

Oregon Manufacturing Innovation Center R&D
33701 Charles T Parker Way,
Scappoose OR 97056

Additive Manufacturing Innovation Center

PROJECT MANUAL
Volume 2 of 3

Sept. 27 2021

Project #1503

AKAAN Architecture + Design LLC
101 St Helens, OR, 97051
503-366-3050

PROJECT

OMIC R&D Additive Manufacturing Center
33701 Charles T. Parker Way
Scappoose, OR 97056

OWNER

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Date: September 27, 2021

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Architect's Project Number: 1503

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This Project Manual has been organized under the format of the Construction Specifications Institute (CSI). Section numbers are listed merely for identification and they may not be consecutive. The Contractor shall check the contents of this Manual against this Table of Contents to assure that this volume is complete.

This manual consists of three (3) volumes.

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Exhibit D	Supplemental General Conditions
Exhibit E	Performance Bond

A102-2017 Standard Form of Agreement between Owner and Contractor – DRAFT

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1.1 WORK COVERED BY CONTRACT DOCUMENTS

- A. Work of this Contract comprises the construction of a new Manufacturing and Research Building as follows:
1. Stories: 1
 2. Approximate Floor Area: 30,000 sq. ft.
 3. Location: Scappoose, Oregon

1.2 RELATED REQUIREMENTS SPECIFIED IN OTHER SECTIONS

- A. Base Bid & Alternate Bids: Section 01-20-00

1.3 OWNER-CONTRACTOR AGREEMENT

- A. See Contract Conditions

1.4 WORK BY OTHERS UNDER SEPARATE CONTRACT

- A. Concurrently with Work of this Contract:
1. Security System Work
 2. Cable TV System Work
 3. Internet Technology (IT) Work

1.5 WORK PERFORMED BY OWNER

- A. Concurrently with Work of this Contract:
1. Products furnished by Owner for installation by Contractor (OF CI):
 - a. Equipment where indicated on Drawings as OF CI
 - b. Any other Work identified on Drawings as OF CI
 1. Installation Procedures: See Section 11-00-50
 2. Products furnished and installed by Owner (OFOI):
 - a. Telephones
 - b. Furniture
 - c. Equipment not included in this Contract
 - d. Any other Work identified on Drawings as OFOI

(Cont.)

1.6 OWNER'S USE OF PREMISES

- A. Owner will occupy adjacent Premises during construction period for the conduct of Owner's normal operations.
- B. Cooperate with Owner during construction operations to minimize conflicts and to facilitate Owner's use of facilities.
- C. Schedule Work to maintain Owner's continuous operations. Include in Contract Sum sufficient funds as may be required for any "overtime" work caused by this requirement. No additional payment to Contractor will be authorized because of Contractor's failure to anticipate required "overtime" work.

1.7 CONTRACTOR'S USE OF PREMISES

- A. Contractor shall limit Contractor's use of the Premises for work and storage to allow for:
 - 1. Work by other Contractors
 - 2. Owner's occupancy of adjacent Premises
- B. Coordinate use of Premises as directed by Architect.

1.8 OVERTIME WORK

- A. To permit arrangements for inspections, the Contractor shall notify the Architect at least 48 hours in advance of any overtime work, including nights, weekends, and holidays. Do no overtime work, requiring inspections, without notifying Architect.
- B. The Contractor shall reimburse the Architect and Owner for any expenses incurred by them because of Contractor's overtime work.

1.9 WORK WITHIN PUBLIC RIGHT-OF-WAY

- A. The Contractor shall obtain any required Right-Of-Way Work Permits, pay Permit Fees, and comply with governing Regulatory Agency requirements, including providing any additional Insurance required by Public Authority.

(Cont.)

1.10 PRODUCTS FURNISHED BY OWNER & INSTALLED BY CONTRACTOR

A. Owner's Responsibilities:

1. In compliance with approved Construction Progress Schedule:
 - a. Arrange for and deliver necessary Shop Drawings, Product Data, and Samples to Contractor.
 - b. Arrange and pay for Product delivery to Site.
 - c. Deliver Supplier's Bill of Materials to Contractor.
 - d. Inspect Product deliveries jointly with Contractor.
 - e. Submit claims for transportation damage.
 - f. Arrange for replacement of damaged, defective, missing, or otherwise unacceptable Items.
 - g. Arrange for required Manufacturer's inspections, service, bonds, and warranties.

B. Contractor's Responsibilities:

1. Designate in Construction Schedule delivery date for each Product.
2. Review Shop Drawings, Product Data, and Samples. Notify Architect about any discrepancies or problems anticipated in Product installation or use.
3. Receive Product and unload at Project Site.
4. Promptly inspect Product jointly with Owner. Record any damage, shortage, or defect.
5. Protect Products against damage and discoloration.
6. Assemble, install, connect, adjust, and finish Products as stipulated in respective Specification Sections.
7. Lawfully dispose of Shipping Containers and Packaging Waste.
8. Clean, repair and touch-up, or replace when directed, Products which have been soiled, discolored, or damaged by Contractor.

1.11 PROTECTING EXISTING UTILITIES

- A. Drawings indicate approximate location of any known, concealed Utility Lines. Before starting work, Contractor shall determine exact location of any of these Lines that could be damaged by Contract Work.
- B. Contractor shall assume that other unknown Utility Lines do exist, and Contractor shall proceed with caution when working in areas that could conceal unknown Utilities. If such Utility Lines are encountered, immediately request disposition instructions from Architect.
- C. If Utility Lines are damaged: Remove, repair, or replace Lines as directed. Additional compensation and/or extensions of time, if any, caused by removing, repairing, or replacing Lines will be determined in accordance with General Conditions.

1.12 USE OF OWNER'S PROPERTY & EQUIPMENT

- A. Do not use Owner's Property, Facilities, or Equipment such as Tools, Ladders, Furniture, Janitorial Equipment, Supplies, etc.

1.13 OFFENSIVE ODORS

- A. Do not permit Vehicle Exhaust Fumes to accumulate, such as Fumes caused by idling trucks or other combustion engines.
- B. Do not use offensive smelling Compounds. When such Odors are unavoidable, exhaust Odors directly to out-of-doors.

1.14 DISTURBING NEIGHBORS

- A. Do not disturb Neighbors or park Vehicles, Material, or Equipment in front of Neighboring Properties without Neighbors' prior-approval.

1.15 INAPPROPRIATE BEHAVIOR

- A. Use of offensive language or gestures (including display of suggestive photos and calendars); sexual or racial harassment; insubordination to Owner's Personnel, their Design Consultants, or their Guests will not be tolerated. Those who behave inappropriately will be banned from Project Site, and no increase in Contract Sum or extension of Contract Time will be authorized for such banning.

1.16 FIRE-HAZARDOUS WORK

- A. Perform no Welding, Torch-cutting, Soldering, Brazing, or other hazardous Work which could activate existing Fire or Smoke Detectors without the following:
 - 1. Give Owner's Representative 48 hours advance notice of such Work.
 - 2. Maintain adequate Fire Extinguishing Equipment close at hand during such Work.
 - 3. Maintain Firewatchers required by governing Regulatory Agency requirements.

1.17 SHUTDOWN OF EXISTING UTILITIES

- A. Do not interrupt existing Utility Services without advance written approval of Owner's Representative.
- B. Minimum Advance Notice:
 - 1. For Minor Interruptions: 3 working days
 - 2. For Major Interruptions impacting entire Building, Wing, or Floor: 10 working days

(Cont.)

1.18 RESPONSE TIME FOR CORRECTING NON-COMPLYING WORK

- A. Contractor's response to notice of Work to be Corrected shall be accomplished during the following time periods:
1. Emergency Work:
 - a. Failures or deficiencies constituting immediate danger or health hazard to People or likely damage to Property.
 - b. Response Time: 24 hours per day, 7 days per week and within 2 hours following receipt of Notice
 2. Urgent Work:
 - a. Failures or deficiencies which do not immediately endanger Persons or Property, but would soon do so if not corrected.
 - b. Response Time: Between 7:00 AM & 4:00 PM on Mondays through Fridays and within 3 calendar days following receipt of Notice.
 3. Routine Work:
 - a. Failures or deficiencies of less importance that do not meet criteria of Emergency or Urgent Work.
 - b. Response Time: Between 7:00 AM & 4:00 PM on Mondays through Fridays and within 5 calendar days following receipt of Notice.

1.19 SPECIFICATIONS DIVISION, SECTION, & PARAGRAPH NUMBERING

- A. Numbering or lettering of Divisions, Sections, and Paragraphs in the Specifications Are merely for identification and may not be consecutive.
- B.. The Divisions and Sections included are listed in the Table of Contents. The Contractor shall verify that the Contractor's copies of the Project Manual are complete.

1.20 SPECIFICATIONS WORDING

- A. The Specifications are of an abbreviated or streamlined type and they frequently include incomplete sentences. Words and phrases such as "shall", "shall be", "Contractor shall"; and similar mandatory phrases shall be supplied by inference in same manner as they are in a note on the Drawings. The Contractor shall provide all Items listed and perform all operations required, in accordance with the General Conditions, if and as modified in these Specifications.

(Cont.)

1.21 SPECIFICATIONS DEFINITIONS

- A. **"Directed"**, **"Requested"**, **"Approved"**, **"Authorized"**, **"Selected"**, **"Required"**, and **"Permitted"** mean directed by the Architect, requested by the Architect, etc.
- B. **"Furnish"** means to supply and deliver to the Project Site, ready for unloading, unpacking, assembly, installation, and similar operations.
- C. **"Indicated"** means references to graphic representations; notes or schedules on the Drawings, or other paragraphs or schedules in the Specifications; and similar requirements in the Contract Documents. Terms such as "shown", "noted", "scheduled", and "specified" are used to help the User locate the Reference.
- D. **"Install"** means operations at the Project Site including actual unloading, temporary storing, unpacking, assembling, erecting, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations.
- E. **"OFOI" (Owner Furnished & Owner Installed)** means Product in question will be furnished and installed by the Owner. The Contractor shall verify all requirements affecting Contractor's Work.
- F. **"OFCI" (Owner Furnished & Contractor Installed)** means Product in question will be furnished by the Owner, and installed by the Contractor. The Contractor shall verify all requirements affecting Contractor's Work.
- G. Where words **"or approved"** are used, the Architect is sole judge of quality and suitability of proposed substitution.
- H. **"Product"** includes Materials, Systems, and Equipment.
- I. **"Project Manual"** means a volume assembled for the Work which may include the Bidding Requirements, Sample Forms, Conditions of the Contract, Specifications, Detail Drawings, and Schedules.
- J. **"Project Site"** means space available to Contractor for performing Work activities, either exclusively or in conjunction with others performing other work as part of the Project.
- K. **"Provide"** means "furnish, install, and where appropriate connect ready for the intended use.
- L. **"Regulations"** mean laws, ordinances, statutes, and lawful orders issued by Authorities having jurisdiction, as well as rules, conventions, and agreements within the Construction Industry that control performance of the Work.

END OF SECTION

1.1 GENERAL

- A. Certain Work Components of this Project have not been designed, engineered, or detailed by the Architect or the Architect's Consultants, and the Components must be designed, engineered, fabricated, and built by the Contractor.
- B. Design-Build Components are defined as either or both of the following:
 - 1. Complete and operational Systems that perform their intended use.
 - 2. Structural Elements which will be subject to Lateral or Vertical Loads.
- C. The Contractor shall coordinate and assume (or assign to Subcontractor) complete responsibility for design, engineering, submittals, fabrication, transportation, and installation of this Work.
- D. Prior to starting Work, the Contractor shall submit all Design-Build documents to the governing Building Department for review and approval. Each Design-Build item may require a separate Permit and Fee, which shall be paid by the Contractor when so required.

1.2 DESIGN-BUILD COMPONENTS OF THE WORK

- A. Requiring Building Department review and approval:
 - 1. Metal Wall & Roof Panels: Section 07-41-00
 - 2. Phenolic Wall Panels: Section 07-43-00
 - 3. Firestopping: Section 07-84-00
 - 4. Aluminum Entrance & Window Wall Systems: Section 08-40-00
 - 5. Plastic Skylights: Section 08-62-00
 - 6. Translucent Sandwich Panels: Section 08-64-00
 - 7. Polycarbonate Plastic Skylights: Section 08-65-00
 - 8. Ceiling Suspension Systems: Section 09-10-00 & 09-50-00
 - 9. Factory-engineered Building: Section 13-12-10
 - 10. Fire Suppression Work: See Fire Suppression Specifications
 - 11. Other Design-Build Work specified elsewhere in Project Manual, if any.

1.3 DESIGN-BUILD DOCUMENT SUBMITTALS

- A. To Architect:
 - 1. Prior to submitting Design-Build Documents to Building Department, submit Documents for Architect's review and approval similar to Shop Drawing Submittal Requirements specified in Section 01-33-00.
- B. To Building Department:
 - 1. Submit after receiving Architect's approval.
 - 2. Comply with Building Department requirements.
 - 3. Include design criteria, design assumptions, structural calculations, fabrication and construction details, required clearances, and interface requirements.
 - 4. Affix Design Professional's seal of Oregon State License on all Submittals.
 - 5. Submittals shall be timely and complete so that time required for Building Department's review will not affect Construction Progress Schedule.

1.4 OWNER'S RESPONSIBILITIES

- A. The Owner will not pay for progress delays, additional Work, additional products, restocking, or reworking required by Contractor's failure to coordinate Design-Build Work with other Project Work.

END OF SECTION

1.1 RELATED REQUIREMENTS SPECIFIED IN OTHER SECTIONS

- A. Submission & Acceptance of Bids: See Procurement Requirements
- B. Owner-Contractor Agreement Form: See Contract Requirements
- C. Summary of Work: Section 01-11-00

1.2 BASE BID

- A. Includes all Work shown on Drawings or included in Specifications, excepting only that Work noted in the following Alternate Bids, and that Work specifically noted as excepted.

1.3 ALTERNATE BIDS

- A. Alternate Bids are identified by the Construction Manager / General Contractor (CMGC, P&C) by number and each describes basic changes to be incorporated into the Work, only when that Alternate is made part of the Work by specific provision in the Owner-Contractor Agreement.
- B. Referenced Specification Sections stipulate pertinent requirements for Products and methods to achieve the Work stipulated in the Alternate.
- C. Coordinate related Work and modify surrounding Work as required to integrate the Work of the Alternate, and to provide complete construction required by Contract Documents.
- D. **Alternate Bids: - See CMGC (P&C) Clarifications.**

END OF SECTION

1.1 RELATED REQUIREMENTS SPECIFIED IN OTHER SECTIONS

- A. Summary of Work: Section 01-11-00
- B. Project Meetings: Section 01-31-50
- C. Progress Schedules: Section 01-32-00
- D. Shop Drawings, Product Data, & Samples: Section 01-33-00
- E. Temporary Facilities: Section 01-50-00
- F. Cutting & Patching: Section 01-73-00
- G. Cleaning: Section 01-74-00
- H. Contract Closeout: Section 01-77-00

1.2 CONSTRUCTION ORGANIZATION & START-UP

- A. Establish on-site Lines of Authority and Communications including the following:
 - 1. Preconstruction Meeting and Progress Meetings as specified in Section 01-31-50.
 - 2. Establish procedures for Intra-project Communications including:
 - a. Submittals
 - b. Reports & Records
 - c. Recommendations
 - d. Coordination Drawings
 - e. Schedules
 - f. Resolution of Conflicts
 - 3. Contract Documents Interpretation:
 - a. Consult with Architect to obtain interpretation
 - b. Assist in resolution of questions or conflicts which may arise
 - c. Transmit written interpretations to Subcontractors and to other concerned parties
 - 4. Permits & Approvals:
 - a. Verify that Subcontractors have obtained required Permits and Inspections for Work and for Temporary Facilities.
 - 5. Control use of Site:
 - a. Supervise Field Engineering and Project Layout.
 - b. Allocate Field Office Space and Work and Storage Areas for use of each Subcontractor.

1.3 COORDINATING SUBCONTRACTORS' WORK

- A. Coordinate the Work of all Subcontractors and make certain that, where the Work of one Trade is dependent upon the Work of another Trade, the Work first installed is properly placed, installed, aligned, and finished as specified or required to properly receive subsequent Materials applied or attached thereto.
- B. Direct Subcontractors to correct defects in Substrates they install when Subcontractors of subsequent Materials have a reasonable and justifiable objection to such surfaces.
- C. Do not permit Subcontractors to apply or install Product over improperly installed or improperly finished Substrate that would result in an unsatisfactory or unacceptable finished Product.

1.4 COORDINATING WORK WITH OWNER'S WORK

- A. Coordinate, and make certain that, where Work of either party is dependent upon the other party, the Work first performed is properly placed, installed, aligned, and finished as required to permit the proper installation of the following Work.
- B. If the Owner's Work in any way interferes with the Contractor's Work, so notify the Owner sufficiently in advance so that the Owner has reasonable time to make necessary adjustments.
- C. If the Contractor's Work in any way interferes with the Owner's Work, so notify the Owner as soon as possible. If the Contractor's Work must be modified to accommodate the Owner's Work, the Contract Sum and/or the Contract Time will, when necessary, be adjusted by a Change Order.

1.5 COORDINATING WORK WITH OTHER CONTRACTORS' WORK

- A. Coordinate, and make certain that, where Work of either party is dependent upon the other party, the Work first performed is properly placed, installed, aligned, and finished as required to permit the proper installation of the following Work.
- B. If Other Contractors' Work in any way interferes with this Contractor's Work, so notify Owner's Representative sufficiently in advance so that the Owner has reasonable time to make necessary adjustments.
- C. If this Contractor's Work in any way interferes with Other Contractors' Work, so notify Owner's Representative as soon as possible. If this Contractor's Work must be modified to accommodate Other Contractors' Work, the Contract Sum and/or the Contract Time will, when necessary, be adjusted by a Change Order.

1.6 CLOSE-OUT DUTIES

- A. Equipment start-up:
 - 1. Comply with requirements specified in Section 01-75-00.
- B. At completion of Work of each Subcontract, conduct inspection to assure that:
 - 1. Work is acceptable.
 - 2. Specified cleaning has been accomplished.
 - 3. Temporary Facilities and Debris have been removed from Site.
- C. Substantial Completion:
 - 1. Conduct inspection and prepare list of Work to be completed or corrected.
 - 2. Assist Architect in inspection.
 - 3. Supervise correction and completion of Work as established in Architect's Inspection Reports.
- D. Final Completion:
 - 1. Assist Architect in inspection.
 - 2. Comply with requirements specified in Section 01-77-00.

END OF SECTION

1.1 GENERAL

- A. The following shall apply to this Contract:
1. In event that the Contractor or a Subcontractor, at any tier, determines that some portion of the Drawings, Specifications, or other Contract Document require clarification or interpretation, the Contractor shall submit a written Request for Interpretation (RFI) to the Architect.
 2. The RFI shall clearly and concisely set forth the issues for which the clarification or interpretation is sought, and why a response is needed. The RFI shall also set forth the Contractor's interpretation or understanding of the issues.
 3. The Contractor shall attest that prior to submitting a RFI from a Subcontractor, the General Contractor has reviewed the RFI for appropriateness and completeness and, if needed, obtained clarifications from the Subcontractor.
 4. The Architect will review each RFI, and determine whether or not the document qualifies as a Request for Interpretation as defined below. If the Architect determines that the document is not a legitimate RFI, it will be returned to the Contractor unreviewed as to content.
 5. The Architect will respond to RFI's within 5 working days of receipt from the Contractor, unless a longer time will be required to provide an adequate response. If a longer time is determined necessary, the Architect will, within 5 working days, notify the Contractor of the anticipated response time. An extension to the Contract Time will not be considered unless the Contractor submits a written request for extension to the Architect within 5 working days thereafter.
 6. Unless specifically noted to the contrary, RFI responses from the Architect will not alter requirements of the Contract Documents. If the Contractor believes that an Architect's response does affect the Contract Sum or Contract Time, the Contractor shall, within 5 working days, submit a written notice to the Architect, stating proposed changes and documenting the reasons for such changes. Failure to give such notice shall waive the Contractor's right to seek additions to the Contract Sum or extensions to the Contract Time under the Changes to the Work Article of the General Conditions.

(Cont.)

1.2 UNACCEPTABLE RFI CLAIMS

- A. The Owner will not authorize increases to the Contract Sum or extensions to the Contract Time caused by Contractor's additional field or office staffing, project delays, decreased labor productivity, etc. when such claims are caused by any or all of the following:
1. Project Communications:
 - a. Routine communications between the Owner, Architect, and Contractor, including correspondence, memos, field-reports, test-reports, telephone calls, faxed messages, E-mail, etc.
 2. Substitution Requests:
 - a. Requests by Contractor to substitute products or methods of construction.
 3. Shop Drawings & other Submittals:
 - a. Contractor prepared drawings, product data, samples, etc. submitted for Architect's review to ascertain that Contractor clearly understands Project design intent and Contract Document requirements.
 4. Value Engineering Requests:
 - a. Communications regarding Contractor-originated Value Engineering requests.
 5. Non-conforming Work:
 - a. Communications regarding Work that has not been performed in compliance with the Contract Documents.
 6. Finding Existing Information:
 - a. Directing Contractor where to locate requested information within Drawings, Specifications, or other Contract Documents.

1.3 REQUESTS

- A. Requests may be submitted only when Requestor cannot obtain interpretations or information through research, Contract Documents review, or other reasonable means.
- B. Requests for interpretations or information that is already contained or provided for in the Contract Documents may result in additional administrative costs, which shall be charged by the Owner to the Requestor.
- C. Requests shall include the following information:
1. Sequential Request Numbers
 2. Sender's & Receiver's names, firm names, and related addresses
 3. Request Issue Date
 4. Requested Reply Date
 5. Request Description
 6. References & Attachments
 7. Sender's Recommendations
 8. Space for Receiver's Response

END OF SECTION

1.1 GENERAL

- A. This Section establishes procedures with respect to the development, use, transmission, and exchange of Digital Data for this Project. If and where these provisions conflict with any provisions in the Owner-Contractor Agreement, the provisions in the Agreement shall prevail.

1.2 DEFINITIONS

- A. **Digital Data** means information, communications, drawings, specifications, or designs created or stored for the Project in digital form.
- B. **Confidential Information** means Digital Data containing confidential or business proprietary information that the transmitting party designates and clearly marks as “Confidential”.
- C. **Party** and **Parties** refer to the signing parties to the Agreement, and includes the Party’s officers, directors, employees, consultants, agents, or subcontractors.
- D. In addition any definition included in the Agreement, **Written** or **In Writing** means any written communication sent by digital transmission that permits the recipient to print or store the communication. Communications transmitted electronically as specified herein are presumed received. **Texted or Phone Messages** will be not considered acceptable Digital Transmission.
- E. **Project Participant** means any entity (or individual) providing services, work, equipment or materials on the Project and includes the Parties.

1.3 ACCURACY OF ARCHITECT’S DIGITALLY-TRANSMITTED DATA

- A. To the best of the Architect’s knowledge, belief, and understanding the transmitted information is accurate, however the Architect makes the Data available as a convenience to the Contractor, and the Architect does not guarantee the accuracy of the Drawings or the dimensions thereon. The Contractor shall verify the accuracy of the furnished information.

1.4 ADJUSTMENTS TO THE AGREEMENT

- A. If a Party believes that any requirements specified herein will result in a change in the Party’s scope of work or services warranting an adjustment in compensations, contract sum, schedule or contract time, the Party shall so notify the other Party. Failure to provide such notice shall result in a Party’s waiver of any claims for adjustment in compensation, contract sum, schedule, or contract time as a result of the established requirements.
- B. Upon such notice, the Parties shall discuss and negotiate revisions to these requirements or discuss and negotiate any adjustments in compensation, contract sum, schedule or contract time in accordance with the terms of the Agreement

DIGITAL DATA TRANSMISSION & MANAGEMENT

- C. Notice required under this Section shall be provided within 30 days of receipt of the award of the Contract.

1.5 DIGITAL DATA TRANSMISSION

- A. The transmission of Digital Data constitutes a warranty by the Transmitting Party to the Receiving Party that the Transmitting Party is the copyright owner of the Digital Data, or otherwise has permission to transmit the Digital Data for its use on the Project.
- B. If a Party transmits Confidential Digital Data, the transmission of such Confidential Digital Data constitutes a warranty to the Party receiving the Confidential Digital Data that the transmitting Party is authorized to transmit the Confidential Digital Data. If a Party receives Confidential Digital Data, the receiving Party shall keep the Confidential Digital Data confidential and shall not disclose it to any other person or entity except to (1) its employees, (2) those who need to know the content of the Confidential Information in order to perform services or construction solely and exclusively for the Project, or (3) its consultants and contractors whose contracts include similar restrictions on the use of Confidential Information.
- C. The Transmitting Party does not convey any ownership right in the Digital Data or in the software used to generate the Data. The Receiving Party may not use the Digital Data unless permission to do so is provided in the Agreement, other documents incorporated by reference in the Agreement, such as the General Conditions of the Contract for Construction, or in any separate license.
- D. Unless otherwise granted in a separate license, the Receiving Party's use, modification, or further transmission of the Digital Data, is specifically limited to the design and construction of the Project, and nothing contained in this Section conveys any other right to the use of the Digital Data for another purpose.
- E. To the fullest extent permitted by law, the Receiving Party agrees to make no claim or bring any action against the Transmitting Party that may arise out of the use of Digital Data.
- F. To the furthest extent permitted by law, the Receiving Party shall indemnify and defend the Transmitting Party from any and all claims arising from or related to the Receiving Party's modification to, or unlicensed use of, the Digital Data.

1.6 DIGITAL DATA MANAGEMENT

- A. If the Project Participants intend to utilize a centralized electronic management system on the Project, the Project Participants shall be responsible for managing and maintaining such systems. The Project Participants responsible for managing and maintaining the centralized electronic document management system shall facilitate the establishment of protocols for transmission, use, storage and archiving of the centralized Digital Data and assist the Project Participants in preparing Digital Data protocols. Upon agreement to, and documentation of the Digital Data protocols, the Project Participants shall manage and maintain the centralized electronic document management system consistent with the management protocols approved by the Project Participants.

END OF SECTION

1.1 GENERAL

- A. Pre-construction Meeting:
1. Owner's Representative will:
 - a. Schedule Meeting
 - b. Make physical arrangements for Meeting
 - c. Prepare Meeting Agenda
 - d. Preside at Meeting
 - e. Record, reproduce, and distribute copies of Minutes to:
 1. Meeting participants
 2. Parties affected by decisions made at Meeting
- B. Periodic Progress Meetings and specially called Meetings throughout the progress of the Work:
1. Contractor shall:
 - a. Prepare Meeting agenda.
 - b. Distribute each Meeting Notice at least 2 days in advance of Meeting.
 - c. Make physical arrangements for Meetings.
 - d. Preside at Meetings.
 - e. Record Meeting minutes, including significant proceedings and decisions.
 - f. Reproduce and distribute copies of Minutes within 3 days after each Meeting to each of the following:
 1. All Meeting participants
 2. All parties affected by decisions made at Meeting
 3. Architect
 4. Owner's Representative
 2. Representatives of Contractor, Subcontractors, and Suppliers attending Meetings shall be qualified and authorized to act on behalf of entity each represents.
 3. Architect, Architect's Professional Consultants, and Owner's Representative may attend Meetings to ascertain that Work is executed consistent with Contract Documents and Construction Schedules.

(Cont.)

1.2 PRE-CONSTRUCTION MEETING

- A. Schedule within 15 days after date of Notice to Proceed.
- B. Location: Central site, convenient for all parties, designated by Owner's Representative.
- C. Required Attendance:
 - 1. Owner's Representative
 - 2. Architect
 - 3. Contractor's Superintendent
 - 4. Major Subcontractors
 - 5. Others as appropriate
- D. Minimum Agenda:
 - 1. Identify Owner's & Contractor's authorized Representatives
 - 2. Distribution and discussion of:
 - a. List of major Subcontractors and Suppliers
 - b. Projected Construction Schedules
 - 3. Critical work sequencing
 - 4. Major Equipment deliveries and priorities
 - 5. Project coordination
 - 6. Designation of responsible personnel
 - 7. Procedures and processing of:
 - a. Field decisions
 - b. Proposal requests
 - c. Submittals
 - d. Change Orders
 - e. Applications for Payment
 - 8. Adequacy of Contract Documents distribution
 - 9. Procedures for maintaining Record Documents
 - 10. Use of premises:
 - a. Office, Staging, Storage, and Work areas.
 - b. Owner's requirements
 - 11. Construction Facilities, Controls, and Construction Aids.
 - 12. Temporary Utilities
 - 13. Safety and First-aid procedures
 - 14. Hazardous Materials
 - 15. Security procedures
 - 16. Housekeeping procedures
 - 17. Inspection procedures
 - 18. Product recycling & Waste management
 - 19. Laboratory Testing Services
 - 20. Contract Closeout & Commissioning requirements

(Cont.)

1.3 PROGRESS MEETINGS

- A. Weekly meetings shall be held at the Jobsite to coordinate the Work, answer questions, and resolve problems.
- B. The following shall attend:
 - 1. General Contractor's Superintendent
 - 2. Mechanical Contractor's Superintendent
 - 3. Electrical Contractor's Superintendent
- C. Others with interest in Project may attend and shall attend when invited.
- D. Minimum Agenda:
 - 1. Review and approval of previous meeting Minutes
 - 2. Review Work progress since previous meeting
 - 3. Field observations, problems, and conflicts.
 - 4. Problems which impede construction schedule
 - 5. Review off-site fabrication and delivery schedules
 - 6. Corrective measures and procedures to regain projected schedule
 - 7. Revisions to Construction Schedule
 - 8. Progress schedule during succeeding work period.
 - 9. Coordination of schedules
 - 10. Review submittal schedules; expedite as required.
 - 11. Product recycling and Waste management
 - 12. Maintenance of quality standards
 - 13. Pending changes and substitutions
 - 14. Record Documents status
 - 15. Review proposed changes for:
 - a. Affect on Construction Schedule and on completion date
 - b. Affect on other Project Contracts
 - 16. Other business

1.4 PRE-INSTALLATION CONFERENCES

- A. When specified in individual Specification Section, convene Pre-installation Conference at Project site prior to commencing work.
- B. Require attendance of those specified.
- C. Notify Architect at least 4 days in advance of meeting date.
- D. Prepare Agenda, preside at Conference, and record and distribute Conference Minutes with copy to Architect.

