of Structural Quality.
11. ASTM A 563 – Specification for Carbon and Alloy Steel Nuts
12. ASTM A 572 – Standard Specification for High-Strength Low-Alloy Columbium-Vanadium Structural Steel.
13. ASTM A 653 / A 653M – Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process
14. ASTM A 792 / A 792M – Standard Specification for Steel Sheet, 55 % Aluminum-Zinc Alloy-Coated by the Hot-Dip Process
15. ASTM A 992 – Standard Specification for Structural Steel Shapes.
16. ASTM A 1011 – 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.
17. ASTM A 1039 – Specification for Steel, Sheet, Hot Rolled, Carbon, Commercial, Structural, and High-Strength Low-Alloy, Produced by Twin-Roll Casting Process
18. ASTM E 96 / E 96M – Standard Test Methods for Water Vapor Transmission of Materials.
19. ASTM E 108—Spread-of Flame Testing: Class 1A Rating.
20. ASTM E 283 – Standard Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.
21. ASTM E 331 – Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference.
22. ASTM E 1592 – Test Method for Structural Performance of Sheet Metal Roof and Siding Systems by Uniform Static Air Pressure Difference
23. ASTM E 1646 – Test Method for Water Penetration of Exterior Metal Roof Panel Systems by Uniform Static Air Pressure Difference
24. ASTM E 1680 – Test Method for Rate of Air Leakage Through Exterior Metal Roof Panel Systems
25. ASTM E 2140 – Test Method for Water Penetration of Metal Roof Panel Systems by Static Water Pressure Head
26. ASTM F 436 – Specification for Hardened Steel Washers
27. ASTM F 1145 – Specification for Turnbuckles, Swaged, Welded, Forged
28. ASTM F 1554 – Specification for Anchor Bolts, Steel, 36, 55, and 105-ksi Yield Strength

F. CSA – Canadian Standards Association

G. CWB – Canadian Welding Bureau

H. IAS – International Accreditation Service

I. LGSI – Light Gauge Steel Institute

J. SJI – Steel Joist Institute

K. FM Global:
   1. FMRC Standard 4471 – Approval Standard for Class 1 Roofs for Hail Damage Resistance, Combustibility, and Wind Uplift Resistance.

L. Metal Building Manufacturers Association (MBMA):
   1. MBMA Metal Building Systems Manual.

M. Underwriters Laboratories (UL):
   1. UL 580 – Standard for Tests for Uplift Resistance of Roof Assemblies.

## 1.3 DEFINITIONS

A. Metal Building System: A building system that will employ:
- Either continuous or simple-span 'Z' or 'C'-shaped cold-formed purlins for support of the roof cladding.
- All systems (roof and wall framing, and portal frames) work together to provide resistance to vertical and lateral loading demands.

B. Gable Symmetrical: A continuous frame building with the ridge in the center of the building, consisting of tapered or straight columns and tapered or straight rafters. The rafters may not have interior columns.

C. Roof Slope: Pitch expressed as inches of rise for each 12" of horizontal run.

D. Collateral Loads: The weight of any non-moving equipment or material, such as electrical.

E. Dead Load: The actual weight of the building system (as provided by the metal building supplier) supported by a given member.

F. Roof Live Loads: Loads produced by maintenance activities, rain, erection activities, and other movable or moving loads but not including wind, snow, seismic, crane, or dead loads.

G. Roof Snow Loads: Gravity load induced by the weight of snow or ice on the roof, assumed to act on the horizontal projection of the roof.

H. Seismic Loads: Loads acting in any direction on a structural system due to the action of an earthquake.

I. Wind Loads: The loads on a structure induced by the forces of wind blowing from any horizontal direction.

## 1.4 DESIGN REQUIREMENTS

A. General
   1. The building manufacturer will use standards, specifications, recommendations, findings and/or interpretations of professionally-recognized groups such as AISC, AISI, AWS, ASTM, CSA, CWB, MBMA, Federal Specifications, and unpublished research by MBMA as the basis for establishing design, drafting, fabrication, and quality criteria, practices, and tolerances. The Manufacturer's design, drafting, fabrication and quality criteria, practices, and tolerances shall govern, unless specifically countermanded by the contract documents.
   2. Design structural mill sections and built-up plate sections in accordance with:
      a. (US) code-appropriate edition of AISC's "Specification for the Design, Fabrication and Erection of Structural Steel for Buildings", ANSI/AISC 360 ASD method.
      b. (Canada) CSA S16, “Design of Steel Structures”, latest edition.
   3. Cold-Formed steel structural members and panels will generally be designed in accordance with "Specifications for the Design of Cold-Formed Steel Structural Members", 2007 Edition, ANSI/AISI S-100-07 or CAN CSA S136-07.
   4. Design weldments per the following:
      a. Structural Welding
         1) (US) Design per AWS D1.1, “Structural Welding Code – Steel”, Latest Edition.
      b. Cold-Formed Welding
         1) (US) Design per AWS D1.3, “Structural Welding Code – Sheet Steel”, Latest Edition.

