

101 WEST 33RD STREET
BRYAN, TEXAS

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NOT USED

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NOT USED

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PART 1 - GENERAL

1.1 GEOTECHNICAL INVESTIGATION REPORT

- A. A geotechnical investigation report titled:

has been prepared by [FIRM AND DATE]. The geotechnical investigation data represents information available on the subsurface conditions.

1.2 REPORT AVAILABILITY

- A. A copy of these reports will be available through the offices of the Architect and the Owner.
B. These reports are not part of the Contract Documents.

END OF SECTION

SECTION 003153 - TESTS AND INSPECTIONS

1.1 SUMMARY

- A. Section Includes:
 - 1. Description of Code required tests and Inspections to be furnished by the Owner. Requirements for tests and inspections for bidder designed elements.
 - 3. Code required Quality Assurance Plans for
 - 4. Submittals to the jurisdictional code authorities.
- B. Related Sections:
 - 1. 019100 – Commissioning: Tests and Inspections related to Owner’s commissioning of energy-related building elements.

1.2 CODE REQUIRED TESTS AND INSPECTIONS

- A. Structural elements will be subject to separate Owner paid tests and inspections, as described on the Structural Drawings.
- B. Tests and inspections will be performed in accordance with code requirements.

1.3 GENERAL REQUIREMENTS

- A. The Owner will furnish testing and inspection services for the above Project. Requirements herein are intended as basic descriptions of required tests and may be waived or expanded without impact on the Contract price, except as necessary to accommodate substantial changes in coordination requirements.
- B. Reference to "testing laboratory" in singular shall not be construed to limit work under this document to a single testing agency.
- C. Comply with requirements of the International Building Code as amended by the jurisdictional code authority.
- D. Personnel employed in the inspection of soil, rock, concrete, and steel, specified under Divisions 3, 5, and 31 of these specifications shall be qualified under the requirements of ASTM E329 - Standard Specification for Agencies engaged in the Testing and/or Inspection of Materials Used in Construction.
- E. Inspection and Test Reports: Prepare reports giving results and observations of tests, and stating compliance or noncompliance with Contract Documents. Include records of observations and tests performed, and other items as specified, herein.
- F. Duties and Responsibilities of the Testing Laboratory.
 - 1. Submit written reports of inspections and tests to the Owner, Architect, and other parties designated by the Owner.
 - 2. Submit copies of inspection reports to the jurisdictional building department, as required.
 - 3. Submit copies of inspection reports to the Architect’s Structural Engineer of items specified in Divisions 3, 4, and 5.
 - 4. Upon request, provide interpretation of test results.
 - 5. Submit final signed report stating whether the work requiring special inspection was, to the best of the testing and inspection agency inspector’s knowledge, in conformance with the Contract Documents and the applicable workmanship provisions of the governing code.
- G. Testing Laboratory is not authorized to:
 - 1. Release, revoke, alter or enlarge on requirements of Contract Documents.
 - 2. Approve or accept any portion of the work.
 - 3. Perform any duties of the Contractor.

1.4 EQUIPMENT

- A. Furnish all equipment to perform the required tests and inspections, except as required to be furnished by the General Contractor as described in the Contract Documents.

SECTION 003153 - TESTS AND INSPECTIONS

1.5 REQUIRED TESTS AND INSPECTIONS

- A. Earthwork:
 - 1. Inspect spread footing excavations for conformance to the Contract Documents.
 - 2. Fill Materials: Perform tests to determine acceptability for use.
 - 3. Compaction: Perform density tests to determine compliance with specified compaction requirements.
- B. Trenching and Piping:
 - 1. Perform compaction tests for bedding at one test per 100 linear feet of pipe bedding.
 - 2. Perform compaction tests at one compaction test per lift per 100 linear feet of fill over pipe.
- C. Asphalt Paving:
 - 1. Perform in place density tests with a nuclear gage.
 - 2. Record ambient and asphalt temperatures.
 - 3. Perform Marshal Analysis tests to determine asphalt composition. Perform one test per day.
- D. Concrete Formwork:
 - 1. Inspect forms for location, design, configuration, and seal of form joints and ties.
 - 2. Check condition of bond surfaces, locations and sizes of all embedment items, and anchorage for prevention of displacement.
- E. Steel Concrete Reinforcement:
 - 1. Obtain a copy of approved reinforcing steel placement drawings from the General Contractor.
 - 2. Check reinforcement in place prior to the placement of concrete.
 - 3. Testing procedure shall conform to ASTM A615.
- F. Concrete:
 - 1. Analyze concrete mix design.
 - 2. Aggregate: Review source of aggregate to verify that supplier can furnish concrete of consistent quality.
 - 3. Require mill reports for cement used. Perform tests on cement, at Contractor's expense, if reports cannot be furnished.
 - 4. Inspect consolidation methods and finishing for conformance with contract requirements.
 - 5. Slump and Air Content:
 - a. ASTM C 172, except modified for slump to comply with ASTM C94.
 - b. Test when strength specimens are made, and as often, in the professional opinion of the testing agency, as is necessary for control checks and acceptance proposed.
 - 6. Concrete Temperature: Test hourly when air temperature is 40 degrees F. and below, and when 80 degrees F. and above; and each time a set of compression test specimens is made.
 - 7. Compressive Strength Tests: Test in accordance with ASTM C 39. Compression Test
Specimens:
 - 1) Collect in accordance with ASTM C31; mold and store cylinders for laboratories cured test specimens, except when field-cured test specimens are required.
 - 2) Provide one set of 5 cylinders of each concrete class placed in any one day, or for each 5,000 sq. ft. of surface area placed, unless otherwise indicated. Utilize cylinders in testing procedures as follows: 1 cylinder tested at 7 days, 1 cylinder tested at 14 days, 2 cylinders tested at 28 days, and 1 cylinder retained in reserve for later testing if required. Special Requirements for Early Strength Concrete: Provide 2 additional cylinders (for a total of 7 per set) while placing concrete that will be post-tensioned. Test the 2 additional cylinders at 14 day.
 - 4) Special Requirements for Drilled Piers: Provide one set of 5 cylinders per 50 cubic yards or fraction of drilled pier concrete
 - e. When the frequency of testing will provide less than 5 strength tests for a given class of concrete, conduct testing from at least five randomly selected batches or from each batch if fewer than five are used.
 - f. When the strength of field-cured cylinders is less than 85 percent of companion laboratory-cured cylinders, notify all parties immediately by use of faxed test reports.

SECTION 003153 - TESTS AND INSPECTIONS

8. Concrete Reports shall include:
 - a. Weather and date of pour.
 - b. Name of concrete supplier and truck number.
 - c. Exact mix used and maximum size of aggregate.
 - d. Location in building where placed.
 - e. Cylinder identification.
 - f. Date cylinder received in laboratory.
 - g. Slump data.
 - h. Brand and type of cement used.
 - i. Entrained air content (if required).
 - j. Amount of water added after batching, if any.
 - k. Sequential numbering of reports.
 - l. Compressive strengths.
 9. Report test results in writing to the Architect and the Contractor on the same day that tests are made.
- G. Concrete Floor Flatness/Levelness
1. Measure flatness and levelness of concrete floor slabs to ascertain compliance with specified tolerance requirements after slabs are sufficiently cured to support traffic.
 2. Test in accordance with ASTM E1155 - Standard Test Method for Determining Floor Flatness and Levelness Using the "F Number" System. Use Type I apparatus (Floor Profilometer)
- H. Shotcrete:
1. Verify concrete mix design
 2. Verify qualifications of workmen
 3. Observe placement of reinforcing, guide wires, and shotcrete placement techniques.
 4. Verify thicknesses and density of installed shotcrete.
- I. Concrete Unit Masonry:
1. Take samples of mortar during masonry construction, in accordance with ASTM C109, and grout in accordance with ASTM C1019. Take one test (3"x3"x6" prism) and cast two specimens for each 30 cu. yd. of grout placed each day.
 2. Mill reports for masonry units are required. Perform tests if reports are unavailable. Notify the Owner of the extra service performed.
 3. Testing of reinforcing shall be as specified for steel concrete reinforcing.
- J. Drilled in Anchors, Anchor Bolts, Headed Studs, and Epoxy or Cement Grouted Dowels or Anchors:
1. Provide periodic inspection of installation, including drilled holes after cleaning.
 2. Confirm proper edge distances, depths, and spacings.
 3. Provide tension testing. Test anchors indicated on Structural Drawings in accordance with the Structural Notes.
- K. Structural Welding:
1. Perform periodic visual inspection of all shop and field fillet welding, including stud anchor welds. Inspection of fillet welds shall be in accordance with AWS D1.1. 15 percent of all fillet welds shall be inspected by magnetic particle or dry penetrant methods. All full penetration welds shall be tested by ultrasonic methods in accordance with the requirements of AWS D1.1, Section 6, part III, by ASNT Level II technicians. Any size frequency (1.0, 2.35, 5.0 MHz) and angle (45, 60, 70, and 90) may be used to indicate the size, orientation, and type of discontinuity more accurately.
 2. Verify welding materials, equipment, and welder qualifications.
 3. Inspection reports shall include the following:
 - a. Item inspected.
 - b. Welder's name, certificate expiration date, certified positions.
 - c. Electrode used.
 4. Exceptions to Welding Inspection: Shop welding need not be inspected when shop has been registered and approved by jurisdictional code authorities, in accordance with IBC 1704.2..
- L. Shear Studs:

SECTION 003153 - TESTS AND INSPECTIONS

1. Witness commencement of shear stud installation to determine proper generator, control unit and lift setting. Studs shall be capable of withstanding hammer bending to 45 degrees from vertical without weld failure and shall be tested prior to commencing with production period.
 2. Inspect shear connector stud applied. When visual inspection reveals that a sound weld and/or a full 360 degrees fillet has not been obtained for a particular stud, such stud shall be struck with a hammer and bent to approximately 15 degrees off perpendicular to the beam. Studs meeting this test shall be considered acceptable and shall be left in this position. Studs failing under this test shall be replaced.
 3. Retain record of shear connector stud application and submit with certification that studs have been installed in accordance with the Specifications and the manufacturer's recommendations.
- M. Structural Steel
1. Mill reports are required for all structural steel materials. Perform tests to verify strength of steel if mill reports cannot be furnished by the supplier to the laboratory for certification. Notify the Owner of extra services performed.
 2. Shop Fabrication: Furnish visual inspection during fabrication of structural steel and components (AISC certified fabricators exempt from inspection requirement). Shapes, sizes, classes, and types of steel and threaded fasteners shall be verified for conformance with Contract Documents.
 3. Field Assembly: Perform visual inspection of the installation of structural steel. Verify locations of all anchorages and inserts. Where adjustments are required, reinspect to confirm compliance with Contract Document requirements.
- N. Structural Bolting:
1. All high strength bolting is subject to inspection and testing. Test a minimum of 10 percent of all bolts, and at least 2 bolts in each connection a calibrated wrench to verify that minimum required bolt tension was achieved.
 2. Verify that the installation procedure for structural bolting meets contract requirements.
 3. Mill reports are required for structural high strength bolts. Perform testing if mill tests are unavailable. Notify the Owner if the extra service is performed.
- O. Steel Decking: Perform visual inspection of welds.
- P. Roofing:
1. Inspect roof deck before roofing is started; perform periodic inspection while roofing is being installed to verify compliance with Contract Documents and roofing materials manufacturer's specifications. Inspect all roof related flashing.
 2. Inspections listed performed by roofing manufacturer's representative will qualify as satisfying the requirements of this heading.
- Q. Waterproofing:
1. Verify substrate condition prior to application of waterproofing materials.
 2. Observe installation procedures as necessary to verify proper installation thicknesses and techniques.
- R. Storefront Assembly: Testing and inspecting of representative areas to determine compliance of the various installed systems with specified requirements shall take place as follows.
1. Air Infiltration: Areas shall be tested for air leakage at an air leakage rate of 0.06 cfm/sq. ft. of fixed wall area when tested according to ASTM E283 at a minimum static-air-pressure differential of 6.24 lbf/sq. ft. .
 2. Water Penetration: A minimum of 75 lineal feet of storefront assembly shall be tested in general accordance with AAMA 501.2, and shall not evidence water penetration.
 3. Notify Architect and Owner, in writing, a minimum of 14 days prior to conducting field testing.
 - a. Remove interior finishes to allow for observation during testing.
 - b. Replace interior finishes after conclusion of testing.
 4. Test Reports and Photographs: Required for field testing.
 5. Repair or remove work where test results and inspections indicate that it does not comply with specified requirements.
 - a. Corrective work shall be approved by Architect before re-testing.

SECTION 003153 - TESTS AND INSPECTIONS

- b. Corrective work and retesting shall be paid by Contractor with no additional cost to Owner, including testing fees, Architect's and Consultant's fees.
- 6. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.
- S. Vinyl Punched Windows:
 - 1. Test per ASTM E1105 (pressure differential moisture intrusion testing).
 - 2. Allow for testing of a minimum of 6 windows per ASTM E1105."
- T. Air Barrier System: Testing of air barrier system is described in Section 014550.

END OF SECTION

REQUEST FOR INFORMATION FORM

Date: _____

To: _____

From: _____

LKB Architecture

Spec Sec. Ref: _____

Para: _____

Drawing Ref: _____

Detail: _____

Signed: _____

Response: _____

Attachments

Response From: _____

To: _____

Sent: _____

Rec'd: _____

Signed: _____

Copies: Owner

Consultants

File

SECTION 006325 - SUBSTITUTION REQUEST FORM

TO: **LKB Architecture**

DATE: _____

ATTN: _____

We hereby submit the following for your consideration in lieu of the specified item(s) for the above project:

Specification Section _____ . Paragraph _____ . Referenced Drawing(s) _____

Specified Item: _____

Proposed Substitution: _____

Reason for Substitution: _____

.....
COMPLETE THE FOLLOWING (Use back or additional sheets if necessary).

1. Does the substitution affect dimensions shown on Drawings? Yes _____. No _____.
If yes, indicate changes: _____
2. What effect does the substitution have on other trades? _____

3. What effect do applicable code requirements have on substitution? _____

4. Describe the differences between the proposed substitution and the specified item(s):

5. How do manufacturer guarantees compare between proposed and specified items?
 Same Different (Explain on back.)

.....
What is projected lump sum installed cost difference between proposed substitution and least expensive specified item? \$ _____. [Ø; (decrease); increase]

The undersigned hereby:

- Certifies that the proposed substitute item has been fully investigated and has been determined to be equal or superior to that specified in all respects; that the same or greater warranty will be furnished, that required maintenance service and source for replacement parts are available, and that incorporation of the proposed substitute item will not affect functional clearances.
- Warrants that coordination, installation, and changes to the project as necessary to accommodate the proposed substitution shall be the Contractor's responsibility, that use of the substitute item(s) will not delay project completion, and that claims for additional costs related to its incorporation which may become subsequently apparent will be borne by the Contractor.

Approved For Architect Review: _____

Signature

Title

Signature shall be by a person having authority to legally bind the Contractor to the above terms.

Substitution Allowed

Substitution Allowed As Noted

Substitution Not Allowed

Date: _____

By: _____
Signature Title

END OF SUBSTITUTION REQUEST FORM

SECTION 011000 - SUMMARY

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Special work requirements.
 - 2. Separate work.
 - 3. Owner-furnished Contractor installed products.
 - 4. Coordination.
 - 5. Reference standards.
 - 6. Applicable codes.
 - 7. Field engineering.
 - 8. Request for information
- B. This Section applies to all Technical Specification Sections, and supplements the General and Supplementary Conditions.

1.2 SPECIAL WORK REQUIREMENTS

- A. Limit use of premises to allow for construction operations, to allow for Owner occupancy and work by other Contractors.
- B. Owner Occupancy:
 - 1. Owner will occupy premises during certain stages of construction, for installation of Owner-provided items. Cooperate with Owner to minimize conflict, and to facilitate Owner's operations.
 - 2. Owner will require Temporary Certificate of Occupancy for portions of the premises prior to Final Completion. Contractor shall include such portions of Work in the Construction Schedule to the satisfaction of the Owner.
 - 3. Coordinate use of premises under direction of Owner.
 - 4. Maintain free and safe passage to and from occupied portions of the existing building, in accordance with Code and the Owner's occupancy requirements.
 - 5. Perform no utility shutdowns unless approved by the Owner.
 - 6. Perform demolition to minimize interference with adjacent occupied and public spaces.
 - 7. To the greatest extent possible, select materials and sequence work in an area as required so that the work may be completed overnight and returned to use the next day in that area.
 - 8. Unless approved otherwise by the Owner or suitably isolated, do not perform loud, disruptive, dusty, or odor producing work during business hours. Perform such work only during hours that occupied spaces are closed to the public.
- C. Noise Producing Activities:
 - 1. Unless approved otherwise, limit excessive noise producing activities to daylight hours.
 - 2. Comply with Section 015000 requirements for sound levels and noise control.
- D. Select materials, utilize personnel, perform preparatory work, and sequence work in an area as required so that the work may be completed in the least amount of time possible.
- E. All work shall be performed in a manner that is sensitive to the residential neighborhood environment to the greatest extent possible.

1.3 SEPARATE WORK

- A. Items noted "NIC" (Not In Contract) or FOIO (Furnished by Owner Installed by Owner), will be furnished and installed by Owner.
- B. Coordinate with the separate contractors as necessary to integrate their work into the work of this Contract.

SECTION 011000 - SUMMARY

1.4 OWNER-FURNISHED CONTRACTOR INSTALLED PRODUCTS

- A. Items noted FOIC (Furnished by Owner Installed by Contractor) will be furnished by the Owner for Installation by the Contractor:
- B. Coordinate work to facilitate installation of products furnished by the Owner for Installation by the Contractor, as directed, and as indicated "FOIC," on the Drawings.
- C. Owner's Responsibilities:
 - 1. Arrange for and deliver shop drawings, product data, and samples, to Contractor.
 - 2. Arrange and pay for product delivery to site.
 - 3. Upon delivery, inspect products jointly with Contractor.
 - 4. Submit claims for transportation damage.
 - 5. Arrange for replacement of damaged, defective, or missing items.
 - 6. Arrange for manufacturers' warranties, inspections, and service.
- D. Contractor's Responsibilities:
 - 1. Review shop drawings, product data, and samples.
 - 2. Receive and unload products at site; inspect for completeness, for damage, jointly with Owner.
 - 3. Handle, store, install and finish products.
 - 4. Repair or replace items damaged by Work of this Contract.

1.5 REFERENCE STANDARDS

- A. For products specified by association or trade standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.
- B. The date of the standard is that in effect as of the Bid date, or date of Owner-Contractor Agreement when there are no bids, except when a specific date is specified.
- C. Obtain copies of standards when required by Contract Documents. Maintain copy at jobsite during progress of the specific work.

1.6 APPLICABLE CODES

- A. Conform to the codes listed on the Drawings.

1.7 FIELD ENGINEERING

- A. Provide field engineering services; establish grades, lines, and levels, by use of recognized engineering survey practices.
- B. Control points are those shown on Drawings. Locate and protect control and reference points. Notify the Architect if reference points cannot be located.

1.8 REQUEST FOR INFORMATION

- A. Allot time to resolve questions concerning the Construction Documents with the Architect.
- B. Use a "Request for Information" form or another form as approved by the Architect.
- C. Allow sufficient time in construction schedule for Architect's response to the RFIs.

END OF SECTION

**101 WEST 33RD STREET
BRYAN, TEXAS
SECTION 012300 - ALTERNATES**

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Identification and description of Alternate work.
- B. Related Sections:
 - 1. Owner-Contractor Agreement: Alternates accepted by Owner for incorporation into the Work.
 - 2. Sections of Specifications identified in each Alternate.
- C. This Section supplements the General and Supplementary Conditions.

1.2 PROCEDURES

- A. Alternates will be exercised at the option of Owner.
- B. Coordinate related work and modify surrounding work as required to complete the Work, including changes under each Alternate, when acceptance is designated in Owner-Contractor Agreement.

1.3 ALTERNATE DESCRIPTIONS

- A. ALTERNATE NO. 1 -
 - 1. **Under Basic Bid:**
 - 2. **Under Alternate:**
- B. ALTERNATE NO. 2 -
 - 1. **Under Basic Bid:**
 - 2. **Under Alternate:**
- C. ALTERNATE NO. 3 -
 - 1. **Under Basic Bid:**
 - 2. **Under Alternate:**

END OF SECTION

SECTION 013113 - PROJECT COORDINATION

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. General coordination provisions.
 - 2. Requirements for coordination of space.
- B. This Section applies to all Technical Specification Sections, and supplements the General and Supplementary Conditions.

1.2 GENERAL COORDINATION PROVISIONS

- A. Coordinate work of various specification sections to assure efficient and orderly sequence of installation of construction elements, with provisions for accommodating items installed later.
- B. Carefully study and compare Contract Documents before proceeding with fabrication and installation of work. Promptly advise Architect of any error, inconsistency, omission, or apparent discrepancy discovered.
- C. Allot time in construction scheduling for liaison with Owner and Architect. Establish procedures for handling queries and clarifications. Use Contractor's standard "Request for Information" form to initiate clarifications. Allow sufficient time in construction schedule for Architect's response to the request.
- D. In addition to meetings specified in Section 013119, hold coordination meetings and conferences with personnel and subcontractors to assure coordination of the work.
- E. Coordinate scheduling, submittals, and work of various specification sections to ensure efficient and orderly sequence of installation of independent construction elements.
- F. Verify that characteristics of operating equipment are compatible with building utilities and services.
- G. Verify characteristics of elements of interrelated operating equipment are compatible; coordinate work of various specification sections having interdependent responsibilities for installing, connecting to, and placing in service, such equipment.
- H. In finished areas, except as otherwise indicated, conceal pipes, conduit and wiring in the construction. Coordinate locations of fixtures and outlets with finish elements.
- I. Execute cutting and patching to integrate elements of work, uncover ill-timed, defective, and non-conforming work, provide openings for penetrations of existing surfaces, and provide samples for testing. Seal penetrations through floors, walls, and ceilings.

1.3 COORDINATION OF SPACE

- A. The Contractor shall be responsible for coordinating the actual layout of plumbing, fire protection, HVAC, electrical, and other similar elements, as necessary to avoid interference and maintain the configurations of architectural elements.
- B. Layouts shown on the Drawings are diagrammatic. Follow routings shown for pipes, ducts, and conduit as closely as practical. Where routing changes are required in exposed locations within public spaces, or will affect architectural elements, verify modifications with the Architect prior to proceeding.
- C. Develop coordination drawings, and other preinstallation coordination methods as necessary to coordinate layouts prior to installation. Coordination drawings shall be based on the approved structural steel framing shop drawings, and shall consist of overlay drawings, or other similar methods to graphically indicate plumbing, fire protection, HVAC, electrical, and other similar elements in a single location in order to identify conflicts.

SECTION 013113 - PROJECT COORDINATION

- D. Where coordination drawings, or other preinstallation coordination methods show that available space is inadequate or that modifications will affect architectural elements, request information from the Architect before proceeding with work. No additional payment will be made for installation conflicts which could have been identified by coordination drawings or other preinstallation coordination methods.
- E. Provide clear access to control points, valves, strainers, control devices, and specialty items of every nature to such systems and equipment to obtain maximum head room. Provide adequate clearances as necessary for operation and maintenance.
- F. Make runs parallel with lines of building. Utilize space efficiently to maximize accessibility for other installations, for maintenance, and for repairs.

PART 2 - PRODUCTS

- A. Not Used.

PART 3 - EXECUTION

- A. Not Used.

END OF SECTION

SECTION 013119 - PROJECT MEETINGS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Contractor participation in pre-construction conferences.
 - 2. Contractor administration of progress meetings and pre-installation conferences.
- B. This Section applies to all Technical Specification Sections, and supplements the General and Supplemental Conditions.

1.2 GENERAL MEETING REQUIREMENTS

- A. Make physical arrangements for meetings; notify participants, prepare agenda with copies for each attendee.
- B. Take meeting minutes, and distribute copies within 2 days to the Owner, Architect, and all attendees. Distribute copies to other parties as appropriate.
- C. All representatives attending meetings shall be authorized to act on behalf of the entity each represents.
- D. Architect will attend meetings to ascertain the work is expedited consistent with Contract Documents and construction schedules.

1.3 PRECONSTRUCTION CONFERENCES

- A. Architect will administer pre-construction conference for execution of Owner-Contractor Agreement and exchange of preliminary submittals.
- B. Architect will administer site mobilization conference at Project site for clarification of Owner and Contractor responsibilities in use of site and for review of administrative procedures.

1.4 PROGRESS MEETINGS

- A. Schedule and administer progress meetings throughout the Work at maximum bi-monthly intervals.
- B. Attendance: Job superintendent, major subcontractors and suppliers, Owner, Architect, and others as appropriate to the meeting agenda.
- C. Suggested Agenda:
 - 1. Review of Work progress.
 - 2. Status of progress schedule and adjustments.
 - 3. Delivery schedules.
 - 4. Submittals.
 - 5. Maintenance of quality standards.
 - 6. Pending changes and substitutions
 - 7. Other items affecting progress of Work.

1.5 PRE-INSTALLATION CONFERENCES

- A. Where required in a specification Section, schedule and administer a pre-installation conference prior to commencing work of the Section.
- B. Unless otherwise required, notify the Architect a minimum of 7 calendar days prior to each scheduled meeting.
- C. Require the attendance of entities directly affecting, or affected by, the work of the Section.
- D. Review conditions of installation, preparation and installation procedures, and coordination with related work.

END OF SECTION

SECTION 013233 – PHOTOGRAPHIC DOCUMENTATION

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes administrative and procedural requirements for the following:
 - 1. Preconstruction photographs.
 - 2. Periodic construction photographs.
- B. Related Requirements:
 - 1. Section 017700 "Closeout Procedures" for submitting photographic documentation as Project Record Documents at Project closeout.

1.2 INFORMATIONAL SUBMITTALS

- A. Key Plan: Submit key plan of Project site and building with notation of vantage points marked for location and direction of each [photograph] [video recording]. Indicate elevation or story of construction. Include same information as corresponding photographic documentation.
- B. Digital Record Copy Photographs: Submit unaltered, original, full-size image files within three days of taking photographs.
 - 1. Digital Camera: Minimum sensor resolution of 8 megapixels.
 - 2. Identification: Provide the following information with each image description in file metadata tag:
 - a. Name of Project.
 - b. Name and contact information for photographer.
 - c. Date photograph was taken.
 - d. Description of vantage point, indicating location, direction (by compass point), and elevation or story of construction.

1.3 QUALITY ASSURANCE

- A. Photographer Qualifications: An individual who has been regularly engaged as a professional photographer of construction projects for not less than three years.

1.4 USAGE RIGHTS

- A. Obtain and transfer copyright usage rights from photographer to Owner for unlimited reproduction of photographic documentation.

PART 2 - PRODUCTS

2.1 PHOTOGRAPHIC MEDIA

- A. Digital Images: Provide images in JPG format, with minimum size of [8] <Insert number> megapixels.

PART 3 - EXECUTION

3.1 CONSTRUCTION PHOTOGRAPHS

- A. General: Take photographs using the maximum range of depth of field, and that are in focus, to clearly show the Work. Photographs with blurry or out-of-focus areas will not be accepted.
 - 1. Maintain key plan with each set of construction photographs that identifies each photographic location.
- B. Digital Images: Submit digital images exactly as originally recorded in the digital camera, without alteration, manipulation, editing, or modifications using image-editing software.
 - 1. Date and Time: Include date and time in file name for each image.
 - 2. Field Office Images: Maintain one set of images accessible in the field office at Project site, available at all times for reference. Identify images in the same manner as those submitted to Architect and Construction Manager.

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SECTION 013233 – PHOTOGRAPHIC DOCUMENTATION

- C. Preconstruction Photographs: Before commencement of demolition, take photographs of Project site and surrounding properties, including existing items to remain during construction, from different vantage points, as directed by Architect.
 - 1. Flag construction limits before taking construction photographs.
 - 2. Take 20 photographs to show existing conditions adjacent to property before starting the Work.
 - 3. Take 20 photographs of existing buildings either on or adjoining property to accurately record physical conditions at start of construction.
- D. Periodic Construction Photographs: Take 20 photographs monthly with the cutoff date associated with each Application for Payment. Select vantage points to show status of construction and progress since last photographs were taken.
- E. Final Completion Construction Photographs: Take 20 color photographs after date of Substantial Completion for submission as Project Record Documents. Architect will inform photographer of desired vantage points.
- F. Additional Photographs: Architect may request photographs in addition to periodic photographs specified. Additional photographs will be paid for by Change Order and are not included in the Contract Sum.
 - 1. Three days' notice will be given, where feasible.
 - 2. In emergency situations, take additional photographs within 24 hours of request.
 - 3. Circumstances that could require additional photographs include, but are not limited to, the following:
 - a. Special events planned at Project site.
 - b. Immediate follow-up when on-site events result in construction damage or losses.
 - c. Photographs to be taken at fabrication locations away from Project site. These photographs are not subject to unit prices or unit-cost allowances.
 - d. Substantial Completion of a major phase or component of the Work.
 - e. Extra record photographs at time of final acceptance.
 - f. Owner's request for special publicity photographs.

END OF SECTION 013233

SECTION 013300 - SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Submittal form requirements.
 - 2. Submittal schedule.
 - 3. General requirements for submittals to the Architect.
 - 4. Requirements for each type of submittal.
- B. Related Sections:
 - 1. 007200 - General Conditions of the Contract: Additional submittal requirements.
 - 2. 016000 - Product Requirements: Substitution submittals.
 - 3. 017700 - Closeout Procedures: Closeout submittals.
- C. This Section applies to all Technical Specification Sections, and supplements the General and Supplementary Conditions.

1.2 SUBMITTAL FORM REQUIREMENTS

- A. All submittals other than physical samples shall be provided in electronic format acceptable to the Architect.
- B. Provide the following, as applicable, on each submittal:
 - 1. Present and previous submittal dates.
 - 2. The Project title and number.
 - 3. Contractor's submittal number.
 - 4. Subcontract identification.
 - 5. The names of:
 - a. Contractor.
 - b. Supplier.
 - c. Manufacturer.
 - 6. Identification of revisions on resubmittals.
 - 7. For each product, reference corresponding specification section and paragraph number.
- C. Deliver submittals to the Architect. Include name of contact person identified at the time of Agreement.
- D. Transmit submittals under AIA form G810 or other transmittal form as accepted by the Architect.
- E. Submittals in graphic form shall be clear readable copies with Contractor's original stamp. Facsimile submittals will not be accepted.

1.3 SUBMITTAL SCHEDULE

- A. Make submittals to the Architect as required to cause no delay in the work.
- B. Require each subcontractor to make submittals within 30 days of the subcontract date, unless specified or approved otherwise, or required to meet the work schedule.
- C. Allow a minimum of 10 working days from receipt, for the Architect to review each submittal. Allow additional time for large and complex submittals representing major portions of the Work, such as fire protection, structural steel, or curtain wall. Also allow 5 additional days where review by Architect's consultant is also required.
- D. Schedule submittals to allow sufficient time for possible revision and resubmittal of the rejected submittals, without affecting the construction schedule.
- E. Make the following submittals to the Owner and Architect prior to starting construction and within 10 working days of the Notice to Proceed:
 - 1. Certificates of insurance.
 - 2. List of subcontractors and suppliers.

SECTION 013300 - SUBMITTAL PROCEDURES

3. Construction schedule.
4. Submittal log.
5. Products list.

F. Submit Schedule of Values prior to first application for payment.

1.4 GENERAL REQUIREMENTS FOR SUBMITTALS TO THE ARCHITECT

- A. Make submittals to the Architect, unless otherwise specified.
- B. Review submittals prior to submittal to the Architect.
- C. Stamp and sign each submittal as certification that the submittal has been reviewed by the Contractor. Submittals not stamped and signed by the Contractor will be returned by the Architect without review for resubmittal.
- D. Notify the Architect in writing, at time of submission, of all deviations in the submittals from requirements of the Contract Documents.
- E. Make additional copies of approved submittals as necessary to implement the Work.
- F. Review and approval of a submittal by the Architect shall not relieve the Contractor from responsibility for the proper fitting, finishing, quantities, and erection of the work in strict accordance with the Contract requirements.
- G. Review and approval of a submittal by the Architect shall not relieve the Contractor from the responsibility for providing work not indicated on the submittal, but otherwise required for the completion of the work.
- H. Do not fabricate or erect work prior to approval of the submittals.
- I. Should discrepancies become evident, immediately notify Architect for resolution before proceeding with shop work.
- J. Incorporation of substitutions into submittals will be considered cause for rejection of the submittal.
- K. Submittals will be reviewed by the Architect for conformance to the design concept, only. Architect's review of vendor designed items shall not relieve the Contractor of responsibility for compliance with specified performance requirements.
- L. If the Contractor fails to review Shop Drawings, Product Data, or Samples to determine their responsiveness to the Contract Documents, or fails to substantially respond to Architect's review comments prior to resubmittal, or if he makes submittals which substantially alter the Contract Documents, the Contractor shall reimburse the Owner for the charges of the Architect for extra services required to review such submittals.

1.5 CONSTRUCTION SCHEDULE

- A. Prepare schedule in the form of a network planning system (CPM) for scheduling and controlling the work. Note the critical path.
- B. Show commencement and completion dates proposed for each subdivision of work.
- C. Update and submit monthly. Indicate actual start and completion of all completed activities. Graphically indicate changes from previously issued schedule.
- D. Incorporate remedial construction into schedule when remedial work is required.
- E. Show submittal dates required for shop drawings, product data, and samples, and product delivery dates, including those furnished by Owner.
- F. Coordinate with the Owner's schedule, showing all Contract activities to be performed by the Owner including their start, duration, completion, float and critical path.

SECTION 013300 - SUBMITTAL PROCEDURES

1.6 SUBMITTAL LOG

- A. List each type of submittal, and the date that the submittal will be made. Indicate Architect review time proposed.

1.7 PRODUCTS LIST

- A. Complete list of major products proposed for use, with name of manufacturer, trade name, and model number of each product.

1.8 SCHEDULE OF VALUES

- A. Submit Schedule of Values prior to first Application for payment.
- B. Submit schedule on AIA Form G703. Contractor's standard form or media-driven printout will be considered on request.
- C. Format: Table of Contents of this Project Manual. Identify each line item with number and title of the major Specification Sections.
- D. Include in each line item amount of Allowances. For unit cost Allowances, give quantities measured from Contract Documents multiplied by the unit cost equal to the total for the item.
- E. Include in each line item a directly proportional amount of Contractor's overhead and profit.
- F. Revise schedule to list change orders, for each application for payment.
- G. Provide a sub-schedule for each separate stage of Work specified in Section 011000.

1.9 SHOP DRAWINGS

- A. Submit Shop Drawings required by individual Sections of the Specifications, and as otherwise required for proper performance of the work.
- B. Illustrate fully the requirements of the Specifications and the Contract Drawings, and accurately show quantities, kinds of materials, methods of assembly, and all data required for fabrication, erection, and installation.
- C. Show the relationship of adjoining work, relevant field conditions and dimensions; coordinate with affected subcontractors and suppliers if in conflict.
- D. Number of Copies: Unless otherwise specified, submit 1 legible right-reading copy (PDF) to the Architect for review.
- E. The Architect will return one copy to Contractor with corrections, notations and Architect's stamp indicating action to be taken.
- F. Electronic data of portions of the Contract Documents may be available for use as bases for preparation of shop drawings. The General Contractor shall be responsible for all subsequent distribution of such information to subcontractors and suppliers. Request documents by submitting an executed copy of the "Agreement Concerning Use of Electronic Media" form, following this Section. Use of such documents implies Contractor's and subcontractors' agreement to the terms described on the form. Fully describe requirements for each request.
 - 1. Reproducible backgrounds.
 - a. Copies of contract drawings, or copies of CADD generated drawings with designated data layers, only.
 - b. The Contractor shall reimburse the Architect directly for reproducible backgrounds, \$200.00 per request, plus direct printing costs.
 - 2. Database of CADD generated drawings.
 - a. Release of CADD information will be restricted to the following categories:
 - 1) Architectural floor plans.
 - 2) Site plan.
 - 3) Reflected ceiling plans.
 - 4) Exterior elevations.
 - 5) Structural framing plans.

SECTION 013300 - SUBMITTAL PROCEDURES

- b. The CADD database will be generated on PC hardware by exporting from Revit platform. Architect has the capability to format CADD output to meet capabilities of all major platforms and major media types.
- c. When requesting CADD databases, specify the output form required.
- d. The Contractor shall reimburse the Architect directly for CADD databases; \$200.00 per request of all or any categories listed above.

1.10 PRODUCT DATA

- A. Mark each copy to identify applicable products, models, options, and other data. Include manufacturer's printed installation instructions.
- B. Submit the number of copies which Contractor requires, plus 1 copy which will be retained by Architect.
- C. Modify product data and installation instructions to delete information which is not applicable to the work.
- D. Supplement standard information to provide information specifically applicable to the work.

1.11 SAMPLES

- A. Submit samples as specified in the technical Sections.
- B. Include identification on each sample, giving full information.
- C. Submit the number of samples specified in the technical Sections. Where quantity is not specified, submit 3 samples. One will be retained by the Architect.
- D. Unless specified otherwise, submit full range of manufacturers' standard colors, textures, and patterns for Architect's selection. Submit samples for selection of finishes within 20 days after date of Contract.
- E. Submit samples to illustrate functional characteristics of the product, with integral parts and attachment devices. Coordinate submittal of different categories for interfacing work.

END OF SECTION

SECTION 014500 - QUALITY CONTROL

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. General requirements.
 - 2. Workmanship.
 - 3. Special installation procedures
 - 4. Manufacturer's instructions.
 - 5. Manufacturer's certificates.
 - 6. Mock-ups.
 - 7. Special exterior siding/windows mock-up.
 - 8. Manufacturers' field services.
 - 9. Testing laboratory services.
 - 10. Contractor tests and inspections.
- B. Related Sections:
 - 1. 011000 - Summary: Applicability of specified reference standards.
 - 2. 013300 - Submittal Procedures: Submittal of manufacturer's instructions.
- C. This Section applies to all Technical Specification Sections, and supplements the General and Supplemental Conditions.

1.2 GENERAL QUALITY CONTROL

- A. Maintain quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce work of specified quality.

1.3 WORKMANSHIP

- A. Comply with industry standards, except when more restrictive tolerances or specified requirements indicate more rigid standards or more precise workmanship.
- B. Perform work with persons qualified to produce workmanship of specified quality.
- C. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, and racking.

1.4 SPECIAL INSTALLATION PROCEDURES

- A. Make no attachment to structural concrete or steel members in the building in such a way as to overload or impair the structural integrity of the member.
- B. Steel Decking:
 - 1. Where fastening into bottom of steel or acoustic steel decking is required, fasten only into lower flutes.
 - 2. Do not use fasteners in steel deck which penetrate more than 1 inch.
 - 3. Do not use powder driven fasteners into steel roof deck. Where anchorage to structural framing members is impractical, supports for items such as suspended ceiling systems, ductwork, and aluminum conduit 1-1/2 inches or less may be supported from steel roof decking by sheet metal screws, screwed into the bottom flute of the roof deck, and in sufficient quantity to adequately support the load. Equipment supports, hangers for mechanical piping and other items requiring more than incidental support, shall not be secured to the roof decking.

1.5 MANUFACTURERS' INSTRUCTIONS

- A. Unless specified otherwise, comply with instructions in full detail, including each step in sequence. Should instructions conflict with Contract Documents, request clarification from Architect before proceeding.

SECTION 014500 - QUALITY CONTROL

1.6 MANUFACTURERS' CERTIFICATES

- A. When required by individual Specifications Section, submit, in duplicate, manufacturer's certification that products meet or exceed specified requirements.

1.7 MOCK-UPS

- A. Provide mock-ups as specified in the individual specification sections. When the initial mock-up is unacceptable to the Architect, provide additional mock-ups until approval is obtained. Unacceptability of mock-ups does not constitute reason for increase in Contract Price or Schedule.
- B. Unless specified or approved otherwise, schedule mock-ups for completion a minimum of 5 working days prior to actual commencement of the work represented by the mock-up.
- C. Notify the Architect and Owner a minimum of 5 working days prior to mock-up.
- D. For each mock-up, provide conditions which will replicate the conditions of the actual installation, including lighting, to the greatest reasonable extent.
- E. Approved mock-up shall be the standard of workmanship and materials for the remainder of the related work.
- F. Obtain Architect's written approval for each mock-up.
 - 1. Allow access to the mock-up for Architect's review and for review by manufacturer and trade representatives as the Architect deems appropriate.
 - 2. Proceed with the work upon Architect's approval of the mock-up. Each approved mock-up shall represent the standard of workmanship and materials for the remainder of the related work.
 - 3. Modify and correct mock-up as necessary to obtain Architect's approval; allow time in construction schedule for adjustment or reconstruction of mock-up to obtain approval. Claims for delays due to unacceptable mock-ups will not be considered.
- G. Maintain mock-up in approved condition, until directed otherwise.
- H. Disposition of Mock-Ups:
 - 1. Rejected mock-ups shall be selectively demolished to accommodate new mock-ups, or completely removed as appropriate.
 - 2. Mock-ups constructed as part of the proposed work, and which have been approved by the Architect, may be incorporated into the work.
 - 3. Unless specified or directed otherwise, approved mock-ups which are not incorporated into the work shall be removed upon project completion.

1.8 SPECIAL EXTERIOR WINDOW AND SIDING MOCK-UP

- A. Façade Mock-Up: At a location determined by Architect:
 - 1. Construct mock-up on site of window installation, adjacent exterior metal siding installation, adjacent flat accent panel, adjacent wood siding, sheet metal trim and flashing, as indicated. Mock-up shall include the following, at a minimum:
 - a. One upper floor vinyl window including sill, jamb and head trim/flashing;
 - b. Adjacent siding on 4 sides, including supports, fastener pattern, closures and trim pieces.
 - 2. Façade mock-up will be an in-place mock-up and sequenced/reviewed in multiple stages with construction process.
 - 3. Components indicated for exposed fastening shall include fastening pattern in mock-up.
 - 4. Mock-up shall be constructed in coordination with the of work of Section 072100 and 072700 on that building façade.
 - 5. Mock-up review will include inspection of workmanship, tolerances, metal trim and flashing details, coatings, sealant, and other items pertaining to compliance with Contract Documents and design intent.

1.9 MANUFACTURERS' FIELD SERVICES

- A. When specified, require product manufacturer to furnish qualified personnel to observe field conditions and quality of workmanship, and to provide recommendations, certifications, and other specified services.

SECTION 014500 - QUALITY CONTROL

B. Representative shall submit written report to Architect listing observations and recommendations.

1.10 TESTING LABORATORY SERVICES

A. The Owner will arrange for the services of an Independent Testing Laboratory to inspect and test the Work in accordance with regulatory requirements and to verify compliance with the contract documents.

B. Contractor's Responsibilities:

1. Cooperate with Testing Laboratory personnel, and furnish access, tools, samples, certifications, test reports, design mixes, equipment, storage, and assistance as requested by the Testing Laboratory.
2. Notify Architect and Testing Laboratory 48 hours prior to expected time for operations requiring inspection and testing. When tests or inspections cannot be performed, through the fault of the Contractor, reimburse the Owner for the additional costs incurred.
3. Remove and replace all work found not complying with the Contract Documents. Remedies shall be in accordance with the Contract Documents and code requirements.
4. If initial tests and inspections indicate deficient work, the Contractor shall reimburse the Owner for the costs of all subsequent tests and inspections related to the deficiency.
5. All damage which may occur to the work as a result of normal testing operations shall be repaired to match surrounding surfaces.
6. Schedule testing and inspection so that the work of testing and inspection personnel will be as continuous and brief as possible.

C. Tests and inspections shall be in accordance with code requirements and as otherwise required to verify conformance to Contract requirements.

1.11 CONTRACTOR TESTS AND INSPECTIONS

A. Tests and Inspections are specified in the individual specification Sections.

B. Contractor's Convenience Testing: Inspection and testing performed exclusively for the Contractor's convenience shall be the sole responsibility of the Contractor.

END OF SECTION

SECTION 014550 - AIR BARRIER SYSTEM

PART 1 - GENERAL

1.1 SUMMARY

- A. This section includes administrative and procedural requirements for accomplishing an airtight building enclosure that controls infiltration or exfiltration of air.
- B. Related Sections:
 - 1. 003152 - Testing and Inspection Services: Owner paid testing and inspections.
 - 2. 014500 – Quality Control.
 - 3. 030013 – Concrete.
 - 4. 054000 – Cold Formed Metal Framing
 - 5. 072100 – Thermal Insulation
 - 6. 076200 - Sheet Metal Flashing And Trim
 - 7. 079200 - Joint Sealants: Expansion joint fillers.
 - 8. 081113 – Hollow Metal Doors And Frames
 - 9. 085313 – Vinyl Windows
 - 10. 092843 – Gypsum Sheathing
- C. Drawings, the provisions of the Agreement, the General Conditions, and Division 1 specification sections apply to all work of this Section.

1.2 DEFINITIONS AND REQUIREMENTS

- A. Air Barrier System:
 - 1. The airtight components of the building enclosure and the joints, junctures and transitions between materials, products, and assemblies forming the air-tightness of the building enclosure are called “the air barrier system”. Services include coordination between the trades, the proper scheduling and sequencing of the work, preconstruction meetings, inspections, tests, and related actions, including reports performed by Contractor, by independent agencies, and by governing authorities. They do not include contract enforcement activities performed by Architect.
- B. Requirements of this section relate to the coordination between subcontractors required to provide an airtight building enclosure, customized fabrication and installation procedures, not production of standard products.
 - 1. Continuity of the air barrier materials and products with joints to provide assemblies. Continuity of all the enclosure assemblies with joints and transition materials to provide a whole building air barrier system.
 - 2. Specific quality-control requirements for individual construction activities are specified in the sections of the specifications. Requirements in those sections may also cover production of standard products. It is the Contractor’s responsibility to ensure that each subcontractor is adequately and satisfactorily performing the quality assurance documentation, tests and procedures required by each section.
 - 3. Specified inspections, tests, and related actions do not limit Contractor’s quality-control procedures that facilitate compliance with Contract Document requirements.
 - 4. Requirements for Contractor to provide an airtight building enclosure is not limited by quality-control services required by Architect, Owner, or authorities having jurisdiction and are not limited by provisions of this section.

1.3 QUALITY CONTROL

- A. The Contractor shall ensure that the intent of constructing the building enclosure with a continuous air barrier system to control air leakage into, or out of the conditioned space is achieved. The air barrier system shall have the following characteristics:
 - 1. It must be continuous, with all joints sealed.
 - 2. It must be structurally supported to withstand positive and negative air pressures applied to the building enclosure.
 - 3. Connection shall be made between:
 - a. Foundation and walls.