(Cont.)

1.4 PRE-INSTALLATION CONFERENCES (Cont.)

- E. Minimum Agenda:
1. Contract Documents
 2. Options
 3. Related Change Orders
 4. Products purchase, delivery, storage, & handling.
 5. Shop Drawings, Product Data, & Samples, when required.
 6. Compatibility of Products
 7. Possible conflicts
 8. Effects of Work on Progress Schedule
 9. Weather limitations
 10. Manufacturer's instructions and recommendations
 11. Acceptability of Substrate
 12. Temporary Facilities
 13. Work space and access
 14. Governing regulations
 15. Safety
 16. Inspection and testing requirements
 17. Maintenance requirements
 18. Protection

1.5 PROJECT CLOSEOUT CONFERENCE

- A. At location and time convenient with Owner and Architect, Contractor shall convene Protect Closeout Conference at least 30 calendar days prior to Contract Substantial Completion.
- B. Require Attendance:
1. Owner's Representative
 2. Architect's Representative
 3. General Contractor's Representative
- C. Prepare Agenda, preside at Conference, and record and distribute Conference Minutes with copy to Owner and Architect.
- D. Minimum Agenda:
1. Substantial Completion and Final Acceptance Inspections procedures
 2. Contract Closeout Submittals including Record Documents and Operating & Maintenance Data
 3. Owner's Occupancy procedures, including Owner's Furniture and Equipment installation
 4. Temporary Facilities & Controls removal

END OF SECTION

1.1 GENERAL

- A. Prepare and submit to Architect estimated Progress Schedules for the Work, with Sub-schedules of Related Activities which are essential to its progress.
- B. Revise Schedules when appropriate.
- C. If Contractor fails to deliver Schedule on time or properly update Schedule, Architect may withhold Progress Payment approval until such time as Contractor complies with these requirements.
- D. If, in Architect's opinion, Work progress falls behind approved Schedule, Contractor shall take necessary action to regain lost time. Contractor shall increase Work amount, or number of shifts, or establish overtime operations, or all three, and submit for review Schedule revisions in which progress rate will be regained, all without additional cost to the Owner.
- E. Contractor's failure to comply with these requirements shall be grounds for determination that Contractor is not prosecuting Work with such diligence as will insure Project completion within specified time. Upon such determination Owner may terminate Contractor's right to proceed with Work, or any separable part thereof, in accordance with General Conditions.
- F. The Contractor and all Subcontractors, Suppliers, and Manufacturers shall schedule material deliveries and installations to conform to the Schedule, and provisions to this effect shall be included in all Subcontracts.

1.2 RELATED REQUIREMENTS SPECIFIED IN OTHER SECTIONS

- A. Project Meetings: Section 01-31-50
- B. Shop Drawings, Product Data, & Samples: Section 01-33-00

1.3 SCHEDULES

- A. Form: Bar Graph
- B. Horizontal Time Scale: Identify first Work Day of each Week.
- C. Scale and Spacing: Allow space for notations and future revisions.
- D. Headings: Include separate heading for each Specification Section Title and Section Number listed in Project Manual Table of Contents.

1.4 SCHEDULE CONTENTS

- A. Construction Progress Schedule:
 - 1. Show complete sequence of construction by activity, including any Work performed by Owner.
 - 2. Show dates for beginning, and completion, of each major element of Work.

(Cont.)

1.4 SCHEDULE CONTENTS (Cont.)

- B. Submittal Schedule for Shop Drawings, Product Data, and Samples:
 - 1. Show dates for Contractor's submittals.
 - 2. Show dates Submittals will be required for Owner-furnished Products.
 - 3. Show dates Approved Submittals will be required from the Architect.
- C. Products Delivery Schedule:
 - 1. Show delivery dates for Products furnished by Owner.

1.5 SCHEDULE REVISIONS

- A. Indicate progress of each Activity up to date of each Schedule submission.
- B. Show changes occurring since previous Schedule submission, including the following:
 - 1. Major changes in scope
 - 2. Activities modified since previous submission
 - 3. Revised projections of progress and completion
 - 4. Other identifiable changes
- C. Provide a Narrative Report as needed to define:
 - 1. Problem areas, anticipated delays, and related impact on Schedule.
 - 2. Corrective action recommended, and expected effect.
 - 3. The effect of changes on schedules of other Prime Contractors.

1.6 SCHEDULE SUBMISSIONS

- A. Submit initial Schedule at or before Pre-construction Conference.
- B. Architect will review Schedules and return Review Copy within 10 days after receipt. Architect's review will be for Schedule Format and Content only, and will not include Schedule "achievability", which is Contractor's responsibility.
- C. If required, resubmit within 7 days after return of Review Copy.
- D. At each weekly Progress Meeting, submit 2-week Projected Progress Schedule, which shall include Work to be performed during current week and following week.
- E. Submit updated overall Progress Schedules with each Application for Payment.
- F. Submit 1-digital approved copy of each submission for Architect's permanent use.

1.7 DISTRIBUTION

- A. Distribute copies of Schedules to:
 - 1. Jobsite file
 - 2. Subcontractors
 - 3. Architect
 - 4. Owner's Representative
 - 5. Other concerned parties
- B. Instruct recipients to report promptly to Contractor, in writing, any problems anticipated by projections shown in Schedules.

END OF SECTION

1.1 GENERAL

- A. Extent of Work:
 - 1. Submit Shop Drawings, Product Data, and Samples only for those Items specifically required. The Architect will not be obligated to review Shop Drawings, Product Data, or Samples other than those required by the Contract Documents.
 - 2. Incomplete Submittals will be returned without review.
- B. Related Requirements specified Elsewhere:
 - 1. Definitions, and additional requirements: See General Conditions
- C. Submittal Schedule:
 - 1. Designate in Construction Schedule, or in separate coordinated Schedule, submission dates and dates that reviewed Shop Drawings, Product Data, and Samples will be needed.

1.2 REQUIREMENTS

- A. Shop Drawings:
 - 1. Identify Shop Drawing Details by reference to Drawing Sheet, Detail, Schedule, or Room Number shown on Contract Drawings.
 - 2. Sheet Size: 8-1/2 x 11 inch, or folded to that size to facilitate filing or PDF submission.
- B. Product Data:
 - 1. Clearly mark each copy to identify pertinent Products.
 - 2. Show performance characteristics and capacities.
 - 3. Show dimensions and required clearances.
 - 4. Show wiring and piping diagrams, and controls.
 - 5. Manufacturer's standard schematic drawings and diagrams:
 - a. Modify to delete information not applicable to Work.
 - b. Supplement standard information to provide information specifically applicable to Work.
- C. Samples:
 - 1. Size & Quantity: See respective Specification Sections.
 - 2. Show full range of color, texture and pattern.

(Cont.)

1.3 CONTRACTOR'S RESPONSIBILITIES

- A. Review and approve Shop Drawings, Product Data, and Samples prior to submission.
- B. Determine and verify:
 - 1. Field measurements
 - 2. Product Quantities
 - 3. Field construction criteria
 - 4. Catalog numbers and similar data
 - 5. Conformance with Specifications
- C. Comply with Contract Documents.
- D. Coordinate each Submittal with requirements of Work.
- E. Notify Architect in writing, at submission time, of any deviations in Submittals from Contract Document requirements.
- F. Perform no Work or Fabrication requiring Submittal until Architect approves Submittal.

1.4 SUBMISSION REQUIREMENTS

- A. Using the following **Submittal Transmittal Form (CSI Form 12.1A)**, make submittals promptly in accordance with approved Progress Schedule, and in such sequence as to cause no Work delay.
- B. Submission Method: Digital
- C. Submittal Routing:
 - 1. Shop Drawings:
 - a. Architectural Work: Submit to Architect.
 - b. Structural, Civil, Plumbing, HVAC, and Electrical Work: Submit directly to Architect's appropriate Consultant, plus copy to Architect. Consultant will return copies to Architect with comments and corrections.
 - c. Architect will return copy to Contractor with comments and corrections.
 - d. Contractor shall resubmit copy of corrected Drawings for Architect's permanent files, plus copy to Architect's Consultants when applicable.
 - 2. Product Data:
 - a. General:
 - 1. Include Manufacturer's detailed specifications and data sheets which describe Products. Cross-out any information that does not relate to this Project. Identify any deviations from requirements specified in Contract Documents.
 - b. Architectural Products:
 - 1. Submit to Architect.
 - c. Civil, Structural, Plumbing, HVAC, & Electrical Products:
 - 1. Submit directly to appropriate Engineer, plus copy to Architect.
 - 3. Samples:
 - a. Submit as stipulated in respective Specification Section.
 - b. Digitally-submitted Color and Texture Samples are not acceptable.

(Cont.)

1.4 SUBMISSION REQUIREMENTS (Cont.)

D. Submittals shall contain:

4. Project Title and names of Contractor, Supplier, and Manufacturer, all visible on outside of Submittal.
5. Product identification complete with Specification Section number.
6. Field measurements clearly identified as such.
7. Applicable Standards, such as ASTM or Federal Specification numbers.
8. Identification of deviations from Contract Documents.
9. Identification of resubmittal revisions.
10. Contractor's Stamp, signed and certifying that Products, field measurements, field construction criteria, and information submitted has been reviewed and accepted by Contractor as accurate and conforming with Contract Documents. Submittals not bearing Contractor's signed Approval Stamp will be returned unreviewed.
11. At least 6x8 inch space on 1st page for Architect's Approval Stamp.

(Cont.)



**SUBMITTAL
 TRANSMITTAL**

Project: _____ Date: _____
 _____ A/E Project Number: _____

TRANSMITTAL To (Contractor): _____ Date: _____ Submittal No. _____
A From (Subcontractor): _____ By: _____ Resubmission

Qty.	Reference / Number	Title / Description / Manufacturer	Spec. Section Title and Paragraph / Drawing Detail Reference

- | | |
|--|---|
| <input type="checkbox"/> Submitted for review and approval | <input type="checkbox"/> Substitution involved - Substitution request attached |
| <input type="checkbox"/> Resubmitted for review and approval | <input type="checkbox"/> If substitution involved, submission includes point-by-point comparative data or preliminary details |
| <input type="checkbox"/> Complies with contract requirements | <input type="checkbox"/> Items included in submission will be ordered immediately upon receipt of approval |
| <input type="checkbox"/> Will be available to meet construction schedule | |
| <input type="checkbox"/> A/E review time included in construction schedule | |
- Other remarks on above submission: _____ One copy retained by sender

TRANSMITTAL To (A/E): _____ Attn: _____ Date Rec'd by Contractor: _____
B From (Contractor): _____ By: _____ Date Trnsmt'd by Contractor: _____

- | | |
|--|--|
| <input type="checkbox"/> Approved | <input type="checkbox"/> Revise / Resubmit |
| <input type="checkbox"/> Approved as noted | <input type="checkbox"/> Rejected / Resubmit |
- Other remarks on above submission: _____ One copy retained by sender

TRANSMITTAL To (Contractor): _____ Attn: _____ Date Rec'd by A/E: _____
C From (A/E): _____ Other By: _____ Date Trnsmt'd by A/E: _____

- | | |
|---|--|
| <input type="checkbox"/> Approved | <input type="checkbox"/> Provide file copy with corrections identified |
| <input type="checkbox"/> Approved as noted | <input type="checkbox"/> Sepia copies only returned |
| <input type="checkbox"/> Not subject to review | <input type="checkbox"/> Point-by-point comparative data required to complete approval process |
| <input type="checkbox"/> No action required | <input type="checkbox"/> Submission Incomplete / Resubmit |
| <input type="checkbox"/> Revise / Resubmit | |
| <input type="checkbox"/> Rejected / Resubmit | |
| <input type="checkbox"/> Approved as noted / Resubmit | |
- Other remarks on above submission: _____ One copy retained by sender

TRANSMITTAL To (Subcontractor): _____ Attn: _____ Date Rec'd by Contractor: _____
D From (Contractor): _____ By: _____ Date Trnsmt'd by Contractor: _____

Copies: Owner Consultants _____ _____ _____ One copy retained by sender

1.5 RESUBMISSION REQUIREMENTS

- A. Make any corrections or changes in submittals required by Architect and resubmit until approved.
- B. Shop Drawings and Product Data:
 - 1. Revise initial drawings or data, and resubmit as specified for initial submittal.
 - 2. Identify any changes made other than those requested by Architect.
- C. Samples:
 - 1. Submit new samples as required for initial submittal.

1.6 ARCHITECT'S RESPONSIBILITIES

- A. Review submittals with reasonable promptness.
- B. Affix signature and indicate approval, or requirements for resubmittal.
- C. Return submittals to Contractor for distribution, or resubmission.

1.7 ARCHITECT-FURNISHED COMPUTERIZED DATA

- A. Upon 72 hours advance notice, Architect will make 1 copy only of Architect's Computerized Data, showing related portions of Architect's Drawings, which will be available for Contractor's and Subcontractors' use in the preparation of Shop Drawings.
- B. Delivery Method: Digital
- C. Cost to Contractor (*Payable to Architect*): None
- D. Liability:
 - 1. To the best of the Architect's knowledge, belief, and understanding the submitted information is accurate, however the Architect makes the Data available as a convenience to the Contractor, and the Architect does not guarantee the accuracy of the Drawings or the Dimensions thereon. The Contractor shall verify the accuracy of the furnished information.

END OF SECTION

REFERENCED SPECIFICATIONS & STANDARDS**1.1 REFERENCED SPECIFICATIONS & STANDARDS**

- A. Products or workmanship specified by Referenced Specification or Standard shall comply with requirements of the Specification or Standard, except when more rigid requirements are noted on Drawings, or are specified herewith, or are required by governing Codes.
- B. Should Referenced Specification or Standard conflict with Contract Documents, request clarification from Architect before proceeding with Work.
- C. Contractual relationships of Parties to Contract shall not be altered from those described in Contract Documents by mention or inference in Referenced Specifications or Standards.
- D. Except where a specific date is specified, the date of the Referenced Specification or Standard including any amendments or revisions is that in effect as of the date of the Contract Documents.
- E. Each Entity working on this Project shall be familiar with Referenced Specifications and Standards applicable to their Work. Referenced Specifications and Standards are not bound herewith, and therefore Entities shall obtain any necessary copies from publisher, and maintain at Jobsite until Substantial Completion of their Work.

1.2 REFERENCED TRADE ASSOCIATIONS

- A. See specific Specification Sections.

1.3 REFERENCED REGULATORY AGENCIES

AASHTO American Association of State Highway & Transportation Officials
 444 North Capitol Street, N.W.
 Washington, D.C. 20001
 (202) 624-5800

ADA Americans with Disabilities Act
 Equal Employment Opportunity Commission
 U.S. Dept. of Justice
 U.S. Government Printing Office
 Mail Stop: SSOP
 Washington D.C. 20402-9328

ANSI American National Standards Institute
 1819 L St. NW - Suite 600
 Washington DC 20036
 (202) 293-8020

ASA American Standards Association
 (Now known as ANSI: See above)

(Cont.)

1.3 REFERENCED REGULATORY AGENCIES (Cont.)

ASHRAE	American Society of Heating, Refrigeration, & Air Conditioning Engineers 1791 Tullie Circle NE Atlanta, GA 30329 (800) 527-4723 www.ashrae.org
ASTM	ASTM International Formerly known as American Society for Testing & Materials 100 Barr Harbor Dr. West Conshohocken, PA 19428-2959 (610) 832-9585
CCB	Construction Contractor's Board 700 Summer St. NE - Suite 300 Salem, OR 97309-5052 (503) 378-4621
CPSC	Consumer Product Safety Commission National Injury Information Clearinghouse 5401 Westbard Ave. Rm. 625 Washington, DC 20207 (301) 492-6580
CS	Commercial Standards Commodities Division Department of Commerce Washington, D.C. 20006
DEQ	Dept. of Environmental Quality 811 SW 6 th Ave. Portland, OR 97204 (503) 229-6124
EPA	US Environmental Protection Agency Region 10 - The Pacific Northwest 1200 Sixth Ave. Seattle, WA 98101 (206) 553-1200
FM	Factory Mutual Engineering & Research Corp 1151 Boston-Providence Turnpike Norwood, MA 02062 (617) 762-4300

(Cont.)

REFERENCED SPECIFICATIONS & STANDARDS**1.3 REFERENCED REGULATORY AGENCIES (Cont.)**

Fed. Spec.	Federal Specifications of US General Services Administration Specifications & Consumer Information Distribution Sect. (WFSIS) Washington Navy Yard, Bldg. 197 Washington, D.C. 20407
IBC	International Building Code published by International Code Conference (ICC) 5203 Leesburg Pike - Suite 708 Falls Church, VA 22041
IMC	International Mechanical Code published by ICC (See IBC above)
IPC	International Plumbing Code published by ICC (See IBC above)
LCB	Landscape Contractor's Board 235 Union St. NE Salem, OR 97301 (503) 986-6561
NBFU	National Bureau of Fire Underwriters 85 John St. New York, NY 10017
NBS	National Bureau of Standards U.S. Dept. of Commerce Quince Orchard & Clopper Rds. Gaithersburg, MD 20878 (301) 975-2000
NEC	National Electric Code published by National Fire Protection Association
NFPA	National Fire Protection Association 1 Batterymarch Park Quincy, MA 02169 (617) 770-3000
OBCD	Oregon Building Codes Division Box 14470 Salem, OR 97309-0404 (503) 378-2322

(Cont.)

1.3 REFERENCED REGULATORY AGENCIES (Cont.)

ODOT	Oregon Dept. of Transportation 355 Capitol St. NE Salem, OR 97310 (503) 986-3200
OSFM	Oregon State Fire Marshal 4760 Portland Rd. NE Salem, OR 97305-1760 (503) 378-3473
OSHA	Occupational Safety & Health Administration 350 Winter St. NE – Room 340 Salem, OR 97309-0405 (503) 378-3272
OSSC	Oregon Structural Specialty Code Oregon Building Codes Agency 1535 Edgewater NW. Salem, OR 97310
PS	Product Standards of Commodities Division Department of Commerce Washington, DC 20203
SMACNA	Sheet Metal and Air Conditioning Contractor's National Association A.(703) 803-2980 B. www.smacna.org
UL	Underwriters Laboratories 333 Pfingsten Road Northbrook, IL 60062 (312) 272-8800
USAS	United States of America Standards Institute (Now known as ANSI: See above)

END OF SECTION

1.1 RELATED SECTIONS

- A. Testing Laboratory Services: Section 01-45-30

1.2 EXTENT OF WORK

- A. Contractor shall implement and maintain aggressive Quality Control Program conforming to the following requirements:
1. Monitor quality of all Work, including that of Subcontractors and Service Providers, to ensure that Work complies with Contract Documents.
 2. Include compliance with currently approved Progress Schedule.
 3. Include continuing inspections of Work.
- B. Responsibilities include, but are not limited to the following:
1. Prior to submission to Architect, and in compliance with requirements specified in Section 01-33-00, review and approve Shop Drawings, Product Data, and Samples for compliance with Contract Documents.
 2. Prior to starting Work, review appropriate Contract Drawings & Specifications, Shop Drawings, Product Data, Samples, and Contract Modifications, as well as affected Existing Conditions.
 3. Work closely and cooperate with Architect, attend required Meetings, and execute decisions reached by Architect.
 4. Assign and maintain at Jobsite, Supervisory Personnel acceptable to Owner, who have authority to act in Contractor's behalf at all times Work is being performed, including any Overtime Periods.
 5. Schedule and coordinate inspections and tests with Regulatory Agency Inspectors and with Testing Agency Personnel.
 6. Submit to Architect, Construction Manager, and Owner's Representative signed Reports of Inspections and Tests made by Building Officials, Special Inspectors, and any others performing inspections or tests.
 7. Schedule and coordinate required Pre-Installation Conferences.
 8. Assure that Record Documents, including those prepared by Subcontractors, are accurately maintained and up to date.
 9. Schedule and coordinate specified System and Equipment demonstrations and training sessions for Owner's Personnel.
 10. Make final inspections with Subcontractors of all Work to determine that Work is in compliance with Contract Documents. Prior to calling for Architect's, Construction Manager's, and Owner's Substantial Completion and Final Inspections, verify that Work deficiencies discovered during Contractor's inspections have been satisfactorily corrected.
 11. Unless otherwise directed, accompany Architect, Construction Manager, and Owner during their inspections.
 12. Coordinate final closeout procedures, including those of Subcontractors, to assure compliance with procedures specified in Section 01-77-00.

END OF SECTION

PART 1 - GENERAL

1.1 RELATED REQUIREMENTS SPECIFIED IN OTHER SECTIONS

- A. Inspections and testing required by laws, ordinances, rules, regulations, and orders of Public Authorities: See General Conditions:
- B. Product Certification: See respective Specification Sections.
- C. Equipment testing, adjusting, and balancing: See respective Specification Sections.

1.2 COSTS

- A. Paid by Owner:
 - 1. For Testing Laboratory services specified in this Section.
 - 2. For Code-required Special Inspections of Structural Foundations, Structural Steel, Welding, Bolting, Epoxy Anchoring, Seismic Restraints, Suspended Ceilings, Firestopping, and Concrete Placing.
- B. Paid by Contractor:
 - 1. Soil Erosion monitoring and inspections
 - 2. For retesting required because of defective Work or ill-timed notices, and for reinspections.

1.3 LABORATORY'S QUALIFICATIONS

- A. Independent Laboratory acceptable to Architect and Building Official.
- B. Meet "Recommended Requirements for Independent Laboratory Qualification," latest edition, published by American Council of Independent Laboratories; 1725 K Street, N.W.; Washington, D.C. 20036.
- C. Meet ASTM E-329 latest edition, "Standards of Recommended Practice for Inspection and Testing agencies for Concrete and Steel as used in Construction".

1.4 LABORATORY'S DUTIES

- A. Provide qualified Personnel for specified inspections, sampling, and testing.
- B. Ascertain and certify compliance with Contract Documents.
- C. When requested by Architect, provide interpretation of Test results.
- D. Promptly submit written Inspection & Test Reports to:
 - 1. Owner's Representative
 - 2. Building Official
 - 3. Contractor
 - 4. Architect
- E. Additionally, submit copies of the following Reports to:
 - 1. Tested Earthwork: Geotechnical Engineer & Civil Engineer
 - 2. Tested Asphaltic Concrete: Civil Engineer
 - 3. Tested Structural Work: Structural Engineer

(Cont.)

1.4 LABORATORY'S DUTIES (Cont.)

- F. Include the following in Test Reports:
1. Date issued
 2. Project title, location, and Building Permit number.
 3. Testing Laboratory name and address
 4. Inspector's name
 5. Date of inspection or sampling
 6. Record of temperature and weather
 7. Date of test
 8. Identification of Product tested
 9. Test location in Project
 10. Type of inspection or test
 11. Observations regarding compliance with Contract Documents
- G. Laboratory is not authorized to:
1. Release, revoke, alter, or enlarge on Contract Documents requirements.
 2. Approve or accept any portion of Work
 3. Assume any duties of Contractor
 4. Stop Work

1.5 CONTRACTOR'S RESPONSIBILITIES

- A. Cooperate with Laboratory Personnel, and provide access to Work and to Manufacturer's operations.
- B. Provide to Laboratory representative samples of materials to be tested, in required quantities.
- C. Furnish copies of Structural Steel Mill Test Reports to Laboratory.
- D. Furnish casual labor and facilities:
1. For access to Work to be tested
 2. To obtain and handle Test Samples at Site
 3. To facilitate inspections and tests
 4. For Laboratory's exclusive use for storage and curing of Test Samples until removed to Laboratory
- E. Notify Laboratory at least 24 hours in advance of operations to allow for Personnel assignments and Test scheduling.
- F. Repair any Test Holes to match original conditions.

1.6 LIABILITY

- A. Laboratory service is provided for Owner's self-assurance, and does not relieve Contractor's responsibility to comply with Contract Documents.

(Cont.)

PART 2 - DETAILED REQUIREMENTS

2.1 EARTHWORK DENSITY

- A. Method: ASTM D-2422 (Nuclear Gauge)
- B. Provide Tests for each layer of Fill and Backfill placed in any 1 day, for Pavement Beds in cuts, if any, and for any Earthwork Construction which will support Finished Surfaces or Structures.

2.2 ASPHALT PAVEMENT

- A. Conduct 1 test for each 20,000 sq. ft., or less, of Pavement placed in any 1 day as follows:
 - 1. Compacted Base Rock field-density using ASTM D-2422 (Nuclear Gauge) method.
 - 2. Placement Tests to determine Asphalt-Cement content, gradation of Aggregate, Voids, Temperature, and Marshall Stability of Mix.
 - 3. Finished-product Core Sample to determine Compaction, Voids, and Thickness.

2.3 CAST IN PLACE CONCRETE

- A. Test Samples shall be taken at the following locations:
 - 1. At Pumped Concrete, if any: At Pump Hose discharge end
 - 2. At Rotary Mixer: At Mixer Chute discharge end
- B. Test Concrete Slump as follows:
 - 1. Follow ASTM C-143 and C-172.
 - 2. Take on-site Tests Samples from 1st Delivery Truck plus any additional Truck appearing to discharge Concrete exceeding specified Slump range.
 - 3. If Measured Slump falls outside specified limits retest immediately from another portion of same load. In event of second failure Concrete shall be considered as failing Specification requirements.
- C. Test Concrete Compressive Strength as follows:
 - 1. Follow ASTM C-31, C-39, and C-172.
 - 2. Prepare not less than 5 Test Cylinders for each 100 cu. yds. or less for each class of Concrete cast in any 1 day.
 - 3. Test-break 1 Cylinder at 7 days of age, 1 at 14 days, 2 at 28 days, and remaining Cylinder if and when directed to do so.
 - 4. If any set of 2 Cylinders does not develop full design strength at 28 days of age, Cores and Load-testing may be called for. All Coring and Load-testing costs shall be paid by Contractor.
- D. Test Concrete Air-content as follows:
 - 1. Follow ASTM C-231.
 - 2. Test each Cylinder containing Air-Entrainment.

(Cont.)

2.3 CAST IN PLACE CONCRETE (Cont.)

- E. Test Slab Flatness as follows:
1. Perform measurement with 10 ft. minimum length Highway Straightedge within 16 hours following completion of final troweling. Within 2 hours following completion of Test, notify Contractor and Architect whether or not Work has successfully passed Test, and specifically identify any areas which have failed Test.

2.4 STRUCTURAL STEEL

- A. Inspection at Fabrication Shop and Jobsite as follows:
1. Qualification of Bolting and Welding procedures and personnel.
 2. Inspection of fabricated Structural Steel Members and Assemblies for compliance with the following:
 - a. Drawings and Specifications
 - b. Structural Notes on Drawings
- B. When authorized by Structural Engineer, inspect Welds by the following methods:
1. Magnetic Particle: ASTM E-709
 2. Liquid Penetration: ASTM E-165
 3. Radiographic: AWS Specification D1.1
 4. Ultrasonic: AWS Specification D1.1
 5. Visual: AWS Specification D1.1.6.9

2.5 CONCRETE FLOOR SLAB MOISTURE & VAPOR CONTENT

- A. At 30 days and at 5 days prior to Flooring placement, determine Moisture-content and Vapor-emission rate of Concrete to receive Flooring as follows:
1. Moisture Content measured at Slab Center: ASTM E-1907
 2. In-situ RH Vapor-Emission Rate: ASTM F-2170

2.6 CONCRETE FLOOR SLAB WATER-ABSORPTION (POROSITY)

- A. Test Method to determine Porosity of Concrete to receive Flooring: ASTM F-3191
1. If at or before 1-minute 1-drop of Water absorbs into Concrete: Slab is considered Porous
 2. If after 1-minute 1-drop of Water has not absorbed into Concrete: Slab is considered Non-porous

2.7 FIRESTOPPING TESTING

- A. As specified in Section 07-84-00, test Firestopping in compliance with ASTM E-2174 and E-2393.

PART 2 - DETAILED REQUIREMENTS

2.8 WATER-INFILTRATION TESTING

- A. As specified in Section 08-40-00, test Exterior Wall and Window Assemblies as stipulated in AAMA 501.2.

END OF SECTION

OWNER'S PROJECT REPRESENTATIVE'S DUTIES & AUTHORITY**1.1 GENERAL**

- A. An Owner's Project Representative will at intervals be stationed at the Project Site, and the Representative will be responsible for assisting the Architect in the administration of the Contract. The responsibilities, obligations, and rights of the Architect, as described in the Agreement between the Owner and the Architect, will not be altered or modified by the furnishing of such Project Representative.
- B. Communication by the Owner's Project Representative related to the administration of the Contract shall, in general, be restricted to the Architect and the Contractor. The Project Representative shall communicate with the Owner and the Contractor under the direction of the Architect and with the Architect's full knowledge. The Project Representative shall not communicate directly with Subcontractors or with Product Suppliers except with the full knowledge and approval of the Contractor and the Architect.

1.2 DUTIES & RESPOSIBILITES

- A. The Project Representative shall:
 - 1. Perform on-site observations of the progress and quality of the Work as may be reasonably necessary to determine, in general, if the Work is being performed in a manner indicating that the Work when completed will be in conformance with the Contract Documents.
 - 2. Notify the Architect immediately if, in the Project Representative's opinion, Work does not conform to the Contract Documents or the Work requires special inspection or testing.
 - 3. Monitor the Contractor's Construction Progress Schedules on an on-going basis, and alert the Architect to conditions that could lead to delays in the completion of the Work.
 - 4. Receive and respond to requests from the Contractor for information, and when authorized by the Architect, provide interpretations of the Contract Documents.
 - 5. Receive and review requests for changes by the Contractor, and submit them, together with Representative's recommendations, to the Architect. If requests are accepted, prepare Architect's Supplemental Instructions, incorporating the Architect's Modifications to the Contract Documents.
 - 6. Attend Progress Meetings, and report proceedings to the Architect.
 - 7. Observe tests required by the Contract Documents. Record and report to the Architect on test procedures and test results. When appropriate, approve testing invoices to be paid by the Owner.
 - 8. Maintain records at the Project Site in an orderly manner. Include Correspondence, Contract Documents, Change Orders, Construction Change Directives, reports of site meetings, Shop Drawings, Product Data, and similar submittals; supplementary drawings, color schedules, Applications for Payment; and names, addresses, and telephone numbers of the Contractors, Subcontractors, and principal Material Suppliers.