B. Design Code:
   1. Structural design for the building structural system shall be provided by the metal building system manufacturer for the following design criteria:
      a. Governing Building Code: (See Drawings).
      b. Year/Version: (See Drawings).
      c. Occupancy Category: (See Drawings).

C. Design Loads:

1. Dead Load – Weight of the building system as determined by manufacturer.
2. Roof Live Load – (See Drawings.)
3. Collateral Load – (See Drawings)
4. Roof Snow Load:
    a. Ground Snow Load – (see Drawings).
    b. Snow Exposure Coefficient (Ce) – (See Drawings).
    c. Thermal Coefficient (Ct) – (See Drawings).
    d. Roof Snow Load – (See Drawings).
5. Wind Load:
    a. Wind Speed – (See Drawings).
    b. Wind Exposure – (See Drawings).
6. Seismic Load:
    a. Spectral response acceleration for short periods (Ss) – (See Drawings).
    b. Spectral response acceleration for 1-sec. period (S1) – (See Drawings).
    c. Site Class – (See Drawings).
7. Floor Load.
    a. Live Load – (See Drawings).
    b. Dead Load (Weight of Material by others)–(See Drawings).
    c. Collateral Load – (See Drawings).

D. General Serviceability Limits :
1. Deflection Limits shall be in accordance with the applicable provisions of the Metal Building Systems Manual (MBMA), latest edition.
2. Vertical Deflections:
    a. Roof Secondary (Purlins) – L/150.
    b. Main Frame roof beams – L/180.
3. Horizontal Deflections:
    a. Main Frames – H/60.
4. Vertical deflection limits apply for snow load (50-year mean-recurrence interval) plus collateral load, or the code required live load. The horizontal drift and deflections limits apply for the loads induced by a basic wind speed corresponding to a 10 year mean-recurrence interval.

## 1.5 SUBMITTALS

A. Submit under provisions of Section 01340.

B. Product Data: Manufacturer's data sheets on each product to be used, including:
1. Preparation instructions and recommendations.
2. Storage and handling requirements and recommendations.
3. Installation methods.

C. Shop Drawings: Submit shop drawing and calculation sealed by a Registered NC Engineer. Provide complete erection drawings for the proper identification and assembly of all building components. Drawings will show anchor bolt settings, transverse cross-sections, sidewall, endwall and roof framing, flashing and sheeting, and accessory installation details.

D. Selection Samples: For each finish product specified, two complete sets of color chips representing manufacturer's full range of available colors and patterns.

E. Verification Samples: For each finish product specified, two samples, representing actual product, color, and patterns.

F. Certifications: Shop drawings and design analysis shall bear the seal of a registered professional engineer upon request. Design analysis shall be on file and furnished by manufacturer upon request.

G. Bill of Materials: Bills of material shall be furnished and shall include item weights.

H. Preventative Maintenance Manual.

I. Welder's Certifications: Certification of welder qualifications shall be furnished as specified by the Project Engineer.

J. Submit certification verifying that the metal roof system has been tested and approved by Underwriter’s Laboratory as Class 90.

## 1.6 QUALITY ASSURANCE

A. Manufacturer / Fabricator Qualifications:
   1. (US) All primary products specified in this section will be supplied by a single IAS AC 472 Accredited Manufacturer /Fabricator with a minimum of five (5) years’ experience.
   2. (Canada) All primary products specified in this section will be supplied by a single Manufacturer / Fabricator certified by the CAN/CSA A660-10, “Certification of Manufacturers of Steel Building Systems” program.

B. Weldments/Welder/Weld Inspection Qualifications:
   1. (US) Welding inspection and welding inspector qualification for structural steel shall be in accordance with AWS D1.1, “Structural Welding Code – Steel”, latest edition. Welding inspection and welding inspector qualification for cold-formed steel shall be in accordance with AWS D1.3, “Structural Welding Code – Sheet Steel”, latest edition.