SECTION 014550 - AIR BARRIER SYSTEM

- b. Walls and windows or doors.
 - c. Different wall systems.
 - d. Wall and roof.
 - e. Wall and roof over unconditioned space.
 - f. Walls, floor and roof across construction, control and expansion joints.
 - g. Walls, floors and roof to utility, pipe and duct penetrations.
- B. Air Barrier Penetrations: All penetrations of the air barrier and paths of air infiltration / exfiltration shall be sealed.
- C. Testing and Inspection Services:
- 1. Inspection and testing services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with Contract Document requirements.
 - 2. Qualifications for Air Barrier Testing and Inspection Agencies: Owner will engage an Air Barrier inspection and testing service agencies, including independent testing laboratories, that are prequalified and that specialize in the types of air barrier system inspections and tests to be performed.
- D. Contractor Responsibilities: Unless otherwise indicated as the responsibility of another identified entity, Contractor shall provide coordination of the trades, and the sequence of construction to ensure continuity of the air barrier system joints, junctures and transitions between materials and assemblies of materials and products, from substructure to walls to roof. Provide quality assurance procedures, testing and verification as specified herein. Facilitate inspections, tests, and other quality-control services specified elsewhere in the Contract Documents and required by authorities having jurisdiction or by the Owner. Costs for services listed below are included in the Contract Sum.
- 1. Organize preconstruction meetings between the trades involved in the whole building's air barrier system to discuss where each trade begins and ends and the responsibility and sequence of installation of all the air-tight joints, junctures, and transitions between materials, products and assemblies of products specified in the different sections, to be installed by the different trades.
 - 2. Participate in exterior wall mock-up specified in Section 014500 before proceeding with the work, satisfactory to the Architect.
- E. Associated Services: Cooperate with agencies performing required inspections, tests, and similar services, and provide reasonable auxiliary services as requested. Notify the agency sufficiently in advance of operations to permit assignment of personnel. Auxiliary services required include, but are not limited to, the following:
- 1. Provide access to the Work.
 - 2. Furnish incidental labor and facilities necessary to facilitate inspections and tests.
 - 3. Take adequate quantities of representative samples of materials that require testing or assist the agency in taking samples.
 - 4. Deliver samples to testing laboratories.
 - 5. Provide security and protection of samples and test equipment at the Project Site.
 - 6. Prepare the building for air leakage testing per ASTM E 779. Including providing temporary isolations of intentional penetrations through the building envelope.

1.4 PERFORMANCE REQUIREMENTS

- A. Compliance:
- 1. Performance shall comply with the International Building Code and additional requirements as indicated.
 - 2. The entire building: The air leakage of the entire building shall not exceed 0.22 cfm/ft² under a pressure differential of 0.3 in. water (1.57psf) (2.0 L/s.m² @ 75 Pa) when tested according to ASTM E 779.
 - 3. If the leakage rate when tested as described below tested exceeds that defined here, the owner's testing and inspection agency will conduct a visual inspection of the air barrier. The contractor shall seal all leaks noted to the extent practicable and submit an additional report identifying the corrective actions taken to the building owner and the Code Official

SECTION 014550 - AIR BARRIER SYSTEM

1.5 SUBMITTALS

- A. The independent testing agency shall submit a certified written report, in duplicate, of each inspection, test, or similar service to the Architect. If the Contractor is responsible for the service, submit a certified written report, in duplicate, of each inspection, test, or similar service through the Contractor.
 - 1. Submit additional copies of each written report directly to the governing authority, when the authority so directs.
 - 2. Report Data: Written reports of each inspection, test, or similar service include, but are not limited to, the following:
 - a. Date of issue.
 - b. Project title and number.
 - c. Name, address, and telephone number of testing agency.
 - d. Dates and locations of samples and tests or inspections.
 - e. Names of individuals making the inspection or test.
 - f. Designation of the Work and test method.
 - g. Identification of product and Specification Section.
 - h. Complete inspection or test data.
 - i. Test results and an interpretation of test results.
 - j. Ambient conditions at the time of sample taking and testing.
 - k. Comments or professional opinion on whether inspected or tested Work complies with Contract Document requirements.
 - l. Name and signature of laboratory inspector.
 - m. Recommendations on retesting.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

3.1 REPAIR AND PROTECTION

- A. Upon completion of inspection, testing, sample taking and similar services, repair damaged construction and restore substrates and finishes. Comply with Contract Document requirements for Division 1 Section "Cutting and Patching."
- B. Protect construction exposed by or for quality-control service activities, and protect repaired construction.
- C. Repair and protection is Contractor's responsibility, regardless of the assignment of responsibility for inspection, testing, or similar services.

3.2 TESTING AND INSPECTION

- A. The Owner will hire a testing and inspection agency to provide periodic observation during installation of the air barrier system. The testing and inspection agency will provide the following listed services:
 - 1. Qualitative Testing and Inspection:
 - a. Reports of observations, with copies to the Owner, Contractor and Architect. The observations will include the following items as applicable to the project:
 - 1) Continuity of the air barrier system throughout the building enclosure with no gaps, holes.
 - 2) Structural support of the air barrier system to withstand design air pressures.
 - 3) Masonry and concrete surfaces are smooth, clean and free of cavities, protrusions and mortar droppings.
 - 4) Site conditions for application temperature and dryness of substrates.
 - 5) Maximum length of exposure time of materials to ultra-violet deterioration.
 - 6) Surfaces are properly primed.
 - 7) Measure application thickness of liquid-applied materials to manufacturer's specifications for the specific substrate.

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- 8) Materials used for compatibility.
- 9) Transitions at changes in direction, and structural support at gaps.
- 10) Connections between assemblies (membrane and sealants) for cleaning, preparation and priming of surfaces, structural support, integrity and continuity of seal.

END OF SECTION

SECTION 015000 - TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. General requirements.
 - 2. Electricity, lighting.
 - 3. Heat, ventilation, cooling.
 - 4. Telephone service.
 - 5. Water.
 - 6. Sanitary facilities.
 - 7. Barriers.
 - 8. Closures.
 - 9. Protection of installed work.
 - 10. Security.
 - 11. Safety.
 - 12. Water control.
 - 13. Cleaning during construction.
 - 14. Project identification.
 - 15. Field offices and sheds.
 - 16. Removal.
- B. Related Sections:
 - 1. 011000 - Summary: Contractor use of premises.
 - 2. 017421 - Construction Waste Management and Disposal: Construction waste management plan.
 - 3. 017700 - Closeout Procedures: Final cleaning.
- C. This Section applies to all Technical Specification Sections, and supplements the General and Supplemental Conditions.

1.2 GENERAL REQUIREMENTS

- A. Temporary facilities and controls shall conform to the requirements of the jurisdictional code authorities.

1.3 ELECTRICITY, LIGHTING

- A. Provide service required for construction operations, with branch wiring and distribution boxes located to allow service and lighting by means of construction-type power cords.
- B. Provide lighting for construction operations.
- C. Existing and permanent lighting may be used during construction. Maintain lighting and make routine repairs.
- D. Conserve energy.

1.4 HEAT, VENTILATION

- A. Provide temporary heating and cooling as necessary to maintain specified conditions for Construction operations, to protect materials and finishes from damage due to temperature or humidity.
- B. Provide temporary ventilation of enclosed areas to cure materials, disperse humidity, and prevent accumulations of dust, fumes, vapors, or gases in accordance with the Construction Indoor Air Quality Management requirements specified in Section 013544.
- C. Prior to operation of permanent facilities for temporary purposes, verify that installation is approved for operation, and that filters are in place. Provide minimum Merv 8 filters in accordance with the Construction Indoor Air Quality Management requirements specified in Section 013544
- D. Furnish and pay for operation and maintenance of equipment during construction. Owner will pay for utilities.

SECTION 015000 - TEMPORARY FACILITIES AND CONTROLS

- E. Conserve energy.

1.5 WATER

- A. Provide service required for construction operations. Extend branch piping with outlets located so that water is available by use of hoses.
- B. The Owner will pay the costs for all water used.
- C. Conserve water use whenever possible.

1.6 SANITARY FACILITIES

- A. Provide and maintain required portable facilities and enclosures.

1.7 BARRIERS

- A. Provide as required to prevent public entry to construction areas, to provide for Owner's use of site, and to protect existing facilities and adjacent properties from damage from construction operations.
- B. Provide 6 foot high fence around construction site; equip with vehicular and pedestrian gates with locks. Construction: Commercial grade chain link fence.
- C. Provide barricades and covered walkways as required by governing authorities for public rights-of-way and for public access to existing buildings.
- D. Provide barriers around trees and plants designated to remain. Protect against vehicular traffic, stored materials, dumping, chemically injurious materials, and puddling or continuous running water.
- E. Provide barricades around openings in floors and roof decks.

1.8 CLOSURES

- A. Exterior Closures:
 - 1. Provide temporary weather-tight closures as necessary to create proper interior environmental conditions, protection of materials, and to prevent entry of unauthorized persons. Conform to Construction Indoor Air Quality Management requirements specified in Section 013544.
 - 2. Where doors are necessary for access by construction personnel, provide self-closing hardware and locks.
 - 3. Except as necessary for construction access, do not remove exterior closures until permanent construction is ready to be installed and made weathertight.
 - 4. Enclosures shall be constructed to prevent blow off during inclement weather, and shall be sealed to prevent water penetration and excessive air infiltration.
- B. Interior Closures:
 - 1. Provide temporary closures to prevent penetration of dust and moisture into areas separate from work areas, damage to operating systems and components, and to create environmental conditions necessary for the proper installation of materials and systems.
 - 2. Conform to Construction Indoor Air Quality Management requirements specified in Section 013544.
- C. Installed construction which has been damaged due to lack of protection shall be replaced or restored to original or new condition. This includes construction required to be protected under Construction Indoor Air Quality Management requirements specified in Section 013544.

1.9 PROTECTION OF INSTALLED WORK

- A. Provide temporary protection for installed work, including protection from impact, water, dust contamination, overspray, and similar damage. Conform to Construction Indoor Air Quality Management requirements specified in Section 013544.
- B. Secure temporary protections as necessary to prevent blow off during inclement weather.
- C. Provide protective coverings at exposed exterior walls and horizontal surfaces, projections, and window and door openings.

SECTION 015000 - TEMPORARY FACILITIES AND CONTROLS

- D. Protect finished surfaces from damage caused by traffic, movement of heavy objects, and storage of materials. Where necessary, control traffic in immediate area as necessary to minimize the risk of impact damage.
- E. Prohibit traffic and storage on waterproofed and roofed surfaces, on lawn and landscaped areas.
- F. Installed construction which has been damaged due to lack of protection shall be replaced or restored to original or new condition.

1.10 SECURITY

- A. Provide security program and facilities to protect Work, materials stored off-site, existing facilities, and Owner's operations from unauthorized entry, vandalism, and theft. Coordinate with Owner's security program.

1.11 SAFETY

- A. Furnish safety program and facilities to protect the safety of workers and other persons affected by the Work.

1.12 WATER CONTROL

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

1.13 CLEANING DURING CONSTRUCTION

- A. Control accumulation of waste materials and rubbish on a daily basis, and dispose of off-site or in a designated container on site. Conform to Construction Waste Management and Disposal requirements specified in Section 017421.
- B. Clean interior areas prior to start of finish work, maintain areas free of dust and other contaminants during finishing operations.
- C. Remove excess debris from cavities which are to be concealed in the finished Work.
- D. Cleaning procedures shall be in accordance with Indoor Air Quality Management Plan specified in Section 013544.

1.14 PROJECT IDENTIFICATION

- A. Provide 8 x 6 foot Project identification sign of wood frame and exterior grade plywood construction, painted, with exhibit lettering by professional sign painter, to Architect's design and colors. List title of Project, names of Owner, Architect, professional consultants, Contractor and major subcontractors. Erect on site at location established by Owner.

1.15 FIELD OFFICES AND SHEDS

- A. Field Office:
 - 1. Office: Weather-tight, with lighting, electrical outlets, heating, cooling, and ventilating equipment, and equipped with furniture. Provide, in addition, space for Project meetings, with table and chairs to accommodate 6 persons.
 - 2. Equipment:
 - a. Copier: Contractor's option; 11 x 17 inch size capability.
 - b. Facsimile Machine: Contractor's option. Connect to public phone lines as required for communication with Architect's office and Contractor's home office.
 - c. Communication Service
 - 1) Minimum one dedicated telephone line with instrument.
 - 2) An Internet Service Provider (ISP) account.
 - 3) Com ISDN LAN modem or Office Connect
 - 4) WI-FI, including audio and large screen monitor for Zoom teleconferencing
 - 5) Remote Dual Analog Router (analog or ISDN depending on telephone company service), or approved, for use and communication with Internet Service Provider (ISP).
 - d. Computer: Minimum one Pentium PC with minimum 128 MB of RAM, including the following.

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SECTION 015000 - TEMPORARY FACILITIES AND CONTROLS

- 1) Windows XP and Microsoft Office 2003, or later; Internet Explorer V6.0 or later.
- 2) Bluebeam Revu at least one station for initiating documents.
- 3) Adobe Acrobat Reader.
- e. Printer: Minimum 11x17 inch graphics capability.
- f. Sheet-feed or flatbed scanner and related software.

- B. Storage Sheds for Tools, Materials, and Equipment: Weather-tight, with heat and ventilation for Products requiring controlled conditions, with adequate space for organized storage and access, and lighting for inspection of stored materials.

1.16 CONTRACTOR DESIGNATED AREAS

- A. The Owner will designate exterior areas of the site which will be available to the Contractor for staging and storage of materials. Exterior storage areas shall be enclosed by a construction chain link fence with a vision barrier.
- B. The Owner will designate areas of the Site for Contractor and employee parking.
- C. Exterior Storage Sheds for Tools, Materials, and Equipment: Weather-tight, with adequate space for organized storage and access, and lighting for inspection of stored materials.

1.17 REMOVAL

- A. Completely remove temporary materials and equipment when their use is no longer required. Conform to Construction Waste Management and Disposal requirements specified in Section 017421.
- B. Clean and repair damage caused by installation or use of temporary facilities. Remove underground installations to a depth of 2 feet; grade site as indicated. Restore existing facilities used during construction to specified, or to original, condition.

END OF SECTION

SECTION 016000 - PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Products.
 - 2. Transportation and handling.
 - 3. Storage and protection.
 - 4. General installation requirements.
 - 5. Product options.
 - 6. Substitutions.
- B. Related Sections:
 - 1. 006325 - Substitution Request Form.
 - 2. 011000 - Summary: Owner-furnished products.
 - 3. 014500 - Quality Control: Submittal of manufacturers' certificates.
 - 4. 017421 - Construction Waste Management and Disposal: Construction waste management plan.
 - 5. 017700 - Closeout Procedures: Systems demonstration, operation and maintenance data, warranties and guarantees, spare parts and maintenance materials.
- C. This Section applies to all Technical Specification Sections, and supplements the General and Supplementary Conditions.

1.2 PRODUCTS

- A. Products include material, equipment, and systems.
- B. Comply with size, make, type, and quality specified, unless otherwise approved in writing by the Architect. Specifications and referenced standards are minimum requirements.
- C. All components required to be supplied in quantity shall be identical, whether furnished under one or several Sections of the specifications.
- D. Unless specified or indicated otherwise, materials employed for construction purposes, such as formwork, scaffolding, and temporary lighting, shall not be incorporated into the work.
- E. Unless indicated or specified otherwise, all products incorporated into the Work shall be of the most suitable grade of their respective kinds for the intended use.

1.3 TRANSPORTATION AND HANDLING

- A. Transport by methods to avoid product damage.
- B. Deliver products in manufacturer's original containers or packaging, with identifying labels intact and legible. Where options exist, select container or packaging systems that can be recycled or reused. Coordinate packaging waste removal and recycling with the Construction Waste and Demolition Management Plan
- C. Furnish equipment and personnel to handle products by methods to prevent soiling or damage.
- D. Promptly inspect shipments to assure that products comply with requirements, quantities are correct, and products are undamaged.
- E. Immediately replace non-conforming products with new conforming products, at no additional cost to the Owner.

1.4 STORAGE AND PROTECTION

- A. Store products in accordance with manufacturer's instructions, with seals and labels intact and legible.
- B. Store sensitive products in weather-tight enclosures. Maintain within temperature and humidity ranges required by manufacturer's instructions, and as otherwise required to prevent damage.

SECTION 016000 - PRODUCT REQUIREMENTS

- C. For exterior storage of fabricated products, place on sloped supports above ground. Protect from soiling or staining through ground contact. Cover products subject to deterioration with impervious sheet covering; provide ventilation to avoid condensation.
- D. Store loose granular materials on solid surfaces in a well-drained area; prevent mixing with foreign matter.
- E. Arrange storage of products to furnish convenient access for inspection and inventory.

1.5 GENERAL INSTALLATION REQUIREMENTS

- A. Unless indicated or specified otherwise, install each product in accordance with the product manufacturer's instructions.
- B. Distribute copies of manufacturer's instructions to parties involved in the installation.
- C. Maintain one set of complete instructions at the job site during installation and until completion.

1.6 PRODUCT OPTIONS

- A. Product Specified by Reference Standards or by Description Only: Provide product meeting those standards.
- B. Product Specified by Naming One or More Manufacturers with an "or approved" provision: Use specified product or submit a request for substitution in accordance with the specified substitution requirements. When approved a substitute product may be used.
- C. Product Specified by Naming One or More Manufacturers, without a provision for Substitution: No substitution will be allowed, except as specified under the Article on Substitutions.

1.7 SUBSTITUTIONS

- A. Timing: Substitution requests will be considered to 15 days after date of Owner-Contractor agreement, as pertinent to that phase of work for which the product substitution is proposed. Substitution requests prior to such cutoff date may originate directly from the General Contractor, or from a prospective supplier or subcontractor. Substitution requests within 15 days after cutoff date shall be submitted through the General Contractor. Subsequent substitutions will be considered only for the following reasons:
 - 1. A product becomes unavailable due to no fault of the Contractor.
 - 2. Subsequent information or changes indicate that the specified product will not perform as intended.
 - 3. A substitute product will be in the Owner's best interest.
- B. Substitution requests shall be submitted only through the General Contractor.
- C. Documentation:
 - 1. Document each request with complete data substantiating compliance of proposed substitution with Contract Documents.
 - 2. Requests for substitution shall be made on Document 006325 - Substitution Request Form.
 - 3. Limit each request to one proposed product or system.
 - 4. For substitutions prior to Agreement, signature and projected cost data are not required.
- D. Request for substitution constitutes a representation that the proposer:
 - 1. Certifies that the proposed substitute item has been fully investigated and has been determined to be equal or superior to that specified in all respects.
 - 2. Certifies that the same or greater warranty will be furnished
 - 3. Certifies that required maintenance service and source for replacement parts are available
 - 4. Certifies that incorporation of the proposed substitute item will not affect functional clearances.
 - 5. Warrants that coordination, installation, and changes to the project as necessary to accommodate the proposed substitution shall be the Contractor's responsibility, that use of the substitute item(s) will not delay project completion
 - 6. Warrants that claims for additional costs related to its incorporation which may become subsequently apparent will be borne by the Contractor.

SECTION 016000 - PRODUCT REQUIREMENTS

- E. Substitutions will not be considered when they are indicated or implied on shop drawing or product data submittals.
- F. Review: The Architect will be the judge of the acceptability of the proposed substitution; in the judgment of Architect the product shall meet the following criteria:
 - 1. It is equal or superior in quality and serviceability to the specified product.
 - 2. Its use will not entail unacceptable changes in details and construction of related work.
 - 3. Its design and artistic effect complies with design concept.
- G. The Architect will review requests for substitutions with reasonable promptness, and request additional information, documentation, or samples, as necessary for evaluation of the request. Within two weeks of receipt of the completed request, the Architect will take one of the following actions.
 - 1. If the substitution is allowed by the Architect prior to the cutoff date, an Addendum to the Bid Documents will be issued by the Architect.
 - 2. If the substitution is allowed by the Architect after the cutoff date, the Architect will notify the General Contractor and issue the appropriate Construction Change Authorization, Supplemental Instruction, or Proposal Request.
 - 3. If the request for substitution is denied, the proposer will be notified of the rejection. If a decision on the substitution request cannot be made or obtained within the time allocated, use the specified product.

END OF SECTION

SECTION 017700 - CLOSEOUT PROCEDURES

1.1 SUMMARY

- A. Section Includes:
 - 1. Closeout procedures.
 - 2. Temporary Certification of Occupancy.
 - 3. Final cleaning.
 - 4. Project record documents.
 - 5. Project record documents
 - 6. Operation and maintenance data.
 - 7. Operation instruction.
 - 8. Manufacturer's warranties.
 - 9. Guaranties.
 - 10. Spare parts and maintenance materials.
- B. Related Sections:
 - 1. 011000 - Summary: Partial Owner occupancy.
 - 2. 015000 - Temporary Facilities and Controls: Cleaning during construction.
 - 3. 017421 - Construction Waste Management and Disposal: Construction waste management plan.
 - 4. Division 23 and 26 for special closeout requirements for mechanical and electrical systems.
- C. This Section applies to all Technical Specification Sections, and supplements the General and Supplemental Conditions.

1.2 DEFINITIONS

- A. As-Built / Redline Drawings: As-built/Redline drawings shall mean a set of Construction Drawings that reflect on-site changes required during the project as directed by ASI/RFI. These drawings can be managed as a hard-copy with mark-ups then scanned to PDF at the end of the project or as PDF files using Bluebeam during the project with ASI/RFI files hyperlinked. At the end of the project, either can be delivered as Final Record Documents.
- B. Final Documents: The properties of the project as constructed, defined by final drawings, specifications, maintenance manuals and operating instructions as provided by the Operation & Maintenance Manuals for each discipline and/or trade.

1.3 CLOSEOUT PROCEDURES

- A. Comply with procedures stated in General Conditions of the Contract for Substantial and Final Completion.
- B. Certain areas will be subject to partial occupancy or use as specified in Section 011000.
- C. Submit all certificates of approval issued by the governing authorities, including, without limitation, the following:
 - 1. Certificate of Occupancy.
 - 2. Any and all Temporary Certificates of Occupancy.
- D. Prior to final payment, submit the following affidavits using the forms listed below:
 - 1. Contractor's Affidavit of Payment of Debts and Claims AIA Document G706.
 - 2. Consent of Surety to Final Payment AIA Document G707.
 - 3. Contractor's lien release, and lien releases from each subcontractor; Contractor's Affidavit of Release of Liens AIA Document G706A
- E. Temporary Certificate of Occupancy: It is the intention of this project to allow for and receive a temporary certificate of occupancy for the Early Childhood Education Area prior to final completion. This shall be coordinated by the General Contractor and shall be included as a milestone on the Construction Schedule.
- F. Submit final Application for Payment identifying total adjusted contract sum, previous payments, and sum remaining due.
- G. Submit building permit documents and building inspection signoff sheets to the Owner.

SECTION 017700 - CLOSEOUT PROCEDURES

1.4 FINAL CLEANING

- A. Execute prior to final inspection.
- B. Clean interior and exterior surfaces exposed to view; remove temporary labels, stains and foreign substances, polish transparent and glossy surfaces, vacuum carpeted and soft surfaces.
- C. Clean equipment and fixtures to a sanitary condition.
- D. Clean or replace filters of mechanical equipment.
- E. Clean roofs, gutters, downspouts, and drainage systems.
- F. Clean site; sweep paved areas, rake clean other surfaces.
- G. Touch up and otherwise repair and restore marred, exposed finishes and surfaces. Replace finishes and surfaces that cannot be satisfactorily repaired or restored or that already show evidence of repair or restoration.
- H. Remove waste and surplus materials, rubbish, and construction facilities from the Project and from the site. Conform to Construction Waste Management and Disposal requirements specified in Section 017421.

1.5 PROJECT RECORD DOCUMENTS

- A. Maintain a complete set of record documents which clearly and neatly indicate all changes from the Contract Documents, and all uncovered existing conditions which will be subsequently concealed.
- B. Record documents shall include:
 - 1. Contract drawings.
 - 2. Specifications.
 - 3. Reviewed shop drawings, product data, and samples
 - 4. Closeout documentation for action items identified by owner inspection agencies
- C. Record documents shall be used for no other purpose and shall be stored separate from those used for construction.
- D. Keep documents current; do not permanently conceal any work until required information has been recorded.
- E. Mark specifications legibly and record at each Product section a description of actual products installed. Include the manufacturer's name and product model and number.
- F. Drawings shall indicate exact installed locations and dimensions of all concealed work, including, without limitation, conduit, piping, ducts, mechanical and electrical equipment, and foundations. Indicate all changes to details which involve concealed construction.
- G. Prior to approving each Payment Request, the Architect reserves the right to inspect the Record Documents. The Payment Request may not be approved until the record documents are current to the Date of the Payment Request.
- H. At Contract Closeout, submit documents with transmittal letter containing date, Project title, Contractor's name and address, list of documents, and signature of Contractor.

1.6 OPERATION AND MAINTENANCE DATA

- A. Furnish published operation and maintenance information covering all equipment and finish materials installed on the project. Whether specified or not, furnish published information whenever special maintenance procedures are required to assure the proper operation and durability of project material, equipment, and finishes.
- B. O&M Manuals are to be delivered as one (1) Hard Copy Binder and one (1) Soft-copy in PDF format.
- C. Information shall be submitted by the General Contractor through the Architect.

SECTION 017700 - CLOSEOUT PROCEDURES

1.7 OPERATION INSTRUCTION

- A. Prior to Final Completion, instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment and systems. Provide instruction at mutually agreed upon times.
- B. Use experienced personnel trained and experienced in the operation and maintenance of the building equipment or system involved.
- C. Use operation and maintenance manuals for each piece of equipment or system as the basis of instruction. Review contents in detail to explain all aspects of operation and maintenance.
- D. Refer to the individual technical Sections for additional requirements for instruction of Owner's personnel.

1.8 MANUFACTURER'S WARRANTIES

- A. Furnish original and duplicate copies of each manufacturer warranty executed to the Owner.
- B. Execute Contractor's submittals to the manufacturers, and assemble documents executed by the manufacturers.
- C. Provide table of contents and assemble in binder with durable plastic cover.
- D. Submit material prior to final application for payment in accordance with Section 013300. For equipment put into use with Owner's permission during construction, submit warranty within 10 days after first operation. For items of Work delayed materially beyond Date of Substantial Completion, furnish warranty within ten days after acceptance, listing date of acceptance as start of warranty period.

1.9 GUARANTIES

- A. Furnish written guaranty, executed to the Owner, on work covered by the additional guaranty requirements specified in the technical sections. The guaranty shall commence on the date of Owner acceptance of that portion of the work or Substantial Completion, whichever occurs first.
- B. Transmit through the Architect in accordance with Section 013300.

1.10 SPARE PARTS AND MAINTENANCE MATERIALS

- A. Furnish products, spare parts, and maintenance materials in quantities specified in each Section, in addition to that used for construction of Work. Coordinate with Owner, deliver to Project site and obtain receipt prior to final payment.
- B. Unless specified otherwise, deliver materials in manufacturer's original factory cartons or containers.
- C. Materials shall be clearly labeled, and shall include designations used in the Contract Documents.

1.11 KEYS

- A. Deliver properly identified and tagged keys and hardware maintenance tools to the Owner, including those specified in Sections 064000, 083100, 087100 and 102813.
- B. Obtain itemized receipt for all keys and tools.
- C. Send all master keys by registered mail directly from manufacturer to Owner's representative as later directed.

END OF SECTION

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SECTION 030013 - CONCRETE**

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Cast-in-place concrete.
 - 2. Exterior concrete pads.
 - 3. Concrete accessories.
 - 4. Formwork, shoring, bracing, and anchorage.
 - 5. Concrete reinforcement.
 - 6. Underslab vapor retarder.
 - 7. Concrete Sealer.
- B. Related Sections:
 - 1. 003152 - Testing and Inspection Services: Owner paid testing and inspections.
 - 2. 033514 - Polished Concrete Flooring System
 - 3. 079200 - Joint Sealants: Expansion joint fillers.
 - 4. 312000 - Earth Moving: Fill under slabs on grade.
- C. Drawings, the provisions of the Agreement, the General Conditions, and Division 1 specification sections apply to all work of this Section.
- D. Substitutions: Substitute products will be considered only under the terms and conditions of Section 016000.

1.2 DEFINITIONS

- A. Architectural Concrete: Formed Concrete elements which are exposed to view as an exterior or interior surface in the completed structure.

1.3 REFERENCES

- A. American Concrete Institute (ACI):
 - 1. 117 - Standard Specification for Tolerances for Concrete Construction and Materials.
 - 2. 301-05 - Specifications for Structural Concrete.
 - 3. 315 - Details and Detailing of Concrete Reinforcement.
- B. American Society for Testing and Materials (ASTM):
 - 1. A615 - Deformed and Plain Billet-Steel for Concrete Reinforcement.
 - 2. C33 - Specifications for Concrete Aggregates.
 - 3. C94 - Specifications for Ready Mixed Concrete.
 - 4. C132 - Test for Slump of Portland Cement Concrete.
 - 5. C150 - Specification for Portland Cement.
 - 6. C156 - Test Method for Water Retention by Concrete Curing Materials.
 - 7. C171 - Specification for Sheet Materials for Curing Concrete.
 - 8. C260 - Specifications for Air-Entraining Admixtures for Concrete.
 - 9. C309 - Specification for Liquid Membrane Forming Compounds for Curing Compounds.
 - 10. C494 - Specifications for Chemical Admixtures for Concrete.
 - 11. C618 - Specification for Fly Ash and Raw or Natural Pozzolan for Use as a Mineral Admixture in Portland Cement Concrete.
 - 12. C939 - Test Method for Flow of Grout for Preplaced-Aggregate Concrete
 - 13. C1107 - Specification for Packaged Dry, Hydraulic-Cement Grout (Non-shrink)
 - 14. D1751 - Preformed Expansion Joint Fillers for Concrete Paving and Structural Construction.

1.4 SUBMITTALS

- A. Make submittals in accordance with Section 013300.
- B. Product Data: Submit data for each accessory, admixture, and curing material proposed for the work.

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- C. Shop Drawings:
 - 1. Reinforcing:
 - a. Detail reinforcing in accordance with ACI 315. Indicate reinforcement sizes, spacings, locations and quantities of reinforcing, bending and cutting schedules, splicing, and supporting and spacing devices.
 - b. Indicate embedded items.
 - 2. Slab Layouts: Dimension locations of control, expansion, and construction joints. Relate to building grid lines.
 - 3. Architectural Concrete: Show arrangement and fitting of form joints; note materials and finishes of forming surfaces; indicate locations of all openings and locations of form ties.
- D. Quality Control Submittals:
 - 1. Mix Designs: Prior to concrete work, submit mix designs for approval.
 - 2. Test Results: Submit test results per ASTM C311 performed less than 6 months prior to use for approval by Architect.
 - 3. Certifications: Submit mill certificates for cement, aggregates, and reinforcing.

1.5 QUALITY ASSURANCE

- A. Perform work in accordance with ACI 301.
- B. Pre-Installation Conference:
 - 1. At least 35 days prior to start of concrete work the Contractor shall hold, in accordance with Section 013119, a meeting to review the detailed requirements of the concrete design mixes and to determine the procedures for producing proper concrete construction.
 - 2. Required in attendance:
 - a. Contractor's superintendent.
 - b. Testing Laboratory representative.
 - c. Concrete subcontractor.
 - d. Ready-mix producer.
 - e. Admixtures manufacturer's representative.
 - f. Architect/Engineer
 - g. All subcontractors with work to be installed in, or affected by concrete work.
 - 3. Notify Architect 10 days prior to the scheduled date of the meeting.
 - 4. Agenda: Include the following.
 - a. Installation scheduling and coordination; scheduling of mock-up construction and review.
 - b. Classes of concrete required; mix designs; applicable references.
 - c. Formwork and requirements for Architectural concrete.
 - d. Reinforcement and placement.
 - e. Climatic conditions; hot and/or cold weather concreting procedures (as appropriate); unusual placing conditions.
 - f. Substrate preparation; placement methods; construction joints.
 - g. Flatwork; flatness and levelness requirements; finishing; criteria for acceptance; remedies.
 - h. Curing and protection procedures
 - i. Site quality control; inspection and testing requirements.
 - j. Sealers; locations and coverage rates
- C. Concrete work is subject to special testing and inspection as specified in 014500. Notify Architect and Owner's Testing Service at least 48 hours before concrete is poured.

PART 2 - PRODUCTS

2.1 FORM MATERIALS

- A. Unless specified otherwise, conform to ACI 301.
- B. Plywood: One of the following:
 - 1. APA rated High Density Overlay, Plyform Class 1. Ext.
 - 2. APA B-B Plyform Class 1, ext.

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C. Form Ties:

1. Where concealed: Snap-off metal; metal washer ends
2. At exposed stem walls and fins: 1" diameter by 1" deep plastic cones in layout indicated in the documents. Remove plastic cones and seal the back of the recess with sanded sealant.

D. Chamfers and Rustication Strips: Wood or plastic; fabricate to the shapes indicated.

2.2 REINFORCING

A. Reinforcing Steel: Types as indicated on the structural drawings.

B. Chairs, Bolsters, Bar Supports, and Spacers: Sized and shaped for strength and support of reinforcement during installation and placement of concrete.

2.3 CONCRETE MATERIALS

A. Cement: ASTM C150, normal - Type 1 Portland, grey color.

B. Fly Ash: ASTM C618, Class C or F; loss on ignition (LOI) not to exceed 1 percent. Use fly ash from one single source for the whole Project.

C. Water: ASTM C94, para. 5.1.3.

2.4 ADMIXTURES

A. Air-Entrainment: ASTM C 260; Master Builders Inc. "Micro-Air" or "MBVR", Euclid Chemical Co. "Air Mix," or approved.

B. Water Reducer Normal: ASTM C 494, Type A; Master Builders Inc. "Pozzolith/Polyheed," Euclid Chemical Co. "Eucon WR 75," or approved.

C. High Range Water Reducer (Superplasticizer): ASTM C 494, Type F or G and shall be of the second or third generation type. Shall be batch plant added, extend plasticity time, reduce water 20 to 30 percent. Master Builders Inc. "Rheobuild," Euclid Chemical "Eucon 37," or approved.

D. Accelerator: ASTM C 494, Type C or E, non-corrosive, non-chloride; Master Builders "Pozzutech 20," Euclid Chemical Co. "Accelgard 90," or approved.

E. Set Retarder: ASTM C494, Type B.

F. Shrinkage Reducing Admixture: Eclipse by W.R. Grace Company.

G. Colorant: Davis Colors. L.M. Scofield "Chromix," or approved; colors as scheduled on the Drawings.

2.5 ACCESSORIES

A. Bonding Agent: Acrylic type; Sonneborn "Sonnocrete", W.R. Grace "Duraweld C", Euclid Chemical Co. "Flex-con", or approved.

B. Non-Shrink Grouts: ASTM C1107, Grade B; non-shrink non-catalyzed natural aggregate grout; minimum compressive strength of 7000 PSI at 28 days; 25 to 30 second flow when tested in accordance with ASTM C939 at 45 to 90 degrees F; cement gray in color; Master Builders Inc. "Masterflow 928," Euclid Chemical Co. "HiFlow Grout," or approved.

C. Form Release Coating: Water based type; VOC <150g/l; Nox-Crete "Utility Release," Cresset Chemical Company "Crete-Lease 20-VOC," or approved; non staining.

D. Curing Materials:

1. Waterproof Sheet Material: Waterproof paper in accordance with ASTM C171; reinforced waterproof kraft paper; white color at exterior applications; Burke Kraft Curing Paper Type I-SK-30, or approved.
2. Mats and Burlap: Fabric covering composed of quilted polyethylene sheeting laminated to outer covering of burlap, cotton, or other approved fabric; outer covering shall weigh not less than 6 ounces per square yard.
3. Curing Compound: ASTM C309; clear or translucent with fugitive dye; moisture loss not more than 0.03 gr./sq.cm. when tested in accordance with ASTM C156 and applied in a single coat at the manufacturers recommended rate. Euclid Chemical Co. "Kurz DR" or approved. Curing

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compounds shall be compatible with subsequently applied waterproof membranes and finishing systems.

4. Curing/Sealing Compound: ASTM C309; water based curing compound; Euclid Chemical Company "Aqua-Cure," Sonneborn "Kur-N-Seal WB," Burke by Edoco "Spartan-Cote WB II," W. R. Meadows, Inc., Hampshire IL (800/342-5976); "Sealtight 100-Clear" or approved.
- E. Underslab Vapor Retarder: ASTM E1745, Class A; one of the following:
 1. "Stego Wrap 15 Mil" by Stego Industries, LLC (877-464-7834).
 2. "Vapor Block VB15" by Raven Industries (800-635-3456).
 3. "Griffolyn 15 MIL Green" by Reef Industries, Inc. (800-231-6074).
 4. "Perminator 15 Mil" by WR Meadows, Inc. (847-214-2100)
 5. "Florprufe 120" by Grace Construction Products.
- F. Prefabricated Slab Construction Joints: Burke by Edoco "Keyed Kold Joint," with splice plates, stakes, and driving accessories, or approved; depth 1/2 inch less than slab thickness, galvanized sheet metal tongue and groove joint form, with knockouts for passing reinforcing bars through.
- G. Preformed Joint Fillers:
 1. Non-extruding type; ASTM D1751; Sonneborn "Expansion Joint Filler," WR Meadows "Sealtight Fiber", " Burke by Edoco "Fiber expansion Joint," or approved.
 2. Joint Cap: Strippable plastic type; W.R. Meadows "SealTight Snap-Cap", Burke by Edoco "Joint Cap", or approved; width to match expansion joint filler material.
- H. Waterstop Tape: Bentonite Waterstop: "Waterstop-RX" by Cetco Building Materials Group (800-527-9948) or "Superstop" by Tremco Sealant/Waterproofing Division, or approved (800-321-7906); size as recommended by the manufacturer for the application.
- I. Finishing Aid: Evaporation retardant for preventing rapid drying during hot windy weather, Master Builders "Confilm."

2.6 CONCRETE MIX

- A. Mix concrete in accordance with ASTM C94, and in accordance with the requirements indicated on the structural drawings.
- B. Concrete at slabs on grade shall have a maximum water/cement ratio of 0.45.
- C. Provide fly ash in the following proportions:
 1. A minimum of 20 percent and a maximum of 40 percent by weight of cementitious materials in footings, walls, columns and slabs on grade.
- D. Admixtures:
 1. All concrete shall contain the specified water reducing or high range water reducing admixture, except architectural concrete and concrete with a required water/cement ratio of 0.45 or lower shall contain a high range water reducing admixture.
 2. All concrete required to be air entrained shall contain air entraining admixture to produce 4% to 6% air.
 3. All concrete placed in ambient temperatures from 40 degrees F to 20 degrees F, and all slab concrete placed in ambient temperatures below 50 degrees F, shall contain an accelerator at the manufacturer's required dosage.
 4. All concrete placed in ambient temperatures of 90 degrees F or above, shall contain a set retarder at the manufacturer's required dosage.
 5. Add colorants as necessary to obtain the concrete colors to match the approved samples.
- E. Provide 28 day compressive strengths as indicated on the Structural Drawings. Where not indicated on the Structural Drawings, provide minimum 3000 psi compressive strength unless indicated otherwise.

2.7 REINFORCEMENT FABRICATION

- A. Fabricate as indicated and in accordance with ACI 315.

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PART 3 - EXECUTION

3.1 EXAMINATION

- A. Prior to starting work, carefully inspect installed work of other trades and verify that such work is complete to the point where work of this Section may properly commence. Notify the Architect in writing of conditions detrimental to the proper and timely completion of the work.
- B. Do not begin installation until all unsatisfactory conditions are resolved. Beginning work constitutes acceptance of site conditions and responsibility for defective installation caused by prior observable conditions.

3.2 FORMWORK ERECTION

- A. Verify lines, levels, and measurement before proceeding with formwork. Align form joints. Locate form ties in rows aligned vertically and horizontally with equal spacing per Architect's direction at exposed locations.
- B. Use plywood forms, unless other systems are approved by the Architect.
- C. Use form coating on forms in accordance with the manufacturer's recommendations. Verify that form coatings will not affect the bond of subsequent concrete surface treatments.
- D. Architectural Concrete Forms:
 - 1. Construct forms of high density overlay plywood.
 - 2. Use coned form ties at an even spacing as approved by the Architect.
 - 3. Additional Tolerance Requirements: In accordance with the additional requirements of ACI 301. Form surfaces at the joints between each panel shall be flush within a tolerance of plus or minus 1/16 inch.
 - 4. Form Joint Seal for "Architectural" Concrete: Apply double face tape, not more than 1/16th inch thick to edges of form panels holding back from form surface at least 1/16 inch; apply continuous bead of silicone sealant for the length of the joint; tool sealant smooth and flush with adjoining contact surfaces. Wipe off all excess sealant. Fill flush all holes and imperfections in forming surface with sealant.
 - 5. Rustication Strips: Glue or nail to form surfaces; set and fill nail holes; seal to surface of forms.
 - 6. Form Reuse: Clean forms and repair all holes and damage; obtain approval of form for each reuse; formwork with patches and repairs affecting the appearance of concrete surfaces will not be accepted.
- E. Coordinate with work of other Sections in forming and setting openings, slots, recesses, chases, sleeves, bolts, anchors, and other inserts.
- F. Tolerances: Comply with ACI 117.
- G. Where earth forms are used, hand trim sides and bottoms of earth forms. Remove loose dirt.
- H. Waterstop Tape:
 - 1. Ensure that all surfaces to receive waterstop tape are formed, troweled, or ground smooth.
 - 2. Remove all debris and other materials which would impair bond.
 - 3. Install in locations indicated in accordance with the manufacturer's recommendations. Install to maintain a minimum of 1 inch of concrete coverage over the tape.

3.3 REINFORCEMENT

- A. Place, support, and secure reinforcement against displacement.
- B. Locate reinforcing splices not indicated on the drawings at points of minimum stress.
- C. Provide laps and concrete cover as indicated in the Drawings.

3.4 UNDERSLAB VAPOR RETARDER

- A. Place and protect vapor-retarder sheets according to ASTM E 1643 and manufacturer's written instructions under all interior slabs-on-grade.

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- B. Extend and repair, or replace existing vapor retarder materials at locations of work at existing slabs on grade. Tie in to existing vapor retarder membranes by lapping and seal with tape.
- C. Lap and seal all seams a minimum of 6 inches, seal around all penetrations, lap and seal against foundation walls and footings with manufacturer's recommended sealing tape or mastic.

3.5 PLACING CONCRETE

- A. In accordance with ACI 301.
- B. Bonding Agent: Mix thoroughly and apply strictly in accord with the manufacturer's instructions; do not use when ambient temperature is below 45 degrees F. Place concrete in contact immediately while bonding agent is still tacky.

3.6 SUBSEQUENT TREATMENT FOR FORMED SURFACES

- A. Provide smooth form finish for concrete to remain exposed in the finished work; rough form finish for concrete to remain concealed in the finished work.
- B. Where waterproofing or dampproofing is scheduled or indicated, grout fill all rock pockets, tie holes, and other surface imperfections to create a smooth surface ready to receive the membrane. Grind concrete fins and other surface projections flat with adjacent surfaces.
- C. Subsequent finish treatment for formed surfaces: On accordance with ACI 301; provide at locations indicated.
 - 1. Sand blast finish: In accordance with paragraph 13.5.3.2. Remove sufficient mortar to expose fine aggregate. Exact degree of bite shall be determined at trial locations determined by the Architect. Use only "wet" sand blast methods. Obtain approval of methods and procedures from the appropriate authorities, and include all equipment and provisions required by them at no extra cost to the Owner.

3.7 SLABS

- A. Expansion Joints for Slabs on Grade:
 - 1. Place expansion joints at locations indicated and where exterior slabs abut concrete walls, the building perimeter, and other fixed objects abutting or within the slab area.
 - 2. Form joints 1/2 inch wide x full depth of slab.
 - 3. Form expansion joints with preformed joint filler. Install strippable joint at joints to receive sealant specified in Section 079200.
 - 4. Tool expansion joints to 1/8 inch radius.
 - 5. Discontinue reinforcing at the expansion joint. Use 16 inch long sleeved 3/4 inch diameter smooth dowels at 12 inches on center for expansion joints in the field of the slab.
 - 6. Place perpendicular to longitudinal axis of walls.
- B. Control Joints for Slabs on Grade:
 - 1. Make joints straight; perpendicular or parallel to building lines and slab edges, as appropriate.
 - 2. Control joints shall be saw cut, unless indicated otherwise.
 - 3. Radius tooled control joints to match expansion joints.
 - 4. Control joints shall penetrate the slab a minimum of 1/4 the thickness of the slab and shall be 3/16 inch in width minimum.
 - 5. Space control joints at the locations indicated, except when not indicated locate at 32 times the slab thickness. Provide circular or diamond shaped joint lines around columns. Locate control joints at reentrant corners.
 - 6. At exterior sidewalks and pads, place control joints at maximum 5 foot intervals unless indicated otherwise on the Drawings .
 - 7. Align joints with column lines when ever possible. Joints shall form rectangular panels with the long side less than 1-1/2 times the length of the short side. Provide circular or diamond shaped joint lines around columns. Locate control joints at reentrant corners.
- C. Construction Joints: Place at either expansion or control joint locations for slab on grade construction.
- D. Curing:
 - 1. Moisture cure all concrete for a minimum of 7 days, unless approved or specified otherwise.

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2. Use curing/sealing compound on concrete slabs scheduled to receive sealer.
 3. Use waterproof sheet material at surfaces to receive subsequent bonded finish materials. A curing compound may be used on surfaces to receive subsequent bonded finish materials, provided the curing compound is approved in writing by the manufacturer of the adhesive or the bonding finish material. Curing compound may also be used on surfaces to receive subsequent bonded finish materials, provided the curing compound is removed with shot blasting or other approved method prior to installation of bonded materials.
 4. Curing compounds may be used at exterior concrete pads or paving.
 5. Apply curing compounds and curing/sealing compounds in accordance with the manufacturer's recommendations.
 6. Maintain concrete temperatures above 50 degrees F.
- E. Finishes:
1. Full Trowel finish interior floor slab surfaces, unless specified otherwise.
 2. Light steel trowel finish interior floor slab surfaces scheduled to receive tile, terrazzo, or other similar bonded materials.
- F. Curing/Sealing Compound: Apply a second coat of curing/sealing compound to concrete slabs scheduled to receive sealer. Clean floor and apply just prior to substantial completion. Apply in accordance with the manufacturer's recommendations.
- G. Slab Tolerances: Slabs: Class B in accordance with ACI 301.