(Cont.)

OWNER'S PROJECT REPRESENTATIVE'S DUTIES & AUTHORITY**1.2 DUTIES & RESPOSIBILITES (Cont.)****B.** The Project Representative shall:

1. Maintain a log book of activities at the Project Site, including weather conditions, nature and location of Work being performed, verbal instructions and interpretations given to the Contractor, and specific observations. Record any occurrence or Work that might result in a claim for a change in Contract Sum or Contract Time. Maintain a list of Jobsite Visitors, their titles, and time and purpose of their visit.
2. Assist the Architect in reviewing Shop Drawings, Product Data, and Samples. Notify the Architect if any portion of the Work requiring Shop Drawings, Product Data, or Samples is commenced before such submittals have been approved by the Architect. Receive and log Samples which are required to be furnished at the Project Site, notify the Architect when they are ready for examination, and record the Architect's approval or other action. Maintain custody of approved Samples.
3. Review the Contractor's record copy of the Drawings, Specifications, Addenda, Change Orders, and other Modifications at intervals appropriate to the stage of Work, and notify the Architect of any apparent failure by the Contractor to maintain up-to-date records.
4. Review Applications for Payment and forward Applications to the Architect with the Representative's recommendations for disposition.
5. Review the List of Items to be completed or corrected included with the Contractor's Request for Issuance of a Certificate of Substantial Completion. If the List is accurate, forward the List to the Architect for final disposition. If List is not accurate, so advise the Architect, and return the List to the Contractor for correction.
6. Assist the Architect in conducting inspections to determine the Substantial Completion Date(s) and Final Completion Date.
7. Review Contractor's Contract Closeout Submittals and transmit Submittals to the Architect with the Representative's recommendations for disposition.

1.3 LIMITATIONS OF AUTHORITY**A.** The Project Representative shall not:

1. Exceed the authority of the Architect as stipulated in the Owner-Architect Agreement.
2. Authorize deviations from the Contract Documents.
3. Approve substitute Products, except as authorized in writing by the Architect.
4. Personally conduct or participate in tests or third party inspections, except as authorized in writing by the Architect.
5. Assume any of the responsibilities of the Contractor's Superintendent or of any Subcontractor.
6. Expedite the Work for the Contractor.
7. Have control over or charge of or be responsible for construction means, methods, techniques, sequences, or procedures, or for safety precautions and programs in connection with the Work.

(Cont.)

OWNER'S PROJECT REPRESENTATIVE'S DUTIES & AUTHORITY**1.3 LIMITATIONS OF AUTHORITY (Cont.)****A. The Project Representative shall not: (Cont.)**

8. Authorize or suggest that the Owner occupy the Project in whole or in part.
9. Issue a Certificate for Payment or a Certificate of Substantial Completion.
10. Prepare or certify record copies of the Drawings, Specifications, Samples, Product Data, Addenda, Change Orders, or other Work Modifications.
11. Reject Work or require special inspection or testing, except as authorized in writing by the Architect.
12. Accept, distribute, or transmit submittals made by the Contractor that are not required by the Contract Documents.
13. Order the Contractor to stop the Work or any portion thereof.

END OF SECTION

1.1 GENERAL

- A. Comply with governing Codes and Regulations.
- B. Pay any required Fees or Easement Assessments.
- C. Enforce safe and sanitary practices.
- D. Maintain clean Facilities.
- E. Prevent interference with Owner's normal use of Owner's Facilities.
- F. Prevent wasteful Utility uses.
- G. Should Owner occupy part of Facility, Owner will pay Owner's proportional Utility cost.

1.2 PROJECT IDENTITY SIGN

- A. Material: Exterior-grade, Medium-density Overlaid (MDO) Plywood, and framed with suitable Perimeter Edge Moldings.
- B. Face Size: 4x8 ft.
- C. Thickness: 3/4 inch
- D. Provide immediately after Contract is signed in accordance with Architect's design.
- E. Paint with 2 coats Weatherproof Enamel in colors selected by Architect.
- F. Employ professional Sign Company approved by Architect to reproduce Pictorial Image of Project (furnished by Architect) and to letter Names of the following:
 - 1. Project
 - 2. Owner
 - 3. Owner's Representative
 - 4. Architect
 - 5. Consulting Engineers
 - 6. Construction Manager
 - 7. General Contractor
- G. Locate Sign Board where directed by Architect, and secure to 2 nominal 4x4 inch Posts securely set into the Ground.

1.3 BULLETIN BOARD

- A. Provide 1 weatherproof 4x4 ft. Bulletin Board where regularly visible to Workers.
- B. Display Prevailing Wage Rates; employee benefits such as Health & Welfare Plan, Pension Plan, etc., if any; Equal Opportunity Employment Requirements; Emergency Telephone Numbers; and other important information.

1.4 FIELD OFFICE

- A. General:
 - 1. Provide substantial, weather-tight Office Building on Premises where directed.
 - 2. At Contractor's option, Contractor may use Portable Buildings suitable for office-use.
 - 3. Provide with Heat, Electric Light, and Janitorial Service.
 - 4. Do not use Field Office or Storage Buildings for Personnel housing.

(Cont.)

1.4 FIELD OFFICE (Cont.)

B. Required Furnishings:

1. 1 Table large enough to hold open-set of Contract Drawings
2. 1 Rack large enough to store Contract Drawings, including Record Drawings
3. 1 Shelf large enough to hold Project Manuals and other similar Documents
4. 1 metal, legal-size Filing Cabinet to store Shop Drawings and Project Correspondence
5. May be new or used, but must be safe for use, serviceable, and adequate for intended use.

1.5 TEMPORARY COMMUNICATIONS EQUIPMENT

A. In Contractor's Field Office provide the following:

1. 1 Telephone Answering & Message Recording Machine, unless Contractor's on-site Superintendent carries open Mobile Phone at all times.
2. 1 Computer capable of transmitting, receiving, and printing E-Mail messages and Scanned Documents.

B. Install when Work is started, maintain until Work completion, and pay all charges.

C. Subcontractors shall provide and pay for any separate additional Instruments that they may require.

D. Provide wall-mounted Directory at each Instrument listing Name and Business Phone Number of at least the following:

1. Each Contractor and Subcontractor
2. Architect
3. Architect's Consulting Engineers
4. Testing Laboratories
5. Physicians
6. Hospitals
7. Ambulance
8. Local Fire & Building Departments

E. Do not use Owner's existing Telephone System.

1.6 TEMPORARY WATER

A. Provide and maintain Water for the following purposes:

1. Service Standpipe equipped with sufficient 3/4 inch Hydrants that any Work Center can be reached with 100 ft. Extension Hose. Equip Hydrants with Backflow Prevention Devices. Contractors shall provide their own Extension Hoses.
2. Drinking Water dispensed in Single-service Containers or Sanitary Fountains.
3. Temporary Toilet Facilities

B. Maintain cool as practicable, clean, and fresh.

C. Maintain adequate volume.

D. Protect against freezing.

(Cont.)

1.6 TEMPORARY WATER (Cont.)

- E. Water Source:
1. Water, in quantities judged reasonable by Architect, will be furnished without charge by Owner.
 2. Ascertain where Water Service is available, provide required connections, and extend System to Work area.

1.7 TEMPORARY TOILET FACILITIES

- A. Provide Toilet and Washing Facilities in accordance with governing Regulations. Chemical Toilets equipped with Waterless Hand Cleaners will be permitted.
- B. For Enclosures accommodating more than 1 Person, provide Privacy Screens for each Toilet Fixture.
- C. Provide separate Facilities for each gender.
- D. Maintain each Toilet with Toilet Tissue on suitable Dispenser.
- E. Remove Temporary Toilets as soon as feasible.
- F. Where necessary, disinfect Premises after Toilet removal and restore to specified condition.
- G. Do not use Owner's existing Toilet Facilities.

1.8 TEMPORARY FIRST-AID FACILITIES & DEVICES

- A. Provide adequate First Aid Facilities and Devices for Project Workers.

1.9 TEMPORARY BARRICADES

- A. Provide all necessary to protect Public and Workers against injury and to protect Project against damage and unauthorized intrusion.

1.10 TEMPORARY EXTERIOR ENCLOSURES

- A. Provide sufficient Enclosures to prevent infiltration of Rainwater, Wind, and other Elements, and prevent undue Heat Loss from within Enclosed Area.
- B. At no additional cost to Owner, clean, repair, and, when directed, replace any Building Materials or Contents which have been damaged or discolored because of lack of enclosure.

1.11 TEMPORARY FIRE PROTECTION

- A. Provide and maintain necessary Facilities and Equipment to safeguard Project against Fire Damage.

1.12 TEMPORARY ELECTRICITY

A. Power:

1. Provide and maintain structurally and electrically sound, Code-approved, Temporary Power Distribution System as follows:
 - a. Sufficient Load Centers that any Work Area can be reached with 100 ft. long Extension Cord. General Contractor and each Subcontractor shall provide their own grounded, UL-approved Extension Cords.
 - b. Load Centers shall include:
 1. Weatherproof Distribution Boxes
 2. Circuit Breakers for each Outlet
 3. Equipment Grounding Continuity for entire System
 4. Power at proper voltage for:
 - a. Temporary Field Offices
 - b. Temporary Storage and Construction Buildings
 - c. Temporary Lighting and Power
 - d. Temporary Heating and Ventilating
 - e. Temporary Fire Alarm System
 - f. Pumping
 - g. Testing and checking Equipment
 - h. Owner's Facilities continuous operation during Electrical Services change-over
2. General Contractor, other Prime Contractors, and each Subcontractor shall provide their own power and distribution system for Field Welders and any other Special Power beyond that specified herein.

B. Lighting:

1. Provide and maintain Temporary Lighting at least as follows:
 - a. 30 ft. candles measured 3 ft. above Floor in spaces during work. Energize permanent Lighting Fixtures prior to painting, except where Fixtures are mounted on Walls or Ceilings to be painted. Maintain from 15 minutes prior to until 15 minutes past scheduled Work hours.
 - b. 5 ft. candles measured 3 ft. above Floor where necessary to prevent damage or injury. Maintain when authorized Personnel are present. Provide Light Control Switches at Area Entrances and successive Areas so Personnel access to Project can be through lighted Areas.
 - c. 1 ft. candle measured 3 ft. above Ground as required to illuminate Project Grounds. Control Lights by Photo-electric Cell set to energize Lights from dusk to dawn.
2. Unless otherwise protected, cover exposed Interior Lamps with Guards.

C. Wiring:

1. Prevent conflict with General Construction.
2. Maintain Cords clear of Walkways and other Heavy-traffic Areas.

D. Power Source:

1. Electricity, in quantities judged reasonable by Architect, will be furnished without charge by Owner.
2. Ascertain where Electrical Service is available, provide required connections, and extend System to Work Area.

1.13 TEMPORARY HEATING & VENTILATING

- A. Provide Temporary Heat and Ventilation throughout enclosed construction areas to:
 - 1. Facilitate Work progress.
 - 2. Protect Work and Products against Dampness and Cold.
 - 3. Prevent Moisture Condensation on Surfaces.
 - 4. Provide suitable Ambient Temperatures and Humidity Levels for installation and curing of Products.
 - 5. Provide adequate Ventilation to meet health regulations for Safe Working Environment.
- B. If temporary Portable Heaters are used, exhaust Heater Exhaust Fumes by Ductwork directly to Building Exterior. Do not allow Heaters to over-dry adjacent Materials.
- C. Continue Temporary Heating and Ventilating until Owner occupies or finally accepts Project, whichever is sooner.
- D. Maintain Ventilated Areas in clean condition to avoid undue circulation of Dust and Air-borne Particles.
- E. After Building enclosure, maintain the following Interior Conditions:
 - 1. Temperature (24 hours a day) unless otherwise specified elsewhere: 55°F to 75°F
 - 2. Minimum Air Changes: 1 each 2 hours
 - 3. Maximum Relative Humidity: 50%
- F. Permanent Building System use:
 - 1. Operate no permanent Heating or Ventilating Equipment without Mechanical Engineer's authorization that Equipment is properly installed, has clean Air Filters, and is otherwise suitable for use.
 - 2. Use of permanent Equipment for "temporary" purposes shall not alter Equipment Warranty Period start-date, which shall remain date of Project Substantial Completion.
 - 3. Maintain System for proper operation.
 - 4. If adjacent Site Work is producing Dust, do not intake Outside Air, and cover Outside Air Intakes with 30% minimum-efficiency Air Filters.
 - 5. Immediately prior to Substantial Completion of Project replace Air Filters with new Units, and restore System to like-new condition.
- G. Fuel costs shall be paid by Contractor.

1.14 TEMPORARY MOLD-PREVENTION VENTILATION

- A. Provide sufficient Ventilation within Project Areas to exhaust Moisture from Ambient Air and from Products as required to prevent development of Mold or Mycotoxins.

1.15 TEMPORARY VERTICAL TRANSPORTATION

- A. General Contractor shall provide and pay costs for Temporary Stairs, Ramps, Chutes, etc., required for execution of Work of all Trades, including that required for other Prime Contractors. Subcontractors and other Prime Contractors shall provide their own Material Hoists, Ladders, and Scaffolds.

1.16 TEMPORARY EQUIPMENT

- A. Thermometer:
 - 1. Maintain one 10 inch minimum size Outdoor Thermometer. Mount at convenient location not in direct sunlight.
 - 2. Temperature Range: Minus 30°F to plus 110°F.
- B. Protective Wear:
 - 1. For Visitors' use, provide 6 each of the following:
 - a. Adjustable-size OSHA-approved Protective Helmets
 - b. Safety Glasses
 - c. Safety Vests

1.17 TEMPORARY FACILITIES REMOVAL

- A. Remove Temporary Facilities at Project completion or sooner, if directed.
- B. Repair any damage resulting from Temporary Facilities, including that to existing Street Trees to remain.

END OF SECTION

PART 1 - GENERAL

1.1 RELATED WORK SPECIFIED IN OTHER SECTIONS

- A. Earthwork: Section 02-30-00
- B. Trenching & Backfill for Utilities: Section 02-31-50

1.2 ALTERNATES

- A. Refer to Section 01-20-00 for possible effect upon Work of this Section.

1.3 COORDINATION

- A. Coordinate with other Trades affecting or affected by Work of this Section.

PART 2 - PRODUCTS

2.1 TEMPORARY FENCING & BARRICADES

- A. Material: Contractor's choice
- B. Type: Satisfy conditions of use

PART 3 - EXECUTION

3.1 PROTECTION

- A. Except if and where indicated to be removed, protect existing Street Trees against damage.
- B. Do not attach Ropes, Cables, or Guys to existing Trees.
- C. Provide necessary Fencing and Barricades. Erect prior to Work, and unless otherwise instructed, remove after Work completion.
- D. Prohibit Earth stockpiling, Material storage, and Vehicle Parking and Traffic within Drip-line of Trees.
- E. Prohibit dumping of Refuse, Chemicals, and other Materials, and puddling or running Water which may injure Plant growth including Root Systems.
- F. Prohibit Foot and Vehicle Traffic which may compact Soil over Root Systems.
- G. Prohibit unnecessary cutting, breaking, and skinning of Branches and Roots.
- H. Prohibit skinning and bruising of Bark.
- I. Prohibit Fires, High-heat, and Smoke adjacent to Trees.

PART 3 - EXECUTION

3.2 WATERING

- A. During Contract Period, water remaining Trees as required to maintain health.

3.3 EXCAVATION AROUND TREES

- A. Excavate within Drip-line of Trees only where absolutely necessary.
- B. Where Utility Trenching is required within Drip-line of Trees, tunnel under and around Roots by hand-digging. Do not cut Main Lateral Roots or Tap Roots.
- C. Where excavating for new Construction is required within Drip-line of Trees, hand-excavate to minimize damage to Root Systems. Use Narrow tine Spading Forks and comb soil to expose Roots. Relocate Roots back into Backfill Areas wherever possible. If large Main Lateral Roots are encountered, expose beyond excavation limits as required to bend and relocate Roots without breaking.
- D. If Root relocation is not practical, hand-cut Roots approximately 3 inches back from new construction.
- E. Do not allow exposed Roots to dry before permanent Backfill is placed; provide temporary Earth cover, or pack with Wet Peat Moss.
- F. Temporarily support and protect Roots against damage until permanently relocated and covered with Backfill.

3.4 PRUNING

- A. Engage Certified Arborist to prune damaged Trees and Shrubs where Roots have been cut or lost.
- B. Cut Branches and Roots as close as possible to Trunk or Limb, leaving no more than 1/2 inch Stub exposed. Perform with sharp Pruning Instruments; do not break or chop.

3.5 GRADING & FILLING AROUND TREES

- A. General:
 - 1. Maintain existing Grade within Drip-line of Trees, unless otherwise shown on Drawings.
- B. Lowering Grades:
 - 1. Carefully hand excavate within Drip-line to new Finish Grade.
 - 2. Cut Roots exposed by excavation to approximately 3 inches below elevation of new Finish Grade. Remove Cut-roots larger than 1 inch diameter.
- C. Raising Grades:
 - 1. Where existing grade is 6 inches or less below Finish Grade shown, use existing Topsoil Fill Materials. Carefully place in single layer, do not compact. Hand-grade to required Finish Elevations.
 - 2. Where Existing Grade is more than 6 inches below Finish Grade shown, follow Architect's instructions.

PART 3 - EXECUTION

3.6 REPAIR & REPLACEMENT OF TREES

- A. Repair Trees damaged by Construction Operations.
- B. Engage Certified Arborist to perform Tree Repair Work.
- C. Make Repairs promptly after Damage occurs to prevent progressive Tree deterioration.
- D. Remove and replace dead and damaged Trees which are determined by Certified Arborist to be incapable of recovery to Normal Growth pattern.
- E. Unless otherwise approved, provide new Trees of same size and species as those removed. Plant and maintain as specified in Landscaping Sections.
- F. Where damaged Trees cannot realistically be repaired or replaced, pay Owner, as Liquidated Damage, value of Trees as determined by Guide for Establishing Values of Trees & Other Plants as prepared by Council of Tree & Landscape Appraisers and as distributed by International Society of Arboriculture. Copies can be obtained from Society at 270 Peachtree St. NW; Suite 1900; Atlanta, GA 30303; (678) 367-0981.

END OF SECTION

1.1 REQUIREMENTS INCLUDED

- A. Establish and maintain Project Security Program to protect Work, Stored Products, and Construction Equipment against Theft and Vandalism.

1.2 RELATED REQUIREMENTS SPECIFIED IN OTHER SECTIONS

- A. Storage and Protection of Products: Section 01-60-00

1.3 MAINTENANCE OF SECURITY

- A. Initiate Security Program promptly after Job Mobilization.
- B. Maintain Security Program throughout construction period, until Owner-occupancy or Owner-acceptance precludes the need for Contractor-security.

END OF SECTION

1.1 GENERAL

- A. Materials and Equipment incorporated into Work shall:
 - 1. Conform to applicable Specifications and Standards.
 - 2. Comply with size, make, type, and quantity specified, unless otherwise approved in writing.
- B. Manufactured and Fabricated Products:
 - 1. Manufacture like parts of duplicate units to standard sizes and gauges, and to be interchangeable.
 - 2. Two or more items of same kind shall be identical, and by same Manufacturer.
 - 3. Products shall be suitable for service conditions.
 - 4. Equipment shall comply with capacity, sizes, and dimensions shown or specified, unless otherwise approved in writing.
- C. Do not use Materials or Equipment for any purpose other than that for which designed or specified.

1.2 RELATED REQUIREMENTS SPECIFIED IN OTHER SECTIONS

- A. Shop Drawings, Product Data, & Samples: Section 01-33-00
- B. Product Substitutions: Section 01-63-00
- C. Cleaning: Section 01-74-00

1.3 CONTRACTOR'S OPTIONS

- A. For Products specified only by Referenced Standard, select any Product meeting Standard.
- B. For Products specified by naming several Products, select any one complying with Specifications.
- C. For Products specified by naming one or more Products and "or approved", select any one specified Product or submit request for substitution as specified in Section 01-63-00.

1.4 INAPPROPRIATE PRODUCTS OR METHODS

- A. If Contractor believes that any specified Product, Method, or System is inappropriate for use Contractor shall, if possible, so notify Architect at least 5 Working Days prior to Contract award. If 5-day advance notice is not possible, such notice shall be given as soon as possible before performing Work in question.
- B. If notice of objection is not received within time limits specified above, it will be assumed by Owner that Contractor agrees that specified Products, Methods, and Systems are not inappropriate for use on Project.

(Cont.)

1.5 QUANTITY OF PRODUCTS REQUIRED

- A. Whenever in Specifications a Product is referred to in singular number, such reference shall include as many such Products as are shown on Drawings or are required to complete the Work.

1.6 PRODUCTS LIST

- A. Before Contractor's first request for payment, submit to Architect complete list of major Products proposed for use; include proprietary Product names, Manufacturer's name, and installing Subcontractor's name.

1.7 MANUFACTURERS' INSTRUCTIONS

- A. Perform Work in accord with Manufacturers' instructions.
- B. Do not omit preparatory or installation procedures required by Manufacturer, unless specifically modified or exempted by Contract Documents.
- C. When Contract Documents require Work to comply with Manufacturers' instructions, obtain and distribute such instructions to parties performing work including 2 copies to Architect. Maintain 1 set at jobsite during installation and until acceptance.
- D. Handle, install, connect, clean, condition, and adjust Products in strict accord with such instructions and in conformance with specified requirements.
- E. Should job conditions or specified requirements conflict with Manufacturers' instructions, consult Architect for further instructions.
- F. Do not proceed with Work without clear instructions.

1.8 PRODUCT SUBSTITUTIONS

- A. Refer to Section 01-63-00.

1.9 TRANSPORTATION & HANDLING

- A. Arrange Product deliveries in accord with Construction Progress Schedule. Coordinate to avoid conflict with work and site conditions.
- B. Deliver Products undamaged, in Manufacturer's original containers or packaging, and with legible identifying labels intact.
- C. Immediately upon delivery, inspect shipments to assure compliance with Contract Documents and approved Submittals requirements, and assure that Products are properly protected and undamaged.

(Cont.)

1.10 STORAGE & PROTECTION

- A. Follow Manufacturer's instructions.
- B. If and when necessary, provide additional Off-site Storage as specified in Section 01-29-50.
- C. Maintain Product Identity Labels intact.
- D. Store Products subject to weather-damage in weather-tight enclosures.
- E. Maintain Storage Room temperature and humidity within ranges required by Manufacturer's instructions.
- F. Maintain reasonable protection against Product theft and vandalism.
- G. Exterior Storage:
 - 1. Store fabricated Products above ground, on blocking or skids; prevent Product damage and discoloration.
 - 2. Cover Products subject to deterioration with impervious sheet coverings; provide adequate ventilation to prevent condensation.
 - 3. Store loose Granular Materials on solid surface to prevent mixing with foreign matter.
- H. Inspection of Stored Products:
 - 1. Arrange Storage to permit easy access for inspection.
 - 2. Make periodic inspections of stored Products to assure that Products are maintained as specified and are free from damage, discoloration, and deterioration.
- I. Protection after Installation:
 - 1. Provide substantial Coverings as necessary to protect installed Products against damage and discoloration. Remove Covering when no longer needed.

1.11 DAMAGED & REJECTED PRODUCTS DISPOSAL

- A. Immediately remove from Project Site, and lawfully dispose, any Damaged or Rejected Products.

END OF SECTION

1.1 GENERAL

- A. Wherever a Material, Article, or piece of Equipment is identified on the Drawings or in the Specifications by reference to manufacturers' or vendors' names, trade names, catalog numbers, or the like, it is so identified for the purpose of establishing a standard, and any material, article, or piece of equipment of other manufacturers or vendors which will perform adequately the duties imposed by the general design will be considered equally acceptable provided the material, article, or piece of equipment so proposed is, in the opinion of the Architect, of equal substance, appearance, and function. Substitutions will not be approved that require extensive revisions to the Contract Documents or are not in keeping with the general intent of the Architect's design.
- B. Substituted Products shall not be purchased or installed by the Contractor without the Architect's written approval.
- C. The Architect will be sole judge of acceptability of any proposed substitution.
- D. Each request for substitution approval shall include:
 - 1. Identity of Product for which substitution is requested. Include Specification page and paragraph number.
 - 2. Identity of substitution including complete Product description, drawings, photographs, performance and test data; and all other information necessary for evaluation.
 - 3. Quality comparison of proposed substitution with specified Product.
 - 4. Changes in other Work required because of substitution.
 - 5. Effect on construction progress schedule.
 - 6. Cost of proposed substitution compared with specified Product.
 - 7. Any required license fees or royalties.
 - 8. Availability of maintenance service.
 - 9. Source of replacement materials.

1.2 SUBSTITUTIONS DURING BIDDING PERIOD

- A. No request for substitution approval will be considered unless written request in duplicate has been submitted on Standard Form bound hereinafter, and has been received by Architect at least 5 Working Days prior to Subbid submission deadlines.
- B. Requests must be hand-delivered, faxed, electronically-mailed in PDF-format, or postal-mailed. (*Note: Neither faxed, electronically-mailed requests without automatic-read receipt request, nor postal-mailed requests submitted without self-addressed and stamped envelope will be individually acknowledged.*)
- C. Architect will issue Addenda prior to Subbid submission deadlines listing all approved substitutions.

(Cont.)

SUBSTITUTION REQUEST

To: _____

Project: _____

Specified Item: _____

Specifications Section No.: _____ Page No.: _____ Para. (Line) No.: _____

Proposed Substitution Item: _____

Attached Data Includes:

1. Product description, specifications, photographs, drawings, performance data, and/or test data necessary for request evaluation.
2. Description of changes to Construction Documents that proposed substitution will require for proper installation.

The Undersigned hereby certifies that the following is correct, unless otherwise modified by included attachments:

1. Proposed substitution is equivalent or superior to specified item.
2. If proposed substitution should alter project design, dimensions, or installation requirements, the Undersigned will pay for any increased costs necessitated by substitution, including costs for additional engineering, drawing, and specifying.
3. Proposed substitution will have no adverse effect upon work of other trades, progress schedule, Code compliance, or warranty requirements.
4. Maintenance service and replacement products will be locally and readily available.

Additionally, the Undersigned hereby certifies that if this page is altered or modified, that the terms and requirements of the Contract Documents will remain unaltered or unmodified.

(Print or type the following)

Submitted by: _____

Signature: _____

Firm Name: _____

Street Address: _____

City, State, & Zip: _____

Phone: (____) _____ Date: _____

(If submitted after Contract award):

Contractor's Signature: _____

Owner's Signature: _____

(For use by design professional)

____ Approved ____ Approved as noted

____ Not approved ____ Received too late

By _____

Date _____

Remarks _____

October 10, 2003



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1.3 SUBSTITUTIONS AFTER CONTRACT AWARD

- A. Approval will be granted only when recommended by Architect, when approved by Owner, and when:
 - 1. Specified Product cannot be delivered without Project delay, or
 - 2. Specified Product has been discontinued, or
 - 3. Specified Product has been replaced by superior Product, or
 - 4. Specified Product cannot be guaranteed as specified, or
 - 5. Specified Product will not perform properly, or
 - 6. Specified Product will not fit within designated space, or
 - 7. Specified Product does not comply with governing codes, or
 - 8. Substitution will be clearly in Owner's interest.
- B. If and when approved, Architect will issue Change Order for Owner's signature authorizing approved substitution and revising Contract Sum where appropriate.
- C. Owner will be entitled to deduct from the Contract Sum such amounts paid to Architect for evaluating Substitution Requests after Contract award, and to make agreed-upon changes to the Drawings and Specifications made necessary by Owner's acceptance of such substitutions.

1.4 CONTRACT COMPLIANCE

- A. Substitution approval does not relieve Contractor from responsibility for proper execution of the Work and for compliance with other Contract requirements.

END OF SECTION

PART 1 - GENERAL

1.1 GENERAL

- A. Owner has established that Project shall minimize creation of Jobsite Construction Waste.

1.2 SECTION INCLUDES

- A. Wherever practicable, Waste Materials produced as a result of this Project shall be:
1. Reused in Project Work, when so approved by Architect.
 2. Salvaged for reuse on some other project or for resale.
 3. Recycled as specified herein.

1.3 RELATED SECTIONS

- A. Materials & Equipment: Section 01-60-00
B. Cleaning & Trash Removal: Section 01-71-00

1.4 UNATTAINABLE GOALS

- A. Identify any instance where compliance with requirements of this Specification does not appear practicable, and request resolution from Architect.

1.5 REGULATORY AGENCY REQUIREMENTS

- A. Comply with laws, ordinances, and regulations governing:
1. Handling of Hazardous, Toxic, and Contaminated Materials.
 2. Transporting of Waste Materials.

(Cont.)

PART 2 - PRODUCTS

2.1 RECYCLABLE MATERIALS

- A. The following Materials are presumed to be recyclable within the Project area:
1. Land-clearing Debris & Rubble
 2. Asphaltic Concrete
 3. Metals
 4. Clean Dimensional Wood & Pallet Wood
 5. Plywood, OSB, & Particleboard
 6. Roofing
 7. Gypsum Board (unpainted)
 8. Acoustic Tile
 9. Paint
 10. Glass
 11. Thermal & Acoustic Insulation
 12. Carpet
 13. Paper, Cardboard, & Packaging
 14. Plastic
 15. Beverage Containers

2.2 ON-SITE STORAGE CONTAINERS

- A. Provide separate Storage Containers for each of the following:
1. Each type of Recyclable Material
 2. Salvage to be reused
 3. Salvage to be sold
 4. Hazardous, Toxic, and Contaminated Materials.
 5. Disposable Waste, Trash, and Debris.

PART 3 - EXECUTION

3.1 GENERAL

- A. Comply with applicable requirements of Recycling Facilities and Waste Processors.

3.2 PROTECTING WORK OF OTHER TRADES

- A. Protect against damage and discoloration caused by Work of this Section.

PART 3 - EXECUTION

3.3 SORTING & ON-SITE STORING

- A. Segregate Waste Materials and store in Containers specified above.
- B. Do not permit Containers to overflow.
- C. Maintain Storage Area neat and orderly at all times.