2. (Canada) The metal building manufacturer shall be certified per CWB W47.1, “Certification of Companies for Fusion Welding of Steel”, latest edition.

C. Erector Qualifications: All products listed in this section are to be installed by a single installer with a minimum of five (5) years demonstrated experience in installing products of the same type and scope as specified.

D. Design: Standard drawings and design analysis must bear the seal of a registered professional engineer. Design analysis must be on file and furnished by manufacturer upon request.

## 1.7 DELIVERY, STORAGE, AND HANDLING

A. Delivery and Acceptance Requirements: Deliver materials to site in manufacturer’s original, unopened containers and packaging, with labels clearly identifying product name and manufacturer.

B. Storage and Handling Requirements:
1. Store and handle materials in accordance with manufacturer’s instructions.
2. Keep materials in manufacturer’s original, unopened containers and packaging until installation.
3. Do not store materials directly on ground.
4. Store materials on flat, level surface, raised above ground, with adequate support to prevent sagging.
5. Protect materials and finish during storage, handling, and installation to prevent damage.

C. 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.

D. Store and dispose of hazardous materials, and materials contaminated by hazardous materials, in accordance with requirements of local authorities having jurisdiction.

## 1.8 WARRANTY

A. Building System Warranty
1. Furnish manufacturer’s standard warranty for the metal building system, excluding paint.

2. The manufacturer shall warranty the metal building system against failure due to defective material or workmanship for a period of one (1) year from date of shipment.
3. The liability under this warranty shall be limited to furnishing, but not dismantling or installing, necessary replacement material F.O.B. manufacturer's plant.

B. Roof Weathertightness Warranty
1. Furnish manufacturer's weathertightness warranty for a maximum of 20 years against leaks in roof panels, arising out of or caused by ordinary wear and tear under normal weather and atmospheric conditions.

C. Roof Paint Finish Warranty
1. Galvalume® systems
a. Furnish manufacturer's standard warranty for the Galvalume® panels against rupture, structural failure, or perforation due to normal atmospheric conditions.
b. The warranty shall be for a period of 20 years from the date of shipment for Galvalume® systems.

D. Wall Panel Finish Warranty
1. Minimum 20 years.

## PART 2 PRODUCTS

### 2.1 MANUFACTURERS

A. Acceptable Manufacture Nucor Building Systems.

### 2.2 MATERIALS

A. Primary Framing Steel:
1. Steel for hot rolled shapes must conform to the requirements of ASTM Specifications A-36, A-572 or A-992, with minimum yield of 36 or 50 ksi, respectively.
2. Steel for built-up sections must conform to the requirements of ASTM A-1011, A-1018, A-529, A-572 or A-36 as applicable, with minimum yield of 42, 46, 50, or 55 ksi as indicated by the design requirements.

3. Round Tube must conform to the requirements of ASTM A-500 Grade B with minimum yield strength of 42 ksi.
4. Square and Rectangular Tube must conform to the requirements of ASTM A-500 Grade B with a minimum yield strength of 46 ksi.
5. X-bracing will conform to ASTM A-36 or ASTM A-529 for rod and angle bracing or ASTM A-475 for cable bracing.

B. Secondary Framing Steel:
1. Steel used to form purlins and eave struts must meet the requirements of ASTM A-1011 or ASTM A-1039 Grade 55 for primed material or ASTM A-653 Grade 55 for galvanized material with a minimum yield of 55 ksi.
2. Design Thicknesses – Gauge to be determined by design to meet specified loading conditions.

C. Fasteners:
1. As per manufacturers recommendations.

D. Flashing and Trim: Match material, finish, and color of adjacent components. Provide trim at rakes, including peak and corner assemblies, high and low eaves, corners, bases, framed openings and as required or specified to provide weathertightness and a finished appearance.

## 2.3 PRIMARY FRAMING

A. Rigid Frames: Fabricated as welded built-up "I" sections or hot-rolled sections.
1. Frame Design: Gable Symmetrical.
2. Frame Type: Clear-Span.

B. Rigid Frame Columns:
1. Tapered

C. Rigid Frame Rafters:
1. Tapered

D. Endwall Frames / Roof Beams: Fabricated as mill-rolled sections or built-up "I" sections depending on design requirements. Fabricate endwall columns of cold-formed "C" sections, mill-rolled sections, or built-up "I" sections depending on design requirements.

E. Finish: Red-Oxide as well as Field Applied Paint Coat.

F. Field Bolted Connections: All field bolted connections shall be designed and detailed utilizing ASTM A-325 or A-490 depending on design requirement.