END OF SECTION

SECTION 033514 – POLISHED CONCRETE FLOORING SYSTEM

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Polished concrete slabs.
- B. Related Sections:
- C. 030013 – Concrete: Substrate

1.2 REFERENCES

- A. American National Standards Institute (ANSI):
 - 1. B101.3 - Test Method for Measuring Wet DCOF of Common Hard-Surface Floor Materials.
- B. American Society for Testing and Materials (ASTM):
 - 1. C309 Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete.
 - 2. C171 Standard Specification for Sheet Materials for Curing Concrete.
 - 3. C779 Standard Test Method for Abrasion Resistance of Horizontal Concrete Surface
- C. Reunion Internationale des Laboratoires D'Essais et de Recherches sur les Materiaux et les Constructions (RILEM):
 - 1. Rilem Test Method 11.4 Standard Measurement of Reduction of Moisture Penetration Through Horizontal Concrete Surface
- D. National Floor Safety Institute (NFSI):
 - 1. NFSI Test Method 101-A Standard for Evaluating High-Traction Flooring Materials, Coatings, and Finishes.
- E. South Coast Air Quality Management District (SCAQMD)
 - 1. Rule #1168 (July 1, 2005; Amended January 7, 2005).

1.3 SYSTEM DESCRIPTION

- A. Performance Requirements: Provide polished flooring that has been selected, manufactured and installed to achieve the following:
 - 1. Abrasion Resistance: ASTM C779, Method A, high resistance, no more than 0.008 inch (mm) wear in 30 minute
 - 2. Reflectivity: Increase of 35% as determined by standard gloss mete
 - 3. Waterproof Properties: Rilem Test Method 11.4, 70% or greater reduction in absorption.
 - 4. High Traction Rating: NFSI 101-A, non-slip properties.

1.4 SUBMITTALS

- A. Product Data: Submit product data, including manufacturer's SPEC-DATA® product sheet, for specified product
 - 1. Material Safety Data Sheets (MSDS)
 - 2. Preparation and concrete grinding procedure
 - 3. Dye Selection Guide
- B. Shop Drawings: Indicate information on shop drawings as follows:
 - 1. Typical layout including dimensions and floor grinding schedule.
 - 2. Plan view of floor and joint pattern layout.
 - 3. Areas to receive colored surface treatment.
- C. Quality Assurance Submittals:
 - 1. Test Reports: Certified test reports showing compliance with specified performance characteristics and physical properties as cited in Performance Requirements.
 - 2. Certificates:
 - a. Product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

SECTION 033514 – POLISHED CONCRETE FLOORING SYSTEM

- b. Letter of certification from the National Floor Safety Institute confirming the system has been tested and passed phase Two Level of certification when tested by Method 101-A.
- c. Current contractor's certificate signed by manufacturer declaring contractor as an approved installer of polishing system.
- 3. Manufacturer's Instructions: Manufacturer's installation instruction
- D. Closeout Submittals
 - 1. Warranty: Submit warranty documents.
 - 2. Operation and Maintenance Data: Submit operation and maintenance data for installed products in accordance with Section 017700 - Closeout Procedures. Include:
 - a. Manufacturer's instructions on maintenance or renewal of applied treatments.
 - b. Protocols and product specifications for joint filing, crack repair and/or surface repair.

1.5 QUALITY ASSURANCE

- A. Qualifications:
 - 1. Installer experienced in performing work of this section who has specialized in installation of work similar to that required for this project.
 - 2. Installer trained and holding current certification for installation specified.
 - 3. Manufacturer Qualifications: Manufacturer capable of providing field service representation during construction and approving application method.
- B. Concrete finishing components and materials shall be from single manufacturer.
- C. Installation Conditions: Comply with manufacturer's written recommendations.
- D. Sequence With Other Work: Comply with manufacturer's written recommendations for sequencing construction operations.
- E. Slip Resistance: Unless approved otherwise, measured Dynamic Coefficient of Friction (DCOF) shall be not less than 0.30 (WET) at time of testing as measured using a Regan Scientific Instruments Bot-3000 Tribometer, in accordance with ANSI B101.3.
- F. Mock-Ups:
 - 1. Construct mock-ups in accordance with Section 014500 - Quality Control.
 - 2. Mock-Up Size: 100 ft² sample panel at jobsite at location as directed under conditions similar to those which will exist during actual placement.
 - 3. Mock-up will be used to judge workmanship, concrete substrate preparation, operation of equipment, material application, color selection and shine.
 - 4. Allow 48 hours for inspection of mock-up before proceeding with work.
 - 5. When accepted, mock-up will demonstrate minimum standard of quality required for this work.
 - 6. Approved mock-up may remain as part of finished work.
- G. Preinstallation Meetings: Conduct a preinstallation meeting to verify project requirements, manufacturer's installation instructions and manufacturer's warranty requirements. Comply with Section 013119 - Project Meetings. Review the following:
 - 1. Environmental requirement
 - 2. Scheduling and phasing of work.
 - 3. Coordinating with other work and personnel.
 - 4. Protection of adjacent surface
 - 5. Surface preparation.
 - 6. Repair of defects and defective work prior to installation.
 - 7. Cleaning.
 - 8. Installation of polished floor finishes.
 - 9. Application of liquid hardener, densifier.
 - 10. Protection of finished surfaces after installation.

1.6 DELIVERY, STORAGE & HANDLING

- A. General: Comply with Section 016100 - Product Requirements.
- B. Ordering: Comply with manufacturer's ordering instructions and lead time requirements to avoid construction delays.

SECTION 033514 – POLISHED CONCRETE FLOORING SYSTEM

- C. Delivery:
 - 1. Deliver materials in manufacturer's original packaging with identification labels and seals intact.
- D. Storage and Protection:
 - 1. Store materials protected from exposure to harmful weather conditions and at temperature conditions recommended by manufacturer.
 - 2. Protect concrete slab:
 - a. Protect from petroleum stains during construction.
 - b. Diaper hydraulic power equipment.
 - c. Restrict vehicular parking.
 - d. Restrict use of pipe cutting machinery.
 - e. Restrict placement of reinforcing steel on slab.
 - f. Restrict use of acids or acidic detergents on slab.
- E. Waste Management and Disposal:
 - 1. Separate waste materials for Recycling in accordance with Section 017421 - Construction Waste Management and Disposal.
 - 2. Remove from site and dispose of packaging materials at appropriate recycling facilities.

1.7 WARRANTY

- A. Project Warranty: Refer to Contract Conditions for project warranty provisions.
- B. Manufacturer's Warranty: Submit, for Owner's acceptance, manufacturer's standard warranty document executed by authorized company official. Manufacturer's warranty is in addition to, and does not limit, other rights Owner may have under Contract Documents.
- C. Warranty: Commencing on date of acceptance by Owner.

1.8 MAINTENANCE

- A. Comply with manufacturer's written instructions to maintain installed product.

PART 2 - PRODUCTS

2.1 POLISHED CONCRETE FINISHING PRODUCTS

- A. Manufacturer: L & M Construction Chemicals, Inc. (Omaha, NE; 800-362-3331; www.fgs-permashine.com); "FGS Permashine" system.
- B. Component Products/Systems:
 - 1. Hardener, Sealer, Densifier: Proprietary, water based, odorless liquid, VOC compliant, environmentally safe chemical hardening solution leaving no surface film.
 - a. Acceptable Material: L & M Construction Chemicals, Inc., FGS Hardener Plus.
 - 2. Joint Filler: Semi-rigid, 2-component, self-leveling, 100% solids, rapid curing, polyurea control joint and crack filler with Shore A 80 or higher hardness.
 - a. Acceptable Material: L & M Construction Chemicals, Inc., Joint Tite 75
 - 3. Oil Repellent Sealer: Ready to use, silane, siloxane and fluoropolymers blended water based solution sealer, quick drying, low-odor, oil and water repellent, VOC compliant and compatible with chemically hardened floors.
 - a. Acceptable Material: L & M Construction Chemicals, Inc., Petrotex.
 - 4. Concrete Dyes: Fast-drying dye, packaged in premeasured units ready for mixing with VOC exempt solvent; formulated for application to polished cementitious surfaces.
 - a. Acceptable Material: L & M Construction Chemicals, Inc., Vivid Concrete Dyes.
 - 5. Cleaning Solution: Proprietary, mild, highly concentrated liquid concrete cleaner and conditioner containing wetting and emulsifying agents; biodegradable, environmentally safe and certified High Traction by National Floor Safety Institute (NFSI).
 - a. Acceptable Material: L & M Construction Chemicals, Inc., FGS Concrete Conditioner
 - 6. Finish: Medium gloss (MG-2), 800 grit, as scheduled.
 - 7. Color: As scheduled.

SECTION 033514 – POLISHED CONCRETE FLOORING SYSTEM

PART 3 - EXECUTION

3.1 MANUFACTURERS INSTRUCTIONS

- A. Compliance: Comply with manufacturer's written data, including product technical bulletins, product catalog installation instructions, product carton installation instructions and L & M Construction Chemicals, Inc., SPEC-DATA sheets.

3.2 EXAMINATION

- A. Site Verification of Conditions:
 - 1. Verify that concrete substrate conditions are acceptable for product installation in accordance with manufacturer's instructions prior to installation of concrete finishing materials.
- B. Verify Concrete Slab Performance Requirements:
 - 1. Verify concrete is cured to 28 day strength.
 - 2. Verify concrete surfaces received a hard steel-trowel finish (3 passes) during placement.

3.3 PREPARATION

- A. Ensure surfaces are clean and free of dirt and other foreign matter harmful to performance of concrete finishing materials.
- B. Examine surface to determine soundness of concrete for polishing.
- C. General Contractor to remove surface contamination.

3.4 INSTALLATION

- A. Floor Surface Polishing and Treatment:
 - 1. Provide polished concrete floor treatment in entirety of slab indicated by drawings. Provide consistent finish in all contiguous areas.
 - 2. Apply floor finish prior to installation of fixtures and accessories.
 - 3. Diamond polish concrete floor surfaces with power disc machine recommended by floor finish manufacturer. Sequence with coarse to fine grit using dry method.
 - a. Comply with manufacturer's recommended polishing grits for each sequence to achieve desired finish level. Level of sheen shall match that of approved mock-up.
 - b. Expose aggregate in concrete surface only as determined by approved mock-up.
 - c. All concrete surfaces shall be as uniform in appearance as possible.
 - 4. Dyed and Polished Concrete:
 - a. Locate demarcation line between dyed surfaces and other finishes.
 - b. Polish concrete to final finish level.
 - c. Apply diluted dyes to polished concrete surface.
 - d. Allow dye to dry.
 - e. Remove residue with dry buffer; reapply as necessary for desired result.
 - 5. Apply FGS Hardener Plus, Hardener, and Densifier As Follows:
 - a. First coat at 250 ft²/gal.
 - b. Second coat at 350 ft²/gal.
 - c. Follow manufacturer's recommendations for drying time between successive coats.
 - 6. Remove defects and re-polish defective areas.
 - 7. Finish edges of floor finish adjoining other materials in a clean and sharp manner.

3.5 ADJUSTMENTS

- A. Polish to higher gloss those areas not meeting specified gloss levels per mock-up.
- B. Fill joints flush to surface.

3.6 FINAL CLEANING

- A. Do cleanup in accordance with Section 017421 – Construction Waste Management and Disposal.
- B. Mechanically scrub treated floors for seven days with soft to medium pads with approved cleaning solution.
- C. Upon completion, General Contractor shall remove surplus and excess materials, rubbish, tools and equipment.

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D. Install sealant at slab joints in compliance with Section 079200.

3.7 PROTECTION

A. Protect installed product from damage during construction.

B. Protect with "EZ Cover"™ by McTech Corp (866-913-8363) or comparable product.

END OF SECTION

SECTION 035413 - GYPSUM CONCRETE UNDERLAYMENT

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Self leveling gypsum concrete floor underlayment.
 - 2. Acoustical matting and perimeter isolation board.
 - 3. Metal lath.
- B. Related Section:
 - 1. 035416 - Hydraulic Cement Underlayment
 - 2. 061000 - Rough Carpentry: Wood substrate.
- C. Drawings, the provisions of the Agreement, the General Conditions, and Division 1 specification sections apply to all work of this Section.
- D. Substitutions: Substitute products will be considered only under the terms and conditions of Section 016000.

1.2 REFERENCES

- A. American Society for Testing and Materials (ASTM):
 - 1. C109 - Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or 50 mm Cube Specimens).
 - 2. C472 - Test Methods for Physical Testing of Gypsum, Gypsum Plaster, and Gypsum Concrete.
 - 3. C847 - Standard Specifications for Metal Lath.

1.3 SUBMITTALS

- A. Submit manufacturer's product data and installation instructions under provisions of Section 013300.

1.4 QUALITY ASSURANCE

- A. Topping and underlayment shall be installed by applicators approved by the manufacturer of the topping and underlayment material.
- B. Product Compatibility:
 - 1. Manufacturers of underlayment and floor-covering systems certify in writing that products are compatible.
 - 2. Gypsum cement underlayment shall not be applied to portions of subfloor indicated to receive ceramic tile or stone.
- C. All interior primers, adhesives, coatings and sealants shall comply with the most recent version of Rule 1168 of the South Coast Air Quality Management District.

1.5 DELIVERY, STORAGE AND HANDLING

- A. In accordance with 016000.

1.6 ENVIRONMENTAL REQUIREMENTS

- A. In accordance with manufacturer's recommendations. Use mechanical means as necessary to maintain required conditions.

1.7 SEQUENCE AND SCHEDULING

- A. Schedule work such that the building is enclosed and the interior gypsum board has been installed prior to the installation of the gypsum concrete underlayment.

SECTION 035413 - GYPSUM CONCRETE UNDERLAYMENT

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Gypsum Cement Floor Underlayment:
 - 1. Underlayment: Gypsum-cement-based, self-leveling product that can be applied in minimum uniform thickness of 1/8 inch and that can be feathered at edges to match adjacent floor elevations.
 - 2. Cement Binder: Gypsum or blended gypsum cement as defined by ASTM C 219.
 - 3. Compressive Strength: Not less than 2000 psi at 28 days when tested according to ASTM C 109.
 - 4. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Maxxon Corporation "Gyp-Crete 2000".
 - b. Ardex "GS-4 Self-Leveling Repair Underlayment" or "LU-100 Self-Leveling Flooring Underlayment".
 - c. USG Corporation "Levelrock 2500".
 - d. Approved alternate.
- B. Primers and Sealers: Topping and underlayment manufacturer's recommended products.
- C. Metal Lath: Expanded type, 2.5 lbs/s.y. weight; ASTM C847; galvanized after fabrication.
- D. Acoustical Isolation Mat: "Acousti-Matt II" by Maxxon, or approved.
- E. Perimeter Isolation Board: 1/4 inch thick close cell polyethylene foam (2.17 to 9 pcf density); 1 inch higher than the fill height.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Prior to starting work, carefully inspect installed work of other trades and verify that such work is complete to the point where work of this Section may properly commence. Notify the Architect in writing of conditions detrimental to the proper and timely completion of the work.
- B. Do not begin installation until all unsatisfactory conditions are resolved. Beginning work constitutes acceptance of site conditions and responsibility for defective installation caused by prior observable conditions.
- C. Ensure that sub-floor is clean, dry, hard, sound, and free of substances which would affect proper bonding and curing.

3.2 PREPARATION

- A. Mask and protect adjacent surfaces and materials from damage.
- B. Cover floor drains as necessary to prevent clogging.
- C. Screw fasten metal lath to plywood substrate at areas to receive gypsum cement floor underlayment. Lap lath a minimum of 2 inches. Place screws at maximum 6 inches on center.

3.3 ACOUSTICAL ISOLATION MAT

- A. Install acoustical insulation continuously over floor surfaces indicated.
- B. Perimeter Isolation:
 - 1. Provide continuous perimeter isolation board to separate areas with acoustical isolation mat from adjacent construction.
 - 2. Provide metal screed to support perimeter isolation board where gypsum concrete underlayment with acoustical isolation mat abuts gypsum concrete fill without acoustical isolation mat.
 - 3. Attach perimeter isolation board at perimeter walls and at metal screeds.
- C. Install acoustical isolation mat in accordance with the manufacturer's instructions.

SECTION 035413 - GYPSUM CONCRETE UNDERLAYMENT

3.4 APPLICATION

- A. Prime surfaces and apply underlayment in accordance with manufacturer's recommendations for specific substrate and application conditions.
- B. Finish to a smooth level surface, unless specified or indicated otherwise.
- C. Thickness: As indicated.
- D. While the underlayment is still green, remove material as necessary to create smooth even slopes to drains in the locations indicated. Sloped area shall cover an approximate 12 inch radius around the floor drain. Slope 1/4 inch per foot.
- E. Provide gypsum cement floor underlayment, except provide cementitious floor topping at floor surfaces to receive tile.
- F. Sealer:
 - 1. Allow gypsum concrete topping to thoroughly dry before application of sealers, primers, or flooring finishes.
 - 2. Apply to gypsum concrete surfaces to receive bonded floor finishes.
 - 3. Clean surfaces and mix and apply floor sealer in accordance with manufacturer's written instructions.

3.5 CLEANING

- A. As work proceeds, clean up excess materials, rubbish, and splash.

3.6 PROTECTION

- A. Repair damage to surrounding construction to satisfaction of Architect.
- B. Protect underlayment material until fully cured and dry, and until finish materials are applied.

END OF SECTION

SECTION 035416 – HYDRAULIC CEMENT UNDERLAYMENT

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Underlayments and topping slabs as necessary for leveling of new and existing cast-in-place concrete slabs to meet specified tolerances.
 - 2. Leveling of existing cast-in-place concrete slabs.
 - 3. Ramps and tapers as necessary to correct levels between dissimilar finishes.
- B. Related Sections:
 - 1. 030013 - Concrete: Slab tolerances.
- C. Drawings, the provisions of the Agreement, the General Conditions, and Division 1 specification sections apply to all work of this Section.
- D. Substitutions: Proposals for alternate products and methods for applications indicated may be considered by the Architect, subject to requirements of Section 016000, system performance requirements, and applicable requirements of this Section.

1.2 SUBMITTALS

- A. Make submittals in accordance with Section 013300.
- B. Manufacturer's product data and installation instructions.

1.3 QUALITY ASSURANCE

- A. All interior primers, adhesives, coatings and sealants shall comply with the most recent version of Rule 1168 of the South Coast Air Quality Management District.

1.4 DELIVERY, STORAGE AND HANDLING

- A. Deliver materials in their original unopened packages and protect from freezing, direct sun exposure, and exposure to moisture.

1.5 ENVIRONMENTAL REQUIREMENTS

- A. Maintain surface and ambient temperature of between 50 and 80 degrees F for 24 hours before, during, and 24 hours after underlayment installation.
- B. Keep traffic out of area in which underlayment is being applied or cured.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Self Leveling Underlayment System: Self-leveling, pourable, cement based material, minimum 28 day compressive strength 2,000 psi; minimum bond strength 200 psi; one of the following.
 - 1. Mapei Corporation "Ultraplan 1".
 - 2. Ardex Inc. "K-15" Self-Leveling Underlayment Concrete
 - 3. Laticrete International, Inc. "Laticrete 86 LatiLevel Thin Pour Underlayment."
 - 4. Laticrete International, Inc. "Laticrete 88 LatiLevel Thick Pour Underlayment."
- B. Trowelable Underlayment System:
 - 1. Ardex Inc. "SD-P" Fast-Setting Underlayment.
 - 2. Laticrete International, Inc. "Laticrete 220 Medium Bed Mortar mixed with "Laticrete 3701 Latex Mortar Admix."
 - 3. Mapei Corporation "Mapacem 100" or "Planitop 10".
 - 4. Tamms Industries Co. "Thin Patch."
- C. Interior Traffic Bearing Topping System: Ardex Inc. "SD-T" Self-Leveling Self-Drying Concrete Topping; minimum 28 day compressive strength 6,000 psi.

SECTION 035416 – HYDRAULIC CEMENT UNDERLAYMENT

- D. Exterior/Interior Traffic Bearing Patching Compound: Ardex Inc. "CD™ Concrete Dressing"; minimum 28 day compressive strength 4,000 psi.
 - 1. Mapei Corporation "Planicrete 50"
- E. Accessories: Furnish primers, patching compounds, and sand fillers as recommended by the underlayment manufacturer for the conditions of the project.

2.2 MIXING

- A. Thoroughly mix underlayment materials for each type of product in proper proportions to achieve smooth homogeneous mix, free of lumps.

PART 3 - EXECUTION

3.1 GENERAL

- A. With the exception of areas where leveling can be accomplished by use of latex underlayment, as specified in other sections, install cementitious underlayment to concrete slabs as indicated on the Drawings, and as necessary to level slabs or bring substrates to proper elevation.

3.2 PREPARATION

- A. Inspect floor to verify that demolition is complete to the point where work may progress.
- B. Survey floor as necessary to set screeds and reference points. Identify construction joints, control, and expansion joints. Prepare for underlayment at all locations where floor does not meet specified tolerance requirements.
- C. Ensure that subfloor is clean, dry, hard, sound, and free of oils, or other substance which would affect proper bonding and curing. Verify that all areas to be leveled are at or below final design elevation.
- E. Do not begin installation until all unsatisfactory conditions are resolved. Beginning work constitutes acceptance of conditions and responsibility for defective installation caused by prior observable conditions.

3.3 APPLICATION

- A. Install trowelable underlayment at locations where slopes are indicated and at other locations as appropriate to installation conditions; install self leveling underlayment at other locations as necessary to correct slab flatness and levelness.
- B. Set screeds, markers, and reference blocks. Set screeds at all construction and control joints to establish weakened plane joints in underlayment.
- C. Install patching compounds in accordance with the manufacturer's recommendations. Where subsequent finishing of the material is required, float to level surface. Do not trowel.
- D. Apply primer to all areas to receive underlayment; repeat application if necessary to achieve proper build.
- E. Mix materials and pour or pump and squeegee into place to achieve appropriate thickness. At areas to receive cork tile flooring, provide fill thickness as necessary to align cork flooring with adjacent floor surfaces.
- F. Finish to a smooth level surface within tolerances specified for concrete floors.
- G. Cure in accordance with the manufacturer's instructions.
- H. Tolerances:
 - 1. As specified in Section 030013.
 - 2. Ramps at Transition from Stone or Terrazzo to Resilient Flooring: Slope at 1/4" per foot.

3.4 CLEANING

- A. As work proceeds, clean up excess materials, rubbish, and splash.

101 WEST 33RD STREET
BRYAN, TEXAS
SECTION 035416 – HYDRAULIC CEMENT UNDERLAYMENT

END OF SECTION

SECTION 051200 – STRUCTURAL STEEL FRAMING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Elements indicated on the Structural Drawings, including the following:
 - 1. Structural steel.
 - 2. Structural welding.
 - 3. Baseplate grouting.
 - 4. Priming of structural steel.
 - 5. Galvanizing of structural steel.
- B. Related Sections:
 - 1. 014500 - Quality Control: Requirements for testing and inspection.
 - 2. 030013 - Concrete: Placement of structural steel to be embedded in concrete.
 - 3. 055000 - Metal Fabrications: Steel fabrications not indicated on the Structural Drawings.
 - 4. 099000 - Painting: Field painting of structural steel elements.
- C. Drawings, the provisions of the Agreement Conditions of the Contract, and Division 1 specification sections apply to all work of this Section.
- D. Substitutions: Substitute products will be considered only under the terms and conditions of Section 016000.

1.2 REFERENCES

- A. American Institute of Steel Construction (AISC):
 - 1. Specifications for the Design, Fabrication and Erection of Structural Steel for Buildings, including the "Commentary of the AISC Specification".
 - 2. Code of Standard Practice for Steel Buildings and Bridges:
 - a. Paragraph 4. of the above Code is hereby modified by deletion of the following sentence:
"This approval constitutes the Owner's acceptance of all responsibility for the design adequacy of any detail configuration of connections developed by the fabricator as part of his preparation of these shop drawings".
 - 3. Manual of Steel Construction, Allowable Stress Design, 9th Edition 1989.
 - 4. Specifications for Structural Joints Using ASTM A325 or A490 Bolts.
- B. American Society for Testing and Materials (ASTM):
 - 1. A36 - Structural Steel.
 - 2. A123 - Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
 - 3. A143 - Safeguarding Against Embrittlement of Hot Dipped Galvanized Structural Steel Products and Procedures for Detecting Embrittlement.
 - 4. A153 - Specification for Zinc Coating (Hot Dip) on Iron and Steel Hardware.
 - 5. A384 - Safeguarding Against Warpage and Distortion During Hot Dip Galvanizing of Steel Assemblies.
 - 6. A385 - Providing High Quality Zinc Coatings (Hot Dip).
 - 7. A569 - Steel, Carbon (0.15 Maximum, Percent), Hot-Rolled Sheet and Strip, Commercial Quality.
 - 8. A572 - High-Strength Low-Alloy Columbium-Vanadium Steels of Structural Quality.
 - 9. A992 - Standard Specification for Steel for Structural Shapes For Use in Building Framing
 - 10. C1107 - Packaged Dry, Hydraulic-Cement Grout (Nonshrink).
- C. American Welding Society (AWS): D1.1 - Structural Welding Code - Steel.
- D. Steel Structures Painting Council (SSPC): "Steel Structures Painting Manual, Volume 2, Systems and Specifications."

1.3 SUBMITTALS

- A. Make submittals in accordance with Section 013300.
- B. Product Data:
 - 1. Shop applied primers.
 - 2. Non-shrink grout.

SECTION 051200 – STRUCTURAL STEEL FRAMING

- C. Shop Drawings:
 - 1. Indicate profiles, sizes, spacing, and locations of structural members, connections, attachments, fasteners, cambers, loads. Reference all drawing dimensions to grid lines and layout working points indicated in the documents.
 - 2. Indicate welded connections using standard AWS welding symbols. Indicate net weld lengths.
 - 3. Indicate types and locations of field welds.
 - 4. Indicate members to be galvanized.
- D. Quality Control Submittals:
 - 1. Certifications: Submit certification of materials with copies of mill reports for each heat of steel used.

1.4 QUALITY ASSURANCE

- A. The work of this Section is subject to testing and inspection as specified in Section 014500.
- B. Use only welders certified by the jurisdictional authorities.
- C. Unless specified or indicated otherwise, work shall comply with AWS and AISC Standards.

PART 2 - PRODUCTS

2.1 STRUCTURAL STEEL

- A. Types as indicated on the Structural Drawings.

2.2 ACCESSORIES

- A. Non-Shrink Grout: Master Builders "Master Flow 713," Sonneborn "SonogROUT," or approved; non-shrink, non-metallic grout in compliance with ASTM C1107 - Grade C.
- B. Welding Electrodes: E-70 series, low hydrogen, appropriate for use.
- C. Primers:
 - 1. Interior Primer: Modified alkyd; lead and chromate free; one of the following unless approved otherwise.
 - a. "Azeron Primer Series 88HS" by Tnemec Company Inc. (Kansas City, MO; 816-483-3400).
 - b. "Amercoat 5105" by Ameron Protective Coatings (Brea, CA; 714-529-1951).
 - c. "Carbocoat 150HG" by Carboline Company (St. Louis, MO; 314-644-1000; 800-848-4645).
 - 2. Exterior Zinc-Rich Primer: Single component moisture cured primer; minimum 62 percent solids by volume; one of the following:
 - a. Tnemec Series "394 PerimePrime;"
 - b. Carboline Company "Carbozinc 859"
 - c. Ameron Protective Coatings "68HS"
 - 3. Exterior Epoxy Primer or Tie-Coat:
 - a. Tnemec Series N69 Epoxoline,
 - b. Carboline Company "Carboline 888 "
 - c. Ameron Protective Coatings "Amercoat 385."

2.3 FABRICATION

- A. Fabricate structural steel items in accordance with AISC and AWS Standards and in accordance with approved shop drawings. Properly mark and match-mark all materials for field assembly. Fabricate for delivery sequence that will expedite erection and minimize field handling.
- B. Shop Assembly: Fabricate units in as large a part or section as practicable.
- C. Structural Steel to be Exposed in the Finished Work:
 - 1. Comply with provisions of AISC "Code of Standard Practice for Steel Buildings and Bridges" Section 10 "ARCHITECTURAL EXPOSED STRUCTURAL STEEL."
 - 2. Grind welds smooth with adjacent surfaces. Grind butt welds flat and perpendicular to the weld direction.

SECTION 051200 – STRUCTURAL STEEL FRAMING

- D. Fabrication of Elements to Receive Galvanized Coatings:
1. Fabricate in accordance with the applicable requirements of ASTM A143, A384, and A385.
 2. All welding slag and burrs shall be removed prior to galvanizing.
 3. Take care to avoid fabrication techniques which could cause distortion or embrittlement of the steel.
- E. Hot Dip Galvanizing:
1. Steel Fabrications: In accordance with ASTM A123.
 2. Bolts, Nuts, Washers, and Other Hardware: In accordance with ASTM A153.
 3. Surface Finish: Galvanized coatings shall be continuous, firmly adhered, smooth, evenly distributed, and free from defects detrimental to performance or appearance.
 4. Locations: To the greatest extent possible, provide at all structural steel fabrications indicated to be exposed to the weather, in direct contact with concrete or masonry, and as indicated. Unless otherwise approved by the Architect, plug and cold galvanize ventilation and lifting holes which will be exposed to moisture penetration in the finished work.
- F. Interior Shop Primer Application:
1. Preparation: Remove rust and scale by wire brushing, scraping, and sanding down to bare metal in accordance with SSPC-SP2 and SP3. Where SP2 and SP3 measures are insufficient, provide commercial blast cleaning in accordance with SSPC-SP6.
 2. Application: Spray apply primer in accordance with manufacturer's recommendations, minimum dry film thickness.
 3. Shop Primer: Shop prime all steel except:
 - a. Steel encased in concrete.
 - b. Surfaces to be field welded.
 - c. Contact surfaces at high-strength bolts.
 - d. Members to be galvanized.
 - e. Surfaces to receive other (exterior) shop primers.
- G. Exterior Shop Primer Application:
1. Prepare surfaces in accordance with the manufacturer's recommendations, and as specified below.
 2. Solvent clean in accordance with SSPC SP-1; commercial blast ungalvanized ferrous metal surfaces in accordance with SSPC SP6.
 3. Abrade galvanized surfaces with a metal preparation pad.
 4. At galvanized surfaces, spray apply epoxy primer in compliance with manufacturer's instructions.
 5. At non-galvanized surfaces, spray apply zinc-rich primer followed by epoxy tie-coat, in compliance with manufacturer's instructions.
 6. Spray apply primers in accordance with the manufacturer's recommendations. Apply primers to receive field application of finish coats as specified in Section 099000.
 7. Maintain at least one coat of primer at all times during installation. Immediately patch damaged coatings.
 8. Apply epoxy primer to galvanized steel.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Prior to starting work, carefully inspect installed work of other trades and verify that such work is complete to the point where work of this Section may properly commence. Notify the Architect in writing of conditions detrimental to the proper and timely completion of the work.
- B. Do not begin installation until all unsatisfactory conditions are resolved. Beginning work constitutes acceptance of site conditions and responsibility for defective installation caused by prior observable conditions.

3.2 ERECTION

- A. Embedded Items: Provide anchor bolts and templates, and other items as indicated, to other Sections for installation prior to placement of cast-in concrete.

SECTION 051200 – STRUCTURAL STEEL FRAMING

- B. Temporary Shoring and Bracing: Provide as required with connections of sufficient strength to bear imposed loads. Remove temporary members when permanent members are in place and final connections are made.
- C. Erect structural steel in accordance with approved shop drawings and AISC "Code of Standard Practice," Section 7.
- D. Welds shall be in accordance with AWS D1.1.
- E. Cut holes by drilling only.
- F. Tolerances: Maximum deviation from plumb, level, and alignment shall not exceed 1 to 500.
- G. Base Plate Grouting: Set on leveling nuts to accurate elevations and grout solid with non-shrink grout.
- H. Cleaning and Touch-Up:
 - 1. Clean steel of oil or other contaminants as specified under Fabrication.
 - 2. Columns, beams, girders, and other members which are to receive sprayed-on fireproofing shall be cleaned free of loose rust, heavy mill scale, oil, dirt or other foreign substances prior to application of fireproofing materials.
 - 3. Immediately after erection, clean field welds, bolted connections, and abraded areas and touch-up factory primed surfaces with same primer as used in shop; touch-up galvanized surfaces with zinc-rich primer.

END OF SECTION

SECTION 055000 – METAL FABRICATIONS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Fabricated metal items indicated on the Architectural Drawings and scheduled at the end of this Section.
- B. Related Sections:
 - 1. 014500 - Quality Control: Requirements for testing and inspections.
 - 2. 030013 - Concrete: Embedment of metal fabrications.
 - 3. 051200 - Structural Steel Framing: Steel elements indicated on the Structural Drawings.
 - 4. 099000 - Painting: Field painting of metal fabrications shop primed in this section.
- C. Drawings, the provisions of the Agreement, the General Conditions, and Division 1 specification sections apply to all work of this Section.
- D. Substitutions: Substitute products will be considered only under the terms and conditions of Section 016000.

1.2 REFERENCES

- A. American Society for Testing and Materials (ASTM):
 - 1. A36 - Specification for Structural Steel.
 - 2. A53 - Specification for Welded and Seamless Steel Pipe.
 - 3. A123 - Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
 - 4. A143 - Safeguarding Against Embrittlement of Hot Dipped Galvanized Structural Steel Products and Procedures for Detecting Embrittlement.
 - 5. A153 - Specification for Zinc Coating (Hot Dip) on Iron and Steel Hardware.
 - 6. A307 - Specification for Carbon Steel Externally Threaded Standard Fasteners.
 - 7. A366 - Specification for Carbon Steel Cold Rolled Sheet.
 - 8. A384 - Safeguarding Against Warpage and Distortion During Hot Dip Galvanizing of Steel Assemblies.
 - 9. A385 - Providing High Quality Zinc Coatings (Hot Dip).
 - 10. A500 - Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes.
 - 11. A501 - Specification for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing.
 - 12. A569 - Specification for Commercial Quality Hot Rolled Sheet and Strip Carbon (0.15 Maximum Percent) Steel.
 - 13. A570 - Specification for Hot-Rolled Carbon Steel Sheet and Strip, Structural Quality.

1.3 SUBMITTALS

- A. Make submittals in accordance with Section 013300.
- B. Product Literature: Submit product literature for all prefabricated products.
- C. Shop Drawings:
 - 1. Show details of fabrication and installation; indicate materials, thicknesses, dimensions, methods of reinforcement and embedment, attachments, shop finishes, provisions for work of other trades, and other pertinent information as requested by Architect.

1.4 QUALITY ASSURANCE

- A. Fabricator Qualifications: Experienced and regularly engaged in producing metal fabrications of the type specified; must employ only skilled personnel using proper equipment to produce work.
- B. Testing and Inspection: All metal fabrications are subject to special inspection as specified in Section 014500.

SECTION 055000 – METAL FABRICATIONS

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Carbon Steel:
 - 1. Structural Shapes, Plates, and Bars: ASTM A36.
 - 2. Sheet: ASTM A366.
 - 3. Pipe: ASTM A53, seamless, Type S, plain end; schedule 40 unless indicated otherwise.
 - 4. Tubing: ASTM A500 or A501, seamless.
- B. Fasteners: Types as indicated, specified, or required for the assembly and installation of fabricated items.
 - 1. Bolts: ASTM A307, unless indicated otherwise; include nuts and plain harden washers.
 - 2. Drilled-In Concrete Anchors: Ramset "Trubolt Stud Anchor," Hilti Fastening Systems "Kwikbolt," or approved.
- C. Interior Primer: Modified alkyd type (VOC compliant); lead and chromate free; gray or white color; one of the following unless approved otherwise.
 - a. "Azeron Primer Series 88HS" by Tnemec Company Inc. (Kansas City, MO; 816-483-3400).
 - b. "Amercoat 5105" by Ameron Protective Coatings (Brea, CA; 714-529-1951).
 - c. "Carbocoat 150HG" by Carboline Company (St. Louis, MO; 314-644-1000; 800-848-4645).
- D. Exterior Primers:
 - 1. Manufacturer: Tnemec Company Inc. (Kansas City, MO; 816-483-3400).
 - 2. Epoxy Primer: Tnemec Series 69 Epoxoline."
- E. Cold Galvanizing Compound: "Galv-Weld," "Galvican," "ZRC Cold Galvanizing Compound," or equivalent zinc-rich primer.
- F. Miscellaneous Materials: Furnish incidental accessory materials, tools, and equipment as necessary for fabrication and installation of miscellaneous metal items as indicated on the Drawings.
 - 1. Non-Shrink Grout: Master Builder's "Master Flow 713," Sonneborn "Sonogrout," or approved.

2.2 PREFABRICATED COMPONENTS

- A. Unistrut: Unistrut Corporation (Wayne, MI), or approved. Furnish manufacturer's standard components corresponding to "P" numbers indicated on the drawing. Include 1/4 inch thick steel connecting hardware, and 1/2" diameter bolts, nuts, and lock washers.
- B. Steel Gratings:
 - 1. Fabricate from welding quality mild carbon steel conforming to the requirements of ASTM A569.
 - 2. Fabricate in accordance with NAAMM standards for steel grating.
 - 3. Load Capacity:
 - a. Provide bearing bars sized in accordance with manufacturer's load tables for the spans indicated.
 - b. Pedestrian Traffic: 100 psf, but in no case less than 3/4 inch deep by 1/8 inch thick.
 - c. Auto Traffic: H-20 loading.
 - d. Sump Pit Grating: Minimum 125 psf; 300 lb point (4 sq. in.) load.
 - 4. Fabrication: Fully welded construction; space bearing bars on 1-3/16 inch centers and cross bars on 4 inch centers. Provide banding bars of minimum thickness as bearing bars; weld banding bars to bearing bars.
 - 5. Finish: Hot dipped galvanized after fabrication.
 - 6. Provide hold down lugs at grating subject to auto traffic.
- C. Steel Stair Treads:
 - 1. McNichols Company (Houston, TX; 877-721-3416)
 - 2. McNichols Plank Grating. Stair Tread Plank Grip Strut,
 - 3. Galvanized Steel, ASTM A-653 G90,
 - 4. 14 Gauge (.0785" Thick), 4-Diamond-N (10-1/2" Width),
 - 5. 1-1/2" Channel Depth, Serrated Surface, 45% Open Area

SECTION 055000 – METAL FABRICATIONS

2.3 FABRICATION

- A. General Fabrication Requirements: Fabricate as follows, unless specified or indicated otherwise.
 - 1. Verify all dimensions and fabricate to detail with accurate sizes and shapes, straight lines, smooth curves, and sharp angles.
 - 2. Welds shall have sufficient strength to withstand the loads applied.
 - 3. For items exposed to view or subject to contact, grind welds smooth and level with adjacent surfaces; remove all burrs from cut edges. Fill imperfections with body putty as necessary for a smooth even finish.
 - 4. Bend curved sections to a smooth radius free from buckles and twists.
 - 5. Fabrications in exterior locations shall be fabricated to shed water.
- B. Fabrication of Elements to Receive Galvanized Coatings:
 - 1. Fabricate in accordance with the applicable requirements of ASTM A143, A384, and A385.
 - 2. Remove welding slag and burrs prior to galvanizing.
 - 3. Avoid fabrication techniques which could cause distortion or embrittlement of the steel.

2.4 SHOP FINISHES

- A. Hot Dip Galvanizing:
 - 1. Steel fabrications shall be galvanized in accordance with ASTM A123. Bolts, nuts, washers, and other hardware shall be galvanized in accordance with A153.
 - 2. Surface Finish: The galvanized coatings shall be continuous, firmly adhered, smooth, and free from defects.
 - 3. Locations: Provide hot dip galvanizing for all metal fabrications in exterior or moist conditions, in direct contact with concrete or masonry, and as indicated. Unless otherwise approved by the Architect, plug and cold galvanize ventilation and lifting holes which will be exposed to moisture penetration in the finished work.
- B. Interior Primed finish:
 - 1. Preparation: Solvent clean in accordance with SSPC-SP1. Remove rust and scale by wire brushing, scraping, and sanding down to bare metal in accordance with SSPC-SP2 and SP3. Where SP2 and SP3 measures are insufficient, provide commercial blast cleaning in accordance with SSPC-SP6. Immediately apply specified prime coat.
 - 2. Apply interior primer in accordance with manufacturer's recommendations.
 - 3. Locations: Provide at all interior metal fabrication exposed to view, unless otherwise indicated. Do not prime surfaces to be embedded in concrete, and surfaces to be field welded.
- C. Exterior and Galvanized Finish:
 - 1. Prepare surfaces in accordance with the finish coat manufacturer's recommendations, and as specified below.
 - 2. Galvanized Surfaces: Clean per SSPC SP1. Abrade galvanized surfaces with a metal preparation pad.
 - 3. Spray apply primers in accordance with the manufacturer's recommendations. Apply primers to receive field application of finish coats as specified in Section 099000.
 - 4. Except for surfaces indicated to be field welded, coat all surfaces of fabrication, whether or not exposed to view in installed position.
 - 5. Maintain at least one coat of primer at all times during installation. Immediately patch damaged coatings.
 - 6. Finish coat shall be free of dirt, flow lines, sags, blisters, pinholes, and other surface imperfections.
 - 7. Locations: Provide at all exterior metal fabrications exposed to view, fabrications in direct contact with concrete or masonry, and other fabrications as scheduled. Do not prime surfaces to be field welded.

SECTION 055000 – METAL FABRICATIONS

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Prior to starting work, carefully inspect installed work of other trades and verify that such work is complete to the point where work of this Section may properly commence. Notify the Architect in writing of conditions detrimental to the proper and timely completion of the work.
- B. Do not begin installation until all unsatisfactory conditions are resolved. Beginning work constitutes acceptance of conditions as satisfactory.

3.2 INSTALLATION

- A. Install metal fabrications in accurate locations shown. Unless indicated otherwise, fabrications shall be installed plumb and level.
- B. Provide all anchorage devices as indicated and required for a secure installation.
- C. Touch-up all surfaces damaged during installation. Patch all welds and damage marks with matching primer.
- D. Coordinate with Section 030013 for foundations, installation, and concrete fill at pipe bollards.

3.3 SCHEDULE

- A. The following list includes, without limitation, the principal metal fabrications and finishes in the Work.
 - 1. Bent Steel Plate at Exterior Stairs: Hot-dipped galvanized finish.

END OF SECTION

SECTION 061000 – ROUGH CARPENTRY

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Sheathing.
 - 2. Dimensional wood framing.
 - 3. Glued-laminated beams and lumber.
 - 4. Blocking, nailers, and curbing.
 - 5. Plywood terminal back boards.
- B. Related Sections:
 - 1. 061733 – Wood I-Joists
 - 2. 061739 - Open-Web Wood Chord Trusses
 - 3. 076200 - Sheet Metal Flashing and Trim.
 - 4. 092200 – Lightgauge Metal Support Framing: Support framing; metal backing.
 - 5. 092900 - Gypsum Sheathing:
- C. Drawings, the provisions of the Agreement, the General Conditions, and Division 1 specification sections apply to all work of this Section.
- D. Substitutions: Substitutions will be considered only under the terms and conditions of Section 016000.

1.2 REFERENCES

- A. American Institute of Timber Construction (AITC)
- B. American National Standards Institute (ANSI): 190.1 - Structural Glued Laminated Timber.
- C. American Plywood Association (APA)
- D. American Society for Testing and Materials (ASTM):
 - 1. D2898 - Test Method for Accelerated Weathering of Fire-Retardant Treated Wood for Fire Testing.
 - 2. E84 - Test Method for Surface Burning Characteristics of Building Materials.
- E. American Wood Preservers' Association: Book of Standards (AWPA).
- F. National Lumber Grading Authority of Canada (NLGA).
- G. Product Standard (PS): PS-20 - American Softwood Lumber Standard.
- H. Southern Pine Inspection Bureau (SPIB).
- I. West Coast Lumber Inspection Bureau (WCLB): Standard Grading Rules for West Coast Lumber.

1.3 SUBMITTALS

- A. Make submittals in accordance with Section 013300.
- B. Product Data: Submit complete technical and product data on the following:
 - 1. Preservative wood treatments.
 - 2. Framing and sheathing accessories.
 - 3. Fabricated structural wood members.

1.4 QUALITY ASSURANCE

- A. Regulatory Requirements: Work shall conform to the requirements of the currently enforced International Building Code as adopted by the jurisdiction.

SECTION 061000 – ROUGH CARPENTRY

- B. Fabricated Wood Structural Member Manufacturers Qualifications:
 - 1. For each type of fabricated structural wood member, use company specializing in the manufacture of the type of structural wood member with a minimum of three years experience.
 - 2. Glued Laminated Wood Structural Member Manufacturer: Certified by the AITC or APA-EWS (American Wood Systems), in accordance with ANSI A190.1.
- C. Glued laminated structural units shall conform to Voluntary Product Standards PS 56 "Structural Glue Laminated Timber" and AITC 117 "Standard Specifications for Structural Glue-Laminated Timber of Softwood Species".
- D. All interior primers, adhesives, coatings and sealants shall comply with the most recent version of Rule 1168 of the South Coast Air Quality Management District.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Store and protect products under provisions of Section 016000.
- B. Glued Laminated Wood Members:
 - 1. Protective Wrapping: Industrial grade members may be shipped unwrapped. Individually wrap architectural and premium grade members. Maintain protection until immediately prior to installation.
 - 2. Use padded, non-marring slings when handling architectural grade members.
 - 3. Prevent glued laminated members from becoming wet.

PART 2 - PRODUCTS

2.1 DIMENSION LUMBER

- A. Lumber shall be manufactured in accordance with PS 20, and shall be stamped and graded in accordance with WWPA, WCLB, NLGA, or SPIB grading rules.
- B. Moisture Content: Kiln dried to 19% maximum moisture content, except for material whose least dimension is 4 inches thick or greater.
- C. Species: Hem-Fir, Spruce-Pine-Fir (SPF), or Douglas Fir Larch, unless indicated or specified otherwise.
- D. Structural Lumber Grades: As indicated on the Structural Drawings.
- E. Architectural Lumber Grades: Unexposed non-structural wood framing and blocking indicated on the Architectural Drawings shall be graded as follows:
 - 1. Blocking and Nailers: "Utility - Light Framing," or better.

2.2 PANEL MATERIALS

- A. Wood Structural Panel (WSP): As indicated on the Structural Drawings
- B. Plywood Sheathing: APA Rated Sheathing; Structural I; CD grade; Exterior; plywood, unless indicated otherwise on the Structural Drawings; thicknesses as indicated.
- C. Terminal Backboards: APA AC grade exterior; fire retardant treated.

2.3 FABRICATED WOOD STRUCTURAL MEMBERS

- A. Glued Laminated Wood Members:
 - 1. As indicated on the Structural Drawings.
 - 2. Appearance grade where exposed in the finish work.
- B. Laminated Veneer Lumber (LVL): ICBO listed; as indicated on the Structural Drawings.
- C. Parallel Strand Lumber (PSL): As indicated on the Structural Drawings.
- D. General Fabrication Requirements for Fabricated Wood Structural Members:
 - 1. Verify dimensions and site conditions prior to fabrication.
 - 2. Fabricate to meet the structural requirements specified.