3.4 PREPARATION & RECONDITIONING OF RECYCLABLE WOOD

- A. Remove all Nails, Bolts, and other Fasteners.
- B. Segregate Wood contaminated by Creosote, Asphalt, Oil, Preservatives, Lead Paint, or other Chemicals

3.5 TRANSPORTING RECYCLABLE & DISPOSABLE MATERIALS

- A. Comply with governing regulations.

3.6 WORKER INSTRUCTIONS

- A. Instruct on-site Workers about proper separating, handling, and recycling methods.

3.7 CLEANING & REPAIRING

- A. Including Work of other Trades, clean, repair and touch-up, or replace when directed, Products which have been soiled, discolored, or damaged by work of this Section.
- B. Remove Debris from Project Site upon Work completion or sooner, if directed.

END OF SECTION

1.1 WORK INCLUDED

- A. Provide Field Engineering required for Project, including the following:
 - 1. Layout Survey Work
 - 2. Civil, Structural, and other Engineering necessary to execute Contractor's construction methods.

1.2 WORK BY OWNER

- A. Owner's Representative will, upon request, locate existing Control Points and Property Line Corners.

1.3 RELATED WORK SPECIFIED IN OTHER SECTIONS

- A. Summary of Work: Section 01-11-00
- B. Record Documents: Section 01-82-00

1.4 ENGINEER'S QUALIFICATIONS

- A. Layout Surveyor: Oregon State-licensed Land Surveyor
- B. Engineers: Oregon State-licensed in specific service to be performed.

1.5 SURVEY REFERENCE POINTS

- A. Existing Points: See Drawings
- B. Locate prior to starting Work, and preserve during construction.
- C. Make no changes to Existing Points without Architect's approval.
- D. Employ State-licensed Land Surveyor to replace any lost, destroyed, or relocated Points.

1.6 PROJECT LAYOUT

- A. Establish Construction Bench Marks referenced to existing Control Points.
- B. Record Bench Mark locations, with horizontal and vertical dimensions, on Project Record Drawings
- C. Using Surveying Instruments establish lines and levels for the following:
 - 1. Site Improvements, including Paving.
 - 2. Stakes for grading, filling, and Topsoil placing.
 - 3. Utility slopes and invert elevations.
 - 4. Building Foundations, Floor, and Roof elevations.
 - 5. Wall and Column locations and similar Elements.
 - 6. Control lines and levels for Mechanical and Electrical Work.
- D. Periodically verify Layout accuracy.

1.7 EQUIPMENT

- A. Maintain the following at Project Site for Architect's use:
1. Laser Level
 2. Leveling Rod
 3. Plumb Bob
 4. 6 ft. & 10 ft. long Straight Edges
 5. 100 ft. long Measuring Tape or Laser Measuring Device

END OF SECTION

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Perform all cutting, fitting, and patching, including related excavation or backfill required to complete Work, and to:
 - 1. Make Work fit properly
 - 2. Integrate with other Work
 - 3. Uncover Work for installation of ill-timed Work
 - 4. Remove and replace defective and non-conforming Work
 - 5. Remove samples of installed Work for testing
 - 6. Provide penetrations through non-structural surfaces for Mechanical and Electrical Work

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Products similar to those specified elsewhere in this Project Manual:
 - 1. Follow those Specifications.
- B. Other Products:
 - 1. Follow Architect's instructions.

PART 3 - EXECUTION

3.1 EXISTING CONDITIONS

- A. Inspect existing conditions and identify Work subject to damage or movement caused by proposed cutting and patching.
- B. After uncovering, inspect conditions affecting performance of Work.
- C. Report unsatisfactory and questionable conditions to Architect.
- D. Do not proceed with Work until Architect provides further instructions.

3.2 PREPARATION

- A. Maintain adequate Temporary Support necessary to assure structural integrity of affected Work.
- B. Protect other portions of Project Work against damage and discoloration.
- C. Protect Work exposed by cutting against damage and discoloration.

PART 3 - EXECUTION

3.3 PERFORMANCE

- A. Provide proper surfaces for patching and finishing.
- B. Employ qualified Installer or Fabricator to perform cutting and patching for:
 - 1. Weather-exposed or moisture-resistant surfaces.
 - 2. Sight-exposed finished surfaces.
- C. Cut Concrete and other Rigid Materials with Masonry Saw or Core Drill. Do not over-cut at Corners.
- D. Restore cut or removed Work with new Products to provide Work complete in accordance with Contract Documents. Maintain any original Fire-resistance Rating.
- E. Fit Work air-tight to Pipes, Sleeves, Ducts, Conduits, and other surface penetrations.
- F. Where patching occurs, refinish entire surface to provide even finish to match adjacent Work as follows:
 - 1. Continuous Surfaces: Refinish to nearest Intersection or Joint.
 - 2. Assemblies: Refinish entire Assembly.

3.4 CUTTING STRUCTURAL FRAMING

- A. Exposed Members:
 - 1. None permitted unless otherwise shown on Drawings or pre-approved.
- B. Concealed Light-gage Steel Framing Members:
 - 1. Flanges: Do not cut, notch, or drill.
 - 2. Webs: Cut or drill only in compliance with Framing Manufacturer's instructions.

3.5 CLEANING & REPAIRING

- A. Including Work of other Trades, clean, repair and touch-up, or replace when directed, Products which have been soiled, discolored, or damaged by work of this Section.
- B. Remove Debris from Project Site upon work completion or sooner, if directed.

END OF SECTION

PART 1 - GENERAL

1.1 EXTENT OF WORK

- A. As required by Contract Conditions and as specified herein, execute Cleaning and Trash removal during Work progress and at Work completion.

1.2 RELATED WORK SPECIFIED IN OTHER SECTIONS

- A. Materials Recycling & Waste Management: Section 01-64-00
- B. Cleaning specific Products or Work: See respective Specification Sections.

1.3 ALTERNATES

- A. Refer to Section 01-20-00 for possible effect upon Work of this Section.

1.4 REGULATORY AGENCY REQUIREMENTS

- A. Comply with governing Codes, Regulations, Ordinances, and Antipollution requirements.

PART 2 - PRODUCTS

2.1 CLEANING MATERIALS

- A. Use only those which will not create hazards to health or property, and which will not damage Surfaces.
- B. Use only those recommended by Manufacturer of Surface to be cleaned.
- C. Use only on Surfaces recommended by Cleaning Material Manufacturer.

PART 3 - EXECUTION

3.1 GENERAL

- A. Follow Cleaning Material and Surface Manufacturers' instructions.

PART 3 - EXECUTION

3.2 DURING CONSTRUCTION

- A. Periodically, and when directed by Architect, clean to maintain Work, Site, and adjacent Properties free from accumulations of Waste, Rubbish, and Windblown Debris, resulting from Construction Operations.
- B. Provide on-site Containers for collection of Waste, Debris, and Rubbish.
- C. Periodically remove Waste, Debris, and Rubbish; and lawfully dispose of away from Project Site.

3.3 DUST CONTROL

- A. Clean Interior Surfaces prior to painting, and continue cleaning as needed until painting is complete.
- B. Schedule cleaning so that resultant Dust and Contaminants will not fall on wet or newly-coated Surfaces.

3.4 FINAL CLEANING

- A. Remove Waste, Debris, and Surplus Material from Project Site and Adjacent Property, and lawfully dispose. Do not bury on Project Site.
- B. Clean Grounds as follows:
 - 1. Paved Surfaces: Remove Stains, Spills, and Foreign Substances; and hose-clean.
 - 2. Other Surfaces: Rake-clean.
- C. In addition to debris-removal and cleaning specified in other Sections, clean exposed-to-view Exterior and Interior Surfaces.
- D. Employ skilled Workers to perform cleaning.
- E. Remove any Temporary Protection and Labels not required to remain.
- F. From sight-exposed Exterior and Interior Surfaces, remove Grease, Adhesive, Mastic, Dust, Dirt, Paint, Stains, Fingerprints, and other Foreign Substances.
- G. Clean Glazing, including any Mirrors.
- H. Polish Glossy Surfaces to clear shine.
- I. Vacuum-clean Carpet and similar Soft Materials.
- J. Clean Equipment Surfaces, and remove excess Lubricants.
- K. Clean and sanitize Appliances and Plumbing Fixtures.
- L. Ventilating System, if used during construction:
 - 1. Ducts, Blowers, Coils, Etc.: Clean
 - 2. Disposable Filters: Replace
 - 3. Permanent Filters: Clean
- M. Clean Lighting Fixtures and Lamps.
- N. Remove Waste, Debris, and Foreign Substances from Roof and Roof Drainage System.
- O. Maintain Structure and Components clean until Project Substantial Completion.

PART 3 - EXECUTION

3.5 PROTECTING COMPLETED WORK

- A. After cleaning, maintain temporary Door Mat and Disposable Booties adjacent to each Building Entrance, and post durable sign reading:

DO NOT ENTER BUILDING WITHOUT
WEARING FLOOR-PROTECTION
BOOTIES

END OF SECTION

1.1 RELATED REQUIREMENTS SPECIFIED IN OTHER SECTIONS

- A. Record Documents: Section 01-82-00
- B. Operating & Maintenance Data: Section 01-83-00
- C. Equipment: Div. 11
- D. Mechanical Requirements: See Mechanical Specifications
- E. Electrical Requirements: See Electrical Specifications

1.2 ADVANCE NOTICES

- A. Notify Architect's, Construction Manager's, and Owner's Representatives at least 5 working days prior to specified Tests and Inspections.

1.3 GENERAL

- A. Coordinate start up schedules for all Equipment and Systems.
- B. Verify that:
 - 1. Each piece of Equipment or System has been checked for proper Lubrication, Drive Rotation, Belt Tension, Control Sequence, and other Conditions which could damage Equipment or Systems.
 - 2. Tests, Meter Readings, and specified Electrical Characteristics agree with those required by Equipment or System Manufacturer.
 - 3. Equipment and Systems Wiring and Support Components are complete, and have successfully passed all required Tests.
- C. Submit copies of all required Inspections and Tests to Architect's, Construction Manager's, and Owner's Representatives.
- D. Certify in writing that Equipment and Systems are properly installed and correctly functioning.

1.4 START UP REQUIREMENTS

- A. Execute start up in accordance with Contract Specifications and Manufacturers' instructions.
- B. When so specified, require Manufacturers' authorized Representatives to inspect and approve Equipment and Systems prior to start up, and to supervise placing Equipment and Systems in operation.
- C. Adjust and balance Equipment and Systems prior to testing

(Cont.)

1.5 FUNCTIONAL TESTING

- A. Comply with Specifications requirements.
- B. Perform required Tests in presence of Architect's, Construction Manager's, and Owner's Representatives.
- C. Conduct Tests under specified Design Operating Conditions.
- D. Tests shall clearly demonstrate that the Equipment and Systems comply with Specifications, including proper installation, adjustment, calibration, and connections.
- E. Perform Tests in the following sequence:
 - 1. Test Equipment individually.
 - 2. Test Equipment Subsystems separately.
 - 3. Test complete Systems.
 - 4. Test Interties with other Systems.
- F. Obtain Architect's, Construction Manager's, and Owner's written certification of acceptable Tests.
- G. Contractor shall furnish all required Testing Equipment and Materials.

1.6 PERFORMANCE TESTING

- A. Immediately upon written acceptance of Functional Tests, operate Equipment and Systems for at least 30 consecutive days to demonstrate that Equipment and Systems comply with specified Performance Requirements.
- B. In event of Performance Test failure, immediately discontinue 30 day Test, make necessary repairs, adjustments, or replacements, and repeat 30 day Test.
- C. Satisfactory completion of 30 day Performance Test does not relieve Contractor of Contract Warranty requirements.
- D. Systems to be tested include, but are not limited to:
 - 1. Building Equipment
 - 2. Plumbing Systems
 - 3. Heating, Ventilating, & Air Conditioning Systems
 - 4. Control Systems
 - 5. Electrical Power Systems
 - 6. Lighting Systems
 - 7. Fire Suppression Systems
 - 8. Compressed Air Systems
 - 9. Irrigation Systems

1.7 TESTING PROCEDURES APPROVAL

- A. At least 30 calendar days prior to starting Tests, prepare and submit, for Architect's and Owner's approval, detailed description of Contractor's proposed Testing Procedures. Do not begin Tests until Procedures have been approved.

(Cont.)

1.8 DOCUMENTING TESTS

- A. Contractor shall prepare Check-off Sheet(s) for each Component of each System.
- B. In addition to Test results, Check-off Sheets shall include the following:
 - 1. Project Name
 - 2. Equipment/System Item
 - 3. Tag Number
 - 4. Description
 - 5. Calibration
 - 6. Manufacturer & Model
 - 7. Installation Bulletin
 - 8. Specification Page and Paragraph Number
 - 9. Test Conductors' identities and signatures
 - 10. Space for Architect's and Owner's signature of acceptance

1.9 SUBMITTALS

- A. Submit Test Reports to General Contractor for inclusion within Owner's Operation & Maintenance Manuals specified in Section 01-83-00.

END OF SECTION

1.1 RELATED REQUIREMENTS SPECIFIED IN OTHER SECTIONS

- A. Cleaning & Trash Removal: Section 01-74-00
- B. Equipment & Systems Start Up: Section 01-75-00
- C. Warranties & Bonds: Section 01-78-00
- D. Record Documents: Section 01-82-00
- E. Operating & Maintenance Data: Section 01-83-00

1.2 SUBSTANTIAL COMPLETION INSPECTION

- A. When Contractor considers Work substantially complete, as defined in General Conditions, Contractor shall submit to the Architect:
 - 1. Written notice that Work, or designated portion thereof, is substantially complete.
 - 2. List of Items to be completed or corrected.
- B. Architect will, as soon as possible thereafter, make inspection to determine completion status.
- C. If Architect should determine that Work is not substantially complete:
 - 1. Architect will promptly notify Contractor in writing, giving reasons therefore.
 - 2. Contractor shall remedy Work deficiencies, and send second notice of substantial completion to Architect.
- D. When Architect concurs that Work is substantially complete, Architect will:
 - 1. Prepare Certificate of Substantial Completion using AIA Document G704, accompanied with Contractor's list of items to be completed or corrected, as verified and amended by Architect.
 - 2. Submit Certificate to Owner and Contractor for their written acceptance of the responsibilities assigned to them in the Certificate.

1.3 FINAL INSPECTION

- A. When Contractor considers Work complete, Contractor shall submit written certification that:
 - 1. Contract Documents have been reviewed.
 - 2. Contractor has inspected Work for compliance with Contract Documents.
 - 3. Work has been completed in accordance with Contract Documents.
 - 4. Equipment and Systems have been tested in presence of Owner's Representative and are operational.
 - 5. Work is complete and ready for final inspection.
- B. Architect will inspect Work to verify completion status as soon as possible after receipt of Contractor's Certification.
- C. If Architect should consider Work incomplete or defective:
 - 1. Architect will promptly notify Contractor in writing, listing incomplete or defective Work.
 - 2. Contractor shall immediately remedy deficiencies, and send second written certification to Architect that Work is complete.
 - 3. Architect will reinspect Work.
- D. When Architect finds Work acceptable under Contract Documents, Architect will request Contractor to make closeout submittals.

1.4 REINSPECTION FEES

- A. Architect will make 1 Substantial Completion Inspection to determine any Work Deficiencies and 1 Final Completion Inspection to ascertain that Deficiencies have been satisfactorily completed.
- B. If Architect should be required to make additional Inspections:
 - 1. Owner will compensate Architect for such additional services.
 - 2. Owner will deduct Architect's compensation amount from Contractor's final payment as follows:
 - a. Architect's time at current Billing Rates.
 - b. Architect's Employees' time at current Billing Rates.
 - c. Others at current Billing Rates
 - d. Charges will be made for necessary travel time, inspection time, and inspection report writing time; auto expense computed at 65 cents per mile; room and board; and all other expenses incurred in making inspections.

1.5 EVIDENCE OF PAYMENTS & RELEASE OF LIENS

- A. Contractor shall submit the following:
 - 1. Contractor's Affidavit of Payment of Debts and Claims, AIA Doc. G706.
 - 2. Contractor's Affidavit of Release of Liens, AIA Doc. G706A including the following:
 - a. Consent of Contractor's Surety, if any, to Reduction in or Partial Release of Retainage, AIA Doc. G707A.
 - b. Consent of Contractor's Surety, if any, to Final Payment, AIA Doc. G707.
 - c. Contractor's Release or Waiver of Liens.
 - d. Separate releases or waivers of lien for Subcontractors, Suppliers, and others with lien rights against Owner's Property, together with list of those parties.
- B. Sign and execute all Submittals, before delivery to Architect.

1.6 CONTRACTOR'S CLOSEOUT SUBMITTALS TO ARCHITECT

- A. Certificate of Insurance for Products & Completed Operations: See Contract Conditions
- B. Wage Certification: See Contract Conditions
- C. Project Record Documents: See Section 01-82-00
- D. Owner's Operating & Maintenance Manual: See Section 01-83-00
- E. Certificate of Domestic Water Disinfection
- F. Building Official's Certificates of Inspections
- G. Building Official's Certificate of Occupancy

(Cont.)

1.7 SPARE PARTS & MAINTENANCE MATERIALS SUBMITTALS TO OWNER

- A. Specific Requirements: See Specification Sections
- B. Products: Identical to those included in Project Work
- C. Storage Location: On Project premises where directed by Owner
- D. Required Submittals:
 - 1. Extra Acoustic Tile: See Section 09-50-00
 - 2. Extra Resilient Floor Covering: See Section 09-65-00
 - 3. Extra Carpet: See Section 09-68-00
 - 4. Extra Paint: See Section 09-90-00
 - 5. Extra Wall Covering: See Section 09-95-00
 - 6. Extra Fire Suppression Equipment: See Fire Suppression Specifications
 - 7. Extra Plumbing Equipment: See Plumbing Specifications
 - 8. Extra HVAC Equipment: See HVAC Specifications
 - 9. Compressed Air Systems: See Mechanical Specifications
 - 10. Extra Electrical Equipment: See Electrical Specifications
 - 11. Extra Irrigation Equipment: See Div. Irrigation Specifications
 - 12. Others required by Specifications

1.8 DEMONSTRATIONS

- A. Instruct Owner in operation of all Systems and Equipment in accordance with Section 01-83-00.

1.9 FINAL ADJUSTMENT OF ACCOUNTS

- A. Submit final statement of accounting to Architect, including the following:
 - 1. Original Contract Sum
 - 2. Additions and deductions resulting from:
 - a. Previous Change Orders
 - b. Other adjustments
 - c. Deductions for uncompleted Work
 - d. Deductions for any Liquidated Damages
 - e. Deductions for Reinspection Payments
 - 3. Total Contract Sum, as adjusted
 - 4. Previous payments
 - 5. Sum remaining due
- B. Architect will prepare and issue final Change Order, reflecting approved adjustments to Contract Sum not previously made by Change Orders.

1.10 FINAL APPLICATION FOR PAYMENT

- A. Follow procedures specified in Section 01-29-50.

END OF SECTION

1.1 REQUIREMENTS INCLUDED

- A. Compile specified Bonds, if any, and Warranties.
- B. Compile specified Service and Maintenance Contracts.
- C. Review Submittals to verify compliance with Contract Documents.

1.2 RELATED REQUIREMENTS SPECIFIED IN OTHER SECTIONS

- A. Bid Bond: See Procurement Requirements
- B. Performance & Labor & Material Payment Bonds: See Contract Conditions
- C. General Warranty for Construction: See Contract Conditions
- D. Contract Closeout: Section 01-77-00
- E. Operating & Maintenance Data: Section 01-83-00
- F. Warranties or Bonds required for Specific Products: See respective Specification Sections

1.3 REQUIRED SUBMITTALS

- A. Assemble Bonds, Warranties, and Service & Maintenance Contracts executed by Contractor, and each of respective Manufacturers, Suppliers, and Subcontractors.
- B. Number of Original Signed Copies Required: Provide 1 for each volume of Owner's Operating & Maintenance Manual specified in Section 01-83-00.
- C. Table of Contents: Neatly type in orderly sequence.
- D. Provide complete information for each of the following:
 - 1. Product or Work Item
 - 2. Firm, with name of Principal, Address, and Telephone Number
 - 3. Beginning date and duration of Bond, Warranty, or Service & Maintenance Contract.
 - 4. The following information for Owner's Personnel:
 - a. Procedure in event of failure or malfunction.
 - b. Instances which affect Bond, Warranty, or Service & Maintenance Contract.
 - 5. Contractor, name of responsible Principal, Address, and Telephone Number.

1.4 SUBMITTAL FORM

- A. Pages Size: 8-1/2 x 11 inches
- B. Fold larger sheets to fit into Binder.
- C. Cover: Identify each Packet with printed title "WARRANTIES & BONDS".
- D. List:
 - 1. Title of Project
 - 2. Name of Contractor
- E. Punch sheets for standard 3-ring Binder.

1.5 SUBMITTAL LOCATION

- A. Bind into Owner's Operating & Maintenance Manuals specified in Section 01-83-00.

1.6 SUBMITTAL TIME

- A. See Section 01-83-00.

1.7 MANUFACTURERS' WARRANTIES

- A. In addition to Contractor's Warranty, Manufacturers' Warranties shall pass to Owner and shall not take effect until affected Work has been accepted in writing by Owner.

END OF SECTION

1.1 GENERAL

- A. Maintain at Project Site for Owner, 1 record copy of:
 - 1. Contract Drawings & Specifications
 - 2. Addenda
 - 3. Change Orders & other Contract Modifications
 - 4. Field Orders & other Written Instructions
 - 5. Approved Shop Drawings, Product Data, & Samples.
 - 6. Field Test Reports

1.2 RELATED REQUIREMENTS SPECIFIED IN OTHER SECTIONS

- A. Shop Drawings, Product Data, & Samples: Section 01-33-00
- B. Operating & Maintenance Data: Section 01-83-00

1.3 MAINTENANCE OF DOCUMENTS & SAMPLES

- A. Store in Contractor's Field Office apart from Documents used for Construction.
- B. Provide Files, Shelving, and Cabinets necessary to safely and securely store Documents and Samples.
- C. Maintain Documents clean, dry, legible, and in good order.
- D. Do not use Record Documents for Construction purposes.
- E. Make Documents available at all times for Architect's inspection.
- F. Architect will monitor Record Documents during each Jobsite visit. Up-to-date Record Documents are prerequisite to acceptance and approval of Payment Application.

1.4 DRAFTER'S QUALIFICATIONS

- A. Drafting must be accurate and legible.
- B. If Architect deems submitted Drafting to be unacceptable, redraft until acceptable at no additional cost to Owner.

1.5 WORK SET MARKING DEVICES

- A. Type: Waterproof soft-tip
- B. Color Code, unless otherwise directed or approved:
 - 1. Green: Document changes
 - 2. Red: Work deleted
 - 3. Other Contrasting Color: Revised Dimensions and other Notations

1.6 RECORD DRAWINGS

- A. Maintain 1 complete digital-set and hard copy of Contract Drawings to record all Contract changes.
- B. Show actual conditions where installation varies substantially from Work shown on Drawings. Give particular attention to Concealed Work that would be difficult or impossible to record at later date. Record location of Backing and other Concealed Items required for installation of Future Work.
- C. Mark whichever Contract Drawing or Shop Drawing is most appropriate and most capable of accurately and clearly showing actual "field conditions". Where Shop Drawings are used to record changes, record cross-reference on appropriate Contract Drawing.
- D. Where applicable, indicate Change Order numbers with each Change.
- E. Indicate related Specification or Product Data revisions, where applicable.
- F. Upon Work completion, submit hard-copy and digital-copy to Architect for forwarding to Owner.
- G. Contractor may retain Work-set for Contractor's Records.

1.7 RECORD SPECIFICATIONS

- A. Maintain 1 complete copy of Project Manual including Specifications; any Addenda; and other Written Documents such as Change Orders, Supplemental Instructions, and similar written Modifications issued during course of Work.
- B. Mark Documents to show actual conditions where installation varies substantially from specified Work. Give particular attention to Concealed Work that would be difficult or impossible to record at later date.
- C. Indicate related Record Drawing and Product Data revisions, where applicable.

1.8 RECORD PRODUCT DATA

- A. Maintain 1 copy of each Product Data submittal.
- B. Mark documents to show actual conditions where installation varies substantially from Contract Specifications or Drawings. Include any variations in installed Products or in Manufacturer's installation instructions. Give particular attention to Concealed Work that would be difficult or impossible to record at later date.
- C. Indicate related Record Drawing and Specifications revisions, where applicable.

1.9 RECORD SAMPLES

- A. Immediately prior to Substantial Completion date, Contractor shall coordinate with Architect to determine which, if any, Contractor-maintained Samples shall be submitted for Owner's permanent record.

1.10 RECORDING

- A. Label each Document "PROJECT RECORD" in neat, large, printed letters.
- B. Record Information concurrently with Construction progress.
- C. Do not conceal any Work until required Information is recorded.
- D. Legibly mark Drawings to record the following Actual Construction:
 - 1. Depth of Foundation Elements in relation to adjacent Ground Floor elevation.
 - 2. Horizontal and Vertical Locations of Underground Utilities and Appurtenances, referenced to permanent Surface Improvements.
 - 3. Location of Internal Utilities and Appurtenances concealed in Construction, referenced to visible and accessible Features of Structure.
 - 4. Field Changes of Dimensions and Details.
 - 5. Changes made by Change Order or Field Order.
 - 6. Details not shown on original Contract Drawings.
- E. Legibly mark Specifications and any Addenda to record the following:
 - 1. Manufacturer, Trade Name, Catalog Number, and Supplier of each Product actually installed.
 - 2. Changes made by Change Order or Field Order.

1.11 SUBMITTAL

- A. Organize Record Documents into manageable Sets, including Cover Sheet for each Set indicating the following:
 - 1. Project title
 - 2. Date
 - 3. Contractor's Name & Address
 - 4. Title and number of each Record Document
 - 5. Name of Person who prepared Sheet
 - 6. Signature of Contractor or his authorized Representative
- B. Submission Method:
 - 1. Submit Hard-copy and Digital-copy to Architect for forwarding to Owner.

END OF SECTION

1.1 GENERAL

- A. Compile Product Data and related Information appropriate for Owner's maintenance and operation of Products furnished under Contract.
- B. Prepare as specified herein and in other Specification Sections.
- C. Instruct Owner's Personnel in maintenance of Products and in operation of Equipment and Systems.

1.2 RELATED REQUIREMENTS SPECIFIED IN OTHER SECTIONS

- A. Shop Drawings, Product Data, & Samples: Section 01-33-00
- B. Equipment & Systems Start Up: Section 01-75-00
- C. Contract Closeout: Section 01-77-00
- D. Warranties & Bonds: Section 01-78-00
- E. Project Record Documents: Section 01-82-00

1.3 QUALITY ASSURANCE

- A. Data preparation shall be done by Personnel:
 - 1. Trained and experienced in maintenance and operation of described Products.
 - 2. Completely familiar with requirements of this Section.
 - 3. Sufficiently skilled as Technical Writer to communicate essential data.
 - 4. Sufficiently skilled as Drafter to competently prepare required Drawings.

1.4 MANUAL CONTENT - GENERAL

- A. Neatly typewritten Table of Contents for each Volume, arranged in systematic order.
- B. List:
 - 1. Contractor, name of responsible Principal, address, and telephone number.
 - 2. Each Product including name, address, and telephone number of:
 - a. Subcontractor or Installer
 - b. Recommended Maintenance Contractor
 - c. Local source for Replacement Parts
 - 3. Product name and other Identifying Symbols as set forth in Contract Documents.
- C. Product Data:
 - 1. Include only those Sheets which are pertinent to specific Product.
 - 2. Annotate each Sheet to:
 - a. Clearly identify specific Product or Part installed.
 - b. Clearly identify Data applicable to installation.
 - c. Delete references to inapplicable Data.

(Cont.)

1.4 MANUAL CONTENT - GENERAL (Cont.)

- D. Drawings:
1. Supplement Product Data with Drawings where necessary to clearly illustrate:
 - a. Relations of Component Parts
 - b. Control and Flow Diagrams
 2. Do not use Project Record Documents as Maintenance Drawings.
- E. Written Text:
1. Provide where necessary to supplement Product Data and Drawings.
 2. Write all text in English.
 3. Organize in consistent format under separate headings for different procedures.
 4. Provide logical sequence of instructions for each procedure.
- F. Warranties, Bonds, & Maintenance Contracts:
1. Provide copy of each.
 2. Include the following:
 - a. Proper procedures in event of failure.
 - b. Instances which might affect validity of Warranties, Bonds, or Contracts.