## 2.4 SECONDARY FRAMING

A. Purlins: Purlins shall be cold-formed "Z" sections with stiffened flanges. Flange stiffeners shall be sized to comply with the requirements of the latest edition of AISI and LGSI. They shall be pre-punched at the factory to provide for field bolting to the rigid frames. They shall be simple or continuous span as required by design. Connection bolts will install through the purlin/girt webs, not purlin/girt flanges.

B. Purlins: Horizontal structural members which support roof coverings.
   1. Depth: To be determined by design (8”, 10” or 12”)
   2. Maximum Length: To be determined by design.
   3. Finish: Red Oxide Primer also with Field Applied Paint Coat.

C. Eave Struts: Unequal flange, cold-formed "C" sections or “Z” purlins.
   1. Depth: To be determined by design (8”, 10” or 12”)
   2. Maximum Length: To be determined by design.
   3. Finish: Red Oxide Primer.
   4. Finish: Gray Primer.
   5. Finish: Pre-Coated Galvanized.

## 2.5 ROOF PANELS & WALL PANELS.

A. Roof Panel: A NUCOR CFR.
   1. Gauge: 24.
   2. Finish/Color: GALVALUME

B. Wall Panels.

   1. NUCOR Classic Wall

   2. 26 Gauge.

## 2.6 ACCESSORIES

A. Roof Line Trim:
   Trim Type: Simple Eave/Rake Trim.

B. Wall Panel

1. Pelican Gray 1612 Flat Finish, Benjamin Moore.

## 2.7 PANEL FINISHES

A. Roof Panel:
   1. Galvalume® (GM)

## 2.8 FABRICATION

A. General:
   1. Shop-fabricate all framing members for field bolted assembly. The surfaces of the bolted connections must be smooth and free from burrs or distortions.
   2. Shop connections must conform to the manufacturer's standard design practices as defined in this section. Certification of welder qualifications will be furnished when required and specified in advance.
   3. All framing members must carry an identifying mark.

B. Primary Framing:
   1. Plates, Stiffeners and Related Members.: Factory weld base plates splice plates, cap plates, and stiffeners into place on the structural members.
   2. Bolt Holes and Related Machining: Shop fabricate base plates, splices and flanges to include bolt connection holes. Shop fabricated webs to include bracing holes.
   3. Secondary structural connections (purlins and girts) to be ordinary bolted connections, which may include welded clips.
   4. Manufacturer is responsible for all welding inspection in accordance with the manufacturer's IAS Accreditation or CAN/CSA A660 Certification. Special inspection by the buyer or owner may be done in the manufacturer's facility and must be noted on the Contract Documents.
   5. Non-Destructive Testing (NDT) - NDT shall be performed and documented as required by the governing building code for this project.

C. Zee Purlins:
   1. Fabricate purlins from cold-formed "Z" sections with stiffened flanges. Size flange stiffeners to comply with the requirements of the latest edition of AISI. Connection bolts will install through the webs, not the flanges.

D. Bracing:

1. Special Bracing: Diagonal bracing is not permitted in the sidewall, a rigid frame type portal frame will be used.

## PART 3 EXECUTION

### 3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Erector present, for compliance with requirements for installation tolerances and other conditions affecting performance of work.

B. Before erection proceeds, survey elevations and locations of concrete and masonry bearing surfaces and locations of anchor rods, bearing plates and other embedment's to receive structural framing, with Erector present, for compliance with requirements and metal building system manufacturer's tolerances.

C. Proceed with erection only after unsatisfactory conditions have been corrected.

### 3.2 PREPARATION

A. Clean surfaces thoroughly prior to installation.

B. Provide temporary shores, guys, braces, and other supports during erection to keep structural framing secure, plumb, and in alignment against temporary construction loads equal in intensity to design loads. Remove temporary supports when permanent structural framing connections and bracing are in place, unless otherwise indicated.

### 3.3 INSTALLATION

A. The erection of the building system shall be performed by a qualified erector, in accordance with the appropriate erection drawings, erection guides and /or other documents furnished by manufacturer, using proper tools, equipment and safety practices.

B. Erection practices shall conform to "Common Industry Practices", Section 6, MBMA (LR)-Building Systems Manual.

C. There shall be no field modifications to primary structural members except as authorized and specified by manufacturer.

## 3.4 PROTECTION

A. Protect installed products until completion of project.

B. Touch-up, repair or replace damaged products before Substantial Completion.

**END OF SECTION**