SECTION 061000 – ROUGH CARPENTRY

2.4 ACCESSORIES

- A. Fasteners:
 - 1. Hot-dipped galvanized steel for exterior and high humidity locations.
 - 2. For Use with Preservative Treated Wood: 300 Series stainless steel.
 - 3. Use ring shank nails at floor sheathing.
 - 4. Screws: Self tapping; countersunk or low profile head.
- B. Metal Connectors: Simpson Company, Silver Metal Products, Inc, USP Structural Connectors, or approved; types as indicated on the Drawings; minimum G-185 galvanized coating.
- C. Construction Adhesive: M-D Building Products (Oklahoma City OK; 800-654-0007) "MD400," Surebond Inc. (Aliso Viejo, CA; 866-600-7873) "SB-400," or other product meeting the requirements of AFG-01.
- D. Sill Gasket: Closed cell polyethylene foam, glass fiber strips, or approved; continuous rolls; width of sill plate.
- E. Strip Flashing: "Grace Ultra" by WR Grace., 800-444-6459, or "Moistop E-Z Seal" by Fortifiber Corporation 800-343-3972.

2.5 WOOD TREATMENT

- A. Wood Preservative (Pressure Treatment):
 - 1. Preservative treat all exterior lumber, including roofing nailers, curbs and other wood in contact with concrete, masonry, and moist conditions.
 - 2. For above ground use, use AWWA certified Ammonium Copper Quaternium (ACQ) or Copper Hydroxide Sodium Dimethyldithiocarbamate (CDDC) waterborne preservative with 0.25 pounds per cubic foot of wood retention.
 - 3. For ground contact use, use AWWA Treatment C-22 using CCA waterborne preservative with 0.40 pounds per cubic foot of wood retention.
 - 4. Treated lumber shall be kiln dried to a maximum moisture content of 19%; treated plywood shall be kiln dried to a maximum moisture content of 15%.
 - 5. Treated lumber shall bear the quality stamp of an inspection agency approved by the jurisdictional code authorities.
- B. Fire Retardant Treatment:
 - 1. Fire retardant treat lumber and plywood at locations indicated on the Drawings and as otherwise specified.
 - 2. All fire retardant treated wood materials shall bear a UL "FR-S" label, or a label from an approved inspection agency certifying that the material Pressure treat lumber in accordance with meets the requirements of AWWA C-20 Type A for lumber and plywood in accordance with AWWA C-27 Type A for plywood.
 - 3. Treated lumber shall be kiln dried to a maximum moisture content of 19%; treated plywood shall be kiln dried to a maximum moisture content of 15%.
 - 4. All fire retardant treated wood shall bear a UL "FR-S" label, or a label from an approved inspection agency certifying that the material has a flame spread rating no higher than 25 with no evi-dence of significant progressive combustion when tested in accordance with ASTM E84. Exterior fire retardant treated wood shall be treated by means of a system which has been demonstrated to exhibit no increase in fire hazard classification in accordance with ASTM E84 test after having been subjected to accelerated weather conditioning in accordance with ASTM D2898.
 - 5. Approved Products:
 - a. Interior Fireproofing: Clear finish product, Hickson Corporation "Dricon", Hoover Treated Wood Products "Pyro-guard," or Osmose Wood Preserving Co. of America, Inc. "Flame Proof LHC."
 - b. Exterior Fireproofing: Hoover Treated Wood Products "Exterior Fire-X."

SECTION 061000 – ROUGH CARPENTRY

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Prior to starting work, carefully inspect installed work of other trades and verify that such work is complete to the point where work of this Section may properly commence. Notify the Architect in writing of conditions detrimental to the proper and timely completion of the work.
- B. Do not begin installation until all unsatisfactory conditions are resolved. Beginning work constitutes acceptance of site conditions and responsibility for defective installation caused by prior observable conditions.

3.2 FRAMING

- A. Erect as indicated.
- B. Erect wood framing members level and plumb unless indicated otherwise.
- C. Place horizontal members crown side up.
- D. Nailing shall be in accordance with UBC table 2304.9.1, unless indicated otherwise. Use screws when fastening into metal framing and supports.
- E. Use framing members full length without splices.
- F. Tolerances:
 - 1. Maximum 1/4 inch from true position.
 - 2. Maximum 1/4 inch in 10 feet from true plumb or level.
- G. Site treat cut ends of field cut treated lumber with compatible material as recommended by the treatment materials manufacturer.
- H. After end trimming glued laminated beams, seal with penetrating sealer in accordance with AITC requirements. Do not apply sealer to surfaces to receive stains or other finish treatments.
- I. Place sill gasket directly on concrete foundation. Puncture gasket clean and fit tight to protruding foundation anchor bolts.

3.3 SHEATHING

- A. Install sheathing as indicated. When not indicated, install as follows:
 - 1. Secure sheathing with edges on firm bearing. Provide solid edge blocking between sheets.
 - 2. Secure roof sheathing perpendicular to framing members with ends staggered.
- B. Fastening shall be in accordance with code requirements. Use screws in lieu of nails when fastening into metal lightgauge metal framing. Use screws at all floor and deck sheathing.
- C. Allow 1/8 inch spacing at ends and edges between panels, unless otherwise recommended by panel manufacturer.

3.4 BLOCKING, NAILERS, AND CURBS

- A. Provide blocking, nailers, and curbs for sheathing, roof construction, metal flashing, and other construction as indicated, and as necessary for firm support. Unless otherwise indicated, solid wood backing shall be minimum 2 inch nominal thickness; plywood shall be minimum 3/4 inch thick, except that sloped parapet caps may be 1/2 inch thick.
- B. Blocking: Install wood blocking to receive mechanical fasteners for support of plumbing and electrical fixtures and equipment, cabinets, door stop plates, wood base, wainscots, coat hooks, toilet and bath accessories, kitchen equipment, and all other wall and ceiling mounted components.
- C. Screw fasten wood components to metal framing and support elements.

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- D. For attachment of plywood backing, kerf plywood 1/4" (3/8", maximum if required for heavy gage studs) to receive flange return (or crimp the return closed); provide supplementary sheet metal angle attached to back of stud where necessary to support backing. Screws into edge of plywood are unacceptable.

3.5 PLYWOOD TERMINAL BACKBOARDS

- A. Provide a fire retardant treated plywood terminal backboard for telephone systems where indicated on the drawings.
- B. Mechanically apply directly over gypsum backing board.

END OF SECTION

**101 WEST 33RD STREET
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SECTION 061733 – WOOD I-JOISTS**

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Wood chord and plywood web joists for roof and floor framing.
 - 2. Bridging, bracing, and anchorage.
 - 3. Framing for openings.
- B. Related Sections:
 - 1. 061000 - Rough Carpentry
- C. Drawings, the provisions of the Agreement, the General Conditions, and Division 1 specification sections apply to all work of this Section.
- D. Substitutions: Substitute products will be considered only under the terms and conditions of Section 016000.

1.2 REFERENCES

- A. APA - American Plywood Association.

1.3 SYSTEM DESCRIPTION

- A. Design Floor Live Load: As indicated on the Drawings.
- B. Design Roof Live Load: As indicated on the Drawings.

1.4 SUBMITTALS

- A. Make submittals under provisions of Section 013300.
- B. Shop Drawings. Include seal and signature of designing engineer.
- C. Product Data.
- D. Indicate framing system, sizes and spacing of joists, loads and joist cambers, bearing and anchor details, bridging and bracing, and framed openings.
- E. Submit manufacturer's installation instructions under provisions of Section 013300.
- F. Closeout Submittal:
 - 1. In accordance with Section 017700.
 - 2. Submit designing engineer's certification that products and installation comply with design requirements.

1.5 QUALITY ASSURANCE

- A. Manufacturer: Company specializing in manufacture of plywood web joists with three years minimum experience.
- B. Design joists under direct supervision of Professional Engineer experienced in structural framing design registered in State of Texas.

1.6 REGULATORY REQUIREMENTS

- A. Conform to applicable code for loads, seismic zoning, and other governing criteria.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Deliver products to site under provisions of Section 016000.
- B. Store and protect products under provisions of Section 016000.
- C. Transport and store joists in vertical position resting on bearing ends.
- D. Protect joists from moisture, warpage, and distortion during transit and when site stored.

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SECTION 061733 – WOOD I-JOISTS**

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

- A. Trus Joist by Weyerhaeuser (Seattle, WA; 800-525-5440)
- B. Trus Joist MacMillan (Foothill Ranch, CA; 949-616-1600).
- C. Pacific Woodtech Corporation (Burlington, WA; 888-707-2285)
- D. Boise Cascade Company (Boise, ID; 208-384-6161)
- E. Roseburg Forest Products Company (Roseburg, OR; 800-347-7260)
- F. Substitutions: Under provisions of Section 016000.

2.2 MATERIALS

- A. Wood Chord Members: As indicated on the Structural Drawings
- B. Web: As indicated on the Structural Drawings
- C. Joist Bridging: Type, size and spacing required by joist manufacturer.

2.3 ACCESSORIES

- A. Wood Blocking, Plating, Support Members, Framing for Openings: Softwood lumber, hem-fir species, construction grade, maximum moisture content of 19 percent.
- B. Fasteners: Galvanized steel, type to suit application.

2.4 FABRICATION

- A. Verify dimensions and site conditions prior to fabrication.
- B. Tolerances:
 - 1. Depth: $\pm 1/16$ inch.
 - 2. Flange Width: $\pm 1/16$ inch.

PART 3 - EXECUTION

3.1 INSPECTION

- A. Verify that supports and openings are ready to receive joists.
- B. Verify sufficient end bearing area.
- C. Beginning of installation means acceptance of existing conditions.

3.2 PREPARATION

- A. Coordinate placement of bearing items.

3.3 INSTALLATION

- A. Install joists in accordance with manufacturer's instructions.
- B. Place joists true to line and level.
- C. Provide temporary bracing to position joists in place until permanently secured.
- D. Place permanent bridging, bracing, and anchors to maintain joists straight and in correct position before installation of decking or inducing loads.
- E. Do not field cut joists.
- F. Place headers and supports to frame openings required.
- G. Frame openings between joists with lumber.
- H. Coordinate placement of decking with work of this Section.

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3.4 TOLERANCES

- A. Framing Members: 1/2 inch maximum from true position.

3.5 FIELD QUALITY CONTROL

- A. The plywood web joist manufacturer's design engineer or his authorized representative shall visit the site to inspect the work. Verify and certify that joist sizes and materials are as required, that connections are properly executed, and that structural integrity of materials has been maintained.

END OF SECTION

SECTION 061739 - OPEN WOOD CHORD TRUSSES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Complete design, furnishing and installation of open web wood chord ("gang-nail") trusses for roof framing, as indicated, and as necessary to complete the work.
- B. Related Sections
 - 1. 051200 - Structural Steel Framing: Supporting structure.
 - 2. 061000 - Rough Carpentry: Plywood decking.
- C. Drawings, the provisions of the Agreement, the General Conditions, and Division 1 specification sections apply to all work of this Section.
- D. Substitutions: Substitute products will be considered only under the terms and conditions of Section 016000.

1.2 REFERENCES

- A. American Society for Testing and Materials (ASTM):
 - 1. A307 - Carbon Steel Threaded Standard Fasteners.
 - 2. A653: Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated by the hot-Dip Process.
- B. International Building Code (IBC).

1.3 SUBMITTALS

- A. Make submittals in accordance with Section 013300.
- B. Shop Drawings:
 - 1. Indicate standard designations, configuration, sizes, spacing, and locations of trusses, truss coding, bridging, connections, attachments, cambers, and attachment details.
 - 2. Reference dimensions to gridlines and layout working points indicated in the documents.
 - 3. Prepare shop drawings under the seal of a professional structural engineer registered in the State of Indiana.
- C. Calculations: Submit design calculations for open web trusses to the Authority Having Jurisdiction and to Structural Engineer, and provide two informational copies to the Architect for the project records. Calculations shall bear the seal of a professional structural engineer registered in the State of Indiana.
- D. Quality Control Submittals: Certification: Submit written certification that the open web wood chord trusses have been designed to meet the specified requirements.

1.4 QUALITY ASSURANCE

- A. Design: Structural design of the wood chord trusses shall be by a Structural Engineer Licensed to practice in the State of Texas.
- B. Code Approvals: Trusses shall be designed and manufactured to comply with the International Building Code.
- C. Regulatory Requirements: Comply with building department requirements for review of truss shop drawings.
- D. Design of the trusses shall comply with the loading requirements indicated on the Structural Drawings, and the Architectural requirements indicated.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. In accordance with Section 016000.
- B. Store open web trusses in a vertical position and protected from the weather.

SECTION 061739 - OPEN WOOD CHORD TRUSSES

1.6 WARRANTY

- A. Submit in accordance with Section 017700.
- B. The products, when correctly installed and maintained, shall be warranted free from manufacturing errors or defects in workmanship and material, and shall be warranted to perform as designed for the normal and expected life of the building.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Open Web Truss Members: Style as indicated on the Drawings.
- B. Lumber: In accordance with Section 061000.

2.2 CONNECTORS:

- A. Plywood Connectors: Plywood in accordance with Section 061000.
- B. Steel Connectors: Hot-dipped galvanized steel sheet, ASTM A653; die-stamped with integral teeth.
- C. Truss Bridging: Type, size and spacing as indicated on approved shop drawings.
- D. Bolts, Nuts and Washers: ASTM A307.

2.3 FABRICATION

- A. Fabricate trusses to achieve structural and architectural requirements indicated.
- B. Tolerances
 - 1. Length bearing to bearing: $\pm 1/4"$
 - 2. Depth $\pm 1/4"$
- C. Provide chord extensions and braces as indicated.
- D. Identification: Each of the trusses shall be identified by a stamp indicating the truss series, manufacturer's name, plant number, and date of manufacture.

2.4 SOURCE QUALITY CONTROL

- A. Trusses shall be inspected for compliance with specifications and manufacturer's standards for structural integrity, under manufacturer's ongoing program for observation by an independent inspection agency.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Prior to starting work, carefully inspect installed work of other trades and verify that such work is complete to the point where work of this Section may properly commence. Notify the Architect in writing of conditions detrimental to the proper and timely completion of the work.
- B. Do not begin installation until all unsatisfactory conditions are resolved. Beginning work constitutes acceptance of site conditions and responsibility for defective installation caused by prior observable conditions.

3.2 ERECTION

- A. Erect open web trusses in accordance with the Structural Drawings.
- B. During erection, provide temporary bracing for induced loads and stresses to keep the trusses straight and plumb as required and to assure adequate lateral support for the individual trusses and the entire system until the sheathing material has been applied.
- C. Coordinate placement of anchorages construction for securing bearing plates and angles.
- D. [Finish trusses as indicated on the Drawings and specified in Section 099000.]

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3.3 FIELD QUALITY CONTROL

- A. After completion of installation and prior to enclosing the trusses, notify the manufacturer's representative for review of installation.

END OF SECTION

SECTION 062050 – EXTERIOR FINISH CARPENTRY

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Exterior wood standing and running trim.
 - 2. Wood guardrails, screens and railings.
 - 3. Composite decking
 - 4. Soffit paneling.
 - 5. Shop and field applied finishing.
 - 6. Requirements for wood products furnished to other Sections.
- B. Related Sections:
 - 1. 055000 – Metal Fabrications: Metal fabrications, including guardrail balustrade materials, furnished to this Section.
 - 2. 061000 - Rough Carpentry: Framing and sheathing; blocking, nailers, and curbing
 - 3. 064000 - Architectural Casework: Interior millwork and custom casework.
 - 4. 081400 - Wood Doors.
 - 5. 087100 - Door Hardware.
 - 6. 099000 – Painting and Coating: Field-applied stains and finish coatings.
- C. Drawings, the provisions of the Agreement, the General Conditions, and Division 1 Specification Sections apply to all the Work of this Section.
- D. Substitutions: Substitute products will be considered only under the terms and conditions of Section 016000.

1.2 REFERENCES

- A. American National Standards Institute (ANSI)
 - 1. A208.1 - Particleboard, Mat Formed Wood
 - 2. A208.2 - Medium Density Fiberboard for Interior Use
- B. Architectural Woodwork Institute (AWI): Architectural Woodwork Quality Standards, Current Edition.
- C. West Coast Lumber Inspection Bureau (WCLB): Standard Grading Rules No. 17.
- D. U.S. Product Standard (PS): PS 1 Product Standard for Construction and Industrial Plywood

1.3 SUBMITTALS

- A. Make submittals in accordance with Section 013300.
- B. Shop Drawings. Indicate materials, components, profiles, fastening methods, jointing details, finishes and accessories. Details shall be minimum scale of 1-1/2 inch per foot.
- C. Samples:
 - 1. Solid Wood with Transparent Finish: Minimum of three 12 inch long samples representative of the maximum range of color and graining to be expected for each species, cut, and finish combination indicated. Include samples of transparent finish with putty filled holes and specified field applied top coat.
 - 2. Opaque Finish Wood: Minimum of three 12 inch long samples representative of the maximum range of graining and surface imperfections to be expected.

1.4 QUALITY ASSURANCE

- A. Fabricator: Minimum of 5 years experience in the fabrication of custom architectural woodwork of the type specified.
- B. Qualifications of Installers: Use only journeyman finish carpenters who are thoroughly trained and skilled in the work, and who are completely familiar with the materials and quality standards specified.

SECTION 062050 – EXTERIOR FINISH CARPENTRY

1.5 DELIVERY, STORAGE AND HANDLING

- A. In accordance with Section 016000, and as follows:
 - 1. Do not deliver wood materials to the building until "wet" work such as gypsum board work has been completed.
 - 2. Store materials indoors in ventilated area with minimum temperature of 60 degrees F., and relative humidity between 25 and 55 percent.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Lumber:
 - 1. Finish Framing Lumber (minimum 2" thick): Southern Yellow Pine, Select; vertical grain; pressure-preservative treated where indicated.
 - 2. Finish Plank Lumber (thickness less than 2"): Western red cedar; A Grade or better; S1S2E, except provide S4S, in accordance with PS-20, at locations where 2 sides (not including edges) are exposed in the finished work; kiln dried; A Grade or Better; smooth.
 - 3. Maximum moisture content of 19 percent.
 - 4. Concealed Framing Lumber: In accordance with Section 061000.
- B. Composite Decking:
 - 1. Acceptable Manufacturers:
 - a. Trex Railing and Decking; (Winchester, VA; 540-542-6300)
 - b. New Tech Wood (Houston, TX; 866-728-5273)
 - 2. Solid board decking consisting of polyethylene and recycled wood as standard with manufacturer.
 - 3. Wood embossed one side.
 - 4. Color as selected by Architect from manufacturer's full line.
 - 5. Fabricated for exposed fastener installation.
- C. Wood Panel Soffits: One of the following:
 - 1. "LP Wood Siding" by Louisiana Pacific Corp (Nashville, TN; 888-820-0325)
 - 2. "T1-11" by Georgia Pacific Building Products (Atlanta, GA; 800-284-5347)

2.2 ACCESSORIES

- A. Shop Preservative Sealer: Rustoleum Brands (Vernon Hills, IL; 877-385-8155); "Woodlife Classic Clear Preservative".

2.3 WOOD TREATMENT

- A. Wood Preservative (Pressure Treatment):
 - 1. Preservative treat lumber where indicated plus treat all woods used as roofing nailers, curbs and other wood in contact with concrete, masonry, and moist conditions.
 - 2. For above ground use, use AWPA certified Ammonium Copper Quaternium (ACQ) or Copper Hydroxide Sodium Dimethyldithiocarbamate (CDDC) waterborne preservative with 0.25 pounds per cubic foot of wood retention.
 - 3. Treated lumber shall be kiln dried to a maximum moisture content of 19%; treated plywood shall be kiln dried to a maximum moisture content of 15%.
 - 4. Treated lumber shall bear the quality stamp of an inspection agency approved by the jurisdictional code authorities.

2.4 STANDING AND RUNNING TRIM FABRICATION

- A. Shop fabricate all trim to the shapes indicated.
- B. Fabricate all trim in accordance with AWI Section 300, custom grade.
- C. Assemble built-up sections. All glue lines shall be free of squeeze-out where transparent finishes are to be applied.
- D. Scarf all running joints, unless indicated otherwise on the Drawings.
- E. Tolerances for Overall Assembly Dimensions: $\pm 1/32$ inch.

SECTION 062050 – EXTERIOR FINISH CARPENTRY

- F. Shop fit and assemble to the greatest extent possible.
- G. Back or kerf cut all trim greater than 2 inch in width, except terminate before exposed ends.
- H. Fabricate trim from solid lumber, smooth sawn in sizes indicated and to match existing.

2.5 RAILINGS AND GUARDRAILS

- A. AWI Section 800.

2.6 COMPOSITE DECKING INSTALLATION

- A. Install products in compliance with manufacturer's instructions.
- B. Use exposed fasteners in pre-drilled countersunk holes.

2.7 SOFFIT PANEL INSTALLATION

- A. Nail panel siding 6 inches on center along edges and 12 inches on center at intermediate supports with 6d box, casing, or siding nails.
- B. Allow 1/8 inch spacing along panel ends and edges.

2.8 SHOP SEALING

- A. Shop seal all finish woodwork wood surfaces in compliance with manufacturer's printed instructions.
- B. Sand all exposed and semi-exposed wood surfaces smooth, always sanding in the direction of the wood grain.
- C. Sand all exposed transparent finish wood surfaces to AWI "Premium " grade standards. Sand all semi-exposed transparent or opaque finish wood surfaces to AWI "Custom" grade standards.
- D. Fill all depressions and imperfections with paintable putty.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Prior to starting work, carefully inspect installed work of other trades and verify that such work is complete to the point where work of this Section may properly commence. Notify the Architect in writing of conditions detrimental to the proper and timely completion of the work.
- B. Do not begin installation until all unsatisfactory conditions are resolved. Beginning work constitutes acceptance of site conditions and responsibility for defective installation caused by prior observable conditions.

3.2 PREPARATION

- A. Coordinate the installation of blocking and other supports required for the installation of architectural woodwork elements.

3.3 STANDING AND RUNNING TRIM

- A. Jointing: Make all joints to conceal shrinkage; miter all exterior corners; cope all interior corners, miter or scarf all end-to-end joints; install all trim pieces as long as possible, jointing only where solid support is obtained. Make no joints closer than 4 feet to corners.
- B. Coordination at Openings: Coordinate installation of trim with installation of weather resistive barrier components and assembly sequence.
- C. Lengths of Material: Use longest lengths available to minimize end joints in finish carpentry fabrications. The minimum length shall be 8 feet, except where short lengths are required by installation conditions.
- D. Fastening:
 - 1. Install all items straight, true, level, plumb, and firmly anchored in place; where blocking or backing is required, coordinate as necessary with other trades to ensure placement of all required backing and blocking in a timely manner.

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2. Fasten trim with finish nails or screws of proper dimension to hold the member firmly in place without splitting the wood.
 3. On exposed finish work, set all nails and screws and putty.
 4. Align exposed fasteners for uniform pattern; random or "shotgun" patterns will not be accepted.
- E. Select and arrange standing and running trim so that abutting members have a similar grain and color match to the greatest extent possible.
- F. Fabrication: Finish lumber to S4S; shapes and dimensions to match existing unless indicated otherwise.
- G. Fir trim includes but is not limited to water table and milled bevel cap, window, door, and louver trim.

3.4 WOOD RAILS AND GUARDRAILS

- A. Fabricate and install work as indicated to AWI Premium grade standards.

3.5 SITE FINISHING

- A. Set all exposed fasteners.
- B. Apply matching wood filler to exposed fastener indentations and other minor imperfections.
- C. Final finish is specified in 099000.

3.6 CLEANING UP

- A. Keep the premises in a neat, safe, and orderly condition at all times during execution of this portion of the work, free from accumulation of sawdust, cut-ends, and debris.
- B. At the end of each working day, or more often if necessary, remove refuse and thoroughly sweep and/or vacuum surfaces.

END OF SECTION

SECTION 064000 – ARCHITECTURAL WOODWORK

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Interior wood standing and running trim.
 - 2. Custom casework.
 - 3. Wood door frames.
 - 4. Wood countertops.
 - 5. Shop finishing.
 - 6. Option for providing pre-manufactured modular casework.
- B. Related Sections:
 - 1. 061000 - Rough Carpentry: Blocking for finish carpentry.
 - 2. 081400 - Wood Doors: Flush doors.
 - 3. 087100 - Door Hardware.
 - 4. 087300 - Door and Hardware Installation.
 - 5. 099000 - Painting: Field applied stains and finish coatings.
 - 6. 123200 - Manufactured Wood Casework: Non-custom casework
- C. Drawings, the provisions of the Agreement, the General Conditions, and Division 1 specification sections apply to all work of this Section.
- D. Substitutions: Substitute products will be considered only under the terms and conditions of Section 016000.

1.2 REFERENCES

- A. American National Standards (ANSI)
 - 1. ANSI A208.1 - Standard for Particleboard
 - 2. ANSI A208.2 - Standard for Medium Density Fiberboard (MDF)
- B. American Society for Testing and Materials (ASTM)
 - 1. C1036 Standard Specification for Flat Glass
 - 2. E84 Test Method for Surface Burning Characteristics of Building Materials
- C. American Plywood Association (APA)
- D. Architectural Woodwork Institute (AWI): Architectural Woodwork Quality Standards, Guide Specifications and Quality Certification Program (Current Edition).
- E. U.S. Product Standard (PS) PS 1 Product Standard for Construction and Industrial Plywood.

1.3 DEFINITIONS

- A. Exposed Portions of Casework: Those surfaces visible when doors and drawers are closed, including edges of doors and drawers, edges of cabinet boxes visible between doors and drawers, backs of hinged doors, interiors behind glass doors, and interiors in open cabinets.
- B. Semi-Exposed Portions of Casework: Those areas not defined as exposed, but visible when solid (not glazed) doors and drawers are opened.
- C. Concealed Portions of Casework: All remaining areas not defined as exposed or semi-exposed.

1.4 SUBMITTALS

- A. Make submittals in accordance with Section 013300.
- B. Shop Drawings. Indicate materials, components, profiles and configurations, dimensions, fastening methods, jointing details, colors and finishes, and accessories. Details shall be at a minimum scale of 1-1/2 inch per foot. Show all scribe pieces and transitions to adjacent work.

SECTION 064000 – ARCHITECTURAL WOODWORK

C. Samples:

1. Solid Wood and Veneer Wood with Transparent Finish: Submit a minimum of 3 - 12 inch long samples representative of the maximum range of color and graining to be expected for each species, cut, and finish combination specified.
2. Solid Wood and Veneer Wood with Painted Finish: Submit a minimum of 3 - 12 inch long samples representative of the maximum range of color to be expected for each species and finish combination specified.

D. Product Literature:

1. Submit literature for a sample of each hardware component proposed.

1.5 QUALITY ASSURANCE

- A. Fabricator: A minimum of 5 years experience in the fabrication of custom architectural woodwork of the type specified. The Fabricator shall be approved by the Architect.
- B. Qualifications of Installers: Use only journeyman finish carpenters who are thoroughly trained and skilled in the work, and who are completely familiar with the materials and quality standards specified. No allowance will be made for lack of skill on the part of workmen.
- C. Standards:
 1. Custom casework shall conform to AWI Architectural Woodwork Quality Standards Section 400 "custom" grade, unless otherwise indicated.
 2. Pre-manufactured modular casework shall conform to AWI Architectural Quality Standards Section 1600, unless otherwise indicated.

1.6 DELIVERY, STORAGE AND HANDLING

- A. In accordance with 016000, and as follows:
 1. Do not deliver wood materials to the building until "wet" work such as gypsum wallboard work has been completed.
 2. Store materials indoors in ventilated area with a minimum temperature of 60 degrees F., and a maximum humidity of 55%.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Lumber:
 1. Transparent Finish Lumber: AWI Grade I; Southern Yellow Pine, clear; quarter sawn.
 2. Opaque Finish Lumber: AWI Grade II Poplar.
 3. Concealed Framing Lumber: AWI Grade II pine, fir, hemlock, or other species as approved.
 4. Moisture Content: Optimum moisture content per AWI recommendations.
- B. Plywood:
 1. Typical Plywood:
 - a. APA rated in accordance with PS 1; 3/4 inch thick AC exterior grade unless indicated or specified otherwise.
 - b. Face Veneer: AWI Grade A; Yellow Birch, Select White.
- C. Wood Butcher Block Counters:
 1. Select white hard maple (*Acer saccharum*); all sapwood; quarter or rift sawn.
 2. Built-up edge-grain top face; exterior-rated glue.
 3. 1-1/2 inch thickness by 1-1/2 inch wide pieces; countertop finished width and length as indicated on the Drawings.
 4. 1/8 inch radius edge detail.
- D. Particle Board: ANSI A208.1; grade M-2 (medium density); formaldehyde free. Provide quality assurance stamp or manufacturer's certifications as required by local jurisdictional code authorities.

2.2 ACCESSORY MATERIALS

- A. Cabinet Hardware:

SECTION 064000 – ARCHITECTURAL WOODWORK

1. Pulls: 4 inch wire pulls; brushed chrome finish.
 2. Drawer Slides: Full extension ball bearing; clear zinc finish; rail mount; Accuride, or approved; load rating as required for the application.
 - a. Light Duty Rating (drawers 12 inches wide or less): Accuride 2632; 65 lb BIFMA load rating
 - b. Medium Duty Rating (drawers 32 inches wide or less): Accuride 7432; 100 lb BIFMA load rating.
 - c. Heavy Duty Rating (drawers 42 inches wide or less): Accuride 3640; 200 lb BIFMA load rating.
 3. Hinges: RPC #374 5-knuckle hinges, satin chrome.
 4. Catch: EPCO 1000.
 5. Shelf Clips: Double pin, locking, Allen Fields/PX Industries #55036, satin chrome.
- B. Closet Hardware:
1. Closet Rod: Knap & Vogt # 770 5; 1-5/16 inch diameter; chrome finish.
 2. End Flanges: Knap & Vogt # 764/766; chrome finish.
- C. Counter Support Brackets:
1. Manufacturer/Source
 - a. Oodles of Parts Plus (Patchogue, NY; 800-286-5471)
 - b. A&M Hardware Inc. (Manheim PA; 888-647-0200)
 - c. Steelcase
 - d. Herman Miller
 2. Bracket: "Work Station Bracket"; 1/8" steel; 24" x 24" size unless otherwise indicated; right and left hand configuration as appropriate; prime paint finish.
- D. Contact Bond Adhesive: Water based low VOC.
- E. Countertop Finish: Food safe oil-based clear satin finish; one of the following:
1. General Finishes "Wood Bowl Finish".
 2. Watco "Butcher Block Oil and Finish"
 3. Approved alternate.

2.3 STANDING AND RUNNING TRIM FABRICATION

- A. Shop fabricate all trim to the shapes indicated.
- B. Assemble built-up sections. All glue lines shall be free of squeeze-out where transparent finishes are to be applied.
- C. Tolerances for overall assembly dimensions shall be within 1/32 of an inch.
- D. Shop fit and assemble to the greatest extent possible.
- E. Back or kerf cut all trim greater than 2 inch in width, except terminate before exposed ends.
- F. Fabricate trim from solid lumber.

2.4 CASEWORK FABRICATION

- A. General Fabrication Requirements:
1. Fabricate to the configurations indicated, unless approved otherwise on the shop drawings.
 2. Provide openings in casework for the incorporation of all electrical and mechanical components. Openings for all plumbing equipment shall be cut from templates obtained from the plumbing equipment installer.
 3. Provide concealed access to casework electrical fixtures and wiring.
 4. Unless indicated or approved otherwise, provide adjustable base to provide level installation which accommodates variations in floor levelness.
 5. Shop assemble casework to the greatest practical extent
 6. Adjustable Shelves: All casework shelves shall be adjustable, unless otherwise noted. Provisions for shelf adjustment shall be by drillings at 2 inches on center in the cabinet body for the placement of shelf support brackets. Provide 4 supports for each shelf. Drillings shall be in straight even lines.
 7. Provide all hardware, fasteners, and exposed trim.

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8. Provide openings with wiring grommets at locations indicated. When not indicated, provide openings with wiring grommets along countertops with knee spaces underneath. Space at 36 inches maximum, with a minimum of one opening per knee space.
 9. Provide counter supports 36" o.c. at work counters.
- B. Transparent or Opaque Finish Wood Casework Construction:
1. Fabricate transparent or opaque finish wood casework in accordance with AWI standard section 400; "Custom" grade.
 2. Fabricate wood casework with plywood. Provide solid wood edging to panel faces.
 3. Where veneers are indicated to be single piece or slip matched leaves for each panel, adjoining panels shall be end matched and/or slip matched as appropriate.
- C. Plastic Laminate Countertops:
1. Fabricate countertops from particle board and general purpose grade plastic laminate in the shapes indicated.
 2. Where countertops are indicated with sinks, use exterior grade plywood in lieu of particle board.
- D. Wall and Closet Shelf Fabrication:
1. Fabricate from plastic laminate finished particle board; edge banded with matching plastic laminate edging unless indicated otherwise.
 2. Provide minimum 3/4 inch thick shelves up to 30" wide, except provide thicker shelves as required to support the loads and spans indicated without significant deflection.
- E. Hardware:
1. Unless otherwise shown or specified, all drawers shall be equipped with standard full extension slides.
 2. Install hardware straight and true and in perfect alignment horizontally and vertically with adjacent casework and hardware.
 3. Carefully fit and securely attach cabinet hardware in accordance with manufacturers' printed instructions, and exercise caution not to mar or injure finish surfaces.

2.5 SOLID SURFACING

- A. Fabricate solid surfacing countertops and other elements to detail in accordance with the manufacturer's recommendations. Include back and side splashes.
- B. Seal joints with Dupont SCS 1752 silicone sealant.

2.6 SHOP FINISHING

- A. Shop finish all architectural woodwork wood surfaces.
- B. Sand all exposed and semi-exposed wood surfaces smooth, always sanding in the direction of the wood grain where applicable.
- C. Sand all exposed transparent finish wood surfaces to AWI "Premium " grade standards. Sand all semi-exposed transparent or opaque finish wood surfaces to AWI "Custom" grade standards.
- D. Fill all depressions and imperfections with color matched putty, except imperfections shall not exceed AWI Premium grade standards.
- E. Transparent Finish Coating:
 1. Typical Woodwork: Spray apply in accordance with AWI finishing system, Premium Grade Waterborne Conversion Varnish; satin sheen.
 2. Butcher Block Countertop: Apply a minimum of 3 coats with a soaked rag to all surfaces. Allow to dry between coats. Third coat may be field-applied following countertop installation.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Prior to starting work, carefully inspect installed work of other trades and verify that such work is complete to the point where work of this Section may properly commence. Notify the Architect in writing of conditions detrimental to the proper and timely completion of the work.

SECTION 064000 – ARCHITECTURAL WOODWORK

- B. Do not begin installation until all unsatisfactory conditions are resolved. Beginning work constitutes acceptance of site conditions and responsibility for defective installation caused by prior observable conditions.

3.2 PREPARATION

- A. Coordinate the installation of blocking and other supports required for the installation of architectural woodwork elements.

3.3 STANDING AND RUNNING TRIM INSTALLATION

- A. Jointing: Make all joints to conceal shrinkage; miter all exterior corners; cope all interior corners, miter or scarf all end-to-end joints; install all trim pieces as long as possible, jointing only where solid support is obtained. Make no joints closer than 4 feet to corners.
- B. Lengths of Material: Use random lengths and show typical joint locations on shop drawings. The minimum length shall be 8 feet, except where short lengths are required by installation conditions.
- C. Fastening:
 - 1. Install all items straight, true, level, plumb, and firmly anchored in place; where blocking or backing is required, coordinate as necessary with other trades to ensure placement of all required backing and blocking in a timely manner.
 - 2. Fasten trim with finish nails or screws of proper dimension to hold the member firmly in place without splitting the wood.
 - 3. On exposed finish work, set all nails and screws and putty.
 - 4. Align exposed fasteners for uniform pattern; random or "shotgun" patterns will not be accepted.
- D. Select and arrange standing and running trim so that abutting members have a similar grain and color match to the greatest extent possible.

3.4 CASEWORK INSTALLATION

- A. Coordinate casework installation with work of other trades for final electrical and mechanical connections.
- B. Install all casework accurately, plumb, square, and level, and permanently secured in precise position as indicated on the Drawings. Casework shall be scribed to adjacent surfaces as follows:
 - 1. Countertops and splashes to wall surfaces.
 - 2. Cabinet endwalls and other exposed surfaces to walls.
 - 3. Cabinet bases to floors.
- C. The casework installation shall be made complete with all required fastenings, clip angles, braces, anchors, adjustable levelers, and other fittings as required to render the work rigid and secure.
- D. All fasteners securing casework shall be in concealed or semi-concealed locations, unless approved otherwise.
- E. Avoid damaging finished surfaces. Repair or replace all damaged materials and surfaces in a manner approved by the Architect.
- F. Upon completion of work, and in the Architect's presence, demonstrate hardware to work freely as intended.

3.5 CLEANING UP

- A. Keep the premises in a neat, safe, and orderly condition at all times during execution of this portion of the work, free from accumulation of sawdust, cut-ends, and debris.
- B. At the end of each working day, or more often if necessary, thoroughly sweep and/or vacuum surfaces. Remove the refuse to the area of the job site set aside for its storage.

END OF SECTION

SECTION 072100 – THERMAL INSULATION

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Thermal batt insulation.
 - 2. Rigid board wall insulation.
 - 3. Rigid board perimeter insulation.
- B. Related Sections:
 - 1. 075400 - Thermoplastic Membrane Roofing: : Insulation provided as part of the roofing system.
 - 2. 098100 - Acoustic Insulation.
 - 3. 312000 - Earth Moving: Backfilling; coordination with installation of rigid board perimeter insulation at building foundation.
- C. Drawings, the provisions of the Agreement, the General Conditions, and Division 1 specification sections apply to all work of this Section.
- D. Substitutions: Substitute products will be considered only under the terms and conditions of Section 016000.

1.2 REFERENCES

- A. American Society for Testing and Materials (ASTM):
 - 1. C518 - Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by means of the Heat Flow Meter Apparatus.
 - 2. C578 - Rigid, Cellular Polystyrene Thermal Insulation.
 - 3. C612 - Specification for Mineral Fiber Block and Board Thermal Insulation.
 - 4. C665 - Mineral Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing.
 - 5. D1621 - Test Method for Compressive Properties of Rigid Cellular Plastics.
 - 6. E84 - Test Method for Surface Burning Characteristics of Building Materials.

1.3 SUBMITTALS

- A. Make submittals under provisions of Section 013300.
- B. Product Data: Submit manufacturer's product data and installation instructions for each type of insulation.

1.4 QUALITY ASSURANCE

- A. Code Verification: Prior to installation of fire safing systems obtain approval from the jurisdictional Code authorities for the systems and applications proposed.
- B. All interior primers, adhesives, coatings and sealants shall comply with the most recent version of Rule 1168 of the South Coast Air Quality Management District.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Unfaced Batt and Blanket Insulation: ASTM C665, Type I; preformed unfaced glass fiber roll; flame spread of 25 or less and smoke developed of 50 or less when tested in accordance with ASTM E84; formaldehyde free; Owens Corning "Eco-Touch Pink;" Johns Manville Corp. "Thermal-SHIELD Unfaced Fiber Glass Commercial Insulation;" or approved; oversize widths for friction-fit between metal framing.
- B. Rigid Extruded Polystyrene Board:
 - 1. Standard: ASTM C578, Type IV; extruded cellular polystyrene.
 - 2. Thermal Resistance: Minimum "R" per inch of 5 when tested in accordance with ASTM C518 at 75 degrees F. mean temperature.

SECTION 072100 – THERMAL INSULATION

3. Compressive Strength: Minimum 25 psi when tested in accordance with ASTM D1621.
4. Water Absorption: 0.10 to 0.15 percent when tested in accordance with ASTM C272.
5. Thickness/R-value: 1 inch, R-5.
6. Size: 24 inch width, 96 inch length, with square edges.
7. Approved Products:
 - a. Styrofoam by The Dow Chemical Company (Midland, MI; 800-441-4369)
 - b. Foamular 250 by Owens Corning, (Toledo, OH; 800-438-7465).]

2.2 ACCESSORIES

- A. Impaling Pins: 12 gage pins; length as required with mounting plates for welding or adhesive mounting; include retainer shields.
- B. Separate Vapor Barrier for Batt Insulation: Foil scrim kraft FSK 25; flame spread of 25 or less and a smoke developed of 50 or less when tested in accordance with ASTM E84.
- C. Protective Membrane: White polypropylene scrim kraft glass-mat foil-faced membrane; maximum permeance of 0.02 perm (grains/hr. ft². in Hg) by ASTM E96; flame spread of 25 or less when tested in accordance with ASTM E84; "WMP Retro" by Lamtec or approved.
- D. Adhesive:
 1. Type recommended by insulation manufacturer for application; compatible with insulation and substrate.
- E. Related Accessories: Provide other accessories, not specifically described, as required for a complete installation.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify adjacent materials are secure, properly spaced, dry, and ready to receive installation.
- B. Verify mechanical and electrical services within spaces to insulated have been installed and tested.
- C. Prior to starting work, carefully inspect installed work of other trades and verify that such work is complete to the point where work of this Section may properly commence. Notify the Architect in writing of conditions detrimental to the proper and timely completion of the work.
- D. Do not begin installation until all unsatisfactory conditions are resolved. Beginning work constitutes acceptance of site conditions and responsibility for defective installation caused by prior observable conditions.

3.2 INSTALLATION - BATT INSULATION

- A. Install batt insulation in accordance with manufacturer's instructions. Install insulation without gaps or voids.
- C. Trim insulation neatly to fit spaces. Use batts free of damage.
- D. At metal stud framing, insert the insulation edges tightly into the stud channels for a friction fit. Provide additional supports as necessary to prevent sliding of batts in the stud cavity.
- E. Mechanical Fastening:
 1. At locations where no support framing is present, provide metal impaling pins and retainers.
 2. Mechanically or adhesively bond the retaining pins to the substrate in accordance with the manufacturer's recommendations.
 3. Space pins at maximum 24 inches on center along the edges and within the field of the batt. Place edge pins within 6 inches from the edge of the batt.
- F. Pack batt insulation in shim spaces at perimeter of window assembly to maintain continuity of thermal barrier.
- G. R value Schedule:

SECTION 072100 – THERMAL INSULATION

1. Provide batt insulation in sufficient thickness to provide the minimum R-values indicated on the drawings.

3.3 RIGID BOARD INSULATION AT WALLS AND SOFFITS

- A. Install rigid extruded polystyrene insulation where rigid board insulation is indicated at walls, soffits, and under slabs.
- B. Except as otherwise indicated or specified, install all insulation in accordance with the manufacturer's current installation instructions.
- C. Trim insulation to tightly fit between the furring and framing and to fit around penetrations.

3.4 INSTALLATION - RIGID BOARD PERIMETER INSULATION

- A. Use rigid extruded polystyrene insulation. Coordinate with Section 312000 for installation of rigid perimeter insulation.
- B. Install perimeter insulation vertically and horizontally with tight butt joints at locations detailed.
- C. Minimum vertical height: As detailed.
- D. Minimum horizontal width: 24 inches.

END OF SECTION

**101 WEST 33RD STREET
BRYAN, TEXAS
SECTION 072700 - AIR BARRIERS**

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Building wrap air barrier and weather barrier systems.
 - 2. Filler and membrane systems required to seal joints and penetrations to form a continuous air barrier assembly.
 - 3. Related air barrier accessories and components.
- B. Related Sections:
 - 1. 061000 - Rough Carpentry: Sheathing substrate.
 - 2. 076200 - Sheet Metal Flashing and Trim: Flexible flashing provided with separate sheet metal flashing systems.
 - 3. 092843 - Gypsum Sheathing: Solid sheathing substrate.
- C. Drawings, the provisions of the Agreement, the General Conditions, and Division 1 specification sections apply to all work of this Section.
- D. Substitutions: Substitute products will be considered only under the terms and conditions of Section 016000.

1.2 DEFINITIONS

- A. Air Barrier: An air barrier is an assembly of interconnected components within the exterior envelope of a building which prevents air flow across the assembly, and which is intended to prevent excess moisture transfer across the assembly driven by air pressure differentials.

1.3 SYSTEM DESCRIPTION

- A. All voids within air barrier systems shall be closed to prevent air flow across the assembly.
- B. The following elements provided under the work of other Sections shall be considered integral parts of the air barrier assembly:
 - 1. Concrete foundation.
 - 2. Roof membrane. Plumbing vents and roof drains shall not be considered penetrations.
 - 3. Exterior windows and doors.
- C. For the work of this Section, air barrier systems shall consist of the following:
 - 1. Building wrap over solid substrates on the exterior building enclosure.
 - 2. Connective seal from foundation wall to the building wrap layer.
 - 3. Connective seal of building wrap to roof membrane.
 - 4. Sealing of penetrations in the building exterior building air barrier envelope, including windows, doors, plumbing elements, electrical elements, and mechanical components, including duct penetrations at rooftop mechanical unit.

1.4 SUBMITTALS

- A. Make submittals in accordance with Section 013300.
- B. Product Data: Catalog cuts and installation instructions for specified manufactured products.

1.5 QUALITY ASSURANCE

- A. Applicator: Work of this section shall be performed by a single applicator, unless specifically approved otherwise by the Architect.
- B. Pre-Installation Conference:
 - 1. Administer pre-installation conference in accordance with Section 013119.
 - 2. Schedule meeting prior to installation of air barrier components.
 - 3. Discuss air barrier components and sequence of installation.
 - 4. Discuss all joints and penetrations and proposed methods for sealing.
 - 5. Identify and discuss all special conditions.

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SECTION 072700 - AIR BARRIERS**

1.6 DELIVERY, STORAGE, AND HANDLING

- A. In accordance with Section 016000.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Building Wrap System: In compliance with ASTM E2273 for drainage efficiency; one of the following:
 - 1. DuPont Company (800-448-9835) "Tyvek Drain Wrap" or "Tyvek Stucco Wrap."
 - 2. Fortifiber Building Systems "Two-Ply HydroTEX Drainable WRB" or "Weathersmart Drainable."
 - 3. Approved equal.
 - 4. Include manufacturer's standard tape for sealing joints and penetrations.
 - 5. Include manufacturer's standard washered fasteners for installation. Staples are not acceptable.
- B. Flexible Flashing:
 - 1. DuPont Company "Tyvek FlexWrap"
 - 2. W.R. Grace "Vycor Plus."
 - 3. Henry Company "Blueskin" 40 mil thickness.
- C. Flexible Seal: Ethylene Propylene Diene Terpolymer (EPDM) black membrane, reinforced or non-reinforced, nominal 0.045 inch thick; complete with manufacturer's recommended splicing materials.
- D. Air Barrier Sealant: Single component urethane gun grade sealant.
- E. Foam Seal: Low expanding spray urethane foam.
- F. Sheet Metal Closures:
 - 1. Minimum 24 gage prefinished galvanized steel.
 - 2. Custom fabricated to fit the conditions.
- G. Accessories: Provide surface conditioners, primers, mastic, tape, and other accessories as specified by or acceptable to the manufacturer of each product.
- H. Fasteners: Copolymer coated galvanized steel, or stainless steel.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Prior to starting work, carefully inspect installed work of other trades and verify that such work is complete to the point where work of this Section may properly commence. Notify the Architect in writing of conditions detrimental to the proper and timely completion of the work.
- B. Do not begin installation until all unsatisfactory conditions are resolved. Beginning work constitutes acceptance of site conditions and responsibility for defective installation caused by prior observable conditions.