1.5 MANUAL FOR ARCHITECTURAL MATERIALS & FINISHES

- A. Include the following Manufacturer's data:
1. Catalog Number, Size, & Composition.
 2. Color & Texture designations.
 3. Required Reordering Information.
 4. Recommended Cleaning Materials & Methods.
 5. Cautions against detrimental Cleaning Materials & Methods.
 6. Recommended Cleaning & Maintenance Schedule.
- B. Submit specified information for the following:
1. Polished Concrete Floors: Section 03-35-90
 2. Ornamental Metals: Section 05-70-00
 3. Special Doors: Section 08-30-00
 4. Overhead Doors: Section 08-36-00
 5. Aluminum Entrance & Window Systems: Section 08-40-00
 6. Door Hardware: Section 08-71-00
 7. Aluminum Explosion Vents: Section 08-95-00
 8. Acoustic Tile: Section 09-50-00
 9. Resilient Flooring: Section 09-65-00
 10. Carpet: Section 09-68-00
 11. Painting & Finishing: Section 09-90-00
 12. Wall Covering: Section 09-95-00
 13. Visual Display Boards: Section 10-10-00
 14. Toilet Compartments: Section 10-16-00
 15. Operable Partitions: Section 10-65-00
 16. Toilet Accessories: Section 10-80-00
 17. Landscaping: Division 32

1.6 MANUAL FOR WEATHER PROTECTION MATERIALS

- A. Include the following Manufacturer's data:
 - 1. Instructions for Inspection, Maintenance, & Repair.
- B. Submit specified information for the following Products:
 - 1. Metal Roof & Wall Panels: Section 07-41-00
 - 2. Phenolic Wall Panels: Section 07-43-00
 - 3. Single Ply Roofing: Section 07-53-00
 - 4. Sheetmetal Roofing: Section 07-61-00
 - 5. Sheetmetal Flashing & Trim: Section 07-62-00
 - 6. Roof Accessories: Section 07-72-00
 - 7. Joint Sealants: Section 07-92-00
 - 8. Plastic Skylights: Section 08-62-00
 - 9. Translucent Plastic Panels: Section 08-64-00

1.7 MANUAL FOR MECHANICAL EQUIPMENT & SYSTEMS

- A. Include the following Manufacturer's data:
 - 1. Description of Unit and Component Parts including:
 - a. Function, normal operating characteristics, and limiting conditions.
 - b. Performance curves, engineering data, and tests.
 - c. Complete nomenclature and commercial number of replaceable parts.
 - 2. Operating procedures including:
 - a. Start-up, break-in routine, and normal Operating Instructions.
 - b. Regulation, control, stopping, shut-down, and emergency instructions.
 - c. Summer and winter operating instructions.
 - d. Special operating instructions.
 - 3. Maintenance procedures including:
 - a. Routine operations.
 - b. Trouble-shooting guide.
 - c. Disassembly, repair, and reassembly.
 - d. Alignment, adjusting, and checking.
 - e. Servicing schedule, filter-replacement schedule, and lubricating schedule including recommended Lubricants.
 - 4. Manufacturer's printed operating and maintenance instructions.
 - 5. Control Systems operation sequences.
 - 6. Parts list, illustrations, assembly drawings, and diagrams necessary for maintenance, including:
 - a. Life expectancy of Parts subject to wear.
 - b. Items recommended to be stocked as Spare Parts.
 - 7. As-installed Control Systems diagrams.
 - 8. Color-Code Legend, if any.
 - 9. Valve Tag Number Chart, with location and function of each Valve.

(Cont.)

1.7 MANUAL FOR MECHANICAL EQUIPMENT & SYSTEMS (Cont.)

- B. Submit specified information for the following:
1. Irrigation Equipment
 2. Plumbing Equipment
 3. HVAC Equipment
 4. Compressed Air Equipment
 5. Other specified Mechanical Equipment

1.8 MANUAL FOR ELECTRICAL EQUIPMENT & SYSTEMS

- A. Include the following Manufacturer's data:
1. Description of unit and component parts including:
 - a. Function, normal operating characteristics, and limiting conditions.
 - b. Performance curve, engineering data and tests.
 - c. Complete nomenclature and commercial number of replaceable parts.
 2. Panelboard Circuit Directories indicating:
 - a. Electrical service.
 - b. Controls.
 - c. Communications, if any.
 3. As-installed wiring Color-Code Legend, if any.
 4. Operating procedures, including:
 - a. Routine and normal operating instructions.
 - b. Sequences required.
 - c. Special operating instructions.
 5. Maintenance procedures including:
 - a. Routine operations.
 - b. Trouble-shooting guide.
 - c. Disassembly, repair, and reassembly.
 - d. Adjustment and checking.
 6. Manufacturer's printed operating and maintenance instructions.
 7. Parts List, including current prices, and recommended spare parts to be maintained in storage.
- B. Submit specified information for the following:
1. Appliances
 2. Lighting Fixtures
 3. Hoist Equipment
 4. Other specified Electrical Equipment

1.9 ADDITIONAL DATA

- A. Prepare and include the following:
1. Additional data when need becomes apparent during instruction of Owner's personnel.
 2. Additional data specified in other Sections of Specifications to be included.

1.10 SUBMITTAL SCHEDULE

- A. Submit to Architect in final form, 1 paper-copy of complete data at least 15 days prior to Final Completion Inspection.
- B. Copy will be returned with comments.
- C. Within 10 days following Final Inspection, digitally-submit to Architect for forwarding to Owner, corrected-copy in approved final form.

1.11 INSTRUCTION OF OWNER'S PERSONNEL

- A. Prior to Final Project Acceptance, instruct Owner's personnel in necessary operation, adjustment, and maintenance of Products, Equipment, and Systems.
- B. Operating & Maintenance Data specified herein shall be used as Training Manual. Trainers shall review Manual contents with Owner's Personnel in detail as required to clearly explain all aspects of Equipment and Systems operation and maintenance.
- C. Training:
 - 1. Location: At Project Site.
 - 2. Training shall be performed by experienced and Factory-trained Personnel, whose qualifications shall be approved by Architect and Owner prior to start of Training period.
 - 3. Training shall continue until Owner decrees that Personnel are adequately trained.
 - 4. For Owner's future use, provide Owner with computer-viewable Video Recording complete with Audio Sound Track of all Training Sessions. Recording need not be prepared by professional Videographer, but presentation quality must be acceptable to Owner and be suitable for intended purpose.
 - 5. At least 48 hours prior to Training Meeting, notify Architect of Meeting time and location.

END OF SECTION

1.1 SUB-SURFACE SOIL INVESTIGATION REPORT

- A. The following Report, prepared for this Project, is available for review and reference:
1. Title: Oregon Manufacturing Information Center
 2. Project Number: 07041279
 3. Dated: January 10, 2014
 4. Geotechnical Engineer:
 - a. Firm Name: PSI Intertek
 - b. Address: 6032 N. Cutter Circle - Suite 480 - Portland, OR 97217
 - c. Telephone Number: (503) 289-1778
- B. Report can be reviewed at the following locations:
1. Geotechnical Engineer's Office
 2. Contractor's Office

1.2 OWNER'S DISCLAIMER

- A. The Report is not part of the Contract Documents. It is made available for information only.
- B. The Owner does not guarantee Report Information accuracy at locations and times other than those given. Groundwater elevations, particularly, are subject to change.
- C. The Contractor shall assume responsibility for any conclusions the Contractor may draw from this Report. The Contractor may employ its own consultants to analyze this information and/or conduct additional tests and examinations.
- D. The Owner specifically disclaims responsibility for interpretations by any Bidder of information included within the Report.

1.3 DIFFERENT CONDITIONS

- A. If, during construction, conditions are encountered which differ substantially from those indicated in the Report, promptly so notify the Architect in writing, and do not disturb such conditions until directed.
- B. The Architect will promptly request the Owner to instruct the Geotechnical Engineer to investigate such conditions.
- C. If the Geotechnical Engineer determines that conditions do differ substantially from those that reasonably could be anticipated from examination of the Site and the Report, and that such conditions will necessitate a change in the Work and/or an adjustment of the Contract Sum and/or the Contract Time, the Owner will authorize a Change Order, as stipulated in the General Conditions, to enable the necessary changes and/or adjustments.

END OF SECTION

PART 1 - GENERAL

1.1 CONTRACT CONDITIONS

- A. Work of this Section is bound by the Contract Conditions and Division 1, bound herewith, in addition to this Specification and accompanying Drawings.

1.2 RELATED INFORMATION SPECIFIED IN OTHER SECTIONS

- A. Geotechnical Data: Section 02-10-00
- B. Utility Trenching: Section 02-31-50
- C. Base Rock under Asphalt Pavement: Section 02-74-00
- D. Vapor Barrier under Concrete Flatwork: Section 03-30-00
- E. Landscape Soil Preparation & Planting: Division 32

1.3 WORK INCLUDED, BUT REIMBURSED BY OWNER

- A. Should Rock as defined below be encountered, other than any shown in Geotechnical Report, or any shown on Drawings, or any exposed to view during Bidding Period, Owner will pay extra for any necessary Rock removal and take credit for omitted Earth excavation, in accordance with Contract Conditions.
- B. Should Unstable Soil as defined below or excessive Water be encountered, other than any shown in Geotechnical Report, or any shown on Drawings, or any exposed to view during Bidding Period, Owner will pay extra for necessary site dewatering or soil removal, in accordance with Contract Conditions. Owner will not pay for removal or dewatering of Unstable Soil caused by reasonably anticipated inclement weather or by Contractor's work at the Site.
- C. Should Wells, Cisterns, Tanks, Cesspools, Garbage Pits, Foundations, Rubble, etc. be encountered, other than any shown on Geotechnical Report, or any shown on Drawings, or any exposed to view during Bidding Period, Owner will pay extra for any necessary removal and take credit for omitted Earth excavation, in accordance with Contract Conditions.

1.4 DEFINITIONS

- A. Rock:
 - 1. Boulders larger than 1 cu. yd. or Material that requires Splitting, Drilling, Blasting or other Specialized Equipment for removal.
- B. Unstable Soil:
 - 1. Soft, loose, or wet Ground that is incapable of supporting Material, Equipment, Personnel, or Structure.

(Cont.)

PART 1 - GENERAL

1.4 DEFINITIONS (Cont.)

- C. Unsuitable Fill Material:
 - 1. Soil with more than 2% Organic Fragments by volume, and/or with more than Optimum Moisture Content for compaction, and/or with Debris.
- D. AASHTO:
 - 1. American Association of State Highway and Transportation Officials, 341 National Press Building, Washington, D.C., 20004
- E. Weed-free:
 - 1. Material containing less than 5 objectionable Weeds per 100 sq. ft. Weeds include Dandelion, Jimsonweed, Quack Grass, Horsetail, Mustard, Canadian Thistle, Morning Glory, Rush Grass, Lambs Quarter, Chickweed, Cress, Crabgrass, Nutgrass, Poison Oak, Blackberry, Tansy Ragwort, and any other similar objectionable growth.

1.5 ALTERNATES

- A. Refer to Section 01-20-00 for possible effect upon Work of this Section.

1.6 COORDINATION

- A. Coordinate with other Trades affecting or affected by Work of this Section.

1.7 SOIL BEARING TESTS

- A. Should Contractor doubt Bearing Capacity of existing Soil, tests at Owner's expense may be ordered by Architect.

1.8 REGULATORY AGENCY REQUIREMENTS

- A. Comply with City's & DEQ's Dust, Erosion, and Sediment control requirements.

1.9 ADVANCE NOTICES

- A. Notify Testing Lab and Geotechnical Engineer at least 24 hours prior to completion of Excavation Work and Compaction Work so inspections can be made.

EARTHWORK**PART 2 - PRODUCTS****2.1 GRAVEL**

- A. Material: Round; water-worn; washed; sound; durable Rock which is free of soft, friable, thin, elongated, or laminated Pieces; disintegrated Material; organic Matter; Oil; Alkali; or other Deleterious Substances.
Maximum Size: See Filling under PART 3 - EXECUTION
- B. Minimum Size: 5% maximum passing #200 Sieve
- C. Gradation: Even

2.2 CRUSHED ROCK

- A. Material: Washed; sound; durable Rock which is free of soft, friable, thin, elongated, or laminated pieces; disintegrated Material; organic Matter; Oil; Alkali; or other Deleterious Substance.
- B. Shape: Mechanically crush as follows:
 - 1. Fracture at least 70% of Particles on at least 2 Faces.
 - 2. Maximum Unfractured Particles:
 - a. 3/8 inch and larger Rock: 10%
 - b. Smaller than 3/8 inch Rock: 5%Maximum Size: See Filling under PART 3 - EXECUTION
- C. Minimum Size: 5% maximum passing #200 Sieve
- D. Gradation: Even

2.3 IMPORTED LOAM

- A. Material: Fertile, friable, natural, native of locality, and reasonably free of Subsoil, Clay, Silt, Stones, Lumps, Plants, Roots, Sticks, Weeds, Seeds, and other Extraneous Matter.
- B. Minimum Loam: 70%
- C. Minimum Organic Compost: 30%

2.4 COMPACTION EQUIPMENT

- A. Type: Contractor's choice, but appropriate for conditions of use.
- B. Caution: Within 3 ft. of Walls or Curbs use only small, manually-guided Compactors.

2.5 GROUND STABILIZATION FABRIC

- A. Manufacturer: Amoco, or approved.
- B. Type: Propex 2002
- C. Extent of Work: Provide where shown on Drawings.

PART 3 - EXECUTION

3.1 EXISTING CONDITIONS

- A. Prior to starting Work of this Section, verify that Site Clearing has been properly completed and that existing Grades agree with Drawings.
- B. Notify General Contractor about defects requiring correction.
- C. Do not start Work until conditions are satisfactory.
- D. Should any suspected Contaminated Soil be encountered perform the following:
 - 1. Immediately notify Architect and Dept. of Environmental Quality.
 - 2. Comply with Architect's directions and Regulatory Agency requirements.
 - 3. Perform no Work that could disturb or spread suspected Contaminated Soil.
 - 4. Owner will employ and pay Testing Lab to confirm presence of Contaminated Soil.
 - 5. If Laboratory Tests confirm presence of Contaminated Soil, Owner will remove Contaminated Soil and will issue Change Order increasing Contract Sum for any proven additional cost to the Contractor and extending Contract Completion Date for any proven Contractor's lost time.

3.2 SOIL BEARING TESTS

- A. Should Contractor doubt Bearing Capacity of Existing Soil, Tests at Owner's expense may be ordered by Architect.

3.3 PROTECTION

- A. Monuments:
 - 1. Carefully maintain Bench Marks, Monuments, and other Reference Points.
 - 2. If disturbed or destroyed, replace as directed.
- B. Existing Utilities:
 - 1. Comply with requirements specified in Section 01-11-00.
- C. Traffic Control:
 - 1. Unless otherwise approved by Governing Authorities, provide necessary Barricades, Detours, Warning Devices, Flaggers, and coordinate Equipment movement to maintain Vehicle and Pedestrian Traffic on Public and Private Streets, Drives, and Walks.
- D. Erosion, Silt, & Sediment Control:
 - 1. In compliance with requirements of Dept. of Environmental Control (DEQ) and other Governing Agencies, prevent Eroded Material, Silt, and Sediment against entering into any Watercourse or Storm Drain, and onto any adjacent Property.
- E. Street Cleaning:
 - 1. Maintain Public and Private Streets and Walkways clean and Drains open at all times.

(Cont.)

EARTHWORK**PART 3 - EXECUTION****3.3 PROTECTION (Cont.)**

- F. Dust Control:
 - 1. Protect Persons and Property against damage and discomfort caused by Dust; dampen where necessary to settle Dust and where directed.
- G. Existing Trees to remain:
 - 1. Protect against damage in accordance with Section 01-56-00.
- H. Work of this Section:
 - 1. Except under Pavement and Walkways, protect Graded Material against damage and compaction from Traffic.
 - 2. Provide necessary Slopes and Ditches to drain Site during construction.
- I. Other Work and Adjacent Property:
 - 1. Protect against damage and discoloration caused by work of this Section.

3.4 CUTTING EXISTING PAVEMENT, IF ANY

- A. Cut, prior to excavating, with vertical, straight-line Joints using Pavement Saw or other Tool designed for cutting Pavement.
- B. Make Cuts parallel or perpendicular to Pavement centerline.
- C. Pavement Cut Width: Extend Cut 1 ft. beyond each side of Excavation.
- D. Replace Pavement to condition at least as good as existing prior to cutting. Comply with Project Specifications.

3.5 EXCAVATION

- A. Excavating:
 - 1. Excavate with square-edge Buckets as necessary for Work shown on Drawings or specified.
 - 2. Allow ample space for Concrete Formwork and Utility Trenching.
 - 3. Do not weave, pump, rut, or otherwise disturb Excavated Grade Surfaces with Equipment.
 - 4. Protect any Excavation Slopes with securely anchored Plastic Sheeting. Install as soon as practical following excavation, and maintain as long as necessary to prevent Soil erosion.
 - 5. Remove any Disturbed Material and replace with Compacted Fill at no additional cost to Owner.
 - 6. Leave Bearing Surfaces undisturbed, level, and true. Where necessary, compact as specified below.
- B. Blasting:
 - 1. None permitted.

(Cont.)

PART 3 - EXECUTION

3.5 EXCAVATION (Cont.)

- C. Depth of Excavation:
 - 1. Excavate to elevations no higher than shown on Drawings.
 - 2. Notify Architect if adequate Soil Bearing is not reached.
 - 3. Drawings indicate Contract Quantities; adjustments for variations will be made in accordance with General Conditions.
- D. Temporary Stockpiling of Excavated Material:
 - 1. Locate within Construction Area.
 - 2. Unless otherwise approved, do not obstruct Private or Public Streets, Drives, Walkways, or Parking Areas.
 - 3. Locate sufficiently far from Excavation edges to prevent Stockpiled Material from falling into Excavation, and as required to eliminate effect on Excavation stability.
 - 4. At Stockpiles remaining during Rainy Periods, grade and cover Stockpile as required to prevent Compaction, Erosion, and Water Infiltration.
- E. Excess Excavation:
 - 1. Where Excavation, through Contractor's error, is carried to levels lower than those shown on Drawings, fill to proper levels at Contractor's expense as follows:
 - a. Under Footings: Fill with Concrete as specified in Section 03-30-00. Earth Fill or Gravel Fill under Footings not permitted.
 - b. Under Paving, Concrete Floor Slabs, & Walkways: Fill with compacted Gravel or Crushed Rock.
 - c. Elsewhere: Fill with Imported Loam
- F. Shoring:
 - 1. Brace, shore Sides, or increase width of Excavations as necessary to prevent Cave-ins.
 - 2. Repair any Slides or Cave-ins.
 - 3. Remove Shoring before Backfilling.
- G. Water, Snow, Ice, & Frost:
 - 1. Keep Bearing under Footings dry and free of Snow, Ice, and Frost.
 - 2. Provide and operate Pumping Equipment necessary to keep Excavations free from Standing Water. Do not reduce adjacent Ground Water level to extent that could endanger or damage adjacent Structures or Property.
 - 3. Do not create "quick" condition or affect Soil Bearing Capacity.
 - 4. Do not discharge "removed" Water into permanent on-site Utilities or Trenches without Sediment Control.
 - 5. If Bearing Surfaces are softened by Water, Snow, Ice, or Frost, re-excavate to Solid Bearing and fill at Contractor's expense with Concrete as specified in Section 03-30-00.

3.6 EXCESS OR SHORTAGE OF EARTH

- A. Remove from Site excess Material and Material unsuitable for filling.
- B. Provide additional Material herein specified or needed for Fills.

PART 3 - EXECUTION

3.7 GROUND STABILIZATION FABRIC INSTALLATION

- A. Follow Manufacturer's instructions.
- B. Prior to placing Fill, cover Fabric with 1 inch thick layer of Sand.

3.8 PROOF-ROLLING SUBGRADE

- A. Following Subgrade preparation and within 24 hours prior to Fill or Base Course placement, proof-roll Subgrade beneath Building and Pavement Areas with fully-loaded Water Tank Truck or 10 to 12 cu. yd. Dump Truck.
- B. If any areas pump, weave, or appear soft, immediately notify Architect and Owner's Geotechnical Engineer about encountered conditions. Unless otherwise directed and at no additional cost to Owner, over-excavate areas 12 inches minimum, and fill with Crushed Rock compacted as specified below.
- C. If more than 30 calendar days has passed between completion of Fill-placement and Construction-start, if Vehicle Traffic has been routed across area, or if Adverse Weather has occurred since Proof-rolling, repeat Proof-rolling specified above.

3.9 FILLING

- A. General:
 - 1. Before proceeding, remove any Snow, Ice, Frozen Material, Debris or Decayable Matter from areas to be filled.
 - 2. To insure bond, scarify any Sloping Ground to receive Fill.
 - 3. Make Fills as soon as feasible to assure thorough settlement.
 - 4. Uniformly place Fills adjacent to Structures to prevent unbalanced loading.
 - 5. Place Fills in the following maximum loose-lift thicknesses:
 - a. Where Compacted with Heavy Equipment Compactors: 8 inches
 - b. Where Compacted with Hand-operated Compactors: 4 inches
- B. Fills directly under Concrete Flatwork:
 - 1. Base Course:
 - a. Material: Crushed Rock
 - b. Size: 3/4 inch to 1-1/2 inches
 - c. Maximum Fines: 10 %
 - d. Thickness: Fill space between underside of Leveling Course above and existing Subgrade below.
 - e. Maximum Lifts: 12 inches
 - 2. Leveling Course:
 - a. Material: Gravel
 - b. Maximum Size: 3/4 inch
 - c. Thickness: 6 inches

(Cont.)

EARTHWORK**PART 3 - EXECUTION****3.9 FILLING (Cont.)**

- C. Fills beneath Sloping Concrete Flatwork & Asphalt Pavement:
 - 1. Slope Fill to prevent reducing Concrete and Asphalt thicknesses.
- D. Fills Against Walls:
 - 1. Fill with 1-1/2 inch maximum size Gravel.
 - 2. Extend from Footing Bottom to underside of Finish Grade surfacing.
- E. Fills at Planting Areas:
 - 1. Fill with Imported Loam.

3.10 COMPACTING FILLS

- A. Maintain optimum Moisture Content for compaction.
- B. Minimum ASTM D-1557 (modified proctor) Compaction:
 - 1. Under and within 2 ft. of Slabs and Pavements: 95%
 - 2. Under and within 2 ft. of Foundations: 95%
 - 3. Elsewhere: 90%
- C. Extend Fill-compaction to at least 5 ft. beyond edges of Work to be supported.

3.11 WET WEATHER WORK

- A. If Fill is to be placed during wet weather or under wet conditions when control of Soil Moisture-content is not possible, Fill Material shall contain no more than 5% Material passing No. 200 Mesh Sieve (by weight).
- B. Additionally:
 - 1. Slope Ground Surface in Construction Area and seal with Smooth Drum Roller to promote rapid Water-runoff and to prevent Water-ponding, and
 - 2. Perform Work in small areas, and carry through to completion to minimize exposure to wet weather, and
 - 3. Where Traffic over exposed Subgrade is anticipated, protect Subgrade with 12 inch minimum thickness Working Blanket of compacted clean Crushed Rock applied over non-woven Filter Fabric. Areas used as Haul Routes for heavy Construction Equipment may require thicker Blanket. If necessary limit traffic as required to prevent Soil disturbance, and
 - 4. To prevent Water-absorption, leave no Soil uncompacted. Remove Soil which has become too wet for compaction, and replace with new Specified Fill Material.
- C. Optional Treatment:
 - 1. Immediately following excavation, cover Subgrade with Geotextile Fabric. Overlap Fabric Seams 24 inches minimum.

PART 3 - EXECUTION

3.12 GRADING

- A. Rough Grading:
 - 1. Grade entire area of Property to reasonably true and even surfaces.
 - 2. Unless otherwise shown on Drawings, slope Ground at 5% rate for at least 10 ft. away from Building to facilitate drainage.
 - 3. Prevent Water-ponding.
 - 4. Grade to uniform levels or slopes between given Grade Points.
 - 5. Round Surfaces at abrupt Grade changes.
- B. Levels:
 - 1. Grade area around Building to the following levels:
 - a. Paving, Walks, and other Hard-surfaced Areas:
 - 1. To underside of Surfacing, allowing for Gravel Base Course.
 - b. Planting Areas:
 - 1. To Finish Grades, allowing for 12 inches of Imported Loam.
- C. Finish Grading:
 - 1. If Subsoil has not been freshly graded, scarify at least 6 inches deep.
 - 2. Spread necessary Imported Loam over Planting Areas to compacted levels shown on Drawings.
 - 3. Without over-compacting, roll and tamp Soil to prevent future settlement.
 - 4. Remove Stones and Clods larger than 3/4 inch in size; Twigs and Sticks; and any other Foreign Matter.
 - 5. Leave Surfaces ready for Soil-preparation Work by Landscape Subcontractor.

3.13 GRADING TOLERANCE

- A. Position Finish Grade within 0.10 ft. of Grades shown on Drawings.

3.14 RECONDITIONING FINISHED WORK

- A. Where completed Work has been disturbed by subsequent Work, Operations, or Adverse Weather; scarify Surface, re-shape, and re-compact to required Density at no additional cost to Owner.

3.15 CLEANING & REPAIRING

- A. Including Work of other Trades, clean, repair and touch-up, or replace when directed, Work which have been soiled, discolored, or damaged by Work of this Section.
- B. Remove Debris from Project Site upon Work completion, or sooner if directed.

END OF SECTION

PART 1 - GENERAL

1.1 CONTRACT CONDITIONS

- A. Work of this Section is bound by the Contract Conditions and Division 1, bound herewith, in addition to this Specification and accompanying Drawings.

1.2 WORK INCLUDED

- A. Trenching, Pipe Bedding, and Backfilling for Project Utilities including the following:
1. Water Supply System Piping
 2. Irrigation System Piping
 3. Sanitary Sewer System Piping
 4. Storm Sewer System Piping
 5. Foundation Drainage System Piping
 6. Gas System Piping
 7. Electrical System Wiring
 8. Any other Utility System Work shown on Drawings

1.3 RELATED INFORMATION SPECIFIED IN OTHER SECTIONS

- A. Geotechnical Data: Section 02-10-00

1.4 RELATED WORK SPECIFIED IN OTHER SECTIONS

- A. General Earthwork: Section 02-30-00

1.5 WORK INCLUDED, BUT REIMBURSED BY OWNER

- A. Should Rock as defined below be encountered, other than any shown in Geotechnical Report, or any shown on Drawings, or any exposed to view during Bidding Period, Owner will pay extra for any necessary Rock removal and take credit for omitted Earth excavation, in accordance with Contract Conditions.
- B. Should Unstable Soil as defined below or excessive Water be encountered, other than any shown in Geotechnical Report, or any shown on Drawings, or any exposed to view during Bidding Period, Owner will pay extra for necessary site dewatering or soil removal, in accordance with Contract Conditions. Owner will not pay for removal or dewatering of Unstable Soil caused by reasonably anticipated inclement weather or by Contractor's work at the Site.
- C. Should Wells, Cisterns, Tanks, Cesspools, Garbage Pits, Foundations, Rubble, etc. be encountered, other than any shown on Geotechnical Report, or any shown on Drawings, or any exposed to view during Bidding Period, Owner will pay extra for any necessary removal and take credit for omitted Earth excavation, in accordance with Contract Conditions.

PART 1 - GENERAL

1.6 DEFINITIONS

- A. Rock:
 - 1. Material that cannot be removed with Pick and Shovel or by Backhoe with 9500 lb. digging force.
- B. Unstable Soil:
 - 1. Soft, loose, or wet ground that is incapable of supporting Materials, Equipment, Personnel, or Structure.
- C. AASHTO:
 - 1. American Association of State Highway and Transportation Officials, 341 National Press Building, Washington D.C., 20004.
- D. Pipe:
 - 1. Water Supply Pipe, Sewage Pipe, Drainage Pipe, Irrigation Pipe, Gas Pipe, and Electrical Conduit.

1.7 OPTIONS

- A. In lieu of providing Crushed Rock, Contractor may at Contractor's option, substitute the following:
 - 1. Pea Gravel or Sand:
 - a. Where subsequent Backfill settlement is considered critical, such as at Trenches below Pavement, Walkways, Curbs, etc.
 - 2. Native Material:
 - a. Where subsequent Backfill settlement is not considered critical, such as at Trenches below Unsurfaced Areas.
- B. In Trenches within Public Right-of-way or Public Easements, substitute Controlled Density Fill (CDF) consisting of 1000 psi minimum density Cement/Gravel mix or 1 inch Crushed Aggregate Base..

1.8 ALTERNATES

- A. Refer to Section 01-20-00 for possible effect upon Work of this Section.

1.9 COORDINATION

- A. Coordinate with other Trades affecting or affected by Work of this Section.

(Cont.)

PART 1 - GENERAL

1.10 REGULATORY AGENCY REQUIREMENTS

- A. Obtain and pay for any Permits and Inspections required by governing Agencies and Utility Companies.

1.11 ADVANCE NOTICES

- A. Notify Architect and Governing Authorities at least 24 hours prior to covering over Work of this Section so that Inspections can be made.

1.12 FIELD MEASUREMENTS

- A. System layout on Drawings, including existing Utility locations, is diagrammatic and may not be exact.
- B. Verify prior to starting Work.
- C. If field measurements differ slightly from Drawing dimensions modify Work as required for accurate fit. If measurements differ substantially, notify Architect prior to starting Work.

PART 2 - PRODUCTS

2.1 CRUSHED ROCK

- A. Washed, sound, durable, uniform, evenly-graded Rock which is free of soft, friable, thin, elongated, or laminated pieces, disintegrated Material, Organic Matter, Oil, Alkali, or other Deleterious Substance.
- B. Mechanically crush as follows:
 - 1. Fracture at least 70 percent of Particles on at least 2 faces.
 - 2. Unfractured Particles:
 - a. 3/8 inch and larger: 10% maximum
 - b. Smaller than 3/8 inch: 5% maximum
- C. Gradation:
 - 1. Even from Coarse to Fine.
- D. Maximum Size:
 - 1. At Pipe Beds and Pipe Zones: 3/4 inch
 - 2. At Backfills: 1-1/2 inches

PART 2 - PRODUCTS

2.2 PEA GRAVEL

- A. Round, water-worn, washed, sound, durable, uniform, evenly graded Rock which is free of soft, friable, thin, elongated or laminated Pieces, disintegrated Material, Organic Matter, Oil, Alkali, or other Deleterious Substance.
- B. Maximum Size: 1/2 inch

2.3 SAND

- A. Fine granular material naturally produced by Rock disintegration and free from Organic Material, Mica, Loam, Clay, and other Deleterious Substances.

2.4 NATIVE MATERIAL

- A. Excavated Soil native to Project Site and free of Solids larger than 3 inch diameter, Wood, and other Deleterious Materials.

2.5 BURIED UTILITY MARKERS

- A. Tracer Wire: 18 ga. min. solid Copper protected by Green Insulation.
- B. Metallic Foil:
 - 1. Manufacturer & Brand: Reef Industries, Inc. Terra Tape, or approved.
 - 2. Material: Metallic Foil inert to Soil Conditions
 - 3. Thickness: 1 mil
 - 4. Width: 3 inches
 - 5. Imprinted Message:
 - a. "Caution (Type of Utility) Line buried below"
 - b. Repeat Message over full length of Tape
- C. Access Boxes: Provide Valve Boxes, Cleanouts, etc. for Marker toning
- D. Extent of Work: Provide both Markers directly above all metallic and non-metallic Buried Utility Pipe.

2.6 CASINGS FOR BORED CROSSINGS, IF ANY

- A. Material: Schedule 40 Plastic Pipe
- B. Diameter: As required to provide adequate working space for Pipe installation.

PART 3 - EXECUTION

3.1 EXISTING CONDITIONS

- A. Prior to starting Work, verify that existing conditions are suitable to perform work.
- B. Notify General Contractor about defects requiring correction.
- C. Do not start Work until conditions are satisfactory.
- D. Should any suspected Contaminated Soil be encountered perform the following:
 - 1. Immediately notify Architect and Dept. of Environmental Quality.
 - 2. Comply with Architect's directions and Regulatory Agency requirements.
 - 3. Perform no Work that could disturb or spread suspected Contaminated Soil.
 - 4. Owner will employ and pay Testing Lab to confirm presence of Contaminated Soil.
 - 5. If Laboratory Tests confirm presence of Contaminated Soil, Owner will remove Contaminated Soil and will issue Change Order increasing Contract Sum for any proven additional cost to the Contractor and extending Contract Completion Date for any proven Contractor's lost time.

3.2 SOIL BEARING TESTS

- A. Should Contractor doubt Bearing Capacity of Existing Soil, Tests at Owner's expense may be ordered by Architect.

3.3 TRAFFIC CONTROL

- A. Provide Barricades, Detours, Warning Devices, Flaggers, and Equipment Movement necessary to maintain Vehicle and Pedestrian Traffic on public or private Streets and Walks.

3.4 PROTECTING OTHER WORK

- A. Existing Monuments:
 - 1. Carefully maintain Bench Marks, Monuments, and other Reference Points.
 - 2. If disturbed or destroyed, replace as directed.
- B. Existing Utilities:
 - 1. Existing Utilities shown on Drawings are located according to best available information, but accuracy is not guaranteed.
 - 2. Protect encountered active Utilities against damage or dislocation.
 - 3. As directed by Utility Owner, repair or replace active Utilities damaged by work of this Section.
 - 4. Remove inactive or abandoned Utilities from within Building Lines. Plug or cap at least 3 feet outside Building Lines.

(Cont.)

PART 3 - EXECUTION

3.4 PROTECTING OTHER WORK (Cont.)

- C. Erosion, Silt, & Sediment Control:
 - 1. In compliance with requirements of Dept. of Environmental Control (DEQ) and other Governing Agencies, prevent Eroded Material, Silt, and Sediment against entering into any Watercourse or Storm Drain, and onto any adjacent Property.
- D. Street Cleaning:
 - 1. Maintain Public and Private Streets and Walkways clean at all times.
- E. Dust Control:
 - 1. Protect Persons and Property against damage and discomfort caused by Dust. Spry-apply Water where necessary and when directed.
- F. Existing Trees to remain.
 - 1. Protect against damage as specified in Section 01-56-00.
- G. Open Trenches:
 - 1. Protect Persons and Property against injury and damage caused by Open Trenches.
- H. Other Work & Adjacent Property:
 - 1. Protect against damage and discoloration caused by work of this Section.

3.5 CUTTING EXISTING PAVEMENT, IF ANY

- A. Cut prior to excavation with vertical, straight-line Joints using Pavement Saw.
- B. Except where Utility Piping requires otherwise, make Cuts parallel or perpendicular to Pavement centerline.
- C. Cut Width: Except where Utility Piping requires otherwise, extend Cut 1 ft. beyond each side of Trench.
- D. Replace Pavement to condition at least as good as existing prior to cutting. Comply with Project Specifications.

3.6 TRENCHING

- A. Before Starting to Excavate:
 - 1. Strip available Topsoil from areas to be excavated.
 - 2. Stockpile Topsoil where and as directed by General Contractor.
- B. Excavating:
 - 1. Excavate to Lines and Grades shown on Drawings or Specifications, unless otherwise directed by Architect.
 - 2. Allow ample Space for Pipe and Pipe Bedding.
 - 3. Leave Bearing Surfaces undisturbed, level, and true.
 - 4. Hand-grade where necessary.
- C. Blasting:
 - 1. None permitted.

(Cont.)

PART 3 - EXECUTION

3.6 TRENCHING (Cont.)

- D. Depth:
1. Unless otherwise specified or shown on Drawings, allow for at least 24 inches cover over Pipe.
- E. Excavation Width:
1. Where parallel Pipes are to be laid within single Trench:
 - a. At least 18 inches wider than sum of inside diameters of parallel Pipes plus distance between Pipes.
 2. Elsewhere:
 - a. For 4 inch I.D. Pipes & Smaller, if any:
 1. Irrigation Pipe: 9 inches minimum
 2. Elsewhere: 18 inches minimum
 - b. For 6 inch I.D. & larger Pipes, if any: 24 inches minimum
 3. Increase widths where directed by Architect and where necessary to receive Shoring.
 4. Do not damage adjacent Structures or Property.
 5. Do not extend Excavation beyond Construction Easements, unless approved by affected Property Owners.
- F. Temporary Stockpiling of Excavated Material:
1. Locate within Construction Area.
 2. Unless otherwise approved, do not obstruct Private or Public Streets, Drives, or Walkways.
 3. Locate at least 2 ft. from Trench edges. Contractor responsible for safe-loading Trenches.
 4. At Temporary Stockpiles remaining during Rainy Periods, grade and cover Stockpile as required to prevent Compaction, Erosion, and Water Infiltration.
- G. Over-excavation:
1. Where Excavation, through Contractor's error, is carried to levels lower than those shown on Drawings, fill with compacted Pipe Bedding Material to proper levels at no additional cost to Owner.
- H. Shoring:
1. Brace, shore sides, or increase width of excavations as necessary to prevent Cave-ins.
 2. Repair Slides and Cave-ins should they occur.
 3. Remove Shoring before Backfilling.
- I. Water & Frost:
1. Keep Bearing Surfaces dry and frost-free.
 2. When working within Excavation, provide and operate Pumping Equipment necessary to keep excavations free from Standing Water. Do not reduce adjacent Ground Water level to extent that could endanger or damage adjacent Structures or Property. When releasing Ground Water to its static level, prevent Pipe floatation and Backfill disturbance.
 3. Should Bearing Surfaces be softened by Water or Frost, re-excavate to solid bearing and fill at Contractor's expense as specified above for Over-excavation.

PART 3 - EXECUTION

3.7 EXCESS & UNSUITABLE EXCAVATED MATERIAL

- A. Remove from Site, and lawfully dispose.

3.8 PIPE BEDDING INSTALLATION

- A. Material:
 - 1. At any Plastic Pipe or direct-buried Electrical Wiring: Sand
 - 2. At Other Pipe: Crushed Rock
- B. Fill full Trench width.
- C. Minimum thickness below Pipe bottom: 4 inches
- D. Excavate Bell Holes at each Joint to permit proper Joint assembly and inspection.
- E. Hand-shape Trench Bottom to provide uniform, even-support over bottom 120° of Pipe.
- F. Firmly support full Pipe length; do not rest Bell-to-Bell.

3.9 PIPE ZONE MATERIAL INSTALLATION

- A. Material:
 - 1. Within 12 inches of Plastic Pipe: Sand
 - 2. Elsewhere: Crushed Rock
- B. Fill full Trench width.
- C. Sufficiently compact Pipe Zone Material to prevent Pipe movement during final backfilling.
- D. At Pipe smaller than 15 inches diameter: Backfill with Pipe Zone Material to 12 inches above Pipe top.
- E. At 15 inch and larger diameter Pipe: Backfill up to Pipe Spring-line simultaneously on both sides and carefully pack under Pipe Haunches.

3.10 BURIED UTILITY MARKER INSTALLATION

- A. Install at the following uniform distance above the top of Buried Pipe:
 - 1. Minimum: 10 inches
 - 2. Maximum: 12 inches

(Cont.)

PART 3 - EXECUTION

3.11 BACKFILLING

- A. Remove Debris and Decayable Matter from areas to be filled before proceeding.
- B. Make Fills as soon as feasible to assure thorough settlement.
- C. Do not drop sharp, heavy Material onto Pipe.
- D. Do not use sharp Tamping Tool around Pipe.
- E. Do not push Backfill Material into Trench allowing Material to free-fall into open Trench, until at least 2 feet of Cover is provided over Pipe.
- F. Place Fills in 6 to 8 inch maximum Lifts.

3.12 BACKFILL COMPACTION

- A. Compact with Mechanical Vibration.
- B. Maintain optimum Moisture Content for compaction.
- C. Minimum ASTM D-1557 (modified proctor) Compaction:
 - 1. Under and within 2 ft. horizontally and vertically of Structure Foundations, Slabs, or Pavements: 95%
 - 2. Elsewhere: 90%
- D. Do not compact by Water-setting or Water-jetting methods.
- E. Refer to Section 01-45-30 for Testing details.
- F. Replace any Slabs and Pavement which develop Settlement Cracks during Warranty Period.
- G. Re-grade any Unsurfaced Areas where settlement develops during Warranty Period.

3.13 TRENCH BACKFILL MAINTENANCE

- A. Continually maintain unsurfaced Backfilled Trenches throughout Construction Period.

3.14 PROTECTING COMPLETED WORK

- A. Protect against displacement and intrusion by foreign Matter.

3.15 PRODUCT CLEANING & REPAIRING

- A. Where completed areas are disturbed by subsequent Construction Operations or Adverse Weather, scarify Surface, re-shape, and compact to required Density prior to further Construction.
- B. Including Work of other Trades, clean, repair and touch-up, or replace when directed, Products which have been soiled, discolored, or damaged by work of this Section.
- C. Remove Debris from Project Site upon work completion, or sooner if directed.

END OF SECTION

PART 1 - GENERAL

1.1 CONTRACT CONDITIONS

- A. Work of this Section is bound by the Contract Conditions and Division 1, bound herewith, in addition to this Specification and accompanying Drawings.

1.2 WORK INCLUDED BUT SPECIFIED IN OTHER SECTION

- A. Trenching & Backfilling for Work of this Section: Section 02-31-50

1.3 RELATED WORK SPECIFIED IN OTHER SECTIONS

- A. Underground Storm Drainage System & connections to this Work: See Civil Specifications

1.4 ALTERNATES

- A. Refer to Section 01-20-00 for possible effect upon Work of this Section.

1.5 COORDINATION

- A. Coordinate with other Trades affecting or affected by Work of this Section.

1.6 RECORD DRAWINGS

- A. Submit in accordance with requirements specified in Section 01-82-00.

1.7 PRODUCT DELIVERY, STORAGE, & HANDLING

- A. Protect against damage.
- B. Store Plastic Pipe on firm, level support; protect against direct Sunlight.
- C. Store Plastic Pipe Cement in cool location.

1.8 TEMPERATURE

- A. 32°F minimum and 110°F maximum at mating surfaces of Plastic Pipe and Fittings.

PART 1 - GENERAL

1.9 FIELD MEASUREMENTS

- A. System layout on Drawings , including Sewer location and depth, is diagrammatic and may not be exact.
- B. Verify prior to starting Work.
- C. If field measurements differ slightly from Drawing dimensions modify Work as required for accurate fit. If measurements differ substantially, notify Architect prior to starting Work.

1.10 ADVANCE NOTICES

- A. Notify Architect at least 24 hours prior to covering over Work of this Section so inspections can be made.

PART 2 - PRODUCTS

2.1 DRAIN PIPE

- A. Manufacturer: ADS, Hancor, or approved.
- B. Material: Corrugated, perforated Plastic Tubing
- C. Fittings: Match Pipe
- D. Diameter: 4 inches, unless otherwise shown on Drawings.

2.2 FILTER FABRIC

- A. Manufacturer & Brand: Carthage Polyfilter X, Celanese Mirafi 140S, Amoco Propex 4545, or approved.
- B. Maximum Mesh Size: U.S. Standard #100 Sieve
- C. Extent of Work: Provide within Gravel Backfill to prevent Sand, Silt, or Fine Aggregates against entering Drain Pipe.

2.3 PIPE BED & BACKFILL MATERIALS

- A. Specified in Section 02-31-50.

2.4 OTHER MATERIALS

- A. Recommended by Manufacturer and subject to Architect's review and acceptance.
- B. Provide all required to complete and make System operational.

PART 3 - EXECUTION

3.1 EXISTING CONDITIONS

- A. Verify that Drainage Subgrade Surfaces prepared by other Trades are accurately located, graded, compacted, and otherwise properly prepared.
- B. Prior to starting Work, notify General Contractor about defects requiring correction.
- C. Do not start Work until conditions are satisfactory.

3.2 PROTECTING OTHER WORK

- A. Monuments:
 - 1. Carefully maintain Bench Marks, Monuments, and other Reference Points.
 - 2. If disturbed or destroyed, replace as directed.
- B. Existing Utilities:
 - 1. Existing Utilities shown on Drawings are located according to best available information, but accuracy is not guaranteed.
 - 2. Protect active Utilities encountered; notify Utility Owner.
 - 3. Repair or replace Utility Lines damaged by work of this Section.
 - 4. Remove inactive or abandoned Utilities from within Building Lines. Plug or cap at least 3 ft. outside Building lines.
- C. Street Cleaning: Maintain public and private Streets, Walkways, and Drives clean at all times.
- D. Dust Control: Protect Persons and Property against damage and discomfort caused by Dust; water as necessary and when directed.
- E. Existing Street Trees: Protect against damage. See Section 01-56-00.
- F. Work of Other Sections: Protect against damage and discoloration caused by Work of this Section.

3.3 TRENCHING & PIPE BEDDING

- A. Specified in Section 02-31-50.

3.4 DRAIN PIPE INSTALLATION

- A. Set Foundation Drain inverts no lower than 4 inches below adjacent Footing top.
- B. Install Pipe with Perforations facing downward.
- C. Slope Pipe toward and connect to Storm Drainage System.

3.5 ALLOWABLE INSTALLATION TOLERANCES

- A. Install Piping within 1/4 inch of indicated Grade, Location, and Pitch.

PART 3 - EXECUTION

3.6 FILTER FABRIC INSTALLATION

- A. Follow Manufacturer's instructions.
- B. Minimum Joint Lap: 18 inches

3.7 PROTECTING INSTALLED WORK

- A. Protect Drain Pipe against displacement and intrusion by Foreign Matter.
- B. Prevent prolonged exposure of Filter Fabric to Sunlight.
- C. Prevent Traffic on unprotected Filter Fabric.

3.8 BACKFILLING

- A. Specified in Section 02-31-50.

3.9 WASTE MANAGEMENT

- A. Collect Cut-offs, Scrap, Shipping Pallets, Metal Strapping, & Packaging Waste; and place where directed for recycling.

3.10 PRODUCT CLEANING & REPAIRING

- A. Including Work of other Trades, clean, repair and touch-up, or replace when directed, Products which have been soiled, discolored, or damaged by Work of this Section.
- B. Remove Debris from Project Site upon Work completion, or sooner if directed.

END OF SECTION

CAST-IN-PLACE CONCRETE DRIVES, WALKS, CURBS, & GUTTERS**PART 1 - GENERAL****1.1 CONTRACT CONDITIONS**

- A. Work of this Section is bound by the Contract Conditions and Division 1, bound herewith, in addition to this Specification and accompanying Drawings.

1.2 RELATED WORK SPECIFIED IN OTHER SECTIONS

- A. Rough Grading & Fill Under Work of this Section: Section 02-30-00
- B. Exterior Concrete Flatwork other than Walkways: Section 03-30-00

1.3 DESIGN & ENGINEERING

- A. Formwork Design and Engineering, as well as Construction, are Contractor's responsibility.

1.4 ALTERNATES

- A. Refer to Section 01-20-00 for possible effect upon Work of this Section.

1.5 REFERENCED SPECIFICATIONS

- A. If and where working within Public Right-of-way, comply with governing Public Agency Specifications, if more restrictive than specified herein.

1.6 COORDINATION

- A. Coordinate with other Trades affecting or affected by Work of this Section.

1.7 FIELD MOCK UPS

- A. Before starting Work and in accordance with Section 01-33-00, prepare 20 sq. ft. (min.) Mock Up of Exposed Aggregate Concrete Walkway Surface Texture.
- B. Re-prepare, if directed, until accepted.
- C. Accepted Mock Up represents minimum quality standard. Work of lesser quality will be subject to rejection and replacement. Accepted Mock Up, in like new condition, may be used in Contract Work.

CAST-IN-PLACE CONCRETE DRIVES, WALKS, CURBS, & GUTTERS**PART 1 - GENERAL****1.8 PRODUCT DELIVERY, STORAGE, & HANDLING**

- A. Protect against damage and discoloration.
- B. Conform to ASTM C-94.

1.9 WEATHER REQUIREMENTS

- A. Cold Weather:
 - 1. Follow Standard Specification for Cold Weather Concreting, ACI 306.1, copies of which can be obtained from the Institute at 38800 Country Club Dr.; Farmington Hills, MI 48331.
 - 2. Do not place Concrete during cold weather (40°F or less) until Protection Materials and Equipment are at or near Project Site.
 - 3. Place no Concrete on frozen Subgrade.
 - 4. Remove Ice and Snow from Reinforcing, Forms, Embedded Items, and other Contract Surfaces.
 - 5. Raise and maintain temperature of all Surfaces in contact with Concrete above 40°F prior to Concrete placement.
 - 6. Do not use Salts or Chemical Admixtures to prevent Concrete freezing.
 - 7. Terminate any Water Curing at least 24 hours before any anticipated freezing temperatures.
 - 8. Following protection period, allow Concrete to cool gradually.
 - 9. Assume responsibility, including costs, for testing suspected frozen Concrete.
 - 10. Remove and replace freeze-damaged Concrete at Contractor's expense.
- B. Warm Weather:
 - 1. When Air temperature exceeds 85°F or when Wind exceeds 10 mph, place Concrete in accordance with the following requirements:
 - a. Maximum Concrete temperature at time of placement: 70°F.
 - b. Mix Concrete minimum possible time, and place as soon as possible thereafter.
 - c. Sprinkle Forms, Reinforcing, Embedded Items, and Subgrade with cool Water immediately prior to Concrete placement.
 - d. Protect unstripped Formwork and exposed Concrete surfaces against excessive drying with water spray or other approved method.
 - 2. Assume responsibility, including costs, for testing Damage-suspected Concrete.
 - 3. Remove and replace heat-damaged or wind-damaged Concrete at Contractor's expense.

1.10 MINIMUM ILLUMINATION

- A. Perform no work under less than 30 ft. candle Illumination measured 3 ft. above Ground.

CAST-IN-PLACE CONCRETE DRIVES, WALKS, CURBS, & GUTTERS**PART 2 - PRODUCTS****2.1 FORMS**

- A. Material: Smooth, warp-free Steel, straight Wood Plank, or approved.
- B. Minimum Strength: Without Concrete deformation, support Concrete and withstand impact induced by Concrete placement and vibration.
- C. Fabrication:
 - 1. Provide Holes for required Reinforcement Assemblies.
 - 2. Provide each Form Section with positive Locking Device to align and secure Formwork in accurate position.

2.2 FORM TREATMENT MATERIALS

- A. Manufacturer & Brand: Contractor's choice.
- B. Type: Biodegradable and non-staining
- C. VOC Content: 0

2.3 REINFORCEMENT BARS

- A. Material: 100% recycled Steel
- B. Manufacturing Standard: ASTM A-615
- C. Grade: 60, unless otherwise shown on Drawings.
- D. Extent of Work: Unless otherwise shown on Drawings, provide the following:
 - 1. One #4 Bar continuously in both top and bottom of each Cast-in-place Concrete Curb.
 - 2. One #4 Bar continuously in top, bottom, and toe of each Concrete Gutter.
 - 3. One #4 Bar across full-width of any Stair Nosings.

2.4 REINFORCEMENT MESH

- A. Material: Steel Wire Mesh
- B. Manufacturing Standard: ASTM A-185
- C. Wire Size: W2.9
- D. Mesh Opening Size, unless otherwise shown on Drawings:
 - 1. In Walkways: 6x6 inches
 - 2. In Flatwork where subject to Vehicular Loads: 2x2 inches
- E. Extent of Work: Provide in all Flatwork.

(Cont.)

CAST-IN-PLACE CONCRETE DRIVES, WALKS, CURBS, & GUTTERS**PART 2 - PRODUCTS****2.5 REINFORCEMENT ACCESSORIES**

- A. Material: Concrete, Ceramic, Plastic, or Steel. Hot-dip galvanize any Steel Accessories located within 1/2 inch of Concrete surfaces.
- B. Manufacturing Standard: Manual of Standard Practice, published by Concrete Reinforcing Steel Institute; 180 N. LaSalle Street; Chicago, IL 60601. Copies can be obtained from Institute.
- C. Extent of Work: Provide all Accessories necessary for proper Reinforcement placement, spacing, support, and fastening.

2.6 REINFORCEMENT FABRICATION

- A. Follow Manual of Standard Practice published by Concrete Reinforcing Steel Institute.
- B. Allowable Bar Reinforcement Fabrication Variation from Drawing Dimensions:
 - 1. Sheared Length: Plus or minus 1 inch.
 - 2. Tie Dimensions: Plus or minus 1/2 inch.
 - 3. All other Bend Dimensions: Plus or minus 1 inch.

2.7 PORTLAND CEMENT

- A. Manufacturing Standard: ASTM C-150
- B. Type: I-II

2.8 AGGREGATE

- A. Manufacturing Standard: ASTM C-33
- B. Maximum Size: 3/4 inch at Exposed Aggregate Flatwork, 1-1/2 inches elsewhere, and not more than one-fifth of narrowest dimension between sides of Forms, one-third of depth of Flatwork, or three-fourths of narrowest space between Reinforcing Bars.
- C. Source: Aggregates for exposed Concrete shall be of matching size and shall come from same source.

2.9 ENTRAINED AIR

- A. Manufacturing Standard: ASTM C-260
- B. Air Amount: 5% to 7% of Concrete Volume.
- C. Extent of Work: Provide in all Concrete.

CAST-IN-PLACE CONCRETE DRIVES, WALKS, CURBS, & GUTTERS**PART 2 - PRODUCTS****2.10 FLY ASH**

- A. Manufacturing Standard: ASTM C-618
- B. Class: F
- C. Maximum Fly Ash content: 20% of Cement weight
- D. Extent of Work: May be used at Contractor's option.

2.11 WATER REDUCING ADMIXTURES

- A. Manufacturing Standard: ASTM C-494
- B. Type: A
- C. Extent of Work: May be used at Contractor's option.

2.12 CALCIUM CHLORIDE

- A. None permitted.

2.13 DETECTABLE STRIPS FOR WARNING DISABLED PERSONS

- A. Manufacturer: Vanguard (800) 290-5700, Wausau Tile (800) 388-8728, or approved.
- B. Style: Truncated Dome
- C. Color: Yellow
- D. Extent of Work & Manufacturing Standard:
 - 1. Comply with U.S. Americans with Disabilities Act (ADA), and other applicable Codes, Regulations, and Ordinances.
 - 2. Provide over full-width of Curb Ramps and extend 24 inches minimum in direction of Pedestrian travel.

2.14 EXPANSION JOINT FILLER

- A. Material: Asphalt-impregnated Cane Fiber
- B. Manufacturing Standard: ASTM D-1751
- C. Thickness: 3/8 inch
- D. Depth: As required to extend through full Slab depth and to position Filler top 1/4 inch below adjacent Slab top.

(Cont.)

CAST-IN-PLACE CONCRETE DRIVES, WALKS, CURBS, & GUTTERS**PART 2 - PRODUCTS****2.15 CURING COMPOUND**

- A. Type: Non-yellowing and with disappearing White Pigment.
- B. Manufacturer & Brand: Contractor's choice
- C. Manufacturing Standard: ASTM C-1315, Type II, Class A.

2.16 OTHER CONCRETE INGREDIENTS

- A. See Section 03-30-00.

2.17 CONCRETE MIXING

- A. General:
 - 1. Readymix type conforming to ASTM C-94
 - 2. Assume responsibility for Mix design and Product performance.
- B. Design Strength:
 - 1. Minimum 28 day compressive strength: 3500 psi
- C. Maximum Slump:
 - 1. 4 inch Slump at any time is maximum. Add Water only with Architect's permission.
 - 2. Concrete with greater Slump will be rejected and must be replaced.

PART 3 - EXECUTION**3.1 EXISTING CONDITIONS**

- A. Prior to Formwork Installation:
 - 1. Verify that Earthwork is complete and Granular Base is compacted as specified.
- B. Prior to Reinforcement Installation:
 - 1. Verify that Surfaces and Formwork to receive Reinforcement are accurately sized and located, square, plumb, rigid, secure, and otherwise properly prepared.
- C. Prior to Concrete Placement:
 - 1. Verify that Formwork, Reinforcement, and Embedded Items are accurately and securely placed, clean, water and frost-free, and ready to receive Concrete.
 - 2. Prior to starting Work, notify General Contractor about defects requiring correction.
 - 3. Do not start Work until conditions are satisfactory.

CAST-IN-PLACE CONCRETE DRIVES, WALKS, CURBS, & GUTTERS**PART 3 - EXECUTION****3.2 PROTECTING WORK OF OTHER SECTIONS**

- A. Protect against damage and discoloration caused by Work of this Section.

3.3 FORMWORK INSTALLATION

- A. Conform to shapes, lines, and dimensions shown on Drawings.
- B. At Flatwork, position Formwork to produce 1/4 inch per foot minimum drainage-slope.
- C. Brace and tie together to insure that position and shape are maintained.
- D. Make tight to prevent Concrete leakage.

3.4 FORMWORK BRACING

- A. Provide as required to meet Load Requirements.
- B. Protect against undermining or settlement when placed on ground.
- C. Anchor as required to prevent upward or lateral Formwork movement during Concrete placement.

3.5 TREATMENT OF FORMS

- A. Lightly oil immediately prior to Concrete Placement.

3.6 FORMWORK ADJUSTMENTS

- A. Reposition to true alignment prior to, during, and after Concrete placement, if necessary.
- B. During Concrete placement, in areas where Formwork develops weakness, settlement, or distortion, stop Concrete placement, remove placed Concrete, and remove or strengthen Formwork.

3.7 FORMWORK CLEANING

- A. Remove debris and foreign matter from Formwork prior to Concrete placement.
- B. Remove loose rust and foreign matter from reusable Hardware prior to installation into Formwork.

3.8 FORMWORK REMOVAL

- A. Leave Forms in place until Concrete has attained sufficient strength to safely support own weight and any imposed loads.

CAST-IN-PLACE CONCRETE DRIVES, WALKS, CURBS, & GUTTERS**PART 3 - EXECUTION****3.9 FORMWORK RE-USE**

- A. Withdraw projecting Fasteners and clean Concrete Form contact surfaces. Replace with new material when necessary or when directed.
- B. Re-use Forms only when contact-surfaces equal those specified for original use.

3.10 REINFORCEMENT INSTALLATION

- A. Comply with requirements specified in Section 03-20-00.

3.11 GRANULAR BASE PREPARATION

- A. Remove foreign matter from surfaces and areas to receive Concrete.
- B. Dampen Granular Base and any other Porous Surfaces to eliminate suction.

3.12 CONCRETE BOND

- A. Coat Bonding Agent over existing Concrete to be joined with new Concrete.
- B. Follow Manufacturer's directions.

3.13 CONCRETE PLACING

- A. Convey and place by methods which will prevent Material separation and loss.
- B. Do not retemper or use set Concrete.
- C. Do not place Concrete around Catch Basins, Valve Boxes, etc. until such Items are set at correct elevation and approved.

3.14 CONCRETE COMPACTION

- A. Employ mechanical, high-frequency Vibrators to consolidate Concrete around Reinforcement, into corners and angles of Forms, and to exclude rock pockets, air bubbles, and honeycomb.
- B. Hold Vibrator in one spot no longer than 15 seconds; keep in constant motion, insert and withdraw at points approximately 18 inches o.c.
- C. Maintain Vibrator in vertical position when penetrating Concrete.
- D. Do not transport Concrete with Vibrator.
- E. Consolidate Concrete without Aggregate segregation.

PART 3 - EXECUTION

3.15 WALKWAY JOINTS

- A. General:
 - 1. Make perpendicular to line of Walkway.
 - 2. Form to true, straight lines, with Slabs flush at joints.
 - 3. Joint-shape: 1/4 inch maximum radius
- B. Construction Joints:
 - 1. Maximum Spacing: 25 ft. o.c.
 - 2. Provide Expansion Joint Fillers in Joints.
- C. Weakened-plane Shrinkage-control Joints:
 - 1. Over Walk Length: Equally space Joints between 4 ft. min. and 5 ft. max. apart.
 - 2. Over Walk Width:
 - a. At Walks up to 5 ft. wide: No Joints required
 - b. At Walks between 5 ft & 10 ft. wide, if any: Provide Longitudinal Joint centered in Walk width.
 - c. At Walks wider than 10 ft., if any: Layout Joints in pattern approved by Architect.
 - 3. Joint Depth: 1/3 of Slab thickness
 - 4. Joint Width: 1/8 inch

3.16 CURB & GUTTER JOINTS

- A. General:
 - 1. Make perpendicular to line of adjacent Curb and Gutter.
- B. Weakened-plane Shrinkage-control Joints:
 - 1. Insert into Curbs and Gutters 1/8 inch thick, removable, Steel Plate matching Curb and Gutter profile as follows:
 - a. Align with any adjacent Walkway Control Joints.
 - b. Maximum Spacing: 15 ft. apart
 - 2. As soon as possible without Concrete damage, remove Steel Plate, and tool exposed Curb and Gutter edges to 1/8 inch radius.
- C. Expansion Joints:
 - 1. Locate as follows:
 - a. Align with adjacent Walkway Expansion Joints.
 - b. Maximum Spacing: 45 ft. apart
 - c. Provide Expansion Joint Fillers in Joints.
 - 2. Extend Reinforcing Dowels through Joints.

3.17 DETECTABLE STRIPS FOR WARNING DISABLED PERSONS

- A. Follow Manufacturer's instructions.
- B. Set flush with adjacent Pavement Surfaces.