3.2 INSTALLATION

- A. Coordinate work with other trades as necessary to form a continuous air barrier envelope for the building.
- B. Building Wrap Air Barrier Installation:
 - 1. Apply building wrap complete to form a continuous air barrier. Tape seal all joints and penetrations with manufacturer's recommended tape.
 - 2. Coordinate installation of windows and other wall penetrations with the installation of flexible flashing and building wrap as shown.
 - 3. Secure building wrap with screws and washers as recommended by manufacturer, staggering joints with joints in the first layer.
 - 4. Sequence with installation of flexible flashing and metal flashing elements as shown and as necessary to form a continuous air and weather barrier.
 - 5. Install a single building wrap base layer at soffits and other projecting surfaces as necessary to form a continuous building wrap envelope.

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- C. Flexible Flashing:
1. Install flexible flashing as indicated and as specified below.
 2. Trim flexible flashing so that it will not be exposed in the finished work.
 3. Coordinate installation of flexible flashing with installation of building wrap and sheet metal flashing elements.
 4. Install in accordance with the manufacturer's recommendations for each condition.
 5. Provide flexible flashing as indicated and in the following locations to seal joints and penetrations between building wrap base layer and the following:
 - a. Concrete foundation walls.
 - b. Roof membrane.
 - c. Pipe, conduit, and electrical box penetrations.
 - d. Window and door frames.
 - e. Penetrations through the sheathing separation between the drive up canopy soffit enclosure and the occupied building spaces.
 6. Provide flexible flashing at parapet tops as necessary to link to the inner building wrap layers on both sides of the parapet walls.
 7. Provide flexible flashing to seal the joint between sheet metal closure angles and building wrap base layer.
- D. Foam Sealant:
1. Seal holes in electrical boxes, including around wire openings.
 2. Seal penetrations which cannot be sealed with flexible flashing.
- E. Special Construction:
1. Provide custom fabricated sheet metal enclosures around recessed light fixtures and similar elements which penetrate building wrap air barrier assemblies.

END OF SECTION

**101 WEST 33RD STREET
BRYAN, TEXAS
SECTION 073113 - ASPHALT SHINGLES**

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Asphalt shingle roofing, with underlayment, and related flashings.
- B. Related Sections:
 - 1. 061000 - Rough Carpentry: Plywood sheathing.
 - 2. 076200 - Sheet Metal Flashing and Trim: Adjacent flashing.
 - 3. Division 23 – HVAC: Vent flashings.
- C. Drawings, the provisions of the Agreement, the General Conditions, and Division 1 specification sections apply to all work of this Section.
- D. Substitutions: Substitute products will be considered only under the terms and conditions of Section 016000.

1.2 REFERENCES

- A. American Society for Testing and Materials (ASTM)
 - 1. A361 - Sheet Steel, Zinc-Coated (Galvanized) by the Hot-Dip Process for Roofing and Siding.
 - 2. D225 - Asphalt Shingles Surfaced with Mineral Granules.
 - 3. D226 - Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing.
 - 4. D249 - Asphalt Roll Roofing Surfaced with Mineral Granules.
 - 5. D3018 - Class A Asphalt Shingles Surfaced with Mineral Granules.
 - 6. D3161 - Standard Test Method for Wind Resistance of Asphalt Shingles.
 - 7. D3462 - Asphalt Shingles Made from Glass Felt and Surfaced with Mineral Granules.
 - 8. D4586 - Specification for Asphalt Roof Cement - Asbestos Free.

1.3 SUBMITTALS

- A. Make submittals in accordance with Section 013300.
- B. Submit asphalt shingle manufacturer's complete product literature and installation instructions.
- C. Submit shop drawings of metal flashings. Indicate general construction, configurations, jointing methods and locations, fastening methods and locations, and installation details.

1.4 QUALITY ASSURANCE

- A. Provide all assembly components from one single manufacturer, unless specifically allowed by roofing manufacturer.
- B. Provide all assembly components as required to receive full warranties meeting or exceeding requirements specified.

1.5 WARRANTY

- A. Manufacturer's Warranty: Manufacturer agrees to repair or replace asphalt shingles that fail within specified warranty period.
 - 1. Material Warranty Period: 30 years from date of Substantial Completion, prorated, with first 10 years nonprorated.
 - 2. Wind-Speed Warranty Period: Asphalt shingles will resist blow-off or damage caused by wind speeds of up to 130 mph for years from date of Substantial Completion.
 - 3. Algae-Resistance Warranty Period: Asphalt shingles will not discolor for 20 years from date of Substantial Completion.
 - 4. Workmanship Warranty Period: Two years from date of Substantial Completion.

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PART 2 - PRODUCTS

2.1 MATERIALS

- A. Basis of Design: "Timberline HDZ," by GAF Materials Corporation, or approved; charcoal blend color; UL Class A fire rating; wind resistant in accordance with ASTM D3161.
- B. Underlayment: GAF "Deck Armor."
- C. Starter Strip Shingles: GAF "Prostart."
- D. Ridge Cap Shingles: GAF "TimberTEX".
- E. Leak Barrier: GAF "Stormguard"
- F. Ridge Vent: "Cobra Ridge Vent" by GAF Materials Corporation, or approved.
- G. Nails: Standard round wire shingle type of hot-dipped zinc-coated steel; minimum 3/8 inch head diameter; 10-12 gage; sufficient length to penetrate a minimum of 1/2 inch into roof sheathing.
- H. Plastic Cement: ASTM D4586, type II.
- I. Sheet Flashings: ASTM A361; 24 gage thick steel with minimum G90 (1.25) oz/sq ft galvanized coating.
- J. Bituminous Paint: Acid and alkali resistant type; black color.

2.2 FLASHING FABRICATION

- A. Form flashings to profiles indicated on Drawings, and to protect roof assembly and shed water. Form sections square, true, and accurate to profile, in maximum possible lengths, free from distortion and other defects detrimental to appearance or performance.
- B. Apply bituminous paint on concealed surfaces of flashings.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Prior to starting work, carefully inspect installed work of other trades and verify that such work is complete to the point where work of this Section may properly commence. Notify the Architect in writing of conditions detrimental to the proper and timely completion of the work.
- B. Do not begin installation until all unsatisfactory conditions are resolved. Beginning work constitutes acceptance of site conditions and responsibility for defective installation caused by prior observable conditions.
- C. Verify substrates are dry, free of ridges, warps, and voids. Verify roof openings are framed,

3.2 PREPARATION

- A. Coordinate installation of roof mounted components or work projecting through roof.

3.3 EDGE FLASHING

- A. Place eave edge and rake flashing tight with fascia boards. Weather lap joints 2 inches and seal with plastic cement. Secure deck flange with nails spaced 8 to 10 inches oc. Lap water barrier over edge flashing at eaves and install rake flashing over underlayment.

3.4 LEAK BARRIER INSTALLATION

- A. Starting from eave edge of starter strip, lay additional 36 inchwide strips of leak barrier to produce a lapped ply membrane. Weather lap plies minimum 19 inches and secure in place. Lap ends minimum 6 inches. Stagger end joints of each consecutive ply.
- B. Extend eave and rake protection membrane in from edges a minimum 2 feet beyond interior face of walls.

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3.5 UNDERLAYMENT INSTALLATION

- A. Apply underlayment in accordance with the manufacturer's recommendations. Lap to weather: minimum 6 inch end lap; minimum 3-1/2 inch side lap.
- B. Install underlayment over entire roof surface including areas receiving leak barrier protection.
- C. Place one ply of underlayment with ends and edges weatherlapped minimum 6 inches. Stagger end laps of each consecutive layer. Nail protective underlayment to hold in place.
- D. Install underlayment perpendicular to slope of roof.
- E. Weather lap and seal items projecting through or mounted on roof with plastic cement.

3.6 FLASHING INSTALLATION

- A. Weather lap joints minimum 2 inches and seal weathertight with plastic cement. Secure in place with nails at 6 inches oc. Conceal fastenings.
- B. Flash and seal work projecting through or mounted on roofing with plastic cement. Provide weathertight installation.

3.7 ASPHALT SHINGLES INSTALLATION

- A. Install shingles in accordance with the manufacturer's recommendations.
- B. Place asphalt shingles in straight coursing pattern with weather exposure as recommended by the roofing manufacturer to produce double thickness over entire roof area.
- C. Provide double course of shingles at eaves. Project first course of shingles 3/4 inch beyond face of fascia boards.
- D. Extend shingles 1/2 inch beyond face of gable edge fascia boards.
- E. Nail shingles in place in accordance with manufacturer's instructions. No staples are allowed.
- F. Completed installation shall provide weathertight service.

END OF SECTION

SECTION 074216 – SHEET METAL SIDING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Corrugated sheet metal siding, including related sheet metal flashing, and accessories directly related to the sheet metal siding system.
- B. Related Sections:
 - 1. 061000 – Rough Carpentry: Framing and sheathing.
 - 2. 074646 - Mineral-Fiber Cement Siding
 - 3. 076200 - Sheet Metal Flashing and Trim: Requirements for related sheet metal flashing and trim.
 - 4. 092843 - Gypsum Sheathing
- C. Drawings, the provisions of the Agreement, the General Conditions, and Division 1 specification sections apply to all work of this Section.
- D. Substitutions: Substitutions will be considered only under the terms and conditions of Section 016000.

1.2 REFERENCES

- A. American Society for Testing and Materials (ASTM):
 - 1. A653 - Steel Sheet, Zinc Coated, (Galvanized), or Zinc-Iron Alloy Coated by the Hot Dip Process.
 - 2. C518 - Test Method for Steady-State Thermal Transmission Properties by means of the Heat Flow meter.
 - 3. D1621 - Test Method for Compressive Properties of Rigid Cellular Plastics.
 - 4. D2842 - Test Method for Water Absorption of Rigid Cellular Plastics.
- B. Sheet Metal and Air Conditioning Contractors National Association (SMACNA): Architectural Sheet Metal Manual, Fifth Edition 1993.

1.3 SYSTEM DESCRIPTION

- A. System shall be designed and installed to preclude uncontrolled passage of water through the sheet metal siding assembly.

1.4 SUBMITTALS

- A. Make submittals in accordance with Section 013300.
- B. Product Data: Submit for all materials and proprietary systems proposed for the work.
- C. Shop Drawings:
 - 1. Indicate material profile, jointing pattern, jointing details, fastening methods, flashings, penetrations, and installation details.
 - 2. Include manufacturer's installation instructions for manufactured items incorporated in work.
- D. Samples: Submit a minimum of 3 samples of [each] proposed siding type, with finish, color, and texture proposed for the work.

1.5 QUALITY ASSURANCE

- A. Installer: Company specializing in sheet metal siding installation with minimum three years documented experience in installations of type and scope similar to that of this project.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Store products in accordance with Section 016000.
- B. Stack preformed and prefinished material to prevent twisting, bending, or abrasion, and to provide ventilation.
- C. Protect stored materials from heat and direct sunlight.

SECTION 074216 – SHEET METAL SIDING

- D. Prevent contact with materials during storage which may cause discoloration or staining.

1.7 WARRANTY

- A. Furnish warranties in accordance with Section 017700.
- B. Prior to acceptance of work, furnish written two year warranty covering repairs required to maintain metal siding system and associated flashing in watertight condition. Warrant installed system against defects due to faulty materials and workmanship.
- C. Furnish non-prorated 5 year warranty covering loss of film integrity, color change, and chalking. Finish on installed materials shall not show a color change greater than 5 NBS color units, per ASTM D2244, and shall not show chalking in excess of 8, per ASTM D659.

PART 2 - PRODUCTS

2.1 SHEET METAL SIDING SYSTEMS

- A. Corrugated Sheet Metal Siding:
 - 1. Structural siding assembly formed with specified exposed fastened corrugated metal panel; designed for sequential vertical installation by mechanically attaching panels to supports or substrate using exposed fasteners.
 - 2. AEP Span (Tacoma, WA; 800-733-4955) "Nu-Wave" or approved alternate
 - 3. Design Criteria:
 - a. Material: 24 gage core steel with ASTM A653 G90 galvanized coating; flat surface smooth (non-embossed) texture. Provide thicker gauge as necessary to meet wind load requirements indicated on the Structural Drawings at a maximum deflection of L/120..
 - b. Exterior Finish: Two-coat minimum 70 percent resin Kynar 500 or Hylar 5000 fluoropolymer system.
 - c. Color: As selected by Architect from manufacturer's full range
 - d. Fasteners - Exposed Applications: Galvanized steel with soft neoprene washers, factory prefinished to match metal siding color.
 - e. Joint Type: Panels overlap with manufacturer's recommended mastic.
 - f. Panel Coverage: 36 inches.
 - g. Panel Height: 7/8 inches.
 - 4. Protective Backing Paint: Manufacturer's standard wash coat finish.

2.2 ACCESSORY MATERIALS

- A. Fasteners:
 - 1. Exposed Applications: Galvanized steel with soft neoprene washers, factory prefinished to match metal siding color.
- B. Sealant: As recommended by the siding manufacturer for the application.
- C. Building Wrap System: As specified in Section 072700.
 - 1. Product: Du Pont (Wilmington, DE, 800/448-9835) "Tyvek Commercial Wrap," or approved.
 - 2. Include manufacturer's standard tape for sealing joints and penetrations.
 - 3. Flexible Flashing: Polyethylene film with butyl rubber adhesive, self-adhering; W.R. Grace (800/354-5414) "Vycor Ultra," or approved.
- D. Touch-up Paint: Manufacturer's special color-matched material, formulated for retouching fluoropolymer finishes.

2.3 FABRICATION

- A. Cut and form in accordance with approved shop drawings, using recognized sheet metal practices. Perform cutting with clean, sharp properly aligned shearing tools; do not saw or file edges of sheets.
- B. Form pieces in longest practical lengths.
- C. Fabricate flashing and sheet metal, including conductor boxes and downspouts, in accordance with the requirements specified in Section 076200.

SECTION 074216 – SHEET METAL SIDING

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Prior to starting work, carefully examine installed work of other trades and verify that such work is complete to the point where work of this section may properly commence, Notify the Architect in writing of conditions detrimental to the proper and timely completion of the work.
- B. Do not begin installation until all unsatisfactory conditions are resolved. Beginning work constitutes acceptance of site conditions and responsibility for defective installation caused by prior observable conditions.
- C. Verify that substrate is clean, dry, and smooth, free of depressions, waves, and projections. Verify that items required to penetrate panel system are solidly set.

3.2 SHEET METAL SIDING INSTALLATION

- A. Install metal siding as indicated and in accordance with manufacturer's instructions.
- B. Install flashing and sheet metal elements as single continuous lengths to the greatest extent possible. Install in accordance with the requirements specified in Section 076200.
- C. Install each siding panel as a single continuous piece. Install systems to allow for expansion of the panels.
- D. Screw fasten metal siding panels to Z furring supports
- E. Except as otherwise indicated, seal all lapped joints. Prevent squeeze-out of sealants. Immediately remove all excess exposed materials.
- F. Touch-up all scratched and damaged surfaces with matching material. Replace all components which cannot be touched up or otherwise repaired with new conforming materials.

END OF SECTION

**101 WEST 33RD STREET
BRYAN, TEXAS
SECTION 074646 – MINERAL-FIBER CEMENT SIDING**

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Exterior siding and soffits.
 - 2. Exterior trim.
 - 3. Furring.
 - 4. Related flashings, accessories, and fastenings.
- B. Related Sections:
 - 1. 061000 - Rough Carpentry: Substrate.
 - 2. 072700 – Air Barriers: Underlayment.
 - 3. 076200 - Sheet Metal Flashing and Trim: Metal flashing.
 - 4. 079200 - Joint Sealants: Joint fillers.
 - 5. 099000 - Painting: Finishing of panel siding.
- C. Drawings, the provisions of the Agreement, including bonds and certificates, the General Conditions, and Division 1 specification sections apply to all work of this Section.
- D. Substitutions: Substitute products will be considered only under the terms and conditions of Section 016000.

1.2 SUBMITTALS

- A. Make submittals in accordance with Section 013300.
- B. Submit product data for panel siding, including installation instructions.

1.3 DELIVERY AND STORAGE

- A. Deliver products to site under provisions of Section 016000.
- B. Wood materials shall be allowed to acclimate to the site prior to work under this section. Wood materials shall be stored, stickered, and under cover at the site for a minimum of seven days prior to priming, finishing and installation.

PART 2 - PRODUCTS

2.1 MANUFACTURER

- A. As specified: James Hardie Building Products (800/942-7343).
- B. Alternate Manufacturers: Subject to compliance with requirements, products by the following may be considered by substitution request.
 - 1. Cemplank, Inc. (877/236-7526)
 - 2. CertainTeed Corp. (800/233-8990)

2.2 MATERIALS

- A. Fiber Cement Lapped Siding: "Hardiplank," 5/16" thick, smooth finish; width as indicated.
- B. Fiber-Cement Panel Vertical Siding:
 - 1. "Hardipanel"; 5/16" thick, smooth surface; factory primed.
- C. Fiber Cement Soffit Panels:
 - 1. "Hardisoffit," smooth surface; factory primed.
- D. Fiber Cement Trim and Battens:
 - 1. "Harditrim MD Select Planks," 7/16" thick, smooth surface; factory primed.
 - 2. "Harditrim XLD Planks," 3/4" thick, smooth surface; factory primed.
 - 3. "Harditrim HLD Planks," 3/4" thick, smooth surface; factory primed.
 - 4. Widths as indicated.

SECTION 074646 – MINERAL-FIBER CEMENT SIDING

- E. Metal Trim: 6063-T5 aluminum extrusions; factory primed for field finishing under Section 099000; "Fiber Cement Panel Trims (FCP)" by Fry Reglet Corporation (Santa Fe Springs, CA; 800-237-9773).
- F. Finish: Factory primed for field finishing as specified in Section 099000.

2.3 ACCESSORIES

- A. Siding Screws: "Dacrotized", "Rustpert", or hot dip galvanized; ribbed bugle-head; self tapping for steel framing; sufficient length to penetrate metal framing a minimum of 1/2 inch.
- B. Furring: 1 x 4 hem-fir; pressure preservative treated in accordance with Section 061000.
- C. Weather Barrier: As specified in Section 072700.
- D. Flexible Flashing: As specified in Section 072700.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Prior to starting work, carefully inspect installed work of other trades and verify that such work is complete to the point where work of this section may properly commence. Notify the Architect in writing of conditions detrimental to the proper and timely completion of the work.
- B. Do not begin installation until all unsatisfactory conditions are resolved. Beginning work constitutes acceptance of site conditions and responsibility for defective installation caused by prior observable conditions.

3.2 INSTALLATION

- A. Weather Barrier: Verify that weather barrier has been installed in accordance with Section 072700.
- B. Install metal flashings at sills, and head of wall openings to ensure water flow to the exterior. Provide "Z" and drip flashing at non-lapping horizontal joints to prevent water penetration.
- C. Flexible Flashing:
 - 1. Provide 6 inch wide flexible flashing strips at all penetrations.
 - 2. Lap to the frame of the penetrating element as necessary seal perimeter joint, but not so that the membrane will be exposed in the finished work.
 - 3. Install strips in sequence; first at the sill, next at the jamb, and last at the head condition. Lap all strips to weather.
 - 4. Integrate flexible flashing with air barrier and related metal flashing as necessary to shed water and lap to weather.
- D. General Installation Requirements for Panel Siding:
 - 1. Install in accordance with manufacturers specific recommendations for non-shear installation.
 - 2. Install using screws into framing.
 - 3. Arrange components to encourage watershed. Securely fasten in place, aligned, level, and plumb. Cut panel ends over bearing surfaces.
 - 4. Exercise care when site cutting. Cut edges shall be smooth and clean.
 - 5. Allow 1/8 inch space for sealant at adjacent construction and between panels.
 - 6. Use single full sheets to the greatest extent possible to minimize joints..
 - 7. Fabricate exposed surfaces of special shapes to a uniform profile free of saw marks and other surface irregularities.
 - 8. Components shall be plumb and level unless indicated otherwise.

END OF SECTION

SECTION 075400 - THERMOPLASTIC MEMBRANE ROOFING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes:
 - 1. Mechanically fastened thermoplastic membrane roofing system.
 - 2. Roof insulation and cover board.
- B. Related Sections:
 - 1. 076200 - Sheet Metal Flashing and Trim: Non-coated flashings.
- C. Drawings, the provisions of the Agreement, the General Conditions, and Division 1 specification sections apply to all work of this Section.
- D. Substitutions: Substitute products will be considered only under the terms and conditions of Section 016000.

1.2 DEFINITIONS

- A. Roofing Terminology: Refer to ASTM D 1079 and glossary of NRCA's "The NRCA Roofing and Waterproofing Manual" for definition of terms related to roofing work in this Section.

1.3 PERFORMANCE REQUIREMENTS

- A. Provide installed roofing membrane and base flashings that remain watertight; do not permit the passage of water; and resist specified uplift pressures, thermally induced movement, and exposure to weather without failure.
- B. Material Compatibility: Provide roofing materials that are compatible with one another under conditions of service and application required, as demonstrated by roofing membrane manufacturer based on testing and field experience.
- C. Performance: Roofing system shall conform to the following:
 - 1. Wind Uplift For Mechanically Anchored Roof System: Factory Mutual 1-90.
 - 2. Fire: Minimum Underwriter's Laboratory Class B.
 - 3. Thermal: System shall have a maximum thermal conductance as indicated on the Drawings, averaged over all surfaces to which it is applied. Use averaged C value, not averaged R value.
- D. Roofing membrane system shall be an "Energy Star" roofing system as listed by the Environmental Protection Agency.

1.4 SUBMITTALS

- A. Make submittals in accordance with Section 013300.
- B. Product Data: For each type of product and component proposed, including membrane, insulation, fasteners, and accessories.
- C. Shop Drawings:
 - 1. Details for base flashings, membrane terminations, and penetration details.
 - 2. Tapered insulation patterns, including slopes, insulation thickness, cricket layouts.
 - 3. Insulation fastening patterns for mechanically anchored roof assembly.
 - 4. Layouts for flexible traffic walkways and traffic pavers.
 - 5. Ballast layout for ballasted roof system.
- D. Quality Control Submittals:
 - 1. Installer Certificates: Signed by roofing system manufacturer certifying that Installer is approved, authorized, or licensed by manufacturer to install roofing system.
 - 2. Guarantee Draft: Concurrent with initial product data submittal, submit a draft of roof warranties.
 - 3. Manufacturer's installation specifications.
- E. Contract Closeout Submittals:
 - 1. Maintenance Data: For roofing system to include in maintenance manuals.
 - 2. Warranties: Submit specified warranties.

SECTION 075400 - THERMOPLASTIC MEMBRANE ROOFING

3. Inspection Report: Copy of roofing system manufacturer's inspection report of completed roofing installation.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: A qualified firm that is approved, authorized, or licensed by roofing system manufacturer to install manufacturer's product and that is eligible to receive manufacturer's warranty.
- B. Source Limitations: Obtain components for membrane roofing system from or approved by roofing membrane manufacturer.
- C. Pre-Installation Meeting:
 1. Prior to ordering materials and starting the work of this Section administer a pre-roofing meeting.
 2. Require in attendance the following parties:
 - a. Owner
 - b. Architect
 - c. General Contractor
 - d. Roofing installer
 - e. Sheet metal installer
 - f. Mechanical installer.
 - g. Roofing manufacturer's representative
 3. Agenda: Review all procedures, details, and sequence of construction. Discuss and determine responsibility for protection of the work during and after construction, and subsequent maintenance of the roofing system.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver roofing materials to Project site in original containers with seals unbroken and labeled with manufacturer's name, product brand name and type, date of manufacture, and directions for storing and mixing with other components.
- B. Store liquid materials in their original undamaged containers in a clean, dry, protected location and within the temperature range required by roofing system manufacturer. Protect stored liquid material from direct sunlight. Discard and legally dispose of liquid material that cannot be applied within its stated shelf life.
- C. Protect roof insulation materials from physical damage and from deterioration by sunlight, moisture, soiling, and other sources. Store in a dry location. Comply with insulation manufacturer's written instructions for handling, storing, and protecting during installation.
- D. Handle and store roofing materials and place equipment in a manner to avoid permanent deflection of deck.

1.7 PROJECT CONDITIONS

- A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit roofing system to be installed according to manufacturer's written instructions and warranty requirements.

1.8 WARRANTY

- A. Manufacturer's Guarantee: Prior to acceptance of work, furnish manufacturer's written 10 year no dollar limit guarantee executed to the Owner. Guarantee shall include workmanship and materials, and shall cover roofing, flashing, and insulation.

PART 2 - PRODUCTS

2.1 THERMOPLASTIC ROOFING MEMBRANE

- A. Approved Membrane Manufacturers:
 1. Carlisle SynTec Incorporated.
 2. Firestone Building Products Company.
 3. Johns Manville (800) 654-3103.

SECTION 075400 - THERMOPLASTIC MEMBRANE ROOFING

- B. Membrane Description: Thermoplastic polyolefin (TPO) or ethylene propylene (EP) sheet; uniform thickness; flexible; fabric or scrim reinforced.
- C. Thickness: 60 mils nominal thickness.
- D. Exposed Face Color: White.
- E. Physical Properties:
 - 1. Breaking Strength: 225 lbf (1 kN); ASTM D 751, grab method.
 - 2. Elongation at Break: 15 percent; ASTM D 751.
 - 3. Tearing Strength: 55 lbf (245 N) minimum; ASTM D 751, Procedure B.
 - 4. Brittleness Point: Minus 22 deg F (30 deg C).
 - 5. Ozone Resistance: No cracks after sample, wrapped around a 3-inch- (75-mm-) diameter mandrel, is exposed for 166 hours to a temperature of 104 deg F (40 deg C) and an ozone level of 100 pphm (100 mPa); ASTM D 1149.
 - 6. Resistance to Heat Aging: 90 percent minimum retention of breaking strength, elongation at break, and tearing strength after 166 hours at 240 deg F (116 deg C); ASTM D 573.
 - 7. Water Absorption: Less than 4 percent mass change after 166 hours' immersion at 158 deg F (70 deg C); ASTM D 471.
 - 8. Linear Dimension Change: Plus or minus 2 percent; ASTM D 1204.
 - 9. Solar Reflectance Index: Minimum SRI of 78 when tested in accordance with ASTM E1980.

2.2 ACCESSORY MATERIALS

- A. General:
 - 1. Accessory materials recommended by roofing system manufacturer for intended use and compatible with membrane roofing.
 - 2. Liquid-type accessory materials shall meet VOC limits of authorities having jurisdiction.
- B. Sheet Flashing: Manufacturer's standard unreinforced thermoplastic polyolefin or ethylene propylene sheet flashing, 55 mils thick, minimum, of same color as sheet membrane.
- C. Bonding Adhesive: Manufacturer's standard solvent based bonding adhesive for membrane, and solvent-based bonding adhesive for base flashings.
- D. Cut Edge Sealant: Manufacturer's standard solvent based caulk to seal cut edges.
- E. Slip Sheet: Manufacturer's recommended slip sheet, of type required for application.
- F. Metal Termination Bars: Manufacturer's standard predrilled stainless-steel or aluminum bars, approximately 1 by 1/8 inch thick; with anchors.
- G. Metal Battens: Manufacturer's standard aluminum-zinc-alloy-coated or zinc-coated steel sheet, approximately 1 inch (25 mm) wide by 0.05 inch thick, prepunched.
- H. Fasteners: Factory-coated steel fasteners and metal or plastic plates meeting corrosion-resistance provisions in FMG 4470, designed for fastening membrane to substrate, and acceptable to membrane roofing system manufacturer.
- I. Miscellaneous Accessories: Provide pourable sealers, preformed cone and vent sheet flashings, preformed inside and outside corner sheet flashings, T-joint covers, termination reglets, cover strips, seam cleaners, and other accessories.

2.3 ROOF INSULATION

- A. Foam Board Insulation: One of the following.
 - 1. Polystyrene Board Insulation: ASTM C 578 Type II, 1.35-lb/cu. ft. minimum density; use tested R value at a mean temperature of 40 degrees F.
 - 2. Polyisocyanurate Board Insulation: Closed-cell polyisocyanurate foam core with a hydrocarbon blowing agent; integrally laminated to heavy coated glass fiber facers; conform to ASTM C 1289, Type II; FS HH-I- 1972/2, Class 1; UL 790 (ASTM E 108) Class A; FM 4450/4470 Class 1 fire rating.
- B. Tapered Insulation: Provide factory-tapered insulation boards fabricated to slope of 1/4 inch per 12 inches, unless otherwise indicated.

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- C. Provide preformed saddles, crickets, tapered edge strips, and other insulation shapes where indicated for sloping to drain. Fabricate to slopes indicated.

2.4 INSULATION ACCESSORIES

- A. Provide roof insulation accessories recommended by insulation manufacturer for intended use and compatible with membrane roofing.
- B. Fasteners: Factory-coated steel fasteners and metal or plastic plates meeting corrosion-resistance provisions in FMG 4470, designed for fastening roof insulation to substrate, and acceptable to roofing system manufacturer.
- C. Cover Board: One of the following:
 - 1. Gypsum Cover Board: ASTM C1177; glass-mat; water-resistant gypsum substrate; 1/4 inch thick; "Dens-Deck" by Georgia-Pacific Corporation.
 - 2. HP Recovery Board: 1/2 inch thick; type as approved by the roofing manufacturer.

2.5 FLEXIBLE WALKWAYS

- A. Flexible Walkways: Factory-formed, nonporous, heavy-duty, solid-rubber, slip-resisting, surface-textured walkway rolls, approximately 3/16 inch thick, and acceptable to membrane roofing system manufacturer.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Carefully examine substrate and adjacent construction, and verify that conditions are suitable for installation of the work as indicated and specified. Inspection shall ascertain that:
 - 1. All surfaces to be covered by roofing are properly pitched to drain, suitable for installation of roofing system free from susceptibility to puddling.
 - 2. Work of other trades is complete, including installation of blocking and grounds, vents, drains, curbs, and other projections.
 - 3. Substrate surface is clean and free from lumps, foreign matter, surface spalling or flaking, and excessive amounts of dust.
 - 4. Penetrations through the roof deck are properly configured and are a minimum of 16 inches between their closest edges.
 - 5. Verify that roof openings and penetrations are in place and set and braced and that roof drains are securely clamped in place.
 - 6. Verify that wood blocking, curbs, and nailers are securely anchored to roof deck at penetrations and terminations.

3.2 PREPARATION

- A. Clean substrate of dust, debris, moisture, and other substances detrimental to roofing installation according to roofing system manufacturer's written instructions. Remove sharp projections.
- B. Prevent materials from entering and clogging roof drains and conductors and from spilling or migrating onto surfaces of other construction. Remove roof-drain plugs when no work is taking place or when rain is forecast.
- C. Complete terminations and base flashings and provide temporary seals to prevent water from entering completed sections of roofing system at the end of the workday or when rain is forecast. Remove and discard temporary seals before beginning work on adjoining roofing.

3.3 INSULATION INSTALLATION

- A. Coordinate installing membrane roofing system components so insulation is not exposed to precipitation or left exposed at the end of the workday.
- B. Comply with membrane roofing system manufacturer's written instructions for installing roof insulation.
- C. Install tapered insulation under area of roofing to conform to slopes indicated.

SECTION 075400 - THERMOPLASTIC MEMBRANE ROOFING

- D. Install one or more layers of insulation under area of roofing to achieve required thickness. Where overall insulation thickness is 2 inches or greater, install 2 or more layers with joints of each succeeding layer staggered from joints of previous layer a minimum of 6 inches in each direction.
- E. Trim surface of insulation where necessary at roof drains so completed surface is flush and does not restrict flow of water.
- F. Install insulation with long joints of insulation in a continuous straight line with end joints staggered between rows, abutting edges and ends between boards. Fill gaps exceeding 1/4 inch with insulation.
- G. Cut and fit insulation within 1/4 inch of nailers, projections, and penetrations.
- H. Mechanically Fastened Insulation: Install each layer of insulation and secure to deck using mechanical fasteners specifically designed and sized for fastening specified board-type roof insulation to deck type. Fasten insulation to resist uplift pressure at corners, perimeter, and field of roof.
- I. Install cover boards over insulation with long joints in continuous straight lines with end joints staggered between rows. Stagger joints from joints in insulation below a minimum of 6 inches in each direction. Loosely butt cover boards together and fasten to roof deck. Fasten to resist uplift pressure at corners, perimeter, and field of roof.

3.4 MECHANICALLY FASTENED ROOFING MEMBRANE INSTALLATION

- A. Install roofing membrane over area to receive roofing according to roofing system manufacturer's written instructions. Unroll roofing membrane and allow to relax before installing.
- B. Start installation of roofing membrane in presence of roofing system manufacturer's technical personnel.
- C. Accurately align roofing membranes and maintain uniform side and end laps of minimum dimensions required by manufacturer. Stagger end laps.
- D. Mechanically or adhesively fasten roofing membrane securely at terminations, penetrations, and perimeter of roofing.
- E. Apply roofing membrane with side laps shingled with slope of roof deck where possible.
- F. Seams:
 - 1. Clean seam areas, overlap roofing membrane, and hot-air weld side and end laps of roofing membrane according to manufacturer's written instructions to ensure a watertight seam installation.
 - 2. Test lap edges with probe to verify seam weld continuity. Apply lap sealant to seal cut edges of roofing membrane.
 - 3. Verify field strength of seams a minimum of twice daily and repair seam sample areas.
 - 4. Repair tears, voids, and lapped seams in roofing membrane that does not meet requirements.
- G. Spread sealant or mastic bed over deck drain flange at deck drains and securely seal roofing membrane in place with clamping ring.
- H. In-Splice Attachment: Secure one edge of roofing membrane using fastening plates or metal battens centered within membrane splice and mechanically fasten roofing membrane to roof deck. Field-splice seam.

3.5 BASE FLASHING INSTALLATION

- A. Install sheet flashings and preformed flashing accessories and adhere to substrates according to membrane roofing system manufacturer's written instructions.
- B. Apply solvent-based bonding adhesive to substrate and underside of sheet flashing at required rate and allow to partially dry. Do not apply bonding adhesive to seam area of flashing.
- C. Flash penetrations and field-formed inside and outside corners with sheet flashing.
- D. Clean seam areas and overlap and firmly roll sheet flashings into the adhesive. Weld side and end laps to ensure a watertight seam installation.
- E. Run membrane up and over parapets to form a watertight barrier under copings.

SECTION 075400 - THERMOPLASTIC MEMBRANE ROOFING

3.6 WALKWAY INSTALLATION

- A. Flexible Walkways at Mechanically Anchored Roof: Install walkway products in locations indicated. Heat weld to substrate or adhere walkway products to substrate with compatible adhesive according to roofing system manufacturer's written instructions.

3.7 PROTECTING AND CLEANING

- A. Protect membrane roofing system from damage and wear during remainder of construction period. When remaining construction will not affect or endanger roofing, inspect roofing for deterioration and damage, describing its nature and extent in a written report, with copies to Architect and Owner.
- B. Correct deficiencies in or remove membrane roofing system that does not comply with requirements, repair substrates, and repair or reinstall membrane roofing system to a condition free of damage and deterioration at time of Substantial Completion and according to warranty requirements.

END OF SECTION

SECTION 076200 - SHEET METAL FLASHING AND TRIM

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Sheet metal flashing and trim.
 - 2. Requirements for flashing and sheet metal provided in other Sections.
- B. Related Sections:
 - 1. 061000 - Rough Carpentry: Wood blocking, nailers, and grounds.
 - 2. 075400 - Thermoplastic Membrane Roofing: Coordination of flashing installation; installation of lead drain flashing, flexible boot flashing and vent flashing; pre-installation conference.
 - 3. 085313 - Vinyl Windows: Flashing provided as part of the window system.
 - 4. 099000 - Painting and Coating: Field application of paint only where indicated.
- C. Drawings, the provisions of the Agreement, the General Conditions, and Division 1 specification sections apply to all work of this Section.
- D. Substitutions: Substitute products will be considered only under the terms and conditions of Section 016000.

1.2 REFERENCES

- A. American Society for Testing and Materials (ASTM)
 - 1. A167 - Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip.
 - 2. A653 - Steel Sheet, Zinc Coated, (Galvanized), or Zinc-Iron Alloy Coated by the Hot Dip Process.
 - 3. B32 - Solder Metal
 - 4. B209 - Aluminum and Aluminum-Alloy Sheet and Plate.
- B. Federal Specifications (FS): FS SS-C-153 - Cement, Bituminous, Plastic.
- C. Sheet Metal and Air Conditioning Contractors National Association (SMACNA): Architectural Sheet Metal Manual, Sixth Edition 2003.

1.3 SYSTEM DESCRIPTION

- A. Provide flashing and trim systems to prevent water leakage to the building interior.
- B. Fastening systems shall allow for the thermal movement of the materials without buckling, loosening, and leakage.

1.4 SUBMITTALS

- A. Make submittals in accordance with Section 013300.
- B. Product Data: Catalog cuts and installation instructions for manufactured products.
- C. Shop Drawings: Indicate materials, gages, profiles, jointing patterns, jointing details, fastening methods, and installation details.
- D. Samples: Submit three samples representative of finish and color of prefinished flashing materials.

1.5 QUALITY ASSURANCE

- A. Applicator: Company specializing in sheet metal flashing work with 5 years minimum experience.
- B. Unless indicated or specified otherwise, perform work in accordance with the recommendations of SMACNA.
- C. Pre-Installation Conference: Attend pre-installation conference as specified in Section 013119.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. In accordance with Section 016000.
- B. Stack material to prevent twisting, bending, and abrasion, and to provide ventilation.

SECTION 076200 - SHEET METAL FLASHING AND TRIM

- C. Prevent contact with materials during storage which may cause discoloration, staining, or damage.

1.7 GUARANTEE

- A. Submit in accordance with Section 017700.
- B. Furnish guarantee from the installer of each system that metal flashings will properly shed water to the roof or to the building exterior, under all weather conditions, for a minimum period of two years from the date of Substantial Completion. Leaks due to failure of flashing materials, and due to improper installation shall be promptly repaired at no expense to the Owner, and that watertightness of the repair will be demonstrated to the Owner.
- C. For coil-coated sheet metal materials, furnish from the coatings installer non-prorated 20-year warranty against failure of film integrity, and against fade and chalking.

PART 2 - PRODUCTS

2.1 SHEET MATERIALS

- A. Prefinished Galvanized Steel Sheet:
 - 1. ASTM A653 steel sheet with G90 galvanized coating or ASTM A792 steel sheet with AZ60 aluminum/zinc coating; 24 gage unless noted otherwise; factory prefinished with 70 percent resin Kynar 500 or Hylar 5000 coating, standard color as selected by the Architect .
 - 2. Manufacturers:
 - a. AEP-Span, Dallas TX; (214-827-1740; 800-527-2503).
 - b. Centria, Moon Township PA (800-759-7474).
 - c. Copper Sales, Inc., Minneapolis, MN (612-545-1604; 800-426-7737).
- B. Stainless Steel: ASTM A167; Type 302 or 304.

2.2 ACCESSORIES

- A. Fasteners:
 - 1. Furnish bonded stainless steel / neoprene sealing washers for exposed applications.
 - 2. Finish exposed fasteners to match material being fastened.
 - 3. Material:
 - a. Galvanized Steel Sheet: Use galvanized steel or stainless steel.
 - b. Aluminum Sheet and Stainless Steel: Stainless Steel.
 - 4. Use screws when fastening into wood or sheet metal.
 - 5. Use expansion anchors or drive pins when fastening into concrete or masonry.
- B. Sealants:
 - 1. Bedding Sealant: Butyl Rubber Type - One of the Following:
 - a. "Butyl Sealant" by Tremco, Inc. Sealant/Weatherproofing Division; Beachwood, OH; 800-321-7906; 216-292-5000)
 - b. "BP-400" by Adco Global, Inc. (800-248-4010).
 - 2. Lap and Joint Sealant: Polyurethane Sealant - One of the Following:
 - a. "Chem-Calk 900" by Bostik Construction Products (Huntington Valley, PA; 800-221-8726; 215-674-5600).
 - b. "Dynatrol I" by Pecora Corp. (Harleysville, PA; 800-664-7903; 215-799-7528).
 - c. "Sonolastic NP I" by Sonneborn/ChemRex (Shakopee, MN; 800-433-9517; 952-496-6000).
- C. Reglets:
 - 1. Fry Reglet Co or approved; configurations as indicated.
 - 2. Stainless steel.
 - 3. For reglets to be embedded in concrete provide covered ends to prevent infiltration.
- D. Solder: ASTM B32.
- E. Cold Galvanizing Compound: ZRC Worldwide, "ZRC Cold Galvanizing Compound," or approved product meeting the requirements of FS DOD-P-21035.

SECTION 076200 - SHEET METAL FLASHING AND TRIM

- F. Flexible Boot Pipe Flashing: Portals Plus (708/766-5240; 800/774-5240) "Alumi-Flash" with EPDM boots, or approved; sized to match pipe diameter; split type with sealing hardware where necessary for installation at penetrating items which cannot be disconnected for top access. Furnish stainless steel draw bands, adapters, connection hardware, and sealants as necessary for a complete and weather tight installation.
- G. Flexible Flashing: "Grace Ultra," by W.R. Grace (800-354-5414), or approved.
- H. Plastic Cement: FS SS-C-153, Type I-asphaltic base cement.

2.3 FABRICATION

- A. General Requirements:
 - 1. Field measure site conditions prior to fabricating work.
 - 2. Form sections true to shape, accurate in size, square, and free from distortion or defects.
 - 3. Fabricate cleats and starter strips of same material as sheet; interlockable with sheet.
 - 4. Form pieces in longest practical lengths, except as limited by expansion joint requirements.
 - 5. Non-Moving Joints: Shop fabricate to the greatest practical extent.
 - a. Solder all non-moving shop fabricated joints in steel and stainless steel flashing; [weld all non-moving joints in aluminum flashing and trim;]
 - b. Prefinished Galvanized Steel: Lap joints 1 inch, minimum; accurately cut and fit as necessary to maintain profile; embed contact surfaces in sealant; rivet with stainless steel or color matched coated steel pop rivets at 3 to 4 inches o.c.
 - 6. Hem exposed edges on underside 1/2 inch; miter and seam corners.
 - 7. Shop fabricate corner sections with non-moving corner joints and 18 inch long legs.
 - 8. Fabricate vertical faces with bottom edge formed outward 1/4 inch and hemmed to form drip.
 - 9. Form seams lapped in the direction of water flow.
- B. Fabricate all flashing to detail, in accordance with referenced SMACNA Architectural Sheet Metal Manual details, and as specified below. Use minimum 24 gage prefinished galvanized steel sheet unless indicated or specified otherwise.
 - 1. Parapet Caps (Copings): Fabricate with slotted holes at 24 inches on center for fastening at the back; standing seam (design J8) joints per Table 3-1; 22 gage for copings wider than 18 inches.
 - 2. Scuppers: 24 gage stainless steel sheet; soldered joints; dull finish.
 - 3. Counterflashing and Receivers: Removable type; SMACNA Fig 4-4 snaplock or screw-retained configuration; shop fabricated corners; crimped ends to permit lapping at end-to-end joints; 1 Inch at receivers; 3 inches at counterflashing.
 - 4. Conductor Heads: Figure 1-25F.
 - 5. Gutters: Prefinished galvanized steel; SMACNA Figure 1-2, Style A or F; 4 inch width unless indicated otherwise; provide straps or ferrules at 36 inches on center per Fig 1-14; expansion joints at maximum 50 feet in accordance with Figure 1-5.
 - 6. Downspouts: Prefinished galvanized steel; SMACNA Figure 1-32; 3" x 4" rectangular (Figure 1-32B).
 - 7. Lead Drain Flashing: Dimension for minimum 12 inches between edge of drain and edge of flashing, all around; furnish in one continuous piece, including at drain/overflow locations. Furnish to roofer for installation in the roofing system at the drains.
 - 8. Pipe Penetrations: SMACNA plate Fig 4-15, B or C as applicable; provide two piece flashing at 4-15B. Provide flexible boot pipe flashing at the locations indicated. Furnish to roofer for installation in the roofing system.
 - 9. Drain Screens: Fabricate removable screens from 1/4 inch hardware cloth, formed and soldered into a ball shape with a smaller cylindrical base for insertion into the drain. Provide for all drainage outlets in gutters.
 - 10. Embedded Flashing: Fabricate embedded flashing with provisions for removable counter flashing (SMACNA Figure 4-4 snaplock or screw-retained configuration; shop fabricated corners). Fabricate all receivers and flashings which are built into brick veneer, precast concrete, cement plaster, and other similar construction, of 24 gage stainless steel. Fully exposed and removable counter flashing which is connected to embedded flashing may be 24 gage prefinished galvanized sheet. Supply embedded flashing to the appropriate installers for installation as a part of their Work.
 - 11. Wind Clips: 20 gage x 2 inches wide. Match material and finish of flashing being retained.

SECTION 076200 - SHEET METAL FLASHING AND TRIM

12. Vinyl Window Flashing: Prefinished galvanized steel, stainless steel or aluminum; thickness as indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Prior to starting work, carefully inspect installed work of other trades and verify that such work is complete to the point where work of this Section may properly commence. Notify the Architect in writing of conditions detrimental to the proper and timely completion of the work.
- B. Do not begin installation until all unsatisfactory conditions are resolved. Beginning work constitutes acceptance of site conditions and responsibility for defective installation caused by prior observable conditions.