PART 3 - EXECUTION

3.18 CONCRETE FINISHING

- A. Exposed Aggregate Finish:
 - 1. Evenly distribute and darby-in 3/8 inch round, washed River Rock.
 - 2. After initial Concrete set, carefully remove Cement Matrix by washing and brushing to expose Aggregate approximately 1/16 inch deep.
 - 3. After final curing, clean Surfaces with 10% Muriatic Acid Solution, or approved, and rinse Slab with clean Water.
 - 4. Apply Transparent Water Repellent specified in Section 07-18-00.
 - 5. Extent of Work: Provide where shown on Drawings.
- B. Elsewhere:
 - 1. Draw damp Fine Hair Broom across Concrete surface as follows:
 - a. At Walkways: Perpendicular to Traffic direction
 - b. At Curbs & Gutters: Parallel with Curb and Gutter direction

3.19 WALKWAY EDGING

- A. Before final finishing is completed and before final Concrete-set has occurred, finish Concrete Edges with Edging Tool shaped with 1/4 inch radius.
- B. Take particular care to maintain surface on both sides of Joint in same plane.
- C. Do not use Kneeling Planks on Concrete surface.

3.20 CURING

- A. Minimum Curing Period: 3 days
- B. Uniformly apply Compound in accordance with Manufacturer's instructions, after final Concrete finishing is complete, and after all free Water has disappeared from Pavement Surface.
- C. Apply to Concrete Edges immediately after Formwork removal.
- D. If Concrete may be exposed to Deicing Chemicals within 30 calendar days following Curing Period completion: Cure with Water (*not Curing Compound*)

3.21 DEFECTIVE WORK

- A. Remove and replace any Surfaces which show excessive cracks, Slabs which do not drain properly, and other defective Concrete.
- B. Maximum Surface Unevenness: 1/4 inch per 10 ft.
- C. Compressive Strength Tests: Refer to Section 01-45-30.

CAST-IN-PLACE CONCRETE DRIVES, WALKS, CURBS, & GUTTERS**PART 3 - EXECUTION****3.22 PROTECTING COMPLETED WORK**

- A. Protect Work specified herein against damage and discoloration.
- B. Replace, at no additional cost to Owner, any damaged or discolored Work.

3.23 WASTE MANAGEMENT

- A. Collect Cut-offs, Scrap, Shipping Pallets, Metal Strapping, & Packaging Waste; and place where directed for recycling.

3.24 PRODUCT CLEANING & REPAIRING

- A. Including Work of other Trades, clean, repair and touch-up, or replace when directed, Products which have been soiled, discolored, or damaged by Work of this Section.
- B. Remove Debris from Project Site upon Work completion, or sooner if directed.

END OF SECTION

PART 1 - GENERAL

1.1 CONTRACT CONDITIONS

- A. Work of this Section is bound by the Contract Conditions and Division 1, bound herewith, in addition to this Specification and accompanying Drawings.

1.2 WORK INCLUDED

- A. In accordance with governing laws, codes, ordinances, and regulations; Drawings and Specifications; design, engineer, furnish, and install Fencing where located on Drawings.

1.3 ALTERNATES

- A. Refer to Section 01-20-00 for possible effect upon Work of this Section.

1.4 REFERENCED SPECIFICATIONS

- A. Comply with applicable requirements of specifications published by Chain Link Fence Manufacturer's Institute; 9891 Broken Land Parkway; Suite 300; Columbia, MD 21046; (301) 596-2583.
- B. Specifications can be obtained from Institute.

1.5 COORDINATION

- A. Coordinate with other Trades affecting or affected by Work of this Section.

1.6 INSTALLER'S QUALIFICATIONS

- A. Employed by, or acceptable to, Fence Manufacturer

1.7 REGULATORY AGENCY REQUIREMENTS

- A. Gate Latches shall conform to applicable requirements of Americans with Disabilities Act (ADA).

PART 1 - GENERAL

1.8 PRODUCT DELIVERY, STORAGE, & HANDLING

- A. Protect against damage and discoloration.
- B. Deliver with Manufacturer's Tags and Labels intact and legible.
- C. Labels or Tags shall identify Manufacturer, brand name, material, size, and applicable standards.

1.9 GROUND & AIR TEMPERATURE

- A. Above 32°F during Concrete Footing placement, and for 72 hours minimum thereafter.
- B. Remove and replace freeze-damaged Concrete.

PART 2 - PRODUCTS

2.1 POSTS & FRAMES

- A. Material: Zinc-coated Steel
- B. Coating (except at Property Line Fencing):
 - 1. Material: 7 mil thick PVC thermally-fused to Posts and Frames
 - 2. Color: Selected by Architect after Contract award from Manufacturer's standard choices.
 - 3. Shape: Round
- C. Outside Diameter:
 - 1. Line Posts: 2-3/8 inches
 - 2. Top & Brace Rails: 1.66 inches
 - 3. Terminal Posts: 2 -7/8 inches
- D. Fence Height:
 - 1. Property Line Fencing: Match existing adjacent Fencing
 - 2. Elsewhere: See Drawings
- E. Required Brace Locations:
 - 1. Between Post tops
 - 2. Gate Posts
 - 3. End Posts
 - 4. Pull Posts
 - 5. Corner Posts, including adjustable, diagonal, 3/8 inch diameter Tension Rods.

(Cont.)

PART 2 - PRODUCTS

2.2 GATES

- A. Material: Match Posts and Frames.
- B. Type: Rolling
- C. Gate Frame Section Shape: Round
- D. Corner Fittings: Manufacturer's standard for conditions of use
- E. Bracing: Adjustable, 3/8 inch diameter, diagonal Tension Rod
- F. Required Accessories:
 - 1. Latching Devices:
 - a. Type: Plunger
 - b. Accessibility: Operable from either side of Gate
 - 2. Provisions for Padlocking

2.3 FABRIC

- A. Material: 9ga. Steel Wire
- B. Coating:
 - 1. At Property Line Fencing: Hot-dip Galvanized
 - 2. Elsewhere:
 - a. Material: 7 mil thick PVC thermally-fused to Wire
 - b. Color: Selected by Architect after Contract award from Manufacturer's standard choices.
- C. Mesh Opening Size: 2 inches square
- D. Selvage: Knuckled top and bottom

2.4 SLATS

- A. Material: Vinyl Plastic
- B. Color: Selected by Architect after Contract award from Manufacturer's standard choices.
- C. Size: Fit Fabric Mesh openings.
- D. Extent of Work: Provide at Rooftop Mechanical Equipment Screening (Alternate Bid)

2.5 BARBED WIRE FENCE & GATE TOPS

- A. None Required

2.6 ACCESSORIES

- A. Follow Referenced Specifications.
- B. Provide all required for complete installation.

PART 2 - PRODUCTS

2.7 CONCRETE

- A. Cement: ASTM C-150 type I-II
- B. Aggregate: ASTM C-33, 3/4 inch maximum.
- C. Water: Clean & potable
- D. Entrained Air: ASTM C-160, 3% - 5% of Concrete Volume.
- E. Max. Slump: 3 inches
- F. Min. 28 day Compressive Strength: 2,500 psi

PART 3 - EXECUTION

3.1 EXISTING CONDITIONS

- A. Verify that Site and Ground Work are accurately graded, completed, and in condition to receive Fencing.
- B. Prior to starting Work notify General Contractor of defects requiring correction.
- C. Do not start Work until conditions are satisfactory.

3.2 PROTECTING OTHER WORK

- A. Protect against damage and discoloration caused by Work of this Section.
- B. Protect contacting Dissimilar Materials against Galvanic Corrosion.
- C. Protect existing Vegetation against damage.

3.3 SITE CLEARING

- A. Completely clear areas within 1 ft. of Fence Post Footing, and within 6 inches of Fence Fabric.

(Cont.)

PART 3 - EXECUTION

3.4 INSTALLATION

- A. General:
 - 1. Install rigid, plumb, true, in perfect alignment, and in accordance with Manufacturer's instructions and Referenced Specifications.
- B. Posts:
 - 1. Set plumb to 1/4 inch in 10 ft. and not more than 10 ft. apart.
 - 2. In Ground:
 - a. Set not less than 36 inches deep into 12-inch diameter Concrete Footings; not less than 4 inches of Concrete below Post bottom.
 - b. Remove excavated Earth.
- C. Fabric:
 - 1. Install taut, cover full-height of Fence, and extend to within approximately 1 inch above adjacent Ground Surface at Posts.
 - 2. Join Fabric ends by weaving with single strand of Fabric Wire to form continuous mesh pattern with Selvage twisted to match Fabric.
- D. Gates:
 - 1. Install plumb and level within 1/4 inch in 10 ft.
 - 2. Install Ground-Set Items in Concrete.

3.5 ADJUSTMENTS

- A. Adjust Moving Parts to operate satisfactorily at time of Substantial Project Acceptance and during Warranty Period.
- B. Lubricate where necessary.

3.6 WASTE MANAGEMENT

- A. Collect Post and Fabric Trimmings, Shipping Pallets, Metal Strapping, & Packaging Waste; and place where directed for recycling.

3.7 PRODUCT CLEANING & REPAIRING

- A. Including Work of other Sections, clean, repair and touch-up, or replace when directed, Products which have been soiled, discolored, or damaged by Work of this Section
- B. Remove Debris from Project Site upon Work completion, or sooner if directed.

END OF SECTION

PART 1 - GENERAL

1.1 CONTRACT CONDITIONS

- A. Work of this Section is bound by the Contract Conditions and Division 1, bound herewith, in addition to this Specification and accompanying Drawings.

1.2 EXTENT OF WORK

- A. Drawings and Specifications indicate Contract Work.
- B. If Work adjustments must be made because of hidden unacceptable soil conditions, Contract Sum will be adjusted in accordance with Contract Conditions.

1.3 PRODUCTS INSTALLED, BUT FURNISHED UNDER OTHER SECTIONS

- A. Build in as directed by those Trades, without weakening or defacing Formwork.

1.4 RELATED WORK SPECIFIED IN OTHER SECTIONS

- A. Formwork for Concrete Walks & Curbs: Section 02-77-00
- B. Concrete Reinforcement including Bar Supports & Accessories: Section 03-20-00
- C. Cast In Place Concrete: Section 03-30-00
- D. Metal Decking to receive Concrete: Section 05-30-00
- E. Hangers & Inserts for Mechanical & Electrical Work: See Mechanical & Electrical Specifications

1.5 DESIGN & ENGINEERING

- A. Formwork Design and Engineering, as well as Construction, are Contractor's responsibility.
- B. Minimum Formwork Strength: Withstand pressure exerted by Concrete placement and consolidation.
- C. Maximum Formwork Deflection at any exposed Concrete: $L/240$ of Formwork Span
- D. Formwork Construction Joint Locations:
 - 1. Where Joints least-impair Formwork strength
 - 2. Within middle 1/3 of Concrete span. If any Beam intersects Girder within this area, offset Girder Joint no less than twice Beam width.
 - 3. Wall & Column Joints:
 - a. Locate at underside of any adjacent Floors, Slabs, Beams, and Girders.
 - b. Locate at top of any adjacent Footings and Floor Slabs.
 - 4. Make Joints perpendicular to adjacent primary Steel Reinforcement.

PART 1 - GENERAL

1.6 REFERENCED SPECIFICATIONS

- A. Unless otherwise specified herein, conform to applicable requirements of Section 2 of ACI 301, Specifications for Concrete Construction, published by American Concrete Institute (ACI); 38800 Country Club Dr.; Farmington Hills, MI 48331; (248) 848-3800.

1.7 ALTERNATES

- A. Refer to Section 01-20-00 for possible effect upon Work of this Section.

1.8 COORDINATION

- A. Coordinate with other Trades affecting or affected by Work of this Section.

1.9 PRODUCT DELIVERY, STORAGE, & HANDLING

- A. Protect against damage and discoloration.

PART 2 - PRODUCTS

2.1 WOOD PLANK FORMS

- A. Material: Lumber
- B. Species: Douglas Fir or Hemlock
- C. Moisture Content: Contractor's choice
- D. Casting Face Texture: Smooth
- E. Casting Face Appearance:
 - 1. No loose Knots or Knot Holes
 - 2. Maximum Knot Size: 1-1/2 inches and well scattered
- F. Size: Support Concrete at rate poured
- G. Extent of Work: Provide at Footing and Flatwork perimeters, unless otherwise indicated.

2.2 PLYWOOD FORMS

- A. APA Grade: B-B Plyform
- B. Class: 1
- C. Thickness: As required by Concrete placement rate

PART 2 - PRODUCTS

2.3 FORM TIES

- A. Manufacturer: Bowman, Burke, Dayton, Richmond, or approved.
- B. Type: Plastic Cone recommended by Manufacturer for conditions of use.
- C. Break-back Distance from Concrete Face: 1 inch
- D. Do not use Wire Ties and Wood Spacers.

2.4 EMBEDDED ITEMS

- A. Steel Reinforcement: Refer to Section 03-20-00
- B. Anchor Bolts: Furnished by Steel Fabricators and Equipment Suppliers.

2.5 FORM TREATMENT MATERIALS

- A. For Wood Plank Forms: Clean Water
- B. For Plywood Forms: VOC-free, non-staining, chemical Form Release Compound of Contractor's choice.

2.6 FORM JOINT CAULKING COMPOUND

- A. Material: Latex Acrylic Sealant specified in Section 07-92-00.

PART 3 - EXECUTION

3.1 PROTECTION

- A. Protect other Work against damage and discoloration caused by Work of this Section.

3.2 INSTALLATION - GENERAL

- A. Conform to shapes, lines, and dimensions shown on Drawings.
- B. Brace and tie together to ensure that position and shape are maintained.
- C. At Concrete Flatwork directly over any Waterproof or Vapor Retarder Membranes, use Cradle, Pad, or Base-type Screed Supports that will not puncture Membrane. Do not drive Stakes through Membranes

(Cont.)

PART 3 - EXECUTION

3.2 INSTALLATION – GENERAL (Cont.)

- D. Make tight to prevent Concrete leakage.
- E. Arrange Joints as indicated or directed.
- F. Form any Surface Indentations shown on Drawings.
- G. Provide Access Openings as required for cleaning and inspection of Forms and Embedded Items prior to placing Concrete. Locate where not exposed to view.

3.3 EARTH FORMS

- A. Hand trim where necessary.
- B. Remove any loose Dirt.

3.4 PLYWOOD FORMS

- A. At Forms for Exposed Concrete, fill Form Panel joints with Form Joint Caulking Compound, and strike Compound flush with Panel on face adjacent to exposed Concrete, or cover Joints with thin, smooth, plastic, Pressure-sensitive Tape.
- B. Prevent Plywood end grain from forming Concrete exposed to view.

3.5 BRACING

- A. Provide as required to meet load requirements.
- B. Protect against undermining or settlement when placed on ground.
- C. Anchor as required to prevent upward or lateral Formwork movement during Concrete placement.

3.6 FORM TIES

- A. Unless otherwise indicated or approved, locate equidistant and symmetrical; align vertically and horizontally.
- B. At Exposed Concrete Forms seal Form Ties against leakage with Form Joint Caulking Compound.

3.7 OPENINGS & CHASINGS

- A. Provide Openings and Chasings of Slabs and Walls for Mechanical and Electrical Work. Sizes and locations as directed by Mechanical and Electrical Trades.

PART 3 - EXECUTION

3.8 CHAMFERS

- A. Except at Foundation Walls, at flush joints between adjacent materials, and elsewhere shown on Drawings; chamfer exposed external corners of Concrete with 3/4 inch triangular Wood Strips placed in Forms.

3.9 ALLOWABLE TOLERANCES FOR CONCRETE

- A. Variation from level:
 - 1. 1/4 inch in any 10 ft.
 - 2. Maximum over entire length: 1/2 inch
- B. Variation from plumb:
 - 1. 1/4 inch in any 10 ft.
 - 2. Maximum over entire length: 1 inch
- C. Variation in Cross Sectional Dimensions: Minus 1/4 inch; plus 1/2 inch
- D. Variation in Surface Tolerance: 1/8 inch in any 10 ft. measured with 10 ft. straight-edge.
- E. Maximum Deflection of Form Facing between Supports: $0.0025 \times \text{Span}$
- F. Walls: Accurately size and locate within 1/8 inch plus or minus

3.10 FORM TREATMENT

- A. Wood Plank Forms: Wet thoroughly just before placing Concrete.
- B. Plywood Forms:
 - 1. Prior to each use: Apply Form Coating to contact surfaces in accordance with Manufacturer's instructions.
 - 2. When treating previously set Forms, prevent Coatings from covering Reinforcing Steel or existing Concrete where bond is required.
 - 3. Prevent Coatings from collecting in puddles.

3.11 EMBEDDED ITEM INSTALLATION

- A. Steel Reinforcement: Refer to Section 03-20-00.
- B. Anchor Bolts & Anchoring Devices:
 - 1. Set with Templates to assure accurate Bolt positioning.
 - 2. Secure in accordance with approved Setting Drawings.

(Cont.)

PART 3 - EXECUTION

3.12 ADJUSTMENTS

- A. Reposition to true alignment prior to, during, and after Concrete placement, if necessary.
- B. During Concrete placement, in areas where Formwork develops weakness, settlement, or distortion, stop Concrete placement, remove placed Concrete, and replace or strengthen Formwork.

3.13 FORM REMOVAL

- A. Leave Forms and Shoring in place until Concrete has attained sufficient strength to safely support own weight and imposed loads.
- B. Remove Forms at time and in manner to insure safety of Structure, and without Concrete surface damage.
- C. At exposed Concrete, Form-removal time shall be uniform to avoid color differences.
- D. Remove Top Forms from any sloping Concrete surfaces as soon as Concrete is self-supporting. Repair and finish, if necessary, and cure immediately.

3.14 FORM CLEANING

- A. Remove debris and foreign matter from Formwork prior to Concrete placement.
- B. Remove loose rust and foreign matter from reusable Hardware prior to installation into Formwork.

3.15 FORM RE-USE

- A. Withdraw projecting Nails and clean Concrete Form contact-surfaces. Replace with new material when necessary or when directed.
- B. Re-use Forms only when contact-surfaces equal those specified for original use.

3.16 WASTE MANAGEMENT

- A. Collect Formwork Trimmings, and place where directed for recycling.

3.17 PRODUCT CLEANING & REPAIRING

- A. Including Work of other Trades, clean, repair and touch-up, or replace when directed, Products which have been soiled, discolored, or damaged by Work of this Section.
- B. Remove Debris from Project Site upon Work completion, or sooner if directed.

END OF SECTION

PART 1 - GENERAL

1.1 CONTRACT CONDITIONS

- A. Work of this Section is bound by the Contract Conditions and Division 1, bound herewith, in addition to this Specification and accompanying Drawings.

1.2 EXTENT OF WORK

- A. Except where otherwise specified below, provide all required Steel Reinforcement.
- B. Drawings and Specifications indicate Contract Work.
- C. If Work adjustments are made because of hidden unacceptable soil conditions Contract Sum will be adjusted in accordance with Contract Conditions.

1.3 RELATED WORK SPECIFIED IN OTHER SECTIONS

- A. Furnishing & placing Concrete Walk, Curb, & Gutter Reinforcement: Section 02-77-00
- B. Concrete Formwork: Section 03-10-00
- C. Cast in Place Concrete: Section 03-30-00

1.4 ALTERNATES

- A. Refer to Section 01-20-00 for possible effect upon Work of this Section.

1.5 COORDINATION

- A. Coordinate with other Trades affecting or affected by Work of this Section.

1.6 REFERENCED SPECIFICATIONS

- A. Unless otherwise specified herein, conform to applicable requirements of Section 3 of ACI 301, Specifications for Concrete Construction, published by American Concrete Institute (ACI); 38800 Country Club Dr.; Farmington Hills, MI 48331; (248) 848-3800.

1.7 SHOP & PLACEMENT DRAWINGS

- A. Follow ACI 315 Detailing Manual, published by American Concrete Institute; 38800 Country Club Dr.; Farmington Hills, MI 48331; (248) 848-3700.
- B. Submit in accordance with Section 01-33-00.

PART 1 - GENERAL

1.8 PRODUCT DELIVERY, STORAGE, & HANDLING

- A. Protect against damage, deformation, and coverage by Mud or Ice.
- B. Tag each Piece or Bundle; indicate size, grade, and location.

1.9 ADVANCE NOTICES

- A. Notify Architect and Testing Lab at least 24 hours prior to covering Reinforcement so inspections can be made.

PART 2 - PRODUCTS

2.1 BARS

- A. Material: Steel
- B. Manufacturing Standard:
 - 1. If and where Welded: ASTM A-706
 - 2. All Other Bars: ASTM A-615
- C. Grade: 60
- D. Sizes: See Drawings.

2.2 TIE WIRE

- A. Material: Black annealed Steel
- B. Manufacturing Standard: ASTM A-82
- C. Minimum Size: 16 ga.

2.3 ACCESSORIES

- A. Material: Concrete, Ceramic, Plastic, or Metal. Hot-dip galvanize any Metal Accessories adjacent to exposed Concrete surfaces.
- B. Manufacturing Standard: Manual of Standard Practice, published by Concrete Reinforcing Steel Institute; 933 N. Plum Grove Rd.; Schaumburg, IL 60173; (874) 517-1206. Copies can be obtained from Institute or viewed at www.crsi.org
- C. Extent of Work: Provide all Accessories necessary for proper Reinforcement placement, spacing, support, and fastening.

PART 2 - PRODUCTS

2.4 FABRICATION

- A. Follow Manual of Standard Practice published by Concrete Reinforcing Steel Institute.

2.5 ALLOWABLE FABRICATION VARIATION FROM DRAWING DIMENSIONS

- A. Sheared Bar Lengths: Plus or Minus 1 inch
- B. Tie Dimensions: Plus or minus 1/2 inch
- C. All other Bend Dimensions: Plus or minus 1 inch

PART 3 - EXECUTION

3.1 EXISTING CONDITIONS

- A. Verify that surfaces to receive Reinforcement are accurately sized and located, square, plumb, rigid, secure, and otherwise accurately prepared.
- B. Prior to starting Work, notify General Contractor about defects requiring correction.
- C. Do not start Work until conditions are satisfactory.

3.2 PROTECTING WORK OF OTHER SECTIONS

- A. Protect against damage and discoloration caused by Work of this Section.

3.3 INSTALLATION

- A. General: Conform to International Building Code (IBC) paragraphs hereinafter named and amplified.
- B. Bending:
 - 1. Conform to Code paragraph 1907.3
 - 2. Bend Bars without heat.
 - 3. Field bending partially embedded Bars, not permitted without Architect's approval.
- C. Placing:
 - 1. Conform to Code paragraph 1907.5
 - 2. Secure against displacement.

(Cont.)

PART 3 - EXECUTION

3.3 INSTALLATION (Cont.)

- D. Spacing:
1. Conform to Code paragraph 1907.6
 2. Clear distance between parallel Bars, including splices, unless otherwise permitted by Code, not less than:
 - a. Nominal Bar diameter
 - b. 1-1/2 times maximum Concrete Aggregate size
 - c. 1 inch
- E. Splicing:
1. Conform to Code paragraph 1907 & ACI 318, as applicable.
 2. Do not weld or tack-weld Reinforcement Splices.
 3. Minimum Lap at Splices: 48 Bar diameters; 24 inches minimum.
- F. Protective Concrete Covering:
1. Conform to Code paragraph 1907.5.2.1
 - a. Concrete cast against and permanently exposed to Ground: 3 inches
 - b. Concrete not cast against Ground, but exposed to Ground or Weather:
 1. No. 6 through No. 18 Bars, if any: 2 inches
 2. No. 5 Bars and smaller, if any: 1-1/2 inches
 3. W31 or D31 Wire or smaller, if any: 1-1/2 inches
 - c. Concrete neither in contact with Ground nor exposed to Weather:
 1. In Slabs, Walls, or Joists, if any:
 - a. No. 14 & No. 18 Bars, if any: 1-1/2 inches
 - b. No. 11 Bars and smaller: 3/4 inch
 2. In Beams & Columns, if any:
 - a. Primary Reinforcement & Ties, if any: 1-1/2 inches

3.4 SPECIAL REINFORCEMENT INSTALLATION, unless otherwise shown on Drawings

- A. Reinforcement at Concrete Wall Corners & Intersections:
1. Splice Horizontal Reinforcing with Splice Bars and Corner Bars; space and size to match horizontal Wall Reinforcing.
 2. Extend beyond Corner or Intersection 48 Bar diameters; 24 inches minimum.
- B. Reinforcement at Concrete Wall Openings:
1. Provide 2 each Bars around Openings as follows:
 - a. Vertical Bars: Extend over full height of Wall.
 - b. Horizontal Bars:
 1. Where Possible: Extend Bars 24 inches minimum beyond Opening corners.
 2. Where Not Possible: Hook Bar ends

(Cont.)

PART 3 - EXECUTION

3.5 SPECIAL REINFORCEMENT INSTALLATION, unless otherwise shown on Drawings (Cont.)

- A. Reinforcing Bar for Electrical Grounding:
 - 1. Provide three 20 ft. long #4 independent Grounding Bars which overlap lowest longitudinal Building Foundation Reinforcing Bars. Secure Grounding Bars to Foundation Bars.
 - 2. Bend Grounding Bars upward and extend vertically at least 12 inches above top of Sill Plate so Electrician can make Grounding Connection. Protect exposed Grounding Bars with Rigid PVC Pipe.
 - 3. Locate Grounding Bars as close as possible to Electrical Service.
 - 4. Coordinate with Electrical Subcontractor.
- B. Reinforcement at Concrete Floor-slab Re-entrant Corners:
 - 1. Provide two, 48 inch long, #4 Bars diagonally across Re-entrant Corners.

3.6 ALLOWABLE PLACEMENT VARIATION FROM DRAWING DIMENSIONS

- A. Concrete Cover: Plus or minus 1/4 inch
- B. Spacing between Bars: 1/4 inch
- C. Transverse Bars: Space evenly within 2 inches of stated separation.
- D. Bar relocation to avoid interference with other Reinforcement, Conduits, or Embedded Items: 1 Bar diameter, unless otherwise approved by Architect.

3.7 WASTE MANAGEMENT

- A. Collect Reinforcement Trimmings, and place where directed for recycling.

3.8 PRODUCT CLEANING & REPAIRING

- A. Prior to Concrete placement, remove loose flaky rust, mud, oil, and other bond-reducing Coatings.
- B. Including Work of other Trades, clean, repair and touch-up, or replace when directed, Products which have been soiled, discolored, or damaged by Work of this Section.
- C. Remove Debris from Project Site upon Work completion, or sooner if directed.

END OF SECTION

PART 1 - GENERAL

1.1 CONTRACT CONDITIONS

- A. Work of this Section is bound by the Contract Conditions and Division 1, bound herewith, in addition to this Specification and accompanying Drawings.

1.2 EXTENT OF WORK

- A. Drawings and Specifications indicate Contract Work.
- B. If Work adjustments are made because of hidden unacceptable soil conditions Contract Sum will be adjusted in accordance with Contract Conditions.

1.3 RELATED WORK SPECIFIED IN OTHER SECTIONS

- A. Laboratory Testing of Concrete: Section 01-45-30
- B. Concrete Walks, Curbs, & Gutters: Section 02-77-00
- C. Concrete Formwork: Section 03-10-00
- D. Concrete Reinforcement: Section 03-20-00
- E. Polishing Concrete Floor Slabs: Section 03-35-90
- F. Metal Decking to receive Concrete: Section 05-30-00

1.4 ALTERNATES

- A. Refer to Section 01-20-00 for possible effect upon Work of this Section.

1.5 REFERENCED SPECIFICATIONS

- A. Unless otherwise specified herein, conform to applicable requirements of Sections 1, 4, & 5 of ACI 301 - Specifications for Concrete Construction, published by American Concrete Institute (ACI); 38800 Country Club Dr.; Farmington Hills, MI 48331; (248) 848-3800.

1.6 COORDINATION

- A. Coordinate with other Trades affecting or affected by Work of this Section.

1.7 PRODUCT DELIVERY, STORAGE, & HANDLING

- A. Protect against damage and discoloration.
- B. Conform to ASTM C-94.

PART 1 - GENERAL

1.8 WEATHER REQUIREMENTS

A. General:

1. Follow referenced Standard Specification for Cold & Warm Weather Concreting, ACI 306 & 305 respectively.

B. Cold Weather:

1. Do not place Concrete during cold weather (40°F or less) until Protection Materials and Equipment are at or near Project Site.
2. Place no Concrete on frozen Subgrade.
3. Remove Ice and Snow from Reinforcing, Forms, Embedded Items, and other Contact Surfaces.
4. Raise and maintain temperature of all Surfaces in contact with Concrete above 40°F prior to Concrete placement.
5. Do not use Salts or Chemical Admixtures to prevent Concrete freezing.
6. Terminate any Water Curing at least 24 hours before any anticipated freezing temperatures.
7. Locate and direct any Heaters or Ducts so as not to cause overheating or over-drying of Concrete or create fire hazards. Directly exhaust Flue Gases from any Combustion Heaters to outside of any enclosures.
8. Following protection period, allow Concrete to cool gradually.
9. Assume responsibility, including costs, for testing suspected frozen Concrete.
10. Remove and replace freeze-damaged Concrete at Contractor's expense.

C. Warm Weather:

1. When Air temperature exceeds 85°F or when Wind exceeds 10 mph place Concrete in accordance with the following requirements:
 - a. Maximum Concrete temperature at time of placement: 70°F.
 - b. Mix Concrete minimum possible time, and place as soon as possible thereafter.
 - c. Maximum Mixing Time:
 1. When Air-temperature is between 85°F & 90°F: 75 minutes
 2. When Air-temperature exceeds 90°F: 60 minutes
 - d. Sprinkle Forms, Reinforcing, Embedded Items, and Subgrade with Cool Water immediately prior to Concrete placement.
 - e. Protect unstripped Formwork and exposed Concrete surfaces against excessive drying with water spray or other approved method.
 - f. Assume responsibility, including costs, for testing damage-suspected Concrete.
 - g. Remove and replace heat-damaged or wind-damaged Concrete at Contractor's expense.

1.9 ADVANCE NOTICES

- A. Notify Architect and Testing Lab at least 24 hours before intended Concrete placement.
- B. Place no Concrete until Formwork and Reinforcement have been inspected.

PART 2 - PRODUCTS

2.1 CONCRETE FLOOR SLAB VAPOR BARRIER

- A. Manufacturer & Brand: Stego Industries Stego Wrap, Raven VaporBlock, or approved.
- B. Material: Polyolefin Membrane
- C. Manufacturing Standard: ASTM E-1745 class A
- D. Minimum Thickness: 15 mils
- E. Extent of Work: Provide directly beneath on-grade Interior Concrete Flatwork.