3.2 INSTALLATION

- A. Coordinate and sequence flashing installation with the work of other Sections. Furnish flashing to other trades as necessary for installation as a part of the work of other Sections.
- B. Use flexible flashing in locations indicated, and under all copings and curb flashings.
- C. Install starter and edge strips, and continuous cleats before starting installation.
- D. Fastening:
 - 1. Secure flashings using continuous cleats whenever possible. Use exposed fasteners only at the backside of copings, and at other locations not exposed to public view, unless otherwise approved by the Architect.
 - 2. Fit flashings tight in place. Make corners square, surfaces true and straight in planes, and lines accurate to profiles.
 - 3. Insert counterflashings into receivers to form tight fit; where snap fit is not provided, secure in place with stainless steel sheet metal screws, 16" o.c., maximum. Stagger counterflashing joints with receiver joints
 - 4. Insert flashings into reglets to form tight fit; secure in place.
- E. Make watertight connections between scuppers and adjacent roofs, walls, and flashings. Seal all laps.
- F. Joints:
 - 1. Install metal flashings (including embedded flashings and reglets) with provision for plus or minus 1/16 inch thermal movement at each end; provide expansion joints at 12'-0" o.c., maximum.
 - 2. Seal concealed lap joints in with two parallel beads of butyl sealant; use butyl sealant where bedding sealant is indicated or required.
- G. Install splashblocks under downspout outlets.

3.3 FIELD TESTING

- A. Upon request of the Architect, demonstrate that installation is completely watertight by hosing with water as directed.

END OF SECTION

SECTION 078400 - FIRESTOPPING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Firestopping systems for sealing penetrations through fire-rated construction.
- B. Related Sections:
 - 1. 014500 – Quality Control: Requirements for Owner paid inspections.
 - 2. 078500 - Fire Rated Joint Assemblies: Fire rated fillers at fire rated building joint assemblies
 - 3. Division 22 Mechanical: Penetrating elements.
 - 4. Division 23 Electrical: Penetrating elements.
- C. Drawings, the provisions of the Agreement, the General Conditions, and Division 1 specification sections apply to all work of this Section.

1.2 REFERENCES

- A. American Society for Testing and Materials (ASTM):
 - 1. E119 - Method for Fire Tests of Building Construction and Materials.
 - 2. E814 - Methods for Fire Tests of Through-Penetration Fire Stops.
- B. Underwriters Laboratories (UL): 1479 - Fill, Void or Cavity Materials and Through-Penetration Firestop Systems.

1.3 SYSTEM DESCRIPTION

- A. Each firestopping system shall be selected to maintain fire rating of the assembly in which it is used.
- B. Firestopping systems shall be resilient as necessary to accommodate differential movement between assemblies.
- C. Where firestopping is used to seal penetrations through floors with waterproof membranes, system shall be selected for compatibility with membrane material.

1.4 QUALITY ASSURANCE

- A. Code Verification: Prior to installation of fire stopping systems obtain approval from the jurisdictional code authorities for the fire stopping systems and applications proposed.
- B. Firestopping: Tested in accordance with ASTM E119, ASTM E814, or UL 1479 to meet the hourly fire ratings of the construction being sealed. Provide F rated assemblies, except where T rated assemblies are required by the code authority.
- C. Firestopping systems shall be UL assemblies.
- D. All interior primers, adhesives, coatings and sealants shall comply with the most recent version of Rule 1168 of the South Coast Air Quality Management District.
- E. Subcontractor Qualifications: Firestopping work shall be performed by a single firestopping subcontractor, specializing in the installation of firestopping systems.
- F. The firestopping systems shall be subject to Owner paid inspection.
- G. Develop and maintain a system to quickly and easily identify each firestop assembly in the Project. The system shall include a graphic picture of each fire rated assembly being used. Make the system readily available to the Building Inspector, the Architect, [and the Owner paid inspector.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. In accordance with Section 016000.

1.6 ENVIRONMENTAL CONDITIONS

- A. Environmental Requirements: Comply with manufacturer's recommendations.
- B. Maintain maximum ventilation to remove volatile emissions produced during the installation process.

SECTION 078400 - FIRESTOPPING

PART 2 - PRODUCTS

2.1 FIRESTOPPING SYSTEMS

- A. Systems meeting the requirements specified and suitable for the conditions indicated, as manufactured by one or more of the following.
 - 1. Metacaulk.
 - 2. Tremco Inc.
 - 3. Hilti USA.
 - 4. Grace Construction Products.
 - 5. Specified Technologies, Inc.
 - 6. 3M.
- B. Electrical Box Inserts:
 - 1. Manufacturer: Rectorseal (Houston TX; 713-263-8001; 800-231-3345).
 - 2. Fire Rated Pads: "BioFireshield LECTRA-STOP"; 1/4 inch thick intumescent pads; sized to fit electrical boxes; classified by UL; minimum 2 hour rating.
- C. Systems with sodium silicate shall not be used.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Prior to starting work, carefully inspect installed work of other trades and verify that such work is complete to the point where work of this Section may properly commence. Notify the Architect in writing of conditions detrimental to the proper and timely completion of the work.
- B. Do not begin installation until all unsatisfactory conditions are resolved. Beginning work constitutes acceptance of site conditions and responsibility for defective installation caused by prior observable conditions.

3.2 INSTALLATION OF FIRESTOPPING

- A. Provide firestopping at mechanical, electrical, and plumbing penetrations through fire rated floors, walls, and ceilings, and other locations as indicated on the Drawings.
- B. Install firestopping in accordance with the manufacturer's recommendations and as necessary to meet the specified fire rating requirements.
- C. Where firestopping is used to seal around penetrations through waterproof membranes, install to maintain integrity of waterproof barrier.
- D. For sealing electrical boxes, coordinate installation with Division 16. Comply with manufacturer's recommendations for preparation and installation. Install in locations as required by Code for protection of openings through fire rated partitions.

3.3 CLEANING

- A. Trim excess material flush with adjacent surface.
- B. Remove spills, leave area in undamaged, clean condition.

END OF SECTION

SECTION 079200 – JOINT SEALANTS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Cleaning and preparation of joint surfaces.
 - 2. Sealant and backing materials.
- B. Related Sections:
 - 1. 076200 - Sheet Metal Flashing and Trim: Sealants, furnished and installed as part of flashing and sheet metal work.
 - 2. 088000 - Glazing: Glazing sealants.
 - 3. 098100 - Acoustic Insulation: Acoustical sealant.
 - 4. 321313 - Concrete Paving: Expansion joint fillers.
- C. Drawings, the provisions of the Agreement, the General Conditions, and Division 1 specification sections apply to all work of this Section.
- D. Substitutions: Substitute products will be considered only under the terms and conditions of Section 016000.

1.2 REFERENCES

- A. American Society for Testing and Materials (ASTM):
 - 1. C1193 - Guide for Use of Joint Sealants.

1.3 SUBMITTALS

- A. Make submittals in accordance with Section 013300.
- B. Product Data: Submit for each sealant material used. Include manufacturer's surface preparation and installation instructions.
- C. Samples:
 - 1. For custom colors, request color selection from the Architect prior to sample submittal.

1.4 QUALITY ASSURANCE

- A. Installers: Use only skilled workmen specially trained in the techniques of sealing, and familiar with the published recommendations of the manufacturers of the sealants being used.
- B. Verify that sealants are compatible with the substrates and accessory materials provided under other Sections. Send examples of adjacent materials to the Type S sealant manufacturer for compatibility testing. Notify Architect of evidence of incompatibility.
- C. All interior primers, adhesives, coatings and sealants shall comply with the most recent version of Rule 1168 of the South Coast Air Quality Management District.

1.5 ENVIRONMENTAL CONDITIONS

- A. Unless recommended otherwise by the manufacturer, install sealant systems as follows:
 - 1. Do not apply sealant when ambient temperatures are below 40 degrees F, or expected to fall below 40 degrees F before sealant cure is complete.
 - 2. Do not apply sealant to substrates or accessories that are moist.

1.6 GUARANTEE

- A. Furnish guarantees in accordance with Section 017700.
- B. Furnish a 2 year installer's guarantee covering defects in installation.
- C. Furnish Type S sealant manufacturer's standard 5 year warranty.

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SECTION 079200 – JOINT SEALANTS**

PART 2 - PRODUCTS

2.1 SEALANTS

- A. Type S - Neutral Cure Silicone Sealants:
 - 1. Dow Corning, 790 Silicone Building Sealant, or "795 Silicone Structural Glazing and Weatherproofing Sealant."
 - 2. Pecora "890 Architectural Silicone Sealant."
 - 3. Spectrem 3 by Tremco Incorporated.
 - 4. General Electric Co. "Ultrapruf II SCS-2900."
- B. Type AB): Air Barrier Sealant: Silicone, single-component, nonsag, plus 25 percent and minus 25 percent movement capability, nontraffic-use, neutral-curing silicone joint sealant; ASTM C 920, Type S, Grade NS, Class 25, Use NT
 - 1. Dow Corning; 758 Weather Barrier Sealant
 - 2. VaproShield; VaproBond Sealant
- C. Type P: ASTM C920, Type M, grade NS, Class 25; Tremco "Dymeric," Chem-Calk 500, Pecora "Dynatrol II," Sonneborn "Sonalastic NP-II", PRC "Permapol RC-2," or approved.
- D. Type PT: ASTM C920, Type M, Grade P, class 25; Tremco "THC 900", Sonneborn/ChemRex "Sonolastic SL 2", Sika Corporation; Sikaflex-2c SL; Pecora "Urexpan NR-200", or approved; standard colors as selected.
- E. Type A: ASTM C834; Tremco "Acrylic Latex Caulk," Pecora "AC-20," Sonneborn/ChemRex "Sonolac," or approved; standard colors to match adjacent construction.
- F. Type SM: Mildew Resistant Silicone Sealant: USDA approved; Dow Corning 786 by Dow Chemical, 898 Silicone" by Pecora (800-523-6688), Sonolastic Omniplus by Sonneborn/ChemRex, Sanitary 1702 Silicone Sealant by GE Silicones / General Electric Company, or approved; clear color.

2.2 COMPRESSIBLE FOAM TAPE

- A. Precompressed self-adhesive open cell polyurethane foam tape; grey or black color; "Greyflex" by Emseal Joint Systems, Ltd., "Will-Seal" by Illbruck., or approved.
- B. Precompressed prefaced self-adhesive open cell polyurethane foam tape; "Seismic Colorseal" by Emseal Joint Systems, Ltd., or approved.
- C. Furnish tape in thickness recommended by the manufacturer for widths of joints to be filled.

2.3 ACCESSORY MATERIALS

- A. Primer: Non-staining type, recommended by sealant manufacturer to suit application.
- B. Joint Cleaner: Non-corrosive and non-staining type, recommended by sealant manufacturer; compatible with joint forming materials.
- C. Backer Rod: Closed or open cell foam as recommended by the sealant manufacturer for the application; round profile; thickness approximately 130 percent of joint width.
- D. Bond Breaker: Pressure sensitive tape recommended by sealant manufacturer to suit application.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Prior to starting work, carefully inspect installed work of other trades and verify that such work is complete to the point where work of this Section may properly commence. Notify the Architect in writing of conditions detrimental to the proper and timely completion of the work.
- B. Do not begin installation until all unsatisfactory conditions are resolved. Beginning work constitutes acceptance of site conditions and responsibility for defective installation caused by prior observable conditions.
- C. Verify joint dimensions and conditions are acceptable to receive the work of this Section.

SECTION 079200 – JOINT SEALANTS

3.2 PREPARATION

- A. Clean and prepare joints in accordance with manufacturer's instructions. Remove any loose materials and other foreign matter which might impair adhesion of sealant.
- B. Apply masking tightly around joints to protect adjacent surfaces from excess sealant.
- C. Prime as required for proper bond to substrate materials.
- D. Backing Materials:
 - 1. Place backer rod to achieve proper sealant width/depth ratios and to prevent sealant sag.
 - 2. Use bond breaker where there is insufficient depth to use joint filler.

3.3 COMPRESSIBLE FOAM TAPE INSTALLATION

- A. Install in accordance with manufacturer's recommendations.
- B. Install sufficiently deep to accommodate the installation of the Type P sealant.

3.4 INSTALLATION

- A. Perform work in accordance with ASTM C1193, unless specified otherwise or recommended otherwise by the sealant manufacturer.
- B. Apply sealant within recommended temperature ranges.
- C. Joint Profile:
 - 1. Sealant beads shall have a sectional width to depth ratio of 2 to 1, unless specified otherwise or recommended otherwise by the sealant manufacturer.
- D. Tooling:
 - 1. Tool joints concave, unless indicated or specified otherwise. Finish to uniform profile and depth, free of air pockets, embedded matter, ridges, and sags.

3.5 CLEANUP

- A. Clean adjacent surfaces free of excess sealant as the work progresses. Use cleaning agents recommended by the sealant manufacturer.
- B. Upon completion, remove and dispose of masking.

3.6 PROTECTION

- A. Protect sealant in joints subject to dirt, moisture, and traffic during the sealant curing process. Protection shall be able to resist traffic while remaining securely in position.

3.7 SCHEDULE

- A. Type S:
 - 1. Provide at all exterior joints in mineral fiber cement siding and other cladding as indicated, unless specified otherwise; colors as selected from manufacturer's complete line for each type of sealant.
 - 2. Provide at all exterior window perimeter joints, unless specified otherwise; colors as selected from manufacturer's complete line for each type of sealant.
- B. Type AB: Provide at exterior air barrier joints and air barrier material laps, unless specified otherwise.
- C. Type P: Provide at all exterior joints associated with masonry and concrete, unless specified otherwise; custom colors to match the Architect's samples.
- D. Type PT: Provide at all exterior and interior horizontal joints subject to traffic and abrasion, unless specified otherwise; standard colors as selected from manufacturer's complete line of pre-formulated colors.
- E. Type A: Provide at all interior joints, unless specified otherwise.
- F. Type SM: Provide at joints around countertops in wet areas.

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SECTION 079200 – JOINT SEALANTS

END OF SECTION

SECTION 081113 - HOLLOW METAL DOORS AND FRAMES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Rolled steel doors and frames.
 - 2. Accessories.
- B. Related Sections:
 - 1. 081400 - Wood Doors: Doors for metal frames.
 - 2. 087100 - Door Hardware.
 - 3. 087300 - Door and Hardware Installation: Installation of doors and related hardware.
 - 4. 088000 - Glazing: Glazing in doors and frames.
 - 5. 099000 - Painting: Field painting of doors and frames.
- C. Drawings, the provisions of the Agreement, the General Conditions, and Division 1 specification sections apply to work of this Section.
- D. Substitutions: Substitute products will be considered only under the terms and conditions of Section 016000.

1.2 REFERENCES

- A. American National Standards Institute (ANSI): A250.8 - SDI-100 Recommended Specifications for Standard Steel Doors and Frames.
- B. American Society for Testing and Materials (ASTM)
 - 1. A366 - Specification for Steel, Carbon, Cold Rolled Sheet, Commercial Quality.
 - 2. A569 - Specification for Steel, Carbon (0.15 Maximum Percent), Hot Rolled Sheet and Strip, Commercial Quality.
 - 3. A653 - Specification for Steel Sheet, Zinc-coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by Hot-Dip Process.
- C. International Building Code (IBC)
- D. National Fire Protection Association (NFPA): NFPA 80 - Fire Doors and Windows.
- E. Steel Door Institute (SDI): SDI-105 - Recommended Erection Instructions for Steel Frames.

1.3 SUBMITTALS

- A. Make submittals in accordance with Section 013300.
- B. Product Literature: Submit manufacturer's published literature for doors and frames.
- C. Shop Drawings:
 - 1. Frames: Indicate configuration, anchor types and spacings, location of cutouts for hardware, reinforcement, and finish.
 - 2. Doors: Indicate elevations, internal reinforcement, closure method, and cutouts for hardware, glazing and louvers.

1.4 QUALITY ASSURANCE

- A. Conform to requirements of ANSI A250.8.
- B. Regulatory Requirements:
 - 1. Installed frame and door assembly shall conform to NFPA 80 for fire rated class indicated.
 - 2. Where doors are noted with an hourly fire resistance rating, provide door and frame assemblies labeled by Underwriter's Laboratory, or any other testing laboratory approved by the local code authorities, to meet the hourly fire rating noted. Assemblies shall meet IBC requirements for positive pressure.

1.5 DELIVERY, STORAGE AND HANDLING

- A. In accordance with Section 016000.

SECTION 081113 - HOLLOW METAL DOORS AND FRAMES

- B. Protect doors and frames with factory installed protective packaging. Maintain protective packaging until installation commences.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

- A. Members of the Steel Door Institute and of the National Association of Architectural Metal Manufacturers, subject to compliance with the specified requirements.

2.2 MATERIALS

- A. Steel Sheet: Cold rolled ASTM A366, or hot rolled pickled and oiled sheet conforming to ASTM A569, except ASTM A167, Type 304 stainless steel at locations scheduled.

2.3 DOORS

- A. ANSI A250.8; Seamless.
- B. Minimum 18 gage face sheets for interior doors; minimum 16 gage face sheets for exterior doors.
- C. Core:
 - 1. Exterior Doors: Polystyrene or polyurethane foam core.
- D. Provide continuously welded seamless edges
- E. Close top edges of exterior doors flush with steel filler cap; seal joints watertight.
- F. Cut mortises for butts using appropriate templates; universal non-handed preparation of doors is not acceptable.

2.4 FRAMES

- A. Design: Double rabbet, unless indicated otherwise; fully welded. Fabricate frames with throat dimensions as indicated. Provide thermally improved frames at insulated exterior walls.
- B. Gages:
 - 1. Exterior Frames: Minimum 14 gage.
- C. Furnish removable mullions where indicated.

2.5 ACCESSORIES

- A. Glazing Stops: Rolled steel channel shape, butted corners; prepared for countersink style tamperproof screws.
- B. Non-Rated Louvers: Roll formed steel; .60 oz/sq ft. galvanized finish; factory primed for field painting as specified elsewhere; Inverted 'V' blade design; 50 percent free area; tamperproof fasteners.

2.6 FINISH

- A. Exterior Units:
 - 1. A60 hot dip galvanized coating conforming to ASTM A653; factory un-primed.
 - 2. Include reinforcing and other internal components.
 - 3. Use zinc rich primer to touch-up galvanized coatings damaged during fabrication or handling.
 - 4. Shop prime galvanized surfaces with Sherwin Williams "DTM Wash Primer B71Y00001"; self-crosslinking acrylic primer; color similar but not identical to finish coat. One coat in compliance with manufacturer's instructions for surface preparation and application.
 - 5. Shop finish primed surfaces with Sherwin Williams "Acrolon 218 HS Acrylic Polyurethane"; 2 coats in compliance with manufacturer's instructions

SECTION 081113 - HOLLOW METAL DOORS AND FRAMES

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Prior to starting work, carefully inspect installed work of other trades and verify that such work is complete to the point where work of this Section may properly commence. Notify the Architect in writing of conditions detrimental to the proper and timely completion of the work.
- B. Do not begin installation until unsatisfactory conditions are resolved. Beginning work constitutes acceptance of site conditions and responsibility for defective installation caused by prior observable conditions.

3.2 INSTALLATION OF FRAMES

- A. Install frames in accordance with SDI-105 and in accordance with labeling requirements.
- B. Coordinate with wall construction for anchor placement.
- C. Coordinate installation of glass and glazing.
- D. Install accessories.
- E. Install roll formed steel reinforcement channels between two abutting frames. Anchor to structure and floor.
- F. Installation Tolerances; Maximum Diagonal Distortion: 1/16 inch measured with straight edge, corner to corner.
- G. Door and hardware installation is specified in Section 087300.

END OF SECTION

**101 WEST 33RD STREET
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SECTION 081400 – WOOD DOORS**

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Interior wood doors.
 - 2. Metal-clad wood entrance doors
 - 3. Door accessories.
- B. Related Sections:
 - 1. 064000 - Architectural Woodwork: Wood door frames.
 - 2. 081113 - Hollow Metal Doors and Frames: Steel frames.
 - 3. 087100 - Door Hardware.
 - 4. 087300 - Door and Hardware Installation.
 - 5. 088000 - Glazing: Vision lites.
 - 6. 099000 - Painting: Finish coatings.
- C. Drawings, the provisions of the Agreement, the General Conditions, and Division 1 specification sections apply to work of this Section.
- D. Substitutions: Substitute products will be considered only under the terms and conditions of Section 016000.

1.2 REFERENCES

- A. Architectural Woodwork Institute (AWI): Architectural Woodwork Quality Standards, Guide Specifications, and Quality Certification Program; current edition.
- B. International Building Code (IBC)
- C. NFPA 80 - Fire Doors and windows.

1.3 SUBMITTALS

- A. In accordance with Section 013300.
- B. Product Data: Submit manufacturer's product literature for each type of door.
- C. Shop Drawings: Indicate door sizes and thickness, materials, stile and rail reinforcement, internal blocking for hardware attachment, cutouts for glazing and louvers, louver details and glazing stops.
- D. Certification: That exterior doors meet air infiltration rates indicated.
- E. Samples: Submit two 8 x 10 inch samples of each transparent finish species and finish combination proposed.

1.4 QUALITY ASSURANCE

- A. Regulatory Requirements:
 - 1. Installed frame and door assembly shall conform to NFPA 80 for fire rated class indicated.
- B. Provide exterior doors with a measured air infiltration rate of less than 0.2 cfm/sf.

1.5 DELIVERY, STORAGE, AND PROTECTION

- A. In accordance with Section 016000.
- B. Package, deliver, and store doors in accordance with AWI requirements.

1.6 WARRANTY

- A. Furnish manufacturer's standard warranty under provisions of Section 017700.

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SECTION 081400 – WOOD DOORS**

PART 2 - PRODUCTS

2.1 INTERIOR DOORS

- A. Interior Hollow Core Flush Doors:
1. AWI Section 1300, IHC-7 (Institutional Hollow Core); Premium
 2. Core shall meet WDMA I.S.-1 Series.
 3. Vertical edges minimum 1 inch thick.
 4. Top and bottom rails minimum 6 inches.
 5. Face Veneer:
 - a. For Transparent Finish Veneer: Provide AWI Grade A; rift sawn yellow pine; book matched]; minimum 1/50".
 - b. Paint Grade Veneer: Medium density overlay or paint grade birch.
 6. Vertical edges shall be wood to match face veneer; no finger joints will be permitted except at paint grade veneer applications.
 7. 1-3/4 inch thick, unless scheduled otherwise.

2.2 EXTERIOR DOORS

- A. Aluminum-Clad Entrance Doors:
1. Andersen Windows and Doors, Inc (Bayport, MN; 855-955-4926)
 2. "Straightline" Series.
 3. Hinged out-swinging single door; configuration as indicated.
- B. Door Construction:
1. Cladding: Extruded aluminum, minimum thickness 0.050 inch.
 2. Stiles and Rails: Preservative treated (WDMA I.S.4) laminated veneer lumber (LVL) with wood veneer, kiln dried and suitable for stain or painted finish on interior.
 3. Interior Exposed Frame: Preservative treated (WDMA I.S.4) lumber, kiln dried and suitable for stain or painted finish.
 4. Wood Species: Pine.
 5. Interior Finish:
 - a. Stained: Factory-applied before assembly, water-based finish; color as selected b Architect from manufacturer's full line.
 - b. Painted: Factory-applied before assembly, color as selected by Architect from manufacturer's full line.
 - c. Primed: Factory-applied before assembly.
 6. Exterior Finish:
 - a. Painted Frame: Factory-applied baked-on silicone polyester enamel, in compliance with AAMA 2604; color as selected from manufacturer's full ine.
 - b. Painted Panel: Factory-applied baked-on silicone polyester enamel, in compliance with AAMA 2605; [color as selected from manufacturer's standard colors of no less than 50 options] custom color as selected by Architect from manufacturer's full line
 - c. Anodized Frame: Architectural quality, in compliance with AAMA 611 Class I [Black] [Medium Bronze] [Dark Bronze] [Light Bronze] [Copper] [Champagne] [Clear] .
 - d. Anodized Panel: Architectural quality, in compliance with AAMA 611 Class I [Black] [Medium Bronze] [Dark Bronze] [Light Bronze] [Copper] [Champagne] [Clear]
- C. Glazing: Provide insulating glass units certified through Insulating Glass Certification Council as conforming to the requirements of IGCC and ASTM E2190.
1. Manufacturer Designation: Andersen Low-E4 Glass.
 2. Glazing Configuration: Dual-pane.
 3. Tint: None.
 4. Seal and Spacer Type: Dual sealed insulating glass units with polyisobutylene primary seal, silicone secondary seal and stainless steel spacers.
 5. Glass Spacer Color: Black
 6. Glass Type: Clear, fully tempered glass, ASTM C1048.
- D. Hardware:

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2.3 ACCESSORIES

- A. Glass Stops: Wood type, except as required to conform to labeling requirements; finished to match door finish.

2.4 FABRICATION

- A. Fabricate doors to the configurations indicated, in accordance with the AWI standards specified.
- B. Bevel lock and hinge edges 1/8 inch in 2 inches on single acting doors.
- C. Bond edge banding to solid core with hot melt or RF cured adhesive.
- D. Prefit and premachine doors in accordance with AWI 1300-S-6. Premachine for hardware specified in Section 087100, and locate as specified in Section 087300.
- E. Doors shall be factory prefinished as scheduled to match Architect's sample; AWI System Premium Grade Catalyzed Vinyl.
- F. Provide metal astragals to meet fire rating requirements for double fire doors. Finish to match door.
- G. Factory pre-glaze doors.
- H. Flush Door Blocking: For flush doors, provide solid lock blocks and special blocking as required for the hardware components specified elsewhere. Blocking for fire rated doors shall meet the door manufacturer's labeling requirements.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install doors as specified in Section 087300.

3.2 INSTALLATION TOLERANCES

- A. Maximum Diagonal Distortion: 1/16 inch measured with straight edge, corner to corner.

3.3 ADJUSTING AND CLEANING

- A. Adjust for smooth and balanced door movement.

END OF SECTION

**101 WEST 33RD STREET
BRYAN, TEXAS
SECTION 081423 –CLAD WOOD DOORS**

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Pre-hung aluminum clad wood doors and metal frames.
 - 2. Door and frame accessories.
- B. Related Sections:
 - 1. 087100 - Door Hardware: Door hardware.
 - 2. 087300 - Door and Hardware Installation: Installation requirements for door hardware
 - 3. 099000 - Painting: Finishing of interior door surface and painting of door frame.
- C. Drawings, the provisions of the Agreement, the General Conditions, and Division 1 specification sections apply to work of this Section.
- D. Substitutions: Substitute products will be considered only under the terms and conditions of Section 016000.

1.2 REFERENCES

- A. Architectural Woodwork Institute (AWI): Architectural Woodwork Quality Standards, Guide Specifications, and Quality Certification Program; current edition.
- B. International Building Code (IBC)
- C. American Society for Testing and Materials (ASTM):
 - 1. E 774: Standard Specification for Sealed Insulating Glass Units.
 - 2. C 1036: Standard Specification for Flat Glass.
- D. American National Standards Institute / National Wood Window and Door Association (ANSI /NWWDA):
 - 1. I.S.4-94: Industry Standard for Water Repellent Preservative Treatment for Millwork.
 - 2. 101 / I.S.2-97: Voluntary Specifications for Aluminum, Vinyl (PVC) and Wood Windows and Glass Doors.
- E. Sealed Insulating Glass Manufacturers Association / Insulating Glass Certification Council (SIGMA / IGCC).
- F. National Fenestration Rating Council (NFRC): 101: Procedure for Determining Fenestration Product Thermal Properties.
- G. American Architectural Manufacturers Association (AAMA): 2605: Voluntary Specification for High Performance Organic Coatings on Architectural Extrusions and Panels.
- H. Consumer Product Safety Commission (CPSC): 16 CFR 1201: Safety Standard for Architectural Glazing Materials.

1.3 SUBMITTALS

- A. In accordance with Section 013300.
- B. Product Data: Submit manufacturer's product literature for each type of door.
- C. Shop Drawings: Indicate door sizes and thickness, materials, stile and rail reinforcement, internal blocking for hardware attachment, cutouts for glazing and glazing stops.
- D. Samples: Submit two 8 x 10 inch samples of each transparent finish species and finish combination proposed.

1.4 DELIVERY, STORAGE, AND PROTECTION

- A. Prime or seal wood surfaces, including surface to be concealed by wall construction, if more than thirty (30) days will expire between delivery and installation.

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- B. Store door panels flat on a level surface in a clean and dry storage area under provisions of Section 016000. Seal unfinished top and bottom edges of door panels if door panels are stored at the job site more than one (1) week.
- C. Condition doors to local average humidity before hanging.

1.5 WARRANTY

- A. Doors shall be warranted to be free from defects in manufacturing, materials, and workmanship for a period of ten (10) years from purchase date.
- B. Insulating glass shall be warranted against visible obstruction thru the glass caused by a failure of the insulating glass air seal for a period of twenty (20) years from the date of original purchase.
- C. Please see separate manufacturer warranties for Commercial Door hardware components, sills and steel frames.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

- A. Andersen "Straightline Series" 102.

2.2 DOORS AND FRAMES

- A. Construction:
 - 1. Cladding: Extruded aluminum, minimum thickness 0.050 inch.
 - 2. Stiles and Rails: Preservative treated (WDMA I.S.4) laminated veneer lumber (LVL) with wood veneer, kiln dried and suitable for factory painted finish on interior.
 - 3. Interior Exposed Frame: Preservative treated (WDMA I.S.4) lumber, kiln dried and suitable for factory painted finish.
 - 4. Door Configuration: Fully glazed single-panel.
- B. Wood Species: Pine.
- C. Interior Finish:
 - 1. Painted: Factory-applied before assembly, Black
- D. Exterior Finish:
 - 1. Factory-Finished Aluminum Cladding: Factory-applied baked-on silicone polyester enamel, in compliance with AAMA 2605; Black color.

2.3 GLAZING

- A. Tempering Glass: ASTM C1048; glass which has been heat treated to strengthen glass in bending to not less than 4 times the annealed strength; certified safety glass in accordance with ANSI Z97.1.
- B. Insulating Glass Units:
 - 1. Construction: Dual glazed units as follows
 - a. Outer lite nominal 1/4 inch thick clear tempered glass with etched finish on #2 surface; 1/2 inch air space; inner lite nominal 1/4 inch thick clear tempered glass.
 - 2. Fabricate insulating glass units with steel or mill finished aluminum spacers with welded or reinforced and sealed corners, desiccant filled, two sides minimum.
 - 3. Fabricate as required to qualify for Class A seal durability in accordance with ASTM E773 and E774.
 - 4. Fabricate with dual seal system, outer seal compatible with glazing system.

2.4 FABRICATION

- A. Fabricate doors and frames to the configurations indicated, in accordance with standards specified
- B. Bevel lock edges 1/8 inch in 2 inches on single acting doors.
- C. Prefit and premachine doors and frames in accordance with AWI 1300-S-6. Premachine for hardware specified in Section 087100, and locate as specified in Section 087300.

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- D. Factory hang doors using manufacturer's stainless steel, ball bearing hinges. Size: 4 ½ by 4 ½.
- E. Factory pre-glaze doors.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install doors and frames as specified in Section 087300 in accordance with manufacturer's instructions.

3.2 INSTALLATION TOLERANCES

- A. Maximum Diagonal Distortion: 1/16 inch measured with straight edge, corner to corner.

3.3 ADJUSTING AND CLEANING

- A. Adjust for smooth and balanced door movement.

END OF SECTION

SECTION 083100 – ACCESS DOORS AND PANELS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Non-rated access doors and frames and accessories.
- B. Related Sections:
 - 1. 092900 - Gypsum Board: Finishes for concealed access doors.
 - 2. 099000 - Painting: Field paint finish.
- C. Drawings, the provisions of the Agreement, the General Conditions, and Division 1 specification sections apply to work of this Section.
- D. Substitutions: Substitute products will be considered only under the terms and conditions of Section 016000.

1.2 SUBMITTALS

- A. Make submittals in accordance with Section 013300.
- B. Product Data. Include sizes, types, finishes, scheduled locations, and details of adjoining work.

1.3 QUALITY ASSURANCE

- A. Where an access door is required in fire rated construction, the access door assembly shall be labeled by Underwriter's Laboratory, Warnock Hersey, or any other testing laboratory approved by the local code authorities, to meet the hourly fire resistance rating of the construction in which the access door is installed.

PART 2 - PRODUCTS

2.1 WALL AND CEILING ACCESS DOORS

- A. Acceptable Manufacturers:
 - 1. Milcor LP. (Lima OH; 800-441-6899).
 - 2. The Williams Brothers Corporation of America (Front Royal, VA; 800-255-5515).
 - 3. Nystrom Products Co. (Minneapolis MN; 612-781-7850).
 - 4. Karp Associates, Inc. (Maspeth NY; 718-784-2105).
 - 5. JL Industries (Bloomington, MN; 612-835-6850)
- B. Door Types:
 - 1. Non Rated Concealed Drywall Access Door:
 - a. Flush type design, with integral attachment flange and drywall bead for flush installation.
 - b. Minimum 16 gage frame; minimum 14 gage door panel.
 - c. Fully concealed pin type hinges or continuous piano hinge, 175 degree opening.
 - d. Latches: Screw driver operated cam type.
 - e. Key operated cylinder lock where indicated.
- C. Sizes: Approximately 12" x 12" size for hand access, 22" x 22" size for man entry, unless indicated otherwise; furnish custom sizes as necessary.
- D. Finish: Galvanized steel with wiped coat finish; prime units with manufacturer's standard primer to receive paint coatings as specified in Section 099000. Provide stainless steel access doors at restrooms, and other moist locations.

SECTION 083100 – ACCESS DOORS AND PANELS

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Prior to starting work, carefully inspect installed work of other trades and verify that such work is complete to the point where work of this section may properly commence. Notify the Architect in writing of conditions detrimental to the proper and timely completion of the work.
- B. Do not begin installation until unsatisfactory conditions are resolved. Beginning work constitutes acceptance of site conditions and responsibility for defective installation caused by prior observable conditions.
- C. Verify rough openings for door and frame are correctly sized and located.

3.2 INSTALLATION

- A. Install access doors of sizes and in locations as indicated. Provide access doors for access to balancing and fire dampers, trap primers, valves, fans, terminal units, and other equipment requiring periodic inspection through finished walls and ceilings, whether indicated or not. Coordinate access requirements with other trades.
- B. Provide concealed access doors at all gypsum board assemblies.
- C. Install frames plumb and level in wall and ceiling openings, with plane of door surface in accurate alignment with plane of wall or ceiling surface.
- D. Secure rigidly in place in accordance with manufacturer's instructions.

END OF SECTION

**101 WEST 33RD STREET
BRYAN, TEXAS
SECTION 085313 - VINYL WINDOWS**

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Shop fabricated windows.
 - 2. Shop glazing
 - 3. Framed insect screens.
 - 4. Operable hardware and weather-stripping.
- B. Related Sections:
 - 1. 061000 - Rough Carpentry: Prepared openings.
 - 2. 064000 – Architectural Woodwork: Interior wood trim.
 - 3. 074646 - Mineral-Fiber Cement Siding: Coordination; exterior wood trim; air retarder.
 - 4. 072100 - Thermal Insulation: Insulation for window perimeter stuffing.
 - 5. 079200 - Joint Sealants: Perimeter sealing.

1.2 REFERENCES

- A. American Society for Testing and Materials (ASTM):
 - 1. E283 - Rate of Air Leakage Through Exterior Windows, Curtain Walls and Doors.
 - 2. E547 - Test Method for Water Penetration of Exterior Windows, Curtain Walls, and Doors by Cyclic Static Air Pressure Differential.
 - 3. E330 - Structural Performance of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference.

1.3 SYSTEM DESCRIPTION

- A. Air Leakage: ANSI/ASTM E283; 0.15 cfm/sf of window area at test pressure of 1.57 psf.
- B. Water Penetration: None when subjected to ASTM E547 under static pressure of 2.86 psf for 15 minutes.
- C. Deflection: No glass breakage, damage to hardware, or permanent deformation, after subjection to positive and negative pressure of 3psf.

1.4 MOCKUP

- A. Prepare mock-up under provisions of Section 014500.
- B. Install window unit in mock-up wall assembly described in Section 014500
- C. Mock-up to determine acceptability of installed window unit for installation methods.

1.5 SUBMITTALS

- A. Make submittals under provisions of Section 013300.
- B. Product Literature: Manufacturer's descriptive literature and installation instructions.
- C. Shop Drawings: Include dimensions, relation to construction of adjacent work, air and vapor barrier seal to adjacent construction, component anchorage and locations, anchor methods and materials, and hardware details.
- D. Samples:
 - 1. Submit color samples as necessary for selection and verification of colors.
 - 2. Two samples of glazed window frame, corner, mullion joint and operating hardware, as necessary to illustrate quality of materials and joints, color and texture of finish.

1.6 WARRANTY

- A. Submit warranty under provisions of Section 017700.

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SECTION 085313 - VINYL WINDOWS**

- B. Warranty: Submit written warranty, executed by the window manufacturer, agreeing to repair or replace units which fail because of defects in material and workmanship, for as long as the indicated owner maintains ownership of the building.

PART 2 - PRODUCTS

2.1 WINDOW UNITS

- A. Manufacturer: Elevate Windows (Grand Prairie, TX; 469-490-1100)
- B. Type: Extruded vinyl; double-hung and fixed; nailing flange
- C. Glazing:
 - 1. Manufacturer's standard sealed, insulating glazing units in compliance with ASTM E774; Class A; 1" overall thickness.
 - 2. Low-e coating on #2 surface.
- D. Hardware:
 - 1. Weatherstripping: Replaceable double weatherstripping system; EPDM.
 - 2. Operators: Manufacturer's standard "Roto Hardware" with plated hinge arms; non-corroding material with compatible fasteners.
 - 3. Locking Assembly: Manufacturer's standard lever mechanism.
- E. Insect Screen: Fiberglass with matching frame color.
- F. Fabrication
 - 1. Windows shall be fabricated from high impact resistant polyvinyl chloride.
 - 2. Frame extrusions shall include integral nailing fin.
 - 3. All corners of the frame and sash shall be mitered and fusion welded; welds shall be dressed and finished to match surrounding area.
 - 4. Include clips for securing insect screen.
 - 5. Provide limiters on lower sashes limiting opening to 4 inches in height.
 - 6. Factory glaze units using manufacturer's standard snap-on PVC beads sized to accommodate the glass thickness.
 - 7. Install all hardware.
- G. Finish: Homogeneous with rigid PVC co-extruded frame cap; colors as selected by the Architect.

PART 3 - EXECUTION

3.1 INSPECTION

- A. Prior to starting work, carefully inspect installed work of other trades and verify that such work is complete to the point where work of this Section may properly commence. Verify that rough openings are correctly sized and located. Notify the Architect in writing of conditions detrimental to the proper and timely completion of the work.
- B. Do not begin installation until all unsatisfactory conditions are resolved. Beginning work constitutes acceptance of site conditions and responsibility for defective installation caused by prior observable conditions.

3.2 INSTALLATION

- A. Install windows in accordance with manufacturer's instructions.
- B. Maintain alignment with adjacent work. Secure assembly to frame openings without distortion or stress.
- C. Ensure air and vapor retarder is sealed to window frame. Coordinate placement of insulation in spaces around unit perimeter as specified in Section 072116.
- D. Perimeter sealant is specified in Section 079200.
- E. Install insect screens.

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F. Close and latch operating sash.

3.3 CLEANING

A. Clean window frames and glass.

B. Remove labels and visible markings.

END OF SECTION

SECTION 087100 - DOOR HARDWARE

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Finish hardware requirements.
 - 2. Requirements for bidder-supplied hardware schedule.
- B. General Requirements:
 - 1. Contractor shall provide complete hardware schedule including all pieces of hardware required at each opening as specified herein and indicated in the Drawings.
 - 2. Allowed hardware manufacturers shall be as directed by Owner. Where specific model numbers are provided, it is for the purpose of establishing basis for quality and design only. Contractor shall provide alternate products or functions as necessary to meet requirements of Drawings and specifications.
 - 3. Manufacturer substitutions are not permitted.
 - 4. Obtain each type of hardware from single manufacturer.
 - 5. Review Drawings, Door Schedule, and requirements of this Section thoroughly and provide required hardware for all openings, including openings which may have been inadvertently omitted from Door Schedule.
 - 6. Should an opening be omitted or an opening not indicated in Door Schedule, provide hardware of same quality, design and function as specified for similar openings.
 - 7. Furnish hardware complete with brackets, plates, fittings, and other accessories required for installation.
 - 8. Provide screws, nuts, bolts, through-bolts, washers, grommets, and other fastening devices necessary for proper installation of hardware; match finish of hardware being attached. Non-ferrous or corrosion resistant type required where exposed to exterior atmosphere.
- C. Related Sections:
 - 1. 017700 - Closeout Procedures: Submittal of keys.
 - 2. 081400 - Wood Doors.
 - 3. 083100 – Access Doors and Panels
- D. Drawings, the provisions of the Agreement, the General Conditions, and Division 1 specification sections apply to work of this Section.
- E. Substitutions: Substitute products will be considered only under the terms and conditions of Section 016000.

1.2 SUBMITTALS

- A. Make submittals in accordance with Section 013300.
- B. Manufacturer's Data: Submit 3 copies of manufacturer's data for each item of finish hardware.
- C. Samples: Within 35 days after award of the Contract, submit 3 samples each of Push Plates and Kick Plates in colors as selected for approval.
- D. Schedules: Upon award of hardware contract, submit 3 copies of the finish hardware schedule, organized into "hardware sets" and indicating complete designation of every item required for each door or opening. List in vertical form. Review of hardware schedules does not fulfill project requirements in accordance with Contract Documents.
- E. Templates: Furnish hardware templates to door and frame fabricators, and hardware installers. Upon request, check shop drawings of such other work to confirm that adequate provisions were made for the proper installation of hardware.

SECTION 087100 - DOOR HARDWARE

1.3 QUALITY ASSURANCE

- A. Supplier Qualifications: Finish hardware shall be supplied by recognized builders' hardware supplier who has been furnishing hardware in the same area as the project for a period of not less than two years. The supplier's organization shall include a member of the American Society of Architectural Hardware Consultants who is available at all reasonable times during the course of the work to meet with the Owner, Architect or Contractor for project hardware consultation.
- B. Regulatory Requirements:
 - 1. Conform to requirements of the jurisdictional code authorities.
 - 2. Where openings are noted with an hourly fire resistance rating, provide hardware components labeled by Underwriter's Laboratory, or other testing laboratory approved by the local code authorities, to meet the hourly fire rating noted.
 - 3. Hardware shall conform to NFPA 80 for fire rated class indicated.
 - 4. Comply with provisions of Americans with Disabilities Act (ADA), including ADA Accessibility Guidelines and ANSI A117.1, and additional accessibility requirements of the jurisdictional code authorities.

1.4 DELIVERY, STORAGE AND HANDLING

- A. Delivery: Deliver all hardware in manufacturers' original unopened undamaged packages, clearly identifying manufacturer, brand name, and contents.
- B. Replacements: In the event of damage, immediately make all repairs and replacements necessary.
- C. Mark each item of hardware as to description and location of installation in accordance with approved hardware schedule.
- D. Protection: Use all means necessary to protect the finish on hardware before, during and after installation.

1.5 GUARANTEES

- A. Furnish 5-year unconditional guarantees for all door closers, under provisions of Section 017700.

1.6 MAINTENANCE

- A. Factory representatives for door closers, exit bolts, and locksets shall be available during the construction to instruct the Contractor on the proper method of installation of their materials. They shall inspect and adjust their materials at the completion of the work, and supply proper maintenance manuals to the Owner.
- B. Furnish two (2) sets of special tools for installation and maintenance of hardware. Tools for maintenance and adjustments are to be delivered to the Owner upon completion of the work.

PART 2 - PRODUCTS

2.1 HARDWARE

- A. Furnish hardware items as scheduled in approved bidder-supplied hardware schedule.
- B. Except as listed in the following paragraphs, no substitutions of materials will be allowed unless approved by the Architect.

2.2 HARDWARE MATERIALS AND FABRICATION

- A. Furnish fasteners for installation with each hardware item. Furnish Phillips head fasteners, countersunk oval, flat head, or undercut head as appropriate for material to be installed. Furnish door closers and exit devices applied to wood composite or mineral core doors with sex bolts sized to the thickness of the door.
- B. Compatibility: Provide fasteners which are compatible with both unit fastened and substrate, and which will not cause corrosion or deterioration of hardware, base material, or fastener.

SECTION 087100 - DOOR HARDWARE

2.3 HARDWARE FINISHES

- A. General: Provide architectural hardware in the following finishes.
 - 1. General: US26D, Satin Chrome Plated, except:
 - 2. Push Plates, Door Pulls, Kickplates: US32D, Satin Stainless Steel
 - 3. Door Closers: 689/Sprayed Aluminum.

2.4 KEYING

- A. All locksets and deadbolts shall be keyed as directed by the Owner.
- B. Construction master-key all locksets and cylinder items; provide 12 construction masterkeys.
- C. Locksets, exit devices, deadlocks, padlocks, and cylinders (all standard cylinder items) shall be:
 - 1. Grand masterkeyed and/or masterkeyed in sets as required.
 - 2. Individually keyed in strict accordance with Owner's instructions.
 - 3. Keying shall be established specifically for the Owner by the manufacturer.

2.5 HARDWARE GROUPS

- A. As indicated on Drawings.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Installation of doors and hardware is specified in Section 087300.

END OF SECTION

SECTION 087300 - DOOR AND HARDWARE INSTALLATION

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Installation of hardware specified in Section 087100.
 - 2. Installation of wood doors.
- B. Related Sections:
 - 1. 064000 – Architectural Woodwork: Wood frames.
 - 2. 081400 - Wood Doors.
 - 3. 083100 - Access Doors and Panels.
 - 4. 087100 - Door Hardware.
- C. Drawings, the provisions of the Agreement, the General Conditions, and Division 1 specification sections apply to all work of this Section.

1.2 REFERENCES

- A. Hollow Metal Manufacturer's Association (HMMA): 840 - Installation and Storage of Hollow Metal Doors and Frames.
- B. National Fire Protection Association (NFPA): 80 - Fire Doors and Windows.
- C. American National Standards Institute (ANSI): A250.8 - SDI-100 Recommended Specifications for Standard Steel Doors and Frames.
- D. The Door and Hardware Institute (DHI): Recommended Locations for Architectural Hardware for Wood Flush Doors.

1.3 QUALITY ASSURANCE

- A. Installers of doors and finish hardware shall be skilled mechanics experienced in this type of work.
- B. Fire rated doors and hardware shall be installed in accordance with the labeling requirements.

1.4 ENVIRONMENTAL CONDITIONS

- A. Do not subject wood doors to abnormal heat, dryness, or humidity, or sudden changes thereof. Condition doors to average prevailing humidity prior to hanging.

PART 2 - PRODUCTS

2.1 DOORS, FRAMES, AND HARDWARE

- A. Doors, frames and hardware are specified in other sections.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Prior to starting work, carefully inspect installed work of other trades and verify that such work is complete to the point where work of this Section may properly commence. Notify the Architect in writing of conditions detrimental to the proper and timely completion of the work.
- B. Do not begin installation until all unsatisfactory conditions are resolved. Beginning work constitutes acceptance of site conditions and responsibility for defective installation caused by prior observable conditions.

3.2 DOOR INSTALLATION

- A. Install doors in accordance with the door manufacturer's printed instructions.
- B. Install doors plumb and square in associated frames maintaining specified clearances.

SECTION 087300 - DOOR AND HARDWARE INSTALLATION

- C. Except where specified otherwise in the respective door sections, maintain clearances of 1/8 inch at jambs and heads, 1/8 inch at meeting stiles for pairs of doors, and 1/2 inch from bottom of door to top of decorative floor finish or covering, except where threshold is shown or scheduled provide 1/4-inch clearance from bottom of door to top of threshold.
- D. Install doors to operate freely, but not loosely, free from hinge bound conditions, sticking or binding. Do not install in frames which would hinder operation of doors.
- E. Ensure doors are free from rattling when in latched position.

3.3 FINISH HARDWARE INSTALLATION

- A. Install hardware plumb, level and true to line in accordance with manufacturer's templates, printed instructions and Project conditions.
- B. Where cutting and fitting is required on substrates to be field painted or similarly finished, install, fit, remove and store hardware prior to finishing. Reinstall hardware after finishing operations are completed.
- C. Do not install surface mounted items until finishes have been completed on the substrate.
- D. For substrates which are not factory prepared for hardware:
 - 1. Mortise work to correct size and location without gouging, splintering or causing irregularities in exposed finish work.
 - 2. Fit faces of mortised components snug and flush without excessive clearance.
- E. Hardware Locations: The following is a general listing and may contain items which do not apply to this Project.
 - 1. Butt Hinges:
 - a. Top: 5 inches from inside head of frame down to top of hinge.
 - b. Bottom: 10 inches from finish floor to bottom of hinge.
 - c. Intermediate: Equally spaced between top and bottom hinges.
 - 2. Locksets and Latchsets: 38 inches from finish floor to centerline of knob or lever.
 - 3. Deadlocks and Deadlatches: 54 inches from finish floor to centerline of cylinder.
 - 4. Push/Pull Latches: 45 inches from finish floor to centerline of latchbolt.
 - 5. Door Closers:
 - a. Degree of door swing as indicated in Hardware Schedule approved by Architect, or if not indicated, locate to permit maximum door swing.
 - b. Locate on interior side of exterior doors.
 - 6. Wall Stops: Place on adjacent wall at height to contact knob, lever or pull.
 - 7. Floor Stops and Floor Stop/holders: Place to permit maximum swing of door and to prevent door hardware from hitting wall. Place within 3 inches of latch edge of door, and out of foot traffic.
 - 8. Kick Plates and Armor Plates: Mount on push side, 1/8 inch above bottom edge and centered.
 - 9. One-Way Viewers: Centerline 60 inches above finish floor and centered on door, except at guest rooms equipped for handicapped, mount 45 inches above finish floor.
 - 10. Weatherstripping: Trim seals accurately and butt tightly to minimize gaps.

3.4 ADJUSTMENT AND CLEANING

- A. Adjust and check each operating item of hardware and each door to ensure proper operation of function of every unit.
- B. Lubricate moving parts with graphite type lubricant unless otherwise recommended by the hardware manufacturer.
- C. Ensure weatherstripping and seals do not inhibit closing and positive latching of door.
- D. Replace defective materials or units which cannot be adjusted to operate as intended. Reinstall items found improperly installed.
- E. Replace or re-hang doors which are hinge bound and do not swing or operate freely.
- F. Remove and replace doors which are warped, twisted or which are not in true planes.

SECTION 087300 - DOOR AND HARDWARE INSTALLATION

- G. Replace factory finished doors damaged during installation. Refinish or replace field finished doors damaged during installation.
- H. Prior to date of Substantial Completion, readjust and relubricate hardware items as necessary.

3.5 FINAL ADJUSTMENT

- A. Wherever hardware installation is made more than 30 calendar days prior to date of Substantial Completion of a space or area, return to the work during the week prior to acceptance or occupancy and make a final check and adjustment of all hardware items in such space or area. Clean and lubricate 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, spring power, back check, closing and latching speeds, and handicap requirements.
- B. Instruct Owner's personnel in proper adjustment of hardware during the final adjustment of hardware.

END OF SECTION

**101 WEST 33RD STREET
BRYAN, TEXAS
SECTION 092843 - GYPSUM SHEATHING**

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Gypsum sheathing.
- B. Related Sections:
 - 1. 061000 - Rough Carpentry: Stud framing and plywood sheathing
 - 2. 092900 - Gypsum Board: Interior gypsum products.
- C. Drawings, the provisions of the Agreement, the General Conditions, and Division 1 specification sections apply to all work of this Section.
- D. Substitutions: Substitute products will be considered only under the terms and conditions of Section 016000.

1.2 REFERENCES

- A. American Society for Testing and Materials (ASTM):
 - 1. C1177 - Specification for Glass Mat Gypsum Substrate for Use as Sheathing.
 - 2. C1278 - Standard Specification for Fiber Reinforced Gypsum Panel

1.3 SUBMITTALS

- A. Make submittals in accordance with Section 013300.
- B. Product Data: Product literature on gypsum sheathing and screw fasteners.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Gypsum Sheathing: One of the following:
 - 1. G-P Gypsum Corporation "Dens-Glass Gold"; glass mat faced; ASTM C1177; 5/8 inch thickness.
 - 2. Certaineed. "GlasRoc"; glass mat faced; ASTM C1177; 5/8 inch thickness.
 - 3. USG "FIBEROCK® Brand Sheathing with Aqua-Tough™"; ASTM C1278; 5/8 inch thickness.
- B. Exterior Sheathing Screws: Complying with ASTM C1002, C954, and the following:
 - 1. Self-drilling, self-tapping, Type S-12, bugle head, minimum length of 1-1/4 inch for 1/2 inch and 5/8 inch boards.
 - 2. Organic-polymer, ceramic, or other corrosion-protective coating having a salt-spray resistance of more than 800 hours according to ASTM B 117.
 - 3. Approved Product: Hilti (www.us.hilti.com) 6 x 1-1/4 inch "PSH SD HCR Sheathing Screws", item No. 00413489.
- C. Joint and Penetration Sealant: Dow Corning 795 Building Sealant.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Prior to starting work, carefully inspect installed work of other trades and verify that such work is complete to the point where work of this Section may properly commence. Notify the Architect in writing of conditions detrimental to the proper and timely completion of the work.
- B. Do not begin installation until all unsatisfactory conditions are resolved. Beginning work constitutes acceptance of site conditions and responsibility for defective installation caused by prior observable conditions.
- C. Verify that framing is ready for installation of sheathing.

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3.2 GYPSUM SHEATHING INSTALLATION

- A. Install sheathing boards parallel or perpendicular to framing. Install parallel to framing at fire rated walls. Apply sheathing with vertical joints staggered. All edges shall be supported as follows:
 - 1. Maximum span: 24 inches.
 - 2. Maximum cantilever: 2 inches.
- B. Install sheathing with coating towards exterior.
- C. Screw to framing. Space fasteners 8 inches o.c. in field and 4 inches o.c. at ends along each framing member.
- D. Do not bridge expansion joints.
- E. Coordinate with Division 26 work for cutouts for electrical penetrations.
- F. If sheathing is not to be covered by finish material within 6 months after purchase, cover the material as necessary to maintain the manufacturer's warranty.

END OF SECTION

**101 WEST 33RD STREET
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SECTION 092900 – GYPSUM BOARD**

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Interior gypsum board.
 - 2. Gypsum soffit board.
- B. Related Sections:
 - 1. 061000 - Rough Carpentry: Wood framing, blocking and backing.
 - 2. 072100 - Thermal Insulation.
 - 3. 092843 - Gypsum Sheathing.
- C. Drawings, the provisions of the Agreement, the General Conditions, and Division 1 specification sections apply to work of this Section.
- D. Substitutions: Substitutions will be considered only under the terms and conditions of Section 016000.

1.2 REFERENCES

- A. American Society for Testing and Materials (ASTM):
 - 1. C475 - Joint Treatment Materials for Gypsum Wallboard Construction.
 - 2. C557 - Adhesives for Fastening Gypsum Wallboard to Wood Framing.
 - 3. C931 - Standard Specification for Exterior Gypsum Soffit Board
 - 4. C1002 - Steel Drill Screws for the Application of Gypsum Board.
 - 5. C1177 Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing
 - 6. C1395 - Specification for Gypsum Ceiling Board
 - 7. C1396 - Specification for Gypsum Board
 - 8. D3273 Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber
- B. Gypsum Association (GA):
 - 1. GA-216 - Recommended Specifications for the Application and Finishing of Gypsum Board.
- C. Northwest Wall and Ceiling Bureau (NWCB): LFGB-398 - Recommended Levels for Finishing of Gypsum Board.

1.3 SUBMITTALS

- A. Make submittals in accordance with Section 013300.
- B. Submit complete manufacturer's product literature and installation instructions for each of the materials used.

1.4 QUALITY ASSURANCE

- A. Installer Qualifications: Registered with the Northwest Wall and Ceiling Bureau.
- B. Perform work in accordance with GA 216, unless specified otherwise, or required otherwise to meet fire rating requirements.
- C. Regulatory Requirements:
 - 1. Provide assemblies meeting the hourly fire ratings indicated and specified. Assemblies shall be approved by the local jurisdictional authorities.
 - 2. Fire rating requirements take precedence over the construction requirements indicated. In the event of conflict, notify the Architect, and do not begin construction in the area of conflict until the conflict has been resolved.
- D. Assembly Instructions: Contractor shall keep at the site and make available to installers a copy of the following:
 - 1. Installation requirements for each fire rated assembly.
 - 2. GA 216.

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- E. All interior primers, adhesives, coatings and sealants shall comply with the most recent version of Rule 1168 of the South Coast Air Quality Management District.

PART 2 - PRODUCTS

2.1 GYPSUM BOARD MATERIALS

- A. Furnish boards of maximum permissible length for type of installation indicated, tapered edge for boards to be exposed, taped and finished; square edge for boards in concealed applications; 5/8 inch thick unless noted or specified otherwise; furnish type X for fire rated partitions.
- B. Types:
 - 1. Standard Board: ASTM C1396; 5/8 inch thickness unless otherwise indicated.
 - 2. Water Resistant Board: ASTM C1396.
 - 3. Ceiling Board: ASTM C1395; sag resistant.

2.2 ACCESSORIES

- A. Adhesive for laminated construction: ASTM C557, unless recommended otherwise by the gypsum board manufacturer.
- B. Interior Gypsum Trim:
 - 1. Conform to GA 216, unless indicated or specified otherwise.
 - 2. Concealed flange crimp-on or tape-on type; metal or PVC at Contractor's option.
 - 3. Control Joint Trim: USG 093 or approved.
 - 4. Reveal Moldings: Fry Reglet Co. , Pittcon Industries, Inc., Gordon Inc, or approved; aluminum extrusions with taping flanges; shapes as indicated.
- C. Joint Tapes:
 - 1. Standard: ASTM C475 and GA 216.
 - 2. Mesh Tape for Water Resistant Backing Board: 2-1/2 inch wide glass fiber tape; 10x10 mesh; self adhesive type.
- D. Joint and Finishing Compound: ASTM C475; furnish setting type joint compound for use at water resistant board.
- E. Screws: ASTM C1002.
- F. Light Texturing Compound: USG Spray Texture Finish, or approved.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Prior to starting work, carefully inspect installed work of other trades and verify that such work is complete to the point where work of this Section may properly commence. Notify the Architect in writing of conditions detrimental to the proper and timely completion of the work.
- B. Do not begin work until unsatisfactory conditions are resolved. Beginning work constitutes acceptance of site conditions and responsibility for defective installation caused by prior observable conditions.

3.2 GYPSUM BOARD INSTALLATION

- A. Install gypsum board in accordance with GA 216, and fire rated assembly requirements.
- B. Erect wallboard so that edges and corners are firmly supported.
- C. Double Layer Applications:
 - 1. Use backing board or standard board for first layer.
 - 2. Offset joints of second layer from joints of first layer.

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- D. Trim:
1. Use longest practical lengths, with no piece less than 2 feet long for continuous runs greater than 8 feet. Securely fasten and align trim ends at joints.
 2. Place concealed flange corner beads at external corners. At angles other than 90 degrees, bend the flange to conform to the angle.
 3. Place concealed flange type L trim where gypsum board abuts dissimilar materials.
 4. Use J trim at exposed gypsum board edges and at joints where sealant is indicated.
- E. Allow a 1/2 inch gap where gypsum board extends to overhead structure and deflection provisions are incorporated into lightgauge metal framing. Do not fasten gypsum board to top runner. Where the ceiling is exposed in the finished work, finish top edge with a casing bead, and caulk with acrylic sealant as specified in Section 079200.
- F. Sealant Joints:
1. Coordinate installation of firestopping and sealants at concealed joints between partitions and structure at fire rated and acoustically insulated partitions.
 2. Where sealant joints are indicated at ends or edges of wallboard, install for uniform 1/8 inch joint, unless otherwise indicated. Installation of sealant in exposed locations is specified in Section 079200.
- G. Provide water resistant gypsum board at walls in restrooms, toilets, shower rooms, janitor closets and other areas subject to similar damp conditions.

3.3 CONTROL JOINTS

- A. Discontinue gypsum board and use control joint trim at control joints.
- B. Coordinate with the framing installer to ensure that framing is installed immediately on either side of each control joint.
- C. Space control joints as indicated. When not indicated, locate as follows:
1. At maximum 30 foot intervals along continuous wall planes.
 2. At maximum 50 foot intervals at continuous ceilings with perimeter relief.
 3. At maximum 30 foot intervals at continuous ceilings without perimeter relief.
 4. At locations where expansion or control joints occur in the building structure.
 5. Locate control joints to form rectangular or square sections, in "L," "U," "T," or other irregularly shaped areas.
 6. Position control joints to intersect light fixtures, air diffusers, door openings, and other areas of stress concentration.
 7. Coordinate with Section 092200 for special requirements at fire rated assemblies.
- D. Verify location with the Architect prior to installation. Give the Architect a minimum of 48 hours notice.

3.4 FINISHING

- A. Provide finishing in accordance with GA 214.
- B. Where necessary to sand, do so without damaging the face of the gypsum board.
- C. Levels of Finish:
1. Level 5: Not Used.
 2. Level 4: Use only where specifically indicated.
 3. Level 3: Typical, unless indicated otherwise, including:
 - a. Surfaces to receive wall covering.
 - b. Surfaces to receive textured finishes.
 4. Level 2: Provide at the following locations:
 - a. Storage rooms.
 - b. Mechanical rooms.
 - c. Janitors closets.
 - d. Surfaces to receive thick finish materials applied to gypsum board surfaces.
 5. Level 1: Provide at the following locations:
 - a. Surfaces of acoustical assemblies concealed from view in the finished work

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6. Level 0: Provide at surfaces of non-fire rated assemblies concealed from view in the finished work, including surfaces to be covered by casework, wood paneling,

D. Texturing:

1. After primer is applied as specified in Section 099000, apply light orange peel texture to wall surfaces.
2. Do not apply texture to surfaces to receive wall covering, tile, or unframed mirrors.

3.5 TOLERANCES

- A. Install gypsum board with 1/8 inch in 10 feet maximum variation from plane in any direction.

END OF SECTION

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Interior wall tile.
 - 2. Tile backing board.
 - 3. Sealer.
- B. Related Sections:
 - 1. 030013 - Concrete: Substrate.
 - 2. 079200 - Joint Sealants: Expansion joint fillers.
 - 3. 092900 - Gypsum Board: Substrate.
- C. Drawings, the provisions of the Agreement, the General Conditions, and Division 1 specification sections apply to work of this Section.
- D. Substitutions: Substitute products will be considered only under the terms and conditions of Section 016000.

1.2 REFERENCES

- A. American National Standards Institute (ANSI):
 - 1. A108.1 - Ceramic Tile Installed with Portland Cement Mortar.
 - 2. A108.02 - General Requirements: Materials, Environmental, and Workmanship
 - 3. A108.5 - Installation of Ceramic Tile With Dry-Set Portland Cement Mortar or Latex-Portland Cement Mortar.
 - 4. A108.6 - Installation of Ceramic Tile With Chemical-Resistant, Water Cleanable Tile-Setting and Grouting Epoxy.
 - 5. A108.10 - Installation of Grout in Tilework.
 - 6. A108.13 - Installation of Load Bearing, Bonded, Waterproof Membranes for Thin-Set Ceramic Tile and Dimension Stone.
 - 7. A118.3 - Chemical Resistant Water Cleanable Tile-Setting and Grouting Epoxy.
 - 8. A118.4 - Latex-Portland Cement Mortar.
 - 9. A118.10 - Standard for Load Bearing, Bonded, Waterproof Membranes for Thin-set Ceramic Tile and Dimension Stone Installation.
- B. South Coast Air Quality Management District (SCAQMD)
 - 1. Rule #1168 (July 1, 2005; Amended January 7, 2005).
- C. Tile Council of North America (TCNA):
 - 1. Handbook of for Ceramic Tile Installation, current edition.

1.3 DEFINITIONS

- A. Expansion Joints: Unless otherwise detailed, expansion joints in tile fields are sealant-filled joints to accommodate expansion and contraction of tile and possible substrate movement at slab control and construction joints.

1.4 SUBMITTALS

- A. Make submittals in accordance with Section 013300.
- B. Product Data: Submit for each type of tile, grout, adhesive, additive, accessory, and membrane specified.
- C. Shop Drawings: Indicate general layout, surrounding construction, location of expansion joints in substrates and tile fields, edge details, and special conditions.
- D. Samples:
 - 1. Tile: Submit samples of each type and color of tile. Include representative range of colors and finishes to be expected.

2. Grout: Submit cured samples of each grout color. Furnish 2 cured samples of approved grout colors to the expansion joint sealer installer for color matching.
3. Screeds: Submit samples of each type and finish of screed; minimum 3 inch length.

1.5 QUALITY ASSURANCE

- A. Conform to ANSI Standard Specifications for the Installation of Ceramic Tile.
- B. All interior primers, adhesives, coatings and sealants shall comply with the most recent version of Rule 1168 of the South Coast Air Quality Management District.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. In accordance with Section 016000.

1.7 GUARANTY

- A. In accordance with Section 017700, furnish from the tile installer, a two year written guaranty, executed to the Owner, against defects in workmanship and materials.

1.8 SEQUENCE AND SCHEDULING

- A. Conform to the requirements of the Indoor Air Quality Management Plan developed by the Contractor and specified in Section 013544.

PART 2 - PRODUCTS

2.1 TILE

- A. Tile Types: As indicated on the Drawings.
- B. Special Shapes: Unless otherwise indicated or specified, furnish special shapes as standard with the tile manufacturer for uniform transitions and concealed edges in the finished installation. Special shapes include bullnoses, double bullnoses, corner bullnoses, and cove assemblies.

2.2 ACCESSORY MATERIALS

- A. Setting Mortars:
 1. Thin Bed Mortar: Latex modified; "Kerabond" with "Universal Keralastic" by Mapei Corp., "211 Crete Filler Powder" with "4237 Latex Thin-set Mortar Additive," by Laticrete International, Inc., Hydroment"Tile-Mate Premium" with "447 Flex-a-lastic" by Bostik, or approved.
 - Medium Bed Mortar: "Grani/Rapid" by Mapei Corp., Hydroment "Medium Bed Mortar" by Bostik, or "226 Thick Bed Mortar Mix" with "3701 Latex Mortar Admix," by Laticrete International, Inc., or approved.
 - Thick Bed Mortar:
 2. Meet the requirements of SCAQMD Rule 1168. (maximum VOC content of 250 grams/liter for mortar.
- B. Cementitious Sanded Grout:
 1. Fast Setting: "Ultra/Color" by Mapei Corp., "Floor Joint and Grout Filler" with "3701 Latex Mortar Admixture" and "101 Rapid Set Latex", by Laticrete International, Inc. (proportions as recommended by the manufacturer for the setting time required); sanded, except unsanded at joints scheduled at 1/16 inch wide.
 2. Standard Grout: "Ultra/Color" by Mapei Corp., "Keracolor S" by Mapei Corp., or "1500 Series Sanded Grout" with "1776 Grout Admix Plus", by Laticrete International, Inc., Hydroment"Ceramic Tile Grout /Joint Filler" with "425 Flexible Grout Admixture" by Bostik; sanded, except unsanded at joints scheduled at 1/16 inch wide.
 3. Colors: As selected by the Architect from the manufacturer's standard line.
- C. Tile Backing Board and Accessories:
 1. Cementitious Backing Board: 1/2 inch nominal thickness aggregated portland cement panel, reinforced with glass fiber mesh; "Durock Brand Cement Board" by USG (800-874-8968, "Wonderboard" by Custom Building Products (800-272-8786), or approved.
 2. Joint Tape: Open weave glass mesh joint tape, self-adhesive; 2-1/2 inches wide.

3. Fasteners: As recommended by the backing board manufacturer; thread forming self-drilling wafer head screws; polymer coated or zinc plated; USG "Durock Screws," "Rock-On," or approved.

"NobleSeal TS," by The Noble Company; reinforced CPE sheet membrane.

"DalSeal TS." By Dal-Tile Corp.

"Mapelastic" ("PRP 315") by Mapei Corp.

"Laticrete 9235," by Laticrete International.

"RedGard Waterproofing and Crack Prevention Membrane" by Custom Building Products

"NobleSeal CIS," by The Noble Company; reinforced CPE sheet membrane; 36" width; NobleBond 21 adhesive.

"ECB Membrane," by N.A.C. Products Inc.; self bonding reinforced modified asphalt sheet membrane; 36" width.

Mapelastic SM by the Mapei Corp.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Prior to starting work, carefully inspect installed work of other trades and verify that such work is complete to the point where work of this Section may properly commence. Notify the Architect in writing of conditions detrimental to the proper and timely completion of the work.
- B. Do not begin installation until unsatisfactory conditions are resolved. Beginning work constitutes acceptance of site conditions and responsibility for defective installation caused by prior observable conditions.
- C. Verify that locations of expansion joints, control joints, and construction joints in substrate correspond to tile expansion joint locations.

3.2 PREPARATION

- A. Clean substrate surfaces free of grease, dirt, dust, organic impurities, and other materials which would impair bond. Where curing agents have been used mechanically abrade or shotblast substrate surface.

3.3 TILE BACKING BOARD INSTALLATION

- A. Use cementitious backing board, except where gypsum backing board is indicated.
- B. Install in accordance with the manufacturer's installation instructions.
- C. Install units with edges firmly supported.
- D. Screw attach units with 1 inch long drywall screws spaced 6 inches on center along framing.
- E. Install fiberglass reinforcing tape at joints between panels. Completely embed in a thin set mortar bed. Trowel mortar smooth with adjacent surfaces.
- F. Where cementitious tile backing board is indicated as substrate for wainscot, ensure that backing board has been properly shimmed to align with gypsum board above.

CRACK ISOLATION MEMBRANE

At control and construction joints in concrete floors.

At changes in substrate materials.

Shrinkage cracks 1/16 inch or larger in slabs as directed by the Architect.

Substrates are subject to examination by the Owner and the Architect prior to installation of tile or slab leveling materials. Furnish a minimum of 14 days notice.

The examination will determine the need for additional crack isolation membrane at shrinkage cracks and other special conditions.

Provide additional crack isolation membrane in locations as directed, in accordance with provisions of Section 012200.

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SLAB LEVELING

TILE WATERPROOF MEMBRANE INSTALLATION

3.4 INSTALLATION OF TILE

TCNA System: F113 or F122 at Membranes.

Installation Standard: ANSI A108.5.

Setting Materials:

Use epoxy grout.

TCNA System: F111 and F112.

Installation Standard: ANSI A108.1.

Install over cleavage membrane

Bond Coat: Thinset mortar over thickset mortar bed; 3/32 inch minimum thickness.

Slope the mortar bed evenly to the floor drains.

Use epoxy grout.

- A. Wall Application - Gypsum Board Substrate:
 - 1. TCNA System: Similar to W243.
 - 2. Installation Standard: ANSI A108.5.
 - 3. Setting Materials: Thin bed mortar.
 - 4. Use epoxy grout.
- B. Joint Pattern:
 - 1. Lay out tile pattern prior to commencing tile installation.
 - 2. Accurately locate grout joints on lines indicated; where not indicated, adjust grout joints within specified tolerances to minimize use of cut tiles at field edges.
 - 3. Where cut tiles are necessary, position tile such that cut tile at each edge of each rectilinear field is not less than half of a full size unit, unless indicated otherwise.
- C. Tiles shall be blended as required to avoid pattern repeats and "patches" of adjoining tiles of distinctive color or character within each field area. Coordinate distribution of tiles with the Architect.
- D. Tiles which exhibit directional patterns shall be set with grain direction as indicated on the shop drawings, or, if not indicated, as directed by the Architect.
- E. Install tiles aligned with adjacent finishes, where indicated. Provide mortar fill as necessary for proper alignment.
- F. Except as otherwise indicated, install bullnose tiles at exposed tile edges, including edges adjacent to carpet, edges of planters, external corners, and tops of bases.
- G. Ceramic Tile: Install coved transition pieces to match horizontal surface tile colors in restrooms, at intersections of floor tile with walls. Install tile for square corners at vertical inside corners.
- H. Clean joints of mortar to minimum depth of 1/4 inch to allow subsequent grout installation.
- I. Provide temporary setting buttons and shims as necessary to maintain wall tiles in position until setting mortar has set.
- J. Tolerances:
 - 1. Joint Width Variation: Plus or minus 25% of the proposed joint width.
 - 2. Taper: Plus or minus 25 percent from one end to the other.
 - 3. No portion of a tile surface shall vary more than 1/16 inch above or below an adjacent tile surface.
 - 4. Install tile fields level to within tolerance specified for finished substrate.

EXPANSION JOINTS

3.5 GROUTING

- A. Comply with provisions of ANSI A118.3.
- B. Mix grouts in accordance with manufacturer's instructions.

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- C. Grout joints, except expansion joints, in accordance with the manufacturer's recommendations. Float joints to a slightly concave profile.
- D. Remove excess grout from tile surfaces in accordance with the grout and tile manufacturer's recommendations. Do not use excess amounts of water.
- E. Protect adjacent surfaces from damage caused by cleaning agents. Do not use cleaners which would damage tile or grout surfaces.
- F. Do not grout joints indicated to receive sealants, including inside right angle corner joints between floors and walls of column bases. Grout joints perpendicular to expansion joints shall be finished flush with tile edges.
- G. Cured grout joints shall be made free of efflorescence, prior to sealing.

3.6 CURING

- A. Cure installation in accordance with the grout manufacturer's recommendations. Protect tile and grout during curing operations.

3.7 PROTECTION

- A. Protect tile installations from damage, in accordance with Section 015000.
- B. Replace damaged tiles.

3.8 CLEANING

- A. In accordance with Section 015000 and Section 017700.
- B. Coordinate final cleaning with work of Section 079200. Do not begin cleaning operations until tile expansion joints sealants are fully cured.
- C. Prior to substantial completion, wash and thoroughly rinse tile. Leave tile surfaces clean.

END OF SECTION

SECTION 096429 - WOOD STRIP AND PLANK FLOORING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Moisture barrier.
 - 2. Underlayment.
 - 3. Wood strip flooring.
 - 4. Divider strip to adjacent floor finish.
 - 5. Transparent floor finish.
- B. Related Sections:
 - 1. 030013 - Concrete: Concrete sub-floor finish.
 - 2. 061000 - Rough Carpentry: Wood sub-flooring.
 - 3. 0624000 – Architectural Woodwork: Wood base.
 - 4. 079200 - Joint Sealants: Sealants at wood flooring perimeters.
- C. Drawings, the provisions of the Agreement, the General Conditions, and Division 1 specification sections apply to all work of this Section.
- D. Substitutions: Substitute products will be considered only under the terms and conditions of Section 016000.

1.2 REFERENCES

- A. MFMA - Maple Flooring Manufacturers Association.
- B. National Wood Flooring Association (NWFA) - Hardwood Flooring Installation Manual.
- C. American Society for Testing and Materials (ASTM): F1869 - Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride.

1.3 SUBMITTALS

- A. Make all submittals in accordance with Section 013300.
- B. Product Data: Submit product data and manufacturer's installation instructions with all products and systems to be used under this Section, clearly marked and fully described.
- C. Samples:
 - 1. Submit 3 samples of strip flooring, 12 inches in length, with finish to match Architect's samples.
 - 2. Submit one finished sample of flooring to Section 079200 for color matching.

1.4 QUALITY ASSURANCE

- A. Installer Qualifications:
 - 1. Minimum of 5 years experience in the installation and finishing of hardwood strip flooring with projects similar to the work of this Contract.
 - 2. Use only skilled and experienced wood flooring installers for preparation of substrate and actual installation of hardwood flooring.
 - 3. Helpers and apprentices used for such work shall be under full and constant supervision at all times by thoroughly skilled hardwood flooring installers.
 - 4. In the acceptance or rejection of installed wood flooring, no allowance will be made for lack of skill on the part of installers.
- B. Pre-Installation Meeting:
 - 1. In accordance with Section 013119
 - 2. Prior to start of installation of the work of this Section, call a meeting to be held with the following parties in attendance:
 - a. Architect.
 - b. General Contractor.
 - c. Hardwood Flooring Contractor.

SECTION 096429 - WOOD STRIP AND PLANK FLOORING

3. Agenda: At this meeting, discuss all Specifications, details, and order of application. Discuss and determine responsibility for protection of the completed work during and after construction and subsequent maintenance of the flooring system.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Protect wood flooring from excessive moisture in shipment, storage, handling, and installation.
- B. Do not deliver materials to building until "wet work" such as concrete, plaster and drywall have been completed and cured to a condition of equilibrium and surrounding air has maximum moisture content of 40 percent.
- C. Provide permanent heat, light, and ventilation prior to installation.
- D. Room Temperature: Maintain room temperature of a minimum of 65 degrees F and a maximum of 80 degrees F. (18 degrees C) for period of 7 days prior to delivery of materials, during installation and after installation.
- E. Conditioning: Limit flooring average moisture content to 8% or less at time of delivery to site. Deliver in unopened bundles and store in a dry place with adequate air circulation. Place wood floor and underlayment material in the room or spaces to be floored; open sealed packages and crib stack material to permit natural adjustment of moisture content and temperature for a minimum of seven (7) days in advance of the start of installation.
- F. Replacement: In the event of damage during installation, immediately make all repairs and replacements necessary to the approval of the Architect.

1.6 GUARANTEE

- A. Upon acceptance, provide a written 5-year guarantee in accordance with Section 017700, Project Close-Out, unconditionally guaranteeing wood flooring against deficiencies in workmanship and products, including but not limited to, buckling, delaminating, and failure of attachment to substrate.

PART 2 - PRODUCTS

2.1 WOOD FLOORING

- A. Manufacturer: Aacer Flooring, LLC (Peshtigo WI; 715-582-1181; 877-582-1181); Armstrong/Bruce (Lancaster, PA; 866-243-2726); Junckers Hardwood (New York, NY; 800 878-9663)
- B. Flooring Type: Wood strip, 2-1/4" wide x 25/32" x random length; MFMA Northern hard maple; unfinished; mixed grain, second and better grade.
- C. Milling Standard: NWFA, side matched, double end grooved.

2.2 ACCESSORIES

- A. Underlayment: Plywood APA EXT A-C, 3/4 inch thick.
- B. Sub-floor Filler: Premix latex requiring water only to produce cementitious paste.
- C. Vapor Barrier: 4 mil, minimum, clear polyethylene film, or approved.
- D. Wood Flooring Mastic: Water resistant type, as approved by flooring manufacturer.
- E. Perimeter strip: Solid maple as detailed to match color and grain of flooring.
- F. Finish: Waterborne polyurethane clear finish; satin.
 1. "Traffic Naturale" by Bona US (Englewood, CO; 800-872-5515)
 2. "Ultra Fast-Drying Polyurethane for Floors" by Minwax (Cleveland, OH; 800-523-9299)
 3. Approved alternate.
- G. Fasteners:
 1. Underlayment Fasteners: Powder driven type, of suitable length for anchoring underlayment to lightweight concrete substrate.
 2. Flooring Fasteners: Blind nails, 1-3/4 inch length, as recommended by the flooring manufacturer.

SECTION 096429 - WOOD STRIP AND PLANK FLOORING

H. Angle Divider Strip: Anodized aluminum to profiles recommended by Architect.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Prior to starting work, carefully inspect installed work of other trades and verify that such work is complete to the point where work of this Section may properly commence.
- B. Notify the Architect in writing of conditions detrimental to the proper and timely completion of the work.
- C. Do not begin work until all unsatisfactory conditions are resolved. Beginning work constitutes acceptance of site conditions and responsibility for defective installation caused by prior observable conditions.
- D. Moisture Testing of Concrete Slabs:
 - 1. Perform calcium chloride tests to determine the vapor emission rate from the concrete slab. Notify the Architect if tests results show a vapor emission rate which exceeds 3 lbs per 1000 sq. ft. in a 24 hour period.
 - 2. Perform a minimum of 3 tests for the first 1000 square feet, and one additional test for each additional 1000 square feet or fraction thereof. Perform no fewer than 2 tests for each separate area to receive flooring.
 - 3. Test kits are available from VAPRECISION 800-449-6194.

3.2 PREPARATION

- A. Substrates shall be sound, dry, smooth, level, clean; and free of cracks, voids, ridges, foreign materials and substances.
- B. Use latex filler to patch cracks, small holes, and for minor leveling. Ensure floor surface is smooth and flat to plus or minus 1/8 inch/10 feet.
- C. Power vacuum the substrates immediately preceding installation.

3.3 CONDITIONING

- A. Condition wood flooring and underlayment as specified in Delivery, Storage and Handling paragraph.

3.4 INSTALLATION

- A. Install and finish all wood flooring in accordance with NWFA standards. Comply with necessary requirements for commercial use.
- B. Vapor Barrier: Install polyethylene film vapor barrier over slab area to receive wood flooring. Overlap sides and ends 4 to 6 inches; where wood base is indicated, allow enough material at floor edges to extend under base. Comply with manufacturer's instructions for installation of proprietary vapor barrier materials.
- C. Underlayment:
 - 1. Accurately cut and loose lay plywood underlayment over vapor barrier. Lay with long dimension of plywood parallel to long dimension of flooring field, end joints staggered. Leave 1/4 inch to 1/2 inch gap between panels; leave 3/8 inch gap at casework and at line of adjoining tile edge; leave 3/4 inch gap at walls.]
 - 2. When all underlayment panels are in place, fasten to concrete slab with powder actuated fasteners. Fasten center of underlayment panel first, then work towards edges. Space fasteners uniformly over the sheet, using a minimum of 12 fasteners.
- D. Flooring Installation:
 - 1. Install finish flooring with adhesive at concrete substrate and nails at wood substrate; in strict compliance with manufacturer's instructions.
 - 2. Pattern: Lay flooring in with strips parallel to length of room areas. Lay flooring symmetrical about room center line. Fit neatly to vertical interruptions.
 - 3. Tongue and groove match or spline side to end joints.

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4. Expansion Space: Allow approximately 3/4" expansion space under base at walls; allow 1/8 inch expansion space between screeds and wood flooring field.
5. Provide divider strips at centerline of door openings and where flooring terminates with resilient tile or unfinished floor areas.

E. Special Requirements for Adhesive Installation:

1. Apply adhesive to prepared sub-floor in accordance with manufacturer's instructions.
2. Ensure full adhesive contact for permanent bond to substrate.
3. Within one hour of laying, roll work thoroughly in both directions with 150 lb (68 kg) roller.

3.5 FINISHING

- A. Remove excess adhesive from floor surface as work progresses.
- B. Sanding: Machine sand flooring to smooth even finish with no evidence of sander marks. Sand to remove offsets, non-level conditions, and factory sanding marks. Take precautions to contain dust from sanding. Power vacuum clean. Allow no traffic on floor until finishing is complete, or, cover sanded floor with protective paper if there are to be delays in finishing.
- C. Finish: Apply 2 coats of finish in accordance with manufacturer's instructions.
- D. Sealant for transitions is specified in Section 079200.

3.6 PROTECTION

- A. Provide and maintain as required, protection of finished hardwood flooring during remainder of construction period to prevent damage or deterioration to flooring and finish prior to time of final acceptance.

END OF SECTION

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SECTION 096500 - RESILIENT FLOORING**

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Resilient tile flooring.
 - 2. Resilient base.
- B. Related Sections:
 - 1. 030013 - Concrete: Substrate
 - 2. 061000 – Rough Carpentry: Substrate.
 - 3. 096429 - Wood Strip and Plank Flooring
- C. Drawings, the provisions of the Agreement, the General Conditions, and Division 1 specification sections apply to all work of this Section.
- D. Substitutions: Substitute products will be considered only under the terms and conditions of Section 016000.

1.2 REFERENCES

- A. American Society for Testing and Materials (ASTM):
 - 1. D5116 - Guide for Small-Scale Environmental Chamber Determination of Organic Emissions from Indoor Materials/Products.
 - 2. F710 - Preparing Concrete Floors to Receive Resilient Flooring.
 - 3. F1066 – Standard Specification for Vinyl Composition Floor Tile.
 - 4. F1861 - Standard Specification for Resilient Wall Base.
 - 5. F1869 - Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride.
 - 6. F2169 - Standard Specification for Resilient Stair Treads

1.3 SUBMITTALS

- A. Make submittals in accordance Section 013300.
- B. Product Data:
 - 1. Resilient flooring.
 - 2. Resilient base.
 - 3. Accessories.
- C. Shop drawings: Indicate floor pattern, color of various materials, and location of floor accessories.
- D. Samples:
 - 1. Each type and color of resilient flooring material including stair treads; not less than 8"x10" in size.
 - 2. Each type and color of resilient base scheduled; not less than 12 inches in length.
 - 3. Submit samples, not less than 12 inches in length, of each type of transition strip required for the work.

1.4 QUALITY ASSURANCE

- A. Qualifications of Installers:
 - 1. Use only skilled and experienced resilient flooring installers for preparation of substrate and installation of resilient flooring.
 - 2. Helpers and apprentices used for such work shall be under full and constant supervision at all times by thoroughly skilled resilient flooring installers.
- B. All interior primers, adhesives, coatings and sealants shall comply with the most recent version of Rule 1168 of the South Coast Air Quality Management District.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. In accordance with Section 016000.

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1.6 ENVIRONMENTAL REQUIREMENTS

- A. Maintain minimum 70 degrees F air temperature at flooring installation area for three days prior to, during, and for 24 hours after installation.
- B. Store flooring materials in area of application. Allow three days for material to reach equal temperature as area.

1.7 EXTRA STOCK

- A. Deliver 5 percent of each color and pattern of floor material required for project, for maintenance use.
- B. Clearly identify each box or roll.

PART 2 - PRODUCTS

2.1 RESILIENT FLOORING

- A. Resilient Tile Flooring: Conform to ASTM F1066, and as scheduled on the drawings.

2.2 RESILIENT BASE

- A. Manufacturer: One of the following, subject to Architect's approval of color:
 - 1. Roppe Rubber Corp.
 - 2. Burke Flooring Products / Burke Industries.
 - 3. Allstate Rubber Corp.
- B. Resilient Base: ASTM F1861, Type TS, 100 percent vulcanized rubber; 1/8 inch thick; roll stock; coved and straight base as specified; 4 inch height, unless otherwise indicated on the Drawings.

2.3 ACCESSORIES

- A. Subfloor Filler: Portland cement based latex filler, mixed with water to produce a self leveling underlayment, or cementitious paste, as appropriate to project requirements.
- B. Adhesives:
 - 1. Types recommended by resilient flooring and base manufacturers for specific application.
 - 2. Adhesives shall meet the requirements of the Southern California South Coast Air Quality Management District (SCAQMD) Rule 1168. (maximum VOC content of 50 grams/liter for floor covering and resilient base adhesives; 60 grams/liter for rubber flooring adhesives).
- C. Transition Strips: Vinyl; color as selected by the Architect from manufacturer's standard.
- D. All other materials not specifically described, but required for a complete and proper installation of resilient flooring, shall be only as recommended by the manufacturer of the material to which it is applied and shall be subject to the approval of the Architect.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine site conditions and verify that the work of this Section may properly commence. Notify the Architect in writing of unsatisfactory conditions.
- B. Moisture Testing of Concrete Slabs:
 - 1. Test at all concrete slabs indicated to receive resilient flooring, to determine the vapor emission rate.
 - 2. Perform tests in accordance with ASTM F1869.
 - 3. Notify the Architect if tests results show a vapor emission rate which exceeds 3 lbs per 1000 sf in a 24 hour period.
 - 4. Test kits are available from VAPRECISION 800-449-6194.
- C. Do not begin installation until all unsatisfactory conditions are resolved. Beginning work constitutes acceptance of site conditions and responsibility for defective installation caused by prior observable conditions.

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3.2 PREPARATION

- A. Prepare floors in accordance with ASTM F710. Install subfloor filler to fill low spots, cracks, construction joints, holes and other defects, and as required to adjust level to meet adjacent finishes. Feather to maximum slope of 1/8 inch in 1 foot; float to smooth, flat, hard surface. Prohibit traffic over filler.

3.3 FLOORING INSTALLATION

- A. Install all resilient flooring where scheduled in accordance with the manufacturer's recommendations.
- B. Unless indicated otherwise, install resilient flooring with joints and seams parallel to building lines.
- C. Terminate resilient flooring at centerline of door at door openings where adjacent floor finish is dissimilar, and where no threshold is indicated.
- D. Install edge strips at unprotected or exposed edges where flooring terminates.
- E. Scribe flooring to walls, columns, cabinets, floor outlets and other appurtenances to produce tight joints.
- F. Clean substrate. Spread cement evenly in quantity recommended by manufacturer to ensure adhesion over entire area of installation. Spread only enough adhesive to permit installation of flooring before initial set.
- G. Set flooring in place, press with heavy roller to ensure full adhesion.
- H. Continue flooring through areas to receive moveable type partitions without interrupting floor pattern.
- I. Special Requirements for Resilient Tile:
 - 1. Open floor tile cartons, enough to cover each area, and mix tile to ensure shade variations do not occur within any one area.
 - 2. Unless indicated otherwise, lay tiles parallel to building lines to produce symmetrical tile pattern.
 - 3. Install with minimum tile width 1/2 full size at room or area perimeter.
 - 4. Arrange to grid pattern with all joints aligned, with pattern grain parallel for all units and parallel to the length of the room.
- J. Seal joint between flooring and adjacent materials at restrooms, bathrooms, kitchens, and other moist areas with clear silicone sealant.

3.4 BASE INSTALLATION

- A. Adhesive install base materials in accordance with the manufacturer's recommendations.
- B. Install base in maximum practical lengths, with minimum number of joints in each run. Fit joints tight, vertical, and in accurate alignment.
- C. Install straight style base at all walls where resilient base is scheduled in areas with carpeted floors; install cove style base at walls scheduled for resilient base abutting hard surface and resilient floors.
- D. Install base to walls, columns, and to casework toe kicks in all areas where resilient base is scheduled, and where no other base finish is specifically noted or detailed.
- E. Coordinate installation of base with work of Section 096800.
- F. Fit joints tight and vertical, in accurate alignment. For straight runs greater than 48 inches, maintain minimum 18 inches between joints.
- G. Score back of base material with grooving tool, at all outside corners; maintain minimum leg length 18 inches where wall length permits. Mount base so that scored groove is accurately aligned with corner, and with base tightly adhered to wall at both sides of corner, with no visible gaps at top of base. Where cove base is formed around outside corners, stretch toe of cove for smooth transition around corner, with toe in uniform contact with the finish flooring.
- H. Miter or cope inside corners for accurate fit.
- I. Scribe and fit to door frames, stairs, and other obstructions.

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J. Install straight and level to maximum variation of plus or minus 1/8 inch over 10 feet.

3.5 PROTECTION

A. Unless recommended otherwise by the adhesive manufacturer, prohibit traffic from resilient flooring for 48 hours after installation.

3.6 CLEANING

A. Upon completion of the installation, immediately remove all surplus adhesive from adjacent surfaces.

B. As soon as possible after installation, and in accordance with the timing recommended by the manufacturers, clean the entire resilient flooring surface using the materials recommended for that purpose by the manufacturers of the materials being cleaned.

END OF SECTION

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SECTION 096813 – TILE CARPETING**

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Carpet tiles, glued down to concrete substrate.
- B. Related Section:
 - 1. 033013 - Concrete: Substrate; slab level tolerances.
- C. Drawings, the provisions of the Agreement, the General Conditions, and Division 1 specification sections apply to all work of this Section.

1.2 REFERENCES

- A. American Society for Testing & Materials (ASTM):
 - 1. D4263 - Standard Test Method for Indicating Moisture in Concrete by the Plastic Sheet Method.
 - 2. E648-78 - Test Method for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source.
- B. American Association of Textile Chemists & Colorists (AATCC): 134-1975 - Electrostatic Propensity of Carpet.

1.3 SUBMITTALS

- A. Make submittals in accordance with provisions of 013300 and 017700, as applicable.
- B. Product Data: Submit carpet manufacturer's material specification and installation instructions.
- C. Shop Drawings: Submit shop drawings illustrating layout arrangement, as well as transition details between carpet tiles and adjacent floor finishes.
- D. Maintenance Manuals: Furnish Owner with 2 printed copies of the manufacturer's recommendation for the care, cleaning, and maintenance of the carpet, including detailed instructions pertaining to the cleaning and removal of stains.

1.4 QUALITY ASSURANCE

- A. Installer Qualifications: Specialist in carpet installation employing only skilled craftsmen.
- B. Measurement Verification: Measurements shown on the Drawings are approximate. The Contractor's shall verify all dimensions and job site conditions; order sufficient carpet tiles to fully carpet areas as indicated and to fill overage requirements as specified.
- C. All carpet of the same type shall be from the same dye lot.
- D. All interior primers, adhesives, coatings and sealants shall comply with the most recent version of Rule 1168 of the South Coast Air Quality Management District.
- E. Pre-Installation Conference:
 - 1. Comply with provisions of Section 013119.
 - 2. Schedule a conference minimum of 10 calendar days prior to carpet tile installation.
 - 3. Review installation procedures, including locations and types of carpet tile, pattern arrangement, details at corners, and edge details.
 - 4. Require in attendance, the Contractor, Architect, Owner's Representative, carpet tile installer, and other parties affected by this work.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. In accordance with Section 016000.
- B. Delivery: Deliver carpet tiles to site in manufacturer's original packages clearly labeled with the manufacturer's name, brand, and related information. Upon receipt of materials, inspect for in transit damage and replace if necessary.
- C. Storage: Store in dry, clean, well ventilated space; protect from damage, soiling, fading and moisture.