2.2 CONCRETE PRODUCTS - GENERAL

- A. Cements, Aggregates, Pozzolans, etc. for Exposed Concrete shall come from same respective sources.
- B. Prohibited Admixtures: Calcium Chloride, Thyocyanates, and any others containing more than 0.05% Chloride Ions.

2.3 PORTLAND CEMENT

- A. Manufacturing Standard: ASTM C-150
- B. Type: I-II

2.4 AGGREGATE

- A. Manufacturing Standard: ASTM C-33
- B. Maximum Size: 1-1/2 inches and not more than one-fifth of narrowest dimension between sides of Forms, one-third of depth of Flatwork, or three-fourths of narrowest space between Reinforcing Bars.

2.5 FLY ASH

- A. Manufacturing Standard: ASTM C-618
- B. Class: F
- C. Maximum Ignition Loss: 3%
- D. Maximum Fly Ash Content: 20% of Cement weight
- E. Maximum Cement Substitution: 20 %
- F. Extent of Work: May be used at Contractor's option.

PART 2 - PRODUCTS

2.6 ENTRAINED AIR

- A. Manufacturing Standard: ASTM C-260
- B. Mixture (in percentage of Concrete Volume):
 - 1. At Interior Concrete Flatwork subjected to Vehicular Traffic: 3% max.
 - 2. At all other Interior Concrete Flatwork: 2% to 4%
 - 3. At Exterior Concrete Flatwork: 3% to 6%
- C. Extent of Work: Provide in all Concrete exposed to Freeze-Thaw Cycles while in wet condition during construction or during subsequent use.

2.7 WATER REDUCING ADMIXTURES

- A. Manufacturing Standard: ASTM C-494
- B. Type: A
- C. Material: Shall not increase Concrete-shrinkage or promote Water-bleeding
- D. Extent of Work: May be used at Contractor's option.

2.8 BONDING AGENT

- A. At Dry Surfaces: Dayton Superior Day-Chem Ad Bond (J-40), Sonneborn Sonocrete, L&M Everbond, US Spec Acrylcoat, or approved.
- B. At Damp Surfaces: Euclid Euco Epoxy 452 MV or 620, Sika Sikadur Hi-Mod, US Spec Slow-Bond 6500, or approved.

2.9 EXPANSION JOINT FILLER

- A. Material: Asphalt-impregnated Cane Fiber
- B. Manufacturing Standard: ASTM D-1751
- C. Thickness: 3/8 inch
- D. Depth: As required to position Filler top 1/4 inch below Slab top.

2.10 EPOXY ADHESIVE

- A. Manufacturer & Brand: Hilti HIT RE 500SD, Simpson Strong Tie SET-3G, or approved.
- B. Manufacturing Standard: ASTM C-881
- C. Type: 2-component for use on dry or damp surfaces
- D. Allowable Temperature Range: Follow Manufacturer's instructions.

(Cont.)

PART 2 - PRODUCTS

2.10 EPOXY ADHESIVE (Cont.)

- E. Hazardous Material Handling: Follow Manufacturer's instructions.
- F. Extent of Work:
 - 1. Around Reinforcing Dowels, Anchors, etc. where anchoring new Work to existing.
 - 2. Elsewhere shown on Drawings.

2.11 NON-SHRINK GROUT

- A. Manufacturer & Brand: Euclid Euco-NS, L&M Crystx, Master Builders Masterflow 928, Sonneborn SonogROUT, US Grout Five Star Grout, US Spec GP Grout, or approved.
- B. Manufacturing Standard: ASTM C-1107
- C. Minimum 7 day Compressive Strength: 5000 psi
- D. Positive Expansion: Demonstrate compliance with ASTM C-827
- E. Extent of Work:
 - 1. Under Column Base Plates
 - 2. Elsewhere shown on Drawings.

2.12 STANDARD DRY PACK GROUT

- A. Parts by volume:
 - 1. Cement: 1
 - 2. Lime: 1/4
 - 3. Fine Aggregate: 3
 - 4. Pea Gravel: 1-1/2
 - 5. Water: Minimum amount to produce 5000 psi compressive strength at 28 days, and to provide pouring consistency without Aggregate segregation.
- B. Extent of Work:
 - 1. Around any Pipes, Conduit, or Ducts passing through Concrete Flatwork or Walls.
 - 2. Around any other Penetrations through Concrete Flatwork or Walls.
 - 3. Elsewhere shown on Drawings.

2.13 FLOOR FILLER

- A. Manufacturer & Brand: Ardex Feather Finish, US Spec Floatcoat, or approved.
- B. Extent of Work: Provide at any "Birdbaths", and over Concrete Flatwork which is too rough or too untrue to provide acceptable Substrate for Finish Flooring,

PART 2 - PRODUCTS

2.14 CURING COMPOUNDS

- A. At Interior Flatwork:
 - 1. Type: Clear, colorless, water-base, VOC-compliant, and acceptable to adjacent Flooring Manufacturer, if any.
 - 2. Manufacturer: L&M, Meadows, Sonneborn, US Spec, or approved.
 - 3. Manufacturing Standard: ASTM C-1315, Type 1, Class A
- B. At Exterior Flatwork:
 - 1. Type: Non-yellowing, VOC-compliant, and with disappearing White Pigment.
 - 2. Manufacturer: L&M, Meadows, Sonneborn, US Spec, or approved.
 - 3. Manufacturing Standard: ASTM C-1315, Type II, Class A

2.15 HARDENING COMPOUNDS

- A. Liquid Densifier Type:
 - 1. Manufacturer & Brand: Curecrete Ashford Formula, Euclid Euco Diamond Hard, L&M Seal Hard, or approved.
 - 2. Sheen: Low
 - 3. Extent of Work: Provide over exposed Concrete Flatwork within the following:
 - a. Shop Areas (Rooms with "S" Number), including Measuring Room, Trash Room, Compressor Room, & Electrical Room.
 - b. Any other Flatwork to receive Vehicular Traffic.
- B. Standard Duty Type:
 - 1. Manufacturer & Brand: A.C. Horn Hornolith, L&M Fluohard, Nox-Crete Harbaton, Sonneborn Lapidolith, or approved.
 - 2. Extent of Work: Provide over all uncovered Interior Concrete Flatwork. except where Liquid Densifier type Compound is provided.

2.16 PROTECTION PAPER

- A. Material: Heavy-duty, scuff-proof, non-staining Reinforced Paper.
- B. Extent of Work: Apply over uncovered Flatwork subject to discoloration or damage.

2.17 OTHER INGREDIENTS

- A. Conform to Building Code.

(Cont.)

PART 2 - PRODUCTS

2.18 MIXING CONCRETE

- A. General:
 - 1. Readymix type conforming to ASTM C-94.
 - 2. Assume responsibility for Mix design and Product performance.
- B. Concrete Design Strength:
 - 1. Minimum Density: 145 pcf, plus or minus 5%
 - 2. Minimum 28 day Compressive Strengths & Locations: See Structural Notes on Drawings.
- C. Maximum Concrete Slump:
 - 1. 4 inches (plus or minus 1 inch) at any time is maximum.
 - 2. Concrete with greater Slump, or Concrete showing Bleeding or Aggregate Separation as Concrete comes out of Delivery Truck, will be rejected and must be replaced.
 - 3. Add Water only with Architect's permission.
 - 4. Do not add Water after acceptable Slump Test has been obtained.
 - 5. Water-content in Exposed Concrete shall be constant from batch to batch.

PART 3 - EXECUTION

3.1 EXISTING CONDITIONS

- A. Verify that Formwork, Reinforcement, and Embedded Items are accurately and securely placed, clean, water and frost-free, and ready to receive Concrete.
- B. Prior to starting Work, notify General Contractor about defects requiring correction.
- C. Do not start Work until conditions are satisfactory.

3.2 PROTECTING WORK OF OTHER SECTIONS

- A. Protect against damage and discoloration caused by Work of this Section.

3.3 SURFACE PREPARATION

- A. Remove Foreign Matter from surfaces and areas to receive Concrete.
- B. Sprinkle Subgrade and other porous surfaces with Water to eliminate suction.

PART 3 - EXECUTION

3.4 VAPOR BARRIER INSTALLATION

- A. Follow Manufacturer's instructions and ASTM E-1643.
- B. Install Barrier with long dimension parallel with Concrete-pour direction.
- C. Lap Joints 6 inches minimum, and turn-up 12 inches minimum to Slab top at Vertical Surfaces.
- D. Seal Joints and Holes with Mastic or Tape before placing Concrete.
- E. Do not puncture Barrier with Concrete Placement Screed Stakes or other similar Devices.

3.5 CONCRETE BOND

- A. Coat Bonding Agent over existing Concrete to be joined with new Concrete.
- B. Follow Manufacturer's instructions.

3.6 CONSTRUCTION JOINTS IN WALLS, unless otherwise shown on Drawings

- A. At any exposed Horizontal Joints, apply 2x6 Wood Strip level to inside of Form cast against exposed Concrete face. Stop Concrete pour approximately 1/2 inch above lower edge of Strip. Remove Strip prior to continuing Concrete placement.
- B. Keyed Joints:
 - 1. Minimum Depth: 1-1/2 inches
 - 2. Provide at Joints between Walls, Slabs, and Footings.
- C. Reinforcement: Continue across Joint, unless otherwise shown on Drawings.

3.7 CONSTRUCTION JOINTS IN FLATWORK

- A. Form to true, straight lines, and with adjacent Flatwork Panels flush at Joints.
- B. Make Panels as close to square as possible.
- C. Do not extend Reinforcement through Joints.
- D. Except at Expansion Joints, key adjacent Joints.
- E. At Keyed Joints, increase Slab thickness by 2 inches and extend for 12 inches beyond each side of Joint.
- F. Joint Spacing in each direction: Unless spacing is shown on Drawings, do not exceed 30 times Slab thickness.

(Cont.)

PART 3 - EXECUTION

3.8 PLACING CONCRETE

- A. Convey and place by methods which will prevent Material separation and loss.
- B. Place Concrete to receive Liquid Densifier type Hardener in accordance with Hardener Manufacturer's instructions.
- C. At Walls deposit Concrete in 24 inch deep maximum horizontal layers. Do not deposit with inclined seams. Do not allow Base Layers to lose plasticity prior to placing Succeeding Layers.
- D. Do not convey pneumatically-placed Concrete through Aluminum Pipe.
- E. Do not retemper or use set Concrete.
- F. Do not disturb or displace Reinforcement, Embedded Items or Formwork during Concrete placement.
- G. Maximum height of vertical drop without use of trunk, placement ports in sides of Formwork, or other approved method is 5 ft.
- H. If and when under-water Concrete placement is approved, deposit fresh Concrete into mass of previously placed Concrete causing Water to be displaced with minimum Concrete surface disturbance.

3.9 CONSOLIDATING CONCRETE

- A. Employ mechanical, high-frequency Vibrators to consolidate Concrete around Reinforcement, into corners and angles of Forms, and to exclude rock pockets, air bubbles, and honeycomb.
- B. Hold Vibrator in one spot no longer than 15 seconds; keep in constant motion, insert and withdraw at points approximately 18 inches o.c.
- C. Maintain Vibrator in vertical position when penetrating Concrete.
- D. Transporting Concrete with Vibrator not permitted.
- E. Maintain spare Vibrator at jobsite during Concrete placement.

3.10 FINISHING FORM TIE HOLES

- A. In Concrete Exposed to View:
 - 1. After Form Tie removal, fill Holes with Standard Dry Pack Grout mixed as dry as feasible; ram Grout solid, and finish flush with adjacent Concrete Surface.
- B. Elsewhere:
 - 1. No plugging required after Form Tie removal

(Cont.)

PART 3 - EXECUTION

3.11 VOIDS & GRAVEL POCKETS

- A. Repair where necessary and where directed by Architect.
- B. Satisfactory repair of Exposed Concrete is virtually impossible; therefore take all necessary precautions to assure that repairs are unnecessary. If imperfections are sufficiently objectionable, replace Work in question when directed.

3.12 EXPOSED CONCRETE WALL FINISHES

- A. Formed Surfaces Exposed to View:
 - 1. Remove Concrete Fins.
 - 2. Patch Imperfections to match adjacent Surface.
 - 3. Leave Surfaces clean and smooth.
- B. Unformed Surfaces Exposed to View:
 - 1. Finish as required to match adjacent Surface, unless otherwise shown on Drawings.

3.13 CONCRETE FLATWORK FINISHES

- A. Required Preparation Work:
 - 1. Screed all Flatwork to true levels or slopes.
 - 2. Prior to finishing Concrete, remove any accumulated Bleed Water. Do not add "finishing water".
 - 3. Evenly slope to any Drain at 3/16 inch per ft., unless otherwise shown on Drawings.
- B. Non-slip Finish:
 - 1. Screed and tamp Concrete to bring Fine Particles to surface.
 - 2. Bring to true surfaces with Wood or Carpet Float.
 - 3. Slightly roughen Surfaces perpendicular to main traffic-route with wet, fine-hair Broom.
 - 4. Extent of Work: Provide at exterior Flatwork, unless otherwise shown on Drawings.
- C. Smooth-troweled Finish:
 - 1. Finish by Hand or Machine Trowel to hard, dense surface, free from Trowel Marks.
 - 2. Do not absorb Wet Spots with Neat Cement or Cement-Sand Mixture, and do not use Chemical Dryers.
 - 3. Wait until Surfaces are dry enough for proper troweling.
 - 4. Trowel Slabs level or to true slopes.
 - 5. Extent of Work: Provide at all Interior Flatwork, unless otherwise specified.
- D. Slabs to receive Liquid Densifier type Hardener:
 - 1. Follow Hardener Manufacturer's instructions.

3.14 ALLOWABLE FLATWORK TOLERANCES

- A. All Flatwork: True within 1/4 inch per 10 ft.

PART 3 - EXECUTION

3.15 CURING

- A. Prevent rapid or non-uniform Exposed Concrete drying.
- B. Minimum Curing Periods:
 - 1. High-early Strength Cement, if used: 3 days
 - 2. All other Cement: 7 days
- C. Minimum Curing Air Temperature: 50° F
- D. Walls: Keep damp for at least 14 days following Concrete placement.
- E. Flatwork: Immediately after Slabs are finished, treat Concrete with Curing Compound applied in accordance with Manufacturer's instructions.

3.16 NON-SHRINK GROUT INSTALLATION

- A. Follow Manufacturer's instructions.
- B. Do not retemper set-Grout.
- C. Saturate Concrete contact-surfaces prior to grouting. Remove excess Water.
- D. Thoroughly compact Grout free of Air Pockets. Do not vibrate Grout.
- E. Cure Grout with Moisture for at least 24 hours.
- F. Do not remove Leveling Shims, if any, until 48 hours after Grout-placement. After Shim-removal fill Voids with Standard Dry Pack Grout.

3.17 STANDARD DRY PACK GROUT INSTALLATION

- A. Do not retemper set-Grout.
- B. Saturate Concrete contact-surfaces prior to grouting; remove excess Water.
- C. Thoroughly consolidate Grout free of Air Pockets. Do not vibrate Grout.
- D. Cure Grout with Moisture for at least 24 hours.

3.18 EPOXY ADHESIVE APPLICATION

- A. Follow Manufacturer's instructions.

(Cont.)

PART 3 - EXECUTION

3.19 SAWN CONTRACTION JOINTS IN FLATWORK

- A. In Flatwork subject to use by Vehicular Traffic provide the following:
 - 1. Using "Wet Blade" Saw, cut Joints through at least 25% of Slab depth. Do not "dry-saw" without Water. Do not use Grooving Tools or Joint-forming Strips.
 - 2. Joint Spacing: Do not exceed 30 times Slab thickness in both directions.
 - 3. Apply Curing Compound to "cut" surfaces as soon as possible after sawing.
- B. Optional Method: Contractor may, at Contractor's option, substitute the following:
 - 1. System: Husqvarna Soff-Cut; (800) 288-5040; or approved.
 - 2. Method: In accordance with System Manufacturer's instructions, and within 0 to 2 hours following Concrete finishing, saw-cut Joints at least 10% of Slab thickness (1 inch min.)
- C. Open Joint Filling:
 - 1. After waiting as long as possible for Slabs to shrink, fill Joints with semi-rigid Epoxy Joint Filler with A-80 Shore Hardness, which is capable of supporting heavy wheel loads while not becoming hard or brittle with age. Install Filler full depth of Joint without using Backer Rod. Install Filler flush with Slab surface, and finish smooth and dense.

3.20 FLOOR-SLAB FILLER APPLICATION

- A. Prior to Filler application, prime Floor with Asphalt Emulsion.
- B. Mix Filler with Asphalt Emulsion where necessary to improve bond.

3.21 HARDENER APPLICATION

- A. Follow Manufacturer's instructions.
- B. Clean Floors immediately prior to applying Hardener.

(Cont.)

PART 3 - EXECUTION

3.22 DEFECTIVE WORK

- A. If Tests specified in Section 01-45-30 indicate that Concrete has failed to meet Specifications, replace Substandard Material, unless otherwise directed by Architect.
- B. Additionally, remove and replace the following:
 - 1. Loose Topping Slabs
 - 2. Surfaces which show excessive Shrinkage Cracks or Crazeing.
 - 3. Flatwork which does not drain properly
 - 4. Curled or Warped Slabs
 - 5. Rain-damaged or Scaled Concrete
 - 6. Concrete exceeding specified allowable tolerances
 - 7. Work determined by Architect to be unacceptable
- C. On Surfaces scheduled to receive Finish Covering remove, by grinding if necessary, any Defects of sufficient magnitude to show through Covering.
- D. Remove and replace honeycombed and other defective Concrete down to sound Concrete and replace. If chipping is necessary, shape Edges perpendicular to Surface or slightly undercut. Do not feather Edges.

3.23 PRODUCT CLEANING & REPAIRING

- A. Including Work of other Trades, clean, repair and touch-up, or replace when directed, Products which have been soiled, discolored, or damaged by Work of this Section.
- B. Remove Debris from Project Site upon Work completion, or sooner if directed.

3.24 PROTECTING COMPLETED WORK

- A. Flatwork specified to receive Protection Paper:
 - 1. Cover with Protection Paper secured in position, and otherwise protect Concrete against damage and discoloration.
 - 2. Note: Liquid Densifier type Hardener has light colored finish, and can be easily discolored.
- B. All Other Work:
 - 1. Protect against damage and discoloration.

END OF SECTION

PART 1 - GENERAL

1.1 CONTRACT CONDITIONS

- A. Work of this Section is bound by the Contract Conditions and Division 1, bound herewith, in addition to this Specification and accompanying Drawings.

1.2 EXTENT OF WORK

- A. Provide where scheduled.
- B. Extend polishing from Slab-edge to Slab-edge leaving no exposed surface unpolished.

1.3 RELATED WORK SPECIFIED IN OTHER SECTIONS

- A. Concrete Floor Slab to be polished: Section 03-30-00.

1.4 ALTERNATES

- A. Refer to Section 01-20-00 for possible effect upon Work of this Section.

1.5 COORDINATION

- A. Coordinate with other Trades affecting or affected by Work of this Section.

1.6 APPLICATOR'S QUALIFICATIONS

- A. To be eligible to perform Work specified herein Applicator must have successfully completed at least 5 similar projects of at least 5000 sq. ft. each, and be employed by or acceptable to Products Manufacturer.

1.7 MOCK-UP

- A. Prepare in accordance with Section 01-33-00.
- B. Include 20 sq. ft. minimum Mock-up showing typical Joints, color-variations, and surface-appearance anticipated for completed Work.
- C. Make adjustments when so directed, and resubmit as specified above.
- D. Obtain Architect's acceptance before proceeding.
- E. Accepted Mock-up in like-new condition may be used in Project Work.

PART 1 - GENERAL

1.8 REFERENCED SPECIFICATIONS

- A. Comply with Concrete Polishing Council Specification ASCC-CPC 03 3543, published by American Society of Concrete Contractors.
- B. Copies of Specifications can be obtained from Council at 2025 S, Brentwood Blvd.; Suite 105; St, Louis, MO 63144; (866) 788-2722.
- C. Prior to starting Work and in accordance with Section 01-60-00, submit 1 copy each of Referenced Specifications and Densifier Manufacturer's Application Instructions to Architect and General Contractor.

1.9 JOINT LAYOUT DRAWINGS

- A. Submit similar to Shop Drawings in accordance with Section 01-33-00.

1.10 MAINTENANCE INSTRUCTIONS

- A. As specified in Section 01-83-00, deliver to General Contractor for inclusion in Owner's Maintenance Manual.

1.11 PRE-APPLICATION MEETING

- A. Prior to starting Work and in accordance with Section 01-31-50, this Subcontractor shall arrange Meeting to clarify any questions about Specifications, details, and application requirements.
- B. Representatives of the following shall attend:
 - 1. General Contractor
 - 2. Concrete Floor Slab Finisher
 - 3. Densifier Manufacturer

1.12 PRODUCT DELIVERY, STORAGE, & HANDLING

- A. Protect against damage and discoloration.
- B. Deliver in Manufacturer's original, unopened, containers bearing Manufacturer's legible Label.
- C. Store in dry location.

1.13 MINIMUM WORK SPACE TEMPERATURE

- A. During Work and Curing Periods: 40°F
- B. Notify General Contractor, if necessary, to provide additional heat.

PART 1 - GENERAL

1.14 MINIMUM WORK SPACE ILLUMINATION

- A. Perform no work under less than 30 ft. candles measured 3 ft. above Floor.
- B. Notify General Contractor, if necessary, to provide additional light.

PART 2 - PRODUCTS

2.1 DENSIFYING AGENTS

- A. Manufacturer: Lythic Solutions (360) 694-5347, or approved.
- B. Brands:
 - 1. Base Coat: Densifier
 - 2. Top Coat: XL Densifier
 - 3. Protective Coat: Protector
- C. Properties: 100% reactive, non-resinous, and water-soluble.

2.2 CONCRETE MIXING

- A. Minimum 28-day Compressive Strength: 4000 psi
- B. Water-cement Ratio: Between 0.38 - 0.45

2.3 PROTECTION SHEET

- A. Manufacturer & Brand: Contractor's choice recommended by Densifier Manufacturer.
- B. Type: Breathable and satisfying conditions of use. Do not use solid materials such as Plywood or plastic materials such as Polyethylene Film.

PART 3 - EXECUTION

3.1 EXISTING CONDITIONS

- A. Verify that Substrate to receive Work has cured for at least 28 days; is within Moisture limits recommended by Densifier Manufacturer; is clean, sound, secure, true, and complete; and is otherwise properly prepared.
- B. Prior to starting Work, notify General Contractor about defects requiring correction.
- C. Do not start Work until conditions are satisfactory.

PART 3 - EXECUTION

3.2 PROTECTING WORK OF OTHER SECTIONS

- A. Protect against damage or discoloration caused by Work of this Section.

3.3 CONCRETE POLISHING

- A. Using 800-grit to 3000-grit Resin-bonded Abrasives, grind and polish Concrete smooth to the following ASCC-CPC Appearance Ratings:
1. A (85 - 95% Cement Fines plus 5 - 15% Fine Aggregate)
 2. Gloss Level: 2 - Satin (Honed)
 3. Image Clarity Value: 10-39 %
 4. Maximum Haze Index: 10
- B. Minimum ANSI/NFSI B101.3 Coefficient of Friction (COF): 0.40

3.4 DENSIFYER APPLICATION

- A. Follow Manufacturer's instructions.

3.5 CURING

- A. To prevent Concrete surface-cracking and checking, cure Concrete for 7 days (min.) using Wet Blankets. Do not use Curing Compound.

3.6 SEALING

- A. Follow Manufacturer's instructions.

3.7 PROTECTING COMPLETED WORK

- A. Unless otherwise approved by Densifier Manufacturer, cover completed Work with Protection Sheet.

3.8 WASTE MANAGEMENT

- A. Collect Scrap & Packaging Waste; and place where directed for recycling.

PART 3 - EXECUTION

3.9 PRODUCT CLEANING & REPAIRING

- A. Including Work of other Trades, clean, repair and touch-up, or replace when directed, Products which have been soiled, discolored, or damaged by Work of this Section.
- B. Remove Debris from Project Site upon Work completion, or sooner if directed.

3.10 PROTECTING COMPLETED WORK

- A. Protect against damage and discoloration.

END OF SECTION

PART 1 - GENERAL

1.1 CONTRACT CONDITIONS

- A. Work of this Section is bound by the Contract Conditions and Division 1, bound herewith, in addition to this Specification and accompanying Drawings.

1.2 WORK INCLUDED

- A. In accordance with governing laws, regulations, codes, Design Loads listed in Structural Notes on Drawings, and requirements specified in Section 01-11-50; design, engineer, fabricate, and install Structural Steel for Factory Engineered Building as specified herein and as shown on Drawings.

1.3 EXTENT OF WORK

- A. Structural Steel Subcontractor:
1. Provide all Steel Work indicated on Structural Drawings, even if also shown on Architectural Drawings, except where specifically noted to be provided by other Trades.
- B. Miscellaneous Fabricated Steel Subcontractor:
1. Except for Related Work Items specified below, provide all other Steel Work.

1.4 PRODUCTS FURNISHED, BUT INSTALLED UNDER OTHER SECTIONS

- A. Anchor Bolts and loose Bearing Plates installed under Section 03-10-00.

1.5 RELATED WORK SPECIFIED IN OTHER SECTIONS

- A. Grouting under Base & Bearing Plates: Section 03-30-00
B. Steel Decking: Section 05-30-00
C. Miscellaneous Fabricated Steel: Section 05-50-00
D. Field Painting: Section 09-90-00
E. Factory-engineered Buildings: Section 13-12-10
F. Crane Rails: Section 14-60-00

1.6 ALTERNATES

- A. Refer to Section 01-20-00 for possible effect upon Work of this Section.

PART 1 - GENERAL

1.7 COORDINATION

- A. Coordinate with other Trades affecting or affected by Work of this Section.

1.8 REFERENCED SPECIFICATIONS

- A. Except as modified by these Specifications, follow AISC Specification and Code of Standard Practice for Steel Buildings. Code may be obtained from Institute.

1.9 ABBREVIATIONS

- A. **AISC:** American Institute of Steel Construction; One East Wacker Dr.; Suite 700; Chicago, IL 60601-1802; (866) 275-2472.
- B. **ANSI:** American National Standards Institute; 1819 L St. NW; 6th Floor; Washington DC 20036; (202) 293-8020.
- C. **ASCE:** American Society of Civil Engineers; 1801 Alexander Bell Dr.; Reston, VA 20191-4400; (800) 548-2723
- D. **ASTM:** American Society for Testing and Materials; 100 Barr Harbor Dr.; West Conshohocken, PA 19428; (610) 832-9585
- E. **AWS:** American Welding Society; 8669 Doral Blvd.; Suite 130; Doral, FL 33166; (305) 443-9353.

1.10 SHOP DRAWINGS

- A. Submit in accordance with Section 01-33-00.
- B. Indicate Shop and Erection Details, including Cuts, Copes, Connections, Holes, Threaded Fasteners, and Welds.
- C. Indicate Shop and Field Welds by AWS Welding Symbols.
- D. Illustrate erection procedures and sequence.
- E. Furnish Anchor Bolt Templates, Setting Drawings, and Installation Details.

1.11 QUALIFICATIONS

- A. Steel Fabricator & Steel Erector:
1. Not less than 5 years experience in work of this type.
- B. Welders:
1. Welders must be qualified for Welds to be performed in accordance with AWS D1.1 requirements.
 2. For each Welder submit, from approved Independent Laboratory or Inspection Service, Qualification Test Reports not older than 1 year.

PART 1 - GENERAL

1.12 CERTIFICATES OF COMPLIANCE

- A. Submit 2 copies of Manufacturers' Specification Compliance Certificates for each of the following:
 - 1. Structural Steel Sections
 - 2. Fasteners

1.13 PRODUCT DELIVERY

- A. Deliver to Jobsite in accordance with approved Progress Schedule and in proper erection sequence.
- B. Include all required Bolts and other Fastening Devices.

1.14 PRODUCT STORAGE & HANDLING

- A. Store Structural Steel Members above ground on Platforms, Skids, or other approved Supports.
- B. Store any Hot-dip Galvanized Steel Items with air-space between adjacent Items.
- C. Store other Materials in weather-tight and dry locations.
- D. Store packaged Materials in original, unbroken Containers.
- E. Protect against corrosion and damage.
- F. Permit easy access for identification and inspection of Stored Products.

1.15 FIELD MEASUREMENTS

- A. Verify prior to fabrication.
- B. If field measurements differ slightly from Drawing dimensions modify Work as required for accurate fit. If measurements differ substantially, notify Architect prior to fabrication.

PART 2 - PRODUCTS

2.1 STEEL WIDE FLANGE SHAPES

- A. Manufacturing Standard: ASTM A-992
- B. Minimum Yield Strength: 50 ksi

PART 2 - PRODUCTS

2.2 OTHER STEEL BEAMS & PURLINS

- A. Manufacturing Standard: ASTM A-572
- B. Minimum Yield Strength: 50 ksi

2.3 ALL OTHER STEEL SHAPES, BARS, & PLATES

- A. Manufacturing Standard: ASTM A-36 or A-572
- B. Minimum Yield Strength: 36 ksi

2.4 STEEL RODS

- A. Manufacturing Standard ASTM A-36
- B. Minimum Yield Strength: 36 ksi
- C. Diameter: See Drawings

2.5 HIGH-STRENGTH THREADED FASTENERS

- A. Manufacturing Standard: ASTM F-3125
- B. Size & Spacing: See Drawings
- C. Finish: Manufacturer's standard
- D. Extent of Work: Provide where shown on Drawings.

2.6 STANDARD STRENGTH THREADED FASTENERS

- A. Manufacturing Standard:
 - 1. Bolts & Nuts: ASTM A 307, Grade A
 - 2. Plain Washers: ANSI Standard B 27.2
 - 3. Beveled Washers: ANSI Standard B 27.4
- B. Size & Spacing: See Drawings
- C. Finish: Manufacturer's standard
- D. Extent of Work: Provide for all Work, except where High-Strength Threaded Fasteners are required.

2.7 ANCHOR BOLTS

- A. Manufacturing Standard ASTM F-1554
- B. Minimum Yield Strength: 36 ksi
- C. Size & Spacing: See Drawings