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1.6 JOB CONDITIONS

- A. Work of this Section involves the installation of carpet tiles of various patterns, in an arrangement that is indicated on the Drawings. Coordinate with Architect prior to the start of Work.
- B. Precondition: Leave carpet tiles in area to be tiled for 48 hours prior to installation.
- C. Environmental Conditions: Maintain temperature in space in accordance with carpet or adhesive manufacturer's recommendations, but in no case less than 60 degrees F for 24 hours prior to, during, and after installation. Permit no traffic over newly laid adhesive applied carpet for a minimum of 24 hours after installation.

1.7 WARRANTY

- A. Installed carpeting shall be warranted by the manufacturer for a period of ten years from the date of purchase, against wear in excess of ten percent of face weight, backing delamination, edge ravel, and change in dimension, and cup, dome, or dish.

PART 2 - PRODUCTS

2.1 CARPET TILE

- A. Carpet Tile: As scheduled on the Drawings

2.2 RELATED MATERIALS

- A. Adhesive: W.W. Henry Company "Peach Glue", 3M Company "Blue Glue", or approved waterproof, non-flammable carpet adhesive as recommended by the carpet tile manufacturer for compatibility with carpet backing. Carpet adhesive shall be release type, allowing carpet tiles to be removed and replaced at a later date without damaging or removing the adjacent tile pieces.
- B. Installation Tabs: Manufacturer's recommended adhesive tab system for modular carpet.
- C. Floor Transition Strips: Unless otherwise indicated, floor transition strips at all transitions where carpet abuts concrete shall be stainless steel. Furnish Phillips head stainless steel countersunk screws and lead expansion anchors as necessary for anchorage.
- D. Latex Underlayment: White premix latex filler, mixed with water to produce cementitious paste. Dependable Chemical Co., Inc. "Dependable White Skimcoat Underlayment" with "Latex Liquid Additive" or W.W. Henry Company "#335 Underlayment Powder" with #336 Latex Liquid Additive."
- E. Miscellaneous: Furnish incidental and accessory materials, tools, and equipment required for installation of carpet.
- F. Protection Paper: Fortifiber Corporation "Seekure 892," or approved heavy, reinforced, non-staining kraft laminated paper.

PART 3 - EXECUTION

3.1 INSPECTION

- A. General: Do not start work under this Section until work of other trades, including painting, is substantially completed. Inspect surfaces to receive carpet; do not proceed with the work until unsatisfactory conditions have been corrected. Commencement of work constitutes acceptance of surfaces.
- B. Preparation: Surfaces shall be dry, firm, sound and free from oil, dirt, paint, joint compound, bond-breaking or curing compounds, or other foreign matter. Surfaces shall be free from unusual roughness and sharp edges such that the installed carpet will present an even, smooth appearance. Damp mop floors with warm water and vacuum after mopping.
- C. Cracks: Fill cracks, indents and other imperfections which could interfere with satisfactory installation with latex underlayment, mixed and applied in accordance with the manufacturer's printed

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instructions. Trowel to smooth surface. Allow underlayment to fully dry before applying carpet adhesive.

- D. Moisture Test: Prior to commencement of carpet tile installation, and unless otherwise recommended by the carpet adhesive manufacturer, conduct standard 16-hour moisture test on concrete floors in accordance with ASTM D4263, at each area to receive carpet tile.

3.2 TAB INSTALLATION

- A. Lay out area such that cut perimeter tiles will be not less than 8 inches wide. Commence laying tile in center of room or space and work toward perimeters; cut border tile after field tiles have been installed. Cut carpet evenly and accurately to fit neatly at walls, columns, and projections. Lay tile square with area of installation. Joints shall be tight and unnoticeable upon completion.
- B. Place a tab under each edge of carpet tile at the corners leaving $\frac{3}{4}$ of the tab exposed.
- C. Carefully slide the 2nd tile in place then firmly press the tile into the tab.
- D. Continue with the 3rd tile creating a stair step or pyramid pattern, starting at the center point. Check to ensure tiles are properly aligned at edges during the installation.
- E. Place tabs under the edges of the 2nd and 3rd tile.
- F. Continue with the stair step method until the entire area is completed.
- G. Fit the tiles together by sliding them together, being careful not to trap face yarns between or under the edges of the tile.
- H. All carpet tiles shall be rolled with a 75 lb. or 100 lb. roller.
- I. All cutting of carpet for telephone and electrical outlets shall be the responsibility of the carpet installer.
- J. Install floor transition strips at terminations where required. Secure strips to substrate with specified anchors, spaced 6" o.c., maximum.
- K. Terminate tile carpeting at center line of door at door openings where adjacent floor finish is dissimilar and no threshold is indicated.

3.3 ADHESIVE INSTALLATION

- A. Floor adhesive shall be applied in accordance with adhesive manufacturer's recommendations using a roller to ensure 100 percent contact.
- B. Installation: Place all carpet tiles in accordance with manufacturer's recommended procedures. Carpet tiles shall be adhesively applied to concrete slab. All carpet tile shall be oriented in the same direction and shall lay completely flat.
- C. Lay out area such that cut perimeter tiles will be not less than 8 inches wide. Commence laying tile in center of room or space and work toward perimeters; cut border tile after field tiles have been installed. Cut carpet evenly and accurately to fit neatly at walls, columns, and projections. Lay tile square with area of installation. Joints shall be tight and unnoticeable upon completion.
- D. All cutting of carpet for telephone and electrical outlets shall be the responsibility of the carpet installer.
- E. Carpet tile installation shall be rolled and rerolled on the day following installation to assure complete transfer of adhesive.
- F. Install floor transition strips at terminations where required. Secure strips to substrate with specified anchors, spaced 6" o.c., maximum.

3.4 CLEANING AND PROTECTION

- A. Cleaning: Remove all spillage and adhesive from the face of the installed carpet immediately. Use recommended cleaning materials. On completion of installation, the entire carpet area shall be cleaned with an upright beater-type vacuum cleaner.

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- B. All defective and damaged carpet tiles, improperly cut tiles, and carpet tiles on which there are stains which cannot be completely removed to the satisfaction of the Architect or Owner, shall be replaced with new. The entire installation shall be left clean and free from imperfections.
- C. Protection: Following cleaning and vacuuming, protect the carpeting from soiling and damage until final acceptance. In areas where painting or other wet work is to be performed subsequent to carpeting installation, protection shall be accomplished using specified protection paper. Lap edges of paper 6 inches and secure with non-staining tape. The covering shall be kept in repair and damaged portions replaced during the construction period.

END OF SECTION

SECTION 097233 – PLASTIC LAMINATE WALL COVERINGS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Plastic laminate sheet adhered directly to the wall.
- B. Related Section:
 - 1. 092900 - Gypsum Board: Substrate.
- C. Drawings, the provisions of the Agreement, the General Conditions, and Division 1 specification sections apply to all work of this Section.
- D. Substitutions: Substitutions will be considered only under the terms and conditions of Section 016000.

1.2 SUBMITTALS

- A. Make submittals in accordance with Section 013300.
- B. Product Literature: Adhesive.
- C. Samples:
 - 1. Three 8"x10" samples of each type of plastic laminate to be used.
 - 2. Cap moldings.

1.3 QUALITY ASSURANCE

- A. All interior primers, adhesives, coatings and sealants shall comply with the most recent version of Rule 1168 of the South Coast Air Quality Management District.

1.4 DELIVERY, STORAGE AND HANDLING

- A. Delivery: Deliver laminate sheets flat in protective cartons.
- B. Storage: Store laminate sheets flat in a dry location. Acclimate to design temperature a minimum of 48 hours prior to installation.

1.5 ENVIRONMENTAL CONDITIONS

- A. Maintain temperature and humidity in accordance with the adhesive manufacturer's recommendations.
- B. Maintain adequate ventilation and conditions to prevent combustion of adhesive fumes.

PART 2 - PRODUCTS

2.1 HIGH PRESSURE LAMINATED PLASTIC

- A. .050 thick; general purpose grade; color and finish as noted on the Drawings.
- B. Cap Moldings: Aluminum; standard color as selected by the Architect.
- C. Adhesive: Contact bond adhesive.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Prior to starting work, carefully inspect installed work of other trades and verify that such work is complete to the point where work of this Section may properly commence. Notify the Architect in writing of conditions detrimental to the proper and timely completion of the work.
- B. Do not begin installation until all unsatisfactory conditions are resolved. Beginning work constitutes acceptance of site conditions and responsibility for defective installation caused by prior observable conditions.

SECTION 097233 – PLASTIC LAMINATE WALL COVERINGS

3.2 CUTTING AND FITTING

- A. Apply temporary strippable coating to plastic laminate to protect finished surfaces during cutting and fitting operations.
- B. Cut plastic laminate to the shapes indicated.
- C. File all edges smooth from face to back without chipping or causing craze lines.
- D. Cut holes accurately to conform to the penetration, and oversized by 1/16" all around.
- E. Allow 1/16 inch expansion space between panels and at all surrounding construction. Exposed edges shall be smooth and self-trimming.
- F. Dry fit sheets into place before applying adhesive.

3.3 INSTALLATION OF LAMINATE

- A. Clean substrate and laminate surfaces.
- B. Apply adhesive in accordance with the manufacturer's printed application instructions.
- C. Contact bond each sheet to the substrate by progressing from one side to the other to expel all air.
- D. Apply pressure uniformly to the face of the sheet by using a wide hard rubber roller.
- E. Install cap molding at all exposed edges.

3.4 CLEANING

- A. Remove temporary strippable coatings after other work is completed in areas of plastic laminate surfacing.
- B. Remove all adhesive from face of laminate using solvent recommended by manufacturer of adhesive.
- C. Prevent solvent from penetrating glue line at edges and joints of laminate.
- D. Clean laminate surfaces in accordance with recommendations of laminate manufacturer.

END OF SECTION

**101 WEST 33RD STREET
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SECTION 098100 - ACOUSTIC INSULATION**

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Acoustical insulation in walls and ceilings.
 - 2. Acoustical sealant.
- B. Related Sections:
 - 1. 061000 – Rough Carpentry: Framing.
 - 2. 072100 - Thermal Insulation: Thermal batt and blanket insulation.
 - 3. 078400 - Firestopping: Fire rated penetration seals.
 - 4. 092900 – Gyp[sum Board
- C. Drawings, the provisions of the Agreement, the General Conditions, and Division 1 specification sections apply to all work of this Section.
- D. Substitutions: Substitute products will be considered only under the terms and conditions of Section 016000.

1.2 REFERENCES

- A. American Society for Testing and Materials (ASTM):
 - 1. C665 - Mineral Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing.
 - 2. E84 - Test Method for Surface Burning Characteristics of Building Materials.

1.3 SUBMITTALS

- A. Make submittals in accordance with Section 013300.

1.4 QUALITY ASSURANCE

- A. All interior primers, adhesives, coatings and sealants shall comply with the most recent version of Rule 1168 of the South Coast Air Quality Management District.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Batt Acoustical Insulation: ASTM C665, Type I; unfaced glass fiber batts, blankets, or rolls; minimum fire hazard classification rating of 25/50 per ASTM E84; 2-3/4 inches thick for installation in 2-1/2 inch stud cavities; 3-5/8 to 4 inches thick for installation in 3-5/8 inch stud cavities; 6-1/2 inches thick for installation in 6 inch stud cavities; widths to friction-fit between studs, where indicated for installation in stud walls; formaldehyde free.
- B. Acoustical Sealant: Non-hardening, low-shrinkage; for use in conjunction with gypsum board; similar to USG "Sheetrock Brand Acoustical Sealant," Tremco "Acoustical Sealant 30CTG," Quiet Solution (Sunnyvale CA; ; 408-541-8000) "QuietSeal QS-350," or approved; maximum VOC content 250g/L.
- C. Accessories: Furnish other accessories such as fasteners and retainers, not specifically described, but required for a complete installation.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Prior to starting work, carefully inspect installed work of other trades and verify that such work is complete to the point where work of this Section may properly commence.
- B. Notify the Architect in writing of conditions detrimental to the proper and timely completion of the work.

SECTION 098100 - ACOUSTIC INSULATION

- C. Do not begin work until all unsatisfactory conditions are resolved. Beginning work constitutes acceptance of site conditions and responsibility for defective installation caused by prior observable conditions.

3.2 PREPARATION

- A. Verify that adjacent materials are secure, properly spaced, dry, and ready to receive installation.
- B. Verify that mechanical and electrical services within spaces to insulated have been installed and tested.
- C. Furnish acoustical insulation to hollow metal installer for installation in hollow metal frames in acoustical partitions.

3.3 INSTALLATION

- A. Install insulation in stud cavities in accordance with manufacturer's instructions, and as indicated. Coordinate with other trades as necessary to complete acoustical barriers at wall penetrations.
- B. Install insulation without gaps or voids.
- C. Trim insulation neatly to fit spaces. Use insulation materials free of damage.
- D. Acoustical Insulation at Ceilings:
 - 1. Lay acoustical insulation over each acoustically insulated partition which terminates at the ceiling. Insulation shall extend a minimum of 48" each side of the centerline of the acoustical partition
 - 2. Acoustical insulation batts shall be tightly butted.
 - 3. Cut and fit neatly around mechanical and sprinkler drops.
 - 4. Fill spaces between wall batts (at top plate line) and ceiling batts to ensure complete sound closure.
 - 5. Omit insulation over tops of recessed fluorescent light fixtures; and within 2 inches of recessed incandescent fixtures.
- E. Sealant:
 - 1. Install acoustical sealant continuously around perimeter of all acoustically insulated partitions; one continuous bead at each side of framing member interface with substrate.
 - 2. Where double layer of gypsum board is indicated, provide sealant at butt joints between boards , including corner joints, and additional bead at perimeter of base layer prior to installation of finish layer.
 - 3. Except for penetrations in fire rated construction to receive firestopping or fire rated construction joint assemblies, seal all penetrations through acoustical assemblies, including cutouts for lighting fixtures, cabinets, pipes and plumbing, HVAC ducts, and electrical boxes.

END OF SECTION

SECTION 099000 – PAINTING AND COATING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Site applied paint coatings, except as otherwise noted.
- B. Related Sections:
 - 1. 051200 - Structural Steel: Preprimed metal surfaces.
 - 2. 055000 - Metal Fabrications: Pre-primed metal surfaces.
 - 3. 064000 - Architectural Woodwork: Shop finished materials.
 - 4. 081400 - Wood Doors: Prefinished doors.
- C. Drawings, the provisions of the Agreement, the General Conditions, and Division 1 specification sections apply to all work of this Section.
- D. Substitutions: Substitute products will be considered only under the terms and conditions of Section 016000.

1.2 REFERENCES

- A. Master Painters Institute (MPI): Architectural Painting Specification Manual
 - 1. MPI Approved Product List.
 - 2. MPI Architectural Painting Specification Manual.
- B. Steel Structures Painting Council (SSPC).

1.3 DEFINITIONS:

- A. Sheen: Degree of luster of the dried paint film. Where terms such as "gloss," "semi-gloss," "low-gloss," "matte," "satin," "eggshell," or "flat," are used, it shall be subject to the Architect's interpretation, regardless of manufacturer's nomenclature for any particular sheen level. The Architect reserves the right to select from any of manufacturer's published sheen levels for each paint system, if sheen of initial paint finish sample is not approved.

1.4 SUBMITTALS

- A. Make submittals in accordance with Section 013300.
- B. Materials List: Organize to indicate painting systems to be used with each substrate. Include proposed dft for each coat and manufacturer's product data as required to verify compliance with the specified requirements. Do not include MSDS sheets.
- C. Samples:
 - 1. Paint Samples:
 - a. Submit three samples of each paint finish on an 8"x10" card. Reference manufacturer, type of paint, color, sheen, substrate, and application.
 - b. Furnish additional samples until all paint finishes are approved.
 - 2. Transparent Finish Samples:
 - a. Submit samples of each wood species and transparent finish combination.
 - b. If, in the judgment of the Contractor, the wood species or finish method selected indicate that color variations may be inevitable, submit samples in sets of 3 or more illustrating the possible range of these variations.
 - c. When approved, the finished sample or sets shall become the standard for approval.
- D. Contract Closeout Submittals: Record Paint Samples: In accordance with Section 017700, submit three 8"x10" samples of each paint and color used, indicating paint manufacturer and formula number; bind in identical sets. Deliver to on site location as directed.

1.5 QUALITY ASSURANCE

- A. Applicator: Company specializing in commercial painting and finishing with a minimum of three years documented experience.

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- B. Environmental Requirements for Solvent Based Paints: Comply with the Environmental Protection Agency (EPA) requirements for volatile solvents content limitations, as applicable to each classification of coating.
- C. All interior primers, adhesives, coatings and sealants shall comply with the most recent version of Rule 1168 of the South Coast Air Quality Management District.
- D. Visual Standards: Each distinct area of the finished work shall be free of variations in color and sheen, orange peel, runs, sags, blistering, checking, cracking, scratches, dust, dirt, bugs, and other contaminants.
- E. Surface Preparation: Conform to MPI Architectural Painting Specifications Manual, SSPC, manufacturer's instructions, and work as needed to prepare substrates to be free of conditions that may impair adhesion and uniformity.
 - 1. Remove bond breakers, dust, foreign matter, and surface irregularities.
 - 2. Prepare to prevent bleed-through of substrate material.
- F. Paint System Application: Where indicated, conform to MPI Architectural Painting Specifications Manual, and manufacturer's instructions.
 - 1. Paint Grade: Conform to MPI, Premium Grade, except as otherwise specified.
 - a. Minimum one primer coat and two finish coats, except as otherwise specified.
 - b. Additional coats as necessary to cover with no holidays or other surface imperfections.
 - 2. Dry film thickness (DFT) and wet film thickness (WFT), as instructed by manufacturer.

1.6 QUALIFICATIONS

- A. Manufacturer:
 - 1. Products listed by current MPI Approved Products List for each product, except as otherwise specified.
 - 2. Employ full time locally available technical field representative, testing equipment, and services as necessary to perform inspections and to determine compliance with manufacturer's instructions and provisions of Contract Documents.
- B. Applicator:
 - 1. Able to document minimum 10 years continuous experience in commercial quality projects of similar type and scope.
 - 2. Member of Painting and Decorating Contractors of America (PDCA), Master Painters Institute (MPI), or accepted by Architect.
 - 3. Employ qualified journeymen painters with apprentices under direction of qualified journeymen, conforming to trade regulations.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. In accordance with Section 016000.
- B. Delivery: Deliver paint materials to the jobsite in sealed, original, labeled containers, each bearing manufacturer's name, type of paint, brand name, color designation, and instructions for mixing and/or reducing.
- C. Storage: Store paint materials at a minimum ambient temperature of 45 degrees F. in a well ventilated area.
- D. Toxic, acidic, and combustible materials: Take all necessary precautionary safety measures as recommended by the material manufacturers and governing regulations.
- E. Place cotton waste, cloths, and material which may constitute a fire hazard in closed metal containers and daily remove from the site.

1.8 SITE CONDITIONS

- A. Weather Conditions:
 - 1. Do no exterior work on unprotected surfaces when raining, or other moisture is present or expected, or before applied paints can dry or attain proper cure.

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2. Allow wetted surfaces to dry and attain temperatures and condition specified hereinafter before proceeding with previously started work.
- B. Temperature:
1. Do no painting work when surface and air temperatures are below 40 degrees F or below those temperatures recommended by the manufacturer for the material type used.
 2. Minimum temperatures for latex finishes: 45 degrees F for interior work and 50 degrees F. for exterior work, unless approved otherwise.
- C. Lighting: Maintain a lighting level of minimum 50 foot-candles on the surfaces to be painted or finished.
- D. Ventilation: Provide adequate continuous ventilation.

1.9 MAINTENANCE

- A. Furnish overage of paint materials equal to 5 percent minimum of quantity of each paint and transparent finish system component, color and sheen required for the work, but furnish not more than five full one gallon cans, nor less than two full one quart cans, of each type. Overruns in excess of five gallons may be furnished to the Owner at the Contractor's option. Overage shall be taken from the batch mix furnished for the work. Overage shall be furnished in completely filled, properly labeled, sealed cans.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Unless specified otherwise, furnish manufacturer's highest grade coating systems by one of the following manufacturers:
1. Benjamin Moore Paint Company.
 2. The Sherwin-Williams Company.
 3. Pittsburgh Paints.
 4. Pratt & Lambert.
 5. ICI Paints North America.

2.2 PAINT SYSTEMS

- A. Materials not specifically noted and otherwise required for the work, such as linseed oil, shellac, thinners and the like shall be of a quality not less than that required by manufacturers of the finish materials used in the work.
- B. Products for each general purpose shall be compatible. Each system shall be products of one manufacturer where ever possible.
- C. Exterior Ferrous (Non-Galvanized) Metal - Zinc Rich/Epoxy/Polyurethane System: One of the following
1. Manufacturer: Tnemec Company Inc. (Kansas City, MO; 816-483-3400).
 - a. Zinc Primer: Tnemec Series "394 PerimePrime;" single component moisture cured primer; minimum 62 percent solids by volume.
 - b. Epoxy Primer: "Hi-Build Epoxoline II" Series N69.
 - c. Polyurethane Finish Coats: Series 1075 "Endura-Shield II"; Acrylic Polyurethane Enamel; semi-gloss or satin sheen.
 2. Manufacturer: Carboline Company (St. Louis, MO; 314-644-1000; 800-848-4645).
 - a. inc-Rich Primer: "Carbozinc 859"; organic zinc-rich epoxy primer; minimum 80 percent by weight metallic zinc in the cured film.
 - b. Epoxy Primer: "Carboline 888 "
 - c. Polyurethane Finish Coats: Carboline 133 HB; semi-gloss or satin sheen.
 3. Manufacturer: Ameron Protective Coatings (Brea, CA; 714-529-1951).
 - a. Zinc-Rich Primer: "68HS"; organic zinc-rich epoxy primer; minimum 80 percent by weight metallic zinc in the cured film.
 - b. Epoxy Primer: "Amercoat 385."
 - c. Polyurethane Finish Coats: Amercoat 450SA"; semi-gloss or satin sheen.

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4. Manufacturer: ICI Devco.
 - a. Zinc-Rich Primer: "Catha-Coat 302H"; "reinforced" inorganic zinc-rich epoxy primer; minimum 56 percent by weight metallic zinc in the cured film.
 - b. Epoxy Primer: "Devran 224HS," "Bar-Rust 231," or "Bar-Rust 233H."
 - c. Polyurethane Finish Coats: "Devthane 378"; semi-gloss or satin sheen.
- D. Exterior Acrylic Paint System – Fiber Cement Substrate: One of the following:
 1. Manufacturer: Sherwin-Williams
 - a. Touch-Up Primer: Zinsser "Bulls Eye 1-2-3 Plus Primer"
 - b. Finish: "A-100 Exterior Latex Flat."
 2. Manufacturer: Benjamin Moore Paint Company
 - a. Touch-Up Primer: Zinsser "Bulls Eye 1-2-3 Plus Primer"
 - b. Finish: Ultra Spec Exterior Flat Finish (N447)
 3. Manufacturer: ICI Dulux
 - a. Touch-Up Primer: Zinsser "Bulls Eye 1-2-3 Plus Primer"
 - b. Finish: "#2200 Dulux Professional Exterior 100% Acrylic Flat Finish
- E. Exterior Wood Stain: Cabots semi-transparent water based acrylic stain.
- F. Interior Latex Paint System – Gypsum Board Substrate: One of the following.
 1. Manufacturer: Benjamin Moore Paint Company
 - a. Primer: Eco-Spec Interior Latex Primer Sealer (231)
 - b. Finish: Eco-Spec Latex Eggshell Enamel (223)
 2. Manufacturer: Sherwin-Williams
 - a. Primer: Harmony Primer 0 VOC B11W900
 - b. Finish: Harmony 0 VOC B9 Series; Eggshell sheen
- G. Interior Trim Systems – Metal Substrate: One of the following.
 1. Manufacturer: Benjamin Moore Paint Company
 - a. Metal Primer: (DTM waterborne). IMC Acrylic Semi-Gloss DTM Coating (M29)
 - b. Finish: (Semi-Gloss) Impervex 309.
 2. Manufacturer: Sherwin-Williams
 - a. Metal Primer: DTM Acrylic Primer B66-W1; 2.5 – 5.0 mils dft 138 g/l VOC
 - b. Finish: Pro Classic Waterborne Semi-gloss dft 157 g/l VOC
 3. Manufacturer: Ameron International.
 - a. Metal Primer: "Amercoat 148," Waterborne Acrylic Primer.
 - b. Finish: "Amercoat 220," Waterborne Acrylic Topcoat; semigloss.
- H. Interior Trim Systems – Opaque Finish Wood Substrate: One of the following.
 1. Manufacturer: Benjamin Moore Paint Company
 - a. Primer: Fresh Start All Purpose 100% Acrylic Primer (023)
 - b. Finish: (Semi-Gloss) Impervex 309.
 2. Manufacturer: ICI Dulux
 - a. Primer: LM9116 "Lifemaster 2000" primer."
 - b. Finish: LM9200 "Lifemaster 2000" S.G.
 3. Manufacturer: Sherwin-Williams
 - a. Primer: Harmony Primer 0 VOC B11W900
 - b. Finish: Pro Classic Waterborne Semi-gloss dft 157 g/l VOC

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Prior to starting work, inspect installed work of other trades and verify that such work is complete to the point where work of this Section may properly commence. Perform adhesion tests on factory primed items. Notify the Architect in writing of conditions detrimental to the proper and timely completion of the work.

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- B. Do not begin installation until all unsatisfactory conditions are resolved. Beginning work constitutes acceptance of site conditions and responsibility for defective installation caused by prior observable conditions.

3.2 MOISTURE CHECK

- A. Check for excess moisture using an electronic moisture meter. Do not paint materials with moisture levels which would impair the bonding of finish coatings.

3.3 PROTECTION

- A. Adequately protect surfaces not to be painted, from spills, drips, over painting, and other damage caused by this work. Include surfaces within the paint storage and preparation areas.
- B. Hardware and Miscellaneous Items:
 - 1. Remove electrical outlet and switch plates, mechanical diffusers, escutcheons, surface hardware, and fittings prior to starting work.
 - 2. Store, clean and reinstall these items upon completion of work in each area. Use materials and techniques as necessary to prevent damage to finishes on such items.

3.4 SURFACE PREPARATION

- A. Prepare surfaces by removing dirt, dust, grease, oil, moisture, and other contaminants which would impair finish adhesion.
- B. Ferrous Metal Shop Primed under other Sections: Solvent clean to remove oil and grease. Remove loose rust, and blistered and peeling paint to bare metal by scraping, sanding, and wire brushing in accordance with SSPC-SP2 and SP3. Immediately retouch damaged or abraded surfaces with compatible primer. Lightly sand all shop prime painted surfaces to receive paint finish.
- C. Galvanized Ferrous Metal:
 - 1. Undamaged Surfaces: Solvent clean in accordance with SSPC-SP1; abrade surfaces with metal preparation pad.
 - 2. Damaged Surfaces: Remove loose rust to bare metal by scraping, sanding, and wire brushing in accordance with SSPC-SP2 and SP3. Touch up damaged surfaces with zinc rich primer.
- D. Unprimed Ferrous Metal:
 - 1. Solvent clean in accordance with SSPC SP-1.
 - 2. Commercial blast per SSPC SP6.
- E. Wood - Opaque paint finish:
 - 1. Spot coat knots, pitch streaks, and sappy sections with sealer.
 - 2. Fill all nail holes and cracks. Sand filler smooth and level with wood surface.
- F. Wood - Transparent and Semi-Transparent Finishes: Fill all exposed finish nail holes and cracks with matching color filler after prime coat is applied. Sand filler smooth and level with adjacent surfaces.
- G. Fiber Cement Siding: Remove all dirt, dust, grease, oil, loose particles, laitance, foreign material, and peeling or defective coatings. Allow the surface to dry thoroughly. If the surface is new, test it for pH, if the pH is higher than 9, prime with specified Primer.
- H. Concrete - Interior:
 - 1. Remove all contaminants by washing and wire brushing. Sandblast if necessary.
 - 2. Remove all traces of efflorescence, oil, dirt, curing compounds, bond breakers, form release agents, and other materials which would inhibit paint bond.

3.5 GENERAL APPLICATION REQUIREMENTS

- A. Unless specified or indicated otherwise, follow paint manufacturer's label directions for general application procedures and coverage rates.
- B. Do not apply finishes on surfaces that are not sufficiently dry. Make sure each coat of finish is dry and hard before a following coat is applied unless the manufacturer's directions state otherwise.
- C. Tint filler to match stain when clear finishes are specified; work filler well into grain and, before it has set, working perpendicularly to the grain, wipe the excess from the surface.

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- D. Opaque Finishes:
 - 1. Apply number of coats scheduled for each application, except that additional finish coats shall be applied as necessary for complete hiding of substrate colors.
 - 2. Apply primer coats untinted. Where more than one coat of paint is required, tint each succeeding coat up to the final coat similar in tint, but slightly lighter in value (shade).
 - 3. Sand lightly between coats if necessary to achieve required finish; sand between all coats applied to wood substrates.
- E. Rollers for application and backrolling of latex paints shall have a nap of 3/8 inch or less.
- F. Where roller texture is scheduled for application to gypsum board surfaces, finish coats may be roller-applied, or spray applied and backrolled at Contractor's option.
- G. Factory Primed Surfaces: Apply scheduled finish system, less primer coat, except as necessary for patching damage to factory prime coating.
- H. Except where scheduled or indicated otherwise, the intent is to paint all new rooms and areas. Existing areas which have not been remodeled or do not have patched surfaces are not to be repainted. Where existing surfaces have been remodeled or patched the entire room is to be repainted, including the associated access panels, electrical panels, hollow metal doors and frames (both sides), and similar elements within the room.
- I. Epoxy/Urethane Systems: Brush roller or spray apply, as recommended by the manufacturer for the condition.

3.6 CLEANUP

- A. As the work proceeds and on completion of the work, promptly remove all sealers, primers, paints and finishes where spilled, splashed or splattered in a manner not to damage the surface from which it is removed.
- B. Remove masking.
- C. Clean, or replace with new, all lamps and electrical fixtures damaged by overspray; replace with new identical components all lighting fixture louvers and reflectors damaged by overspray.

3.7 COLOR SCHEDULE

- A. Provide paint colors to match those indicated on the drawings. Where a paint color is listed from a specific manufacturer, paint products from other approved manufacturers may be used, provided the color exactly matches the specified color, and the paint system meets the specified requirements. Where no paint color is indicated, provide color and sheen as selected by the Architect.

3.8 EXTERIOR PAINTING AND COATING SCHEDULE

- A. Galvanized and Pre-Primed Steel - Epoxy/Urethane System:
 - 1. System: Epoxy/Polyurethane System:
 - a. Epoxy Primer: Tnemec "Hi-Build Epoxoline II" Series N69, Carboline 888, Ameron "Amercoat 385," or approved; similar to MPI #101.
 - b. Polyurethane Finish Coats: Tnemec Series 73 "Endura-Shield" Acrylic Polyurethane Enamel, Carboline "133 HB," Ameron "Amercoat 450SA," or approved; semi-gloss or satin sheen.
 - 2. Sheen: Semi-gloss, unless indicated otherwise.
 - 3. Application: Exterior galvanized or mill-primed metal surfaces.
 - 4. Retouch welds and damaged galvanized coatings with zinc primer; apply one coat epoxy primer, and two urethane finish coats in accordance with the manufacturer's recommendations. Verify compatibility with shop applied primer. Apply epoxy primer over all shop applied primers, unless the specified primer was shop applied. Brush, roller or spray apply as recommended by manufacturer for conditions.
- B. Exterior Wood – Transparent Stained Finish:
 - 1. Satin Spar Marine Varnish: McCloskey "Man-O-War Spar Varnish 7505."

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2. Includes wood soffits and other wood indicated to receive clear stained finish.
3. System: Five coats; first and second coats exterior wood stain, third coat exterior spar varnish reduced 25 percent, fourth and fifth coats exterior varnish (full strength) as follows:
 - a. Backprime all wood with 1 coat satin spar varnish.
 - b. Sand unfinished exposed face with 150 grit paper.
 - c. Apply one coat exterior wood stain, match Architect's sample.
 - d. Sand while wet, using 400 grit wet or dry paper.
 - e. Apply second coat exterior wood stain, wipe.
 - f. Apply first coat, satin spar varnish, reduced 25 percent.
 - g. Sand as required.
 - h. Apply second coat, unthinned, satin spar varnish.
 - i. Sand as required.
 - j. Apply third coat, unthinned, satin spar varnish.

C. Exterior Wood – Semi-Transparent Stained Finish: Includes existing wood fascia, cedar fencing, and other exterior wood indicated to receive semi-transparent stain: solvent-Based only, Semi-Transparent Stain:

1. Two Coats: Solvent-Based Semi-Transparent Stain.

D. Exterior Cementitious Composition Board (Fiber Cement Board):

1. Acrylic Primer: Factory primed, refer to Section 074646. Where not primed or primer is missing or damaged, provide (1) coat specified primer.
2. Two Coat Exterior Acrylic-Latex, Satin or Flat.

3.9 INTERIOR PAINTING AND COATING SCHEDULE

A. Gypsum Board - Latex System:

1. System: Three coats - first coat latex primer sealer (untinted), second and third coat latex paint.
2. Sheen: Roller texture, satin sheen, except provide flat sheen at light coves, ceilings, skylight areas, clerestory areas, interior fascias, and other light sensitive surfaces. Verify locations of each sheen with Architect before proceeding with work.
3. Application:
 - a. Use on all exposed gypsum board surfaces, including the exposed portions of wall surfaces between adjacent fabric covered panels and mirrors.
 - b. Provide prime coat only behind permanently mounted mechanically anchored mirrors, fabric panels, and similar elements.
 - c. Do not apply primer or paint coatings to surfaces to receive adhesively mounted mirrors or tile.

B. Wood - Opaque Finish Latex System:

1. System: Three coats; first coat latex wood primer, and second and third coat latex enamel.
2. Sheen: Semi-gloss, unless indicated otherwise.
3. Application: Use on wood surfaces only where field-applied opaque paint coatings are indicated.

C. Ferrous Metal and Galvanized - Acrylic System:

1. System: Three coats; first coat acrylic DTM primer; second and third coats latex finish. The primer may be omitted at factory primed surfaces, except as necessary to recoat damaged or abraded preprimed surfaces.
2. Sheen: Semi-gloss, unless indicated otherwise.
3. Application: Interior ferrous metal surfaces including hollow steel metal doors and frames, pipe steel hand and guard rails, overhead doors and frames, access doors and panels, and fire extinguisher cabinets.

3.10 EXPOSED MECHANICAL AND ELECTRICAL WORK IN FINISHED SPACES

A. Ferrous Metal Ducts, Exposed Piping, and Conduit (Except Stainless Steel): As specified this Section for ferrous metal - paint finish.

B. Exposed Registers, Grilles, Exposed Conduit, Electric Cabinets, and Unfinished Portions of Cast-iron Fixtures Exposed to View:

1. Type 1:

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- a. Acrylic Primer: MPI #17, Bonding Primer (water based). Gray color. Red primer not accepted.
 - b. Two Coat Acrylic Semi-Gloss Finish: MPI #54, Interior Latex, Semi-Gloss, MPI Gloss Level 5.
 - c. Typical, except as indicated otherwise; color to match adjacent wall.
2. Type 2:
- a. Epoxy Primer: Tnemec "Hi-Build Epoxoline II" Series N69.
 - b. Polyurethane Finish Coat: Tnemec "Enduralume 1077"; 3.0 mils dft;
 - c. Jet diffusers and large wall returns: color: "03MT Silver" semigloss.

END OF SECTION

**101 WEST 33RD STREET
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SECTION 102813 – TOILET ACCESSORIES**

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Toilet Accessories
- B. Drawings, the provisions of the Agreement, the General Conditions, and Division 1 specification sections apply to all work of this Section.

1.2 REFERENCES

- A. American National Standards Institute (ANSI): A117.1 - Accessible and Usable Building Facilities (2003)

1.3 SUBMITTALS

- A. Make submittals in accordance with Section 013300.
- B. Product Data:
 - 1. Submit for each toilet accessory.
 - 2. Include complete blocking and mounting instructions for fold down baby counters.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Do not deliver accessories to site until rooms in which they are to be installed are ready to receive them.
- B. Pack accessories individually in a manner to protect accessory and its finish.

1.5 COORDINATION

- A. Verify locations and dimensions shown with field conditions prior to installation.
- B. Avoid damaging the work or finish of other trades; repair damage, or replace damaged items, as directed, at no additional cost to the Owner.

1.6 WARRANTY

- A. Submit in accordance with Section 017700.
- B. Folding Baby Counters: Include manufacturer's standard \$1,000,000 liability policy, written to cover all units installed under this contract.

1.7 MAINTENANCE

- A. Furnish 4 cases of 500 sanitary bed liners for fold down baby counters.

PART 2 - PRODUCTS

2.1 GENERAL

- A. Toilet Accessories: Furnished by Owner for installation by Contractor.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Prior to starting work, carefully inspect installed work of other trades and verify that such work is complete to the point where work of this Section may properly commence. Notify the Architect in writing of conditions detrimental to the proper and timely completion of the work.
- B. Do not begin installation until all unsatisfactory conditions are resolved. Beginning work constitutes acceptance of site conditions and responsibility for defective installation caused by prior observable conditions.

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3.2 PREPARATION

- A. Coordinate with Section 061000 for preparation of reinforcements and blocking to receive wall-mounted accessories.
- B. Deliver inserts and rough-in frames to jobsite at appropriate time for building-in. Coordinate installation.
- C. Furnish templates and rough-in measurements as required to other trades.
- D. Protect adjacent or adjoining finished surfaces from damage during installation of work of this Section.
- E. Verify exact location of accessories.

3.3 INSTALLATION

- A. Install fixtures, accessories and items in accordance with manufacturer's instructions, and as indicated on the Drawings.
- B. Install true, plumb, and level, securely and rigidly anchored to substrate.
- C. Mount accessories in locations and elevations as indicated on the Drawings. Where elevation is not indicated, mount at the minimum elevation recommended by the manufacturer.

END OF SECTION

**101 WEST 33RD STREET
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SECTION 113100 - RESIDENTIAL APPLIANCES**

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Residential appliances.
- B. Related Sections:
 - 1. 064000 – Architectural Woodwork: Adjacent countertop construction.
 - 2. 123200 - Manufactured Wood Casework
- C. Drawings, the provisions of the Agreement, the General Conditions, and Division 1 specification sections apply to all work of this Section.

1.2 SUBMITTALS

- A. Make submittals in accordance with Section 013300.
- B. Product Data: Submit complete product data for each piece of equipment.

1.3 QUALITY ASSURANCE

- A. All appliances shall meet EPA Energy Star certification.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. In accordance with Section 016000.

PART 2 - PRODUCTS

2.1 GENERAL

- A. Residential appliances are furnished by the Owner for installation by the Contractor.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Prior to starting work, carefully inspect installed work of other trades and verify that such work is complete to the point where work of this Section may properly commence. Notify the Architect in writing of conditions detrimental to the proper and timely completion of the work.
- B. Do not begin installation until all unsatisfactory conditions are resolved. Beginning work constitutes acceptance of site conditions and responsibility for defective installation caused by prior observable conditions.

3.2 INSTALLATION

- A. Install appliances in accordance with the manufacturer's recommendations in the locations indicated.
- B. Coordinate with the work of Sections 064000 and 123200, as applicable.

END OF SECTION

**101 WEST 33RD STREET
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SECTION 123200 - MANUFACTURED WOOD CASEWORK**

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Factory finished wood-faced cabinets of stock design.
- B. Related Sections:
 - 1. 064000 – Architectural Woodwork: Countertops; other requirements for casework not identified in this Section.
- C. Drawings, the provisions of the Agreement, the General Conditions, and Division 1 specification sections apply to all work of this Section.
- D. Substitutions: Substitute products will be considered only under the terms and conditions of Section 016000.

1.2 REFERENCES

- A. Architectural Woodwork Institute (AWI): Architectural Woodwork Quality Standards, Guide Specifications, and Quality Certification Program; current edition.
- B. International Building Code (IBC)

1.3 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.
- C. Samples: For cabinet finishes and for each type of top material indicated.

1.4 QUALITY ASSURANCE

- A. Quality Standard: Unless otherwise indicated, comply with requirements for modular cabinets in AWI's "Architectural Woodwork Quality Standards" or in KCMA A161.1.
 - 1. Provide AWI Quality Certification Program certificate indicating that manufactured wood casework complies with requirements.
 - 2. Cabinets shall be manufactured to "Custom" standards.
- B. Mock-Ups:
 - 1. Provide mock-up in accordance with Section 014500.
 - 2. Fabricate one lower casework unit to receive transparent finish and one unit to receive opaque finish; complete with countertop, hardware and all electrical and mechanical components; and finished as specified. Select unit as approved by the Architect.
 - 3. Components approved by Architect may be incorporated into the Work.

1.5 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of manufactured wood casework that fail in materials or workmanship within specified warranty period.
 - 1. Failures include, but are not limited to, the following:
 - a. Delamination of components or other failures of glue bond.
 - b. Warping of components.
 - c. Failure of operating hardware.
 - d. Deterioration of finishes.
 - 2. Warranty Period: Five years from date of Substantial Completion.

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SECTION 123200 - MANUFACTURED WOOD CASEWORK

PART 2 - PRODUCTS

2.1 CASEWORK

- A. Manufacturers:
 - 1. Texas Cabinetry (Humble, TX; 281-608-7534)
 - 2. Nelson Cabinetry (Irving, TX; 832-998-6598)
 - 3. Prime Cabinetry (Kennesaw, GA; 844-540-1885)
- B. Basis of Design: Unless indicated otherwise
 - 1. Cabinet Style: Frameless.
 - 2. Flush overlay design, shaker style with inset panels on cabinet doors and drawer faces.
 - 3. Door and Drawer Fronts: Solid-wood stiles and rails, 3/4 inch thick, with 1/4-inch- thick, veneer-faced plywood center panels.

2.2 MATERIALS AND COMPONENTS

- A. Low-Emitting Materials: Fabricate manufactured wood casework, including countertops, with adhesives and composite wood products containing no urea formaldehyde.
- B. Low-Emitting Materials: Adhesives and composite wood products shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."
- C. Solid Lumber: 3/4 inch thick beech or yellow birch.
- D. Panel Products: 5/8" veneer plywood with select yellow birch face. Exposed edges are capped with PVC edging applied through a hot melt bonding process. No urea formaldehyde.
- E. Drawers: 1/2" plywood sides, back, bottom and sub-front. Use rubber or felt bumpers on drawers to minimize noise transfer.
- F. Door And Drawer Fronts: 90 degree side wrap 3/4" thick industrial strength, furniture grade high density wood, with factory-applied high-performance paint coating, all surfaces.
- G. Kitchen Countertop, Back And End Splash: Plastic laminate, laminated to 45-pound industrial grade particle board 3/4" thick. 1-1/2" countertop front edge with 180 degree wrap, exposed edges and exposed sides.
- H. Hardware:
 - 1. Hinges: 1/2" overlay semi-concealed self-closing hinges.
 - 2. Pulls: Richelieu 205, satin nickel finish.
 - 3. Drawer guides: Epoxy coated side-mount drawer guides.
- I. Finish:
 - 1. Low VOC environmentally benevolent finish to meet or exceed Green Guard Emission Standards.
 - 2. Multi-step opaque coating finishing process, hand-sealed, primed and top-coated with pre-catalyzed opaque finish.

2.3 FABRICATION

- A. All parts are machined for accuracy and interlocking strength. All joints are glued and stapled. All exterior parts of the cabinet shall have nails and staples set and holes filled.
- B. Verify all dimension and cabinet unit sizes prior to fabrication. Use no filler panels more than 3" in width.
- C. Cut to fit unless specified to be shop-fabricated or shop-cut to exact size. Where woodwork abuts other finished work, scribe and cut for accurate fit. Before making cutouts, drill pilot holes at comers.

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- D. Cut openings for equipment to be installed. Comply with equipment manufacturers requirements, but provide internal corners of 1/8" minimum radius. Smooth saw cut and ease edges. Provide plastic grommets at holes.
- E. Seal cut edges of counter at openings for sinks and other "wet" equipment, using waterproofing compound recommended by plastic manufacturer and compatible with laminating adhesive.
- F. Distribute defects allowed in the quality grade specified to the best overall advantage, when installing job assembled woodwork items.

2.4 COUNTERTOPS

- A. Custom countertops are specified in Section 064000.

PART 3 - EXECUTION

3.1 CASEWORK INSTALLATION

- A. Install level, plumb, and true; shim as required, using concealed shims. Where manufactured wood casework abuts other finished work, apply filler strips and scribe for accurate fit, with fasteners concealed where practical.
- B. Base Cabinets: Set cabinets straight, level, and plumb. Adjust subtops within 1/16 inch of a single plane. Fasten cabinets to masonry or framing, wood blocking, or reinforcements in walls and partitions with fasteners spaced 24 inches o.c. Bolt adjacent cabinets together with joints flush, tight, and uniform. Align similar adjoining doors and drawers to a tolerance of 1/16 inch.
- C. Wall Cabinets: Hang cabinets straight, level, and plumb. Adjust fronts and bottoms within 1/16 inch of a single plane. Fasten to hanging strips, masonry, or framing, blocking, or reinforcements in walls or partitions. Align similar adjoining doors to a tolerance of 1/16 inch.
- D. Adjust casework and hardware so doors and drawers operate smoothly without warp or bind. Lubricate operating hardware as recommended by manufacturer.

3.2 INSTALLATION OF TOPS

- A. Field Jointing: Where possible make in the same manner as shop jointing, using dowels, splines, adhesives, and fasteners recommended by manufacturer. Prepare edges to be joined in shop so Project-site processing of top and edge surfaces is not required. Locate field joints where shown on Shop Drawings.
 - 1. Secure field joints in plastic-laminate countertops with concealed clamping devices located within 6 inches of front and back edges and at intervals not exceeding 24 inches. Tighten according to manufacturer's written instructions to exert a constant, heavy-clamping pressure at joints.
- B. Secure tops to cabinets with Z- or L-type fasteners or equivalent, using two or more fasteners at each front, end, and back.
- C. Provide backsplashes at backs and sides of counters that abut gypsum board surfaces. Do not provide backsplashes at sides of counters that abut casework or other woodwork panels.
- D. Secure backsplashes and end splashes to walls with adhesive.
- E. Seal junctures of tops, splashes, and walls with mildew-resistant silicone sealant or another permanently elastic sealing compound recommended by countertop material manufacturer.

3.3 CLEANING AND PROTECTING

- A. Clean finished surfaces, touch up as required, and remove or refinish damaged or soiled areas to match original factory finish, as approved by Architect.

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- B. Protection: Provide 6-mil plastic or other suitable water-resistant covering over countertop surfaces. Tape to underside of countertop at a minimum of 48 inches o.c. Remove protection at Substantial Completion.

END OF SECTION 123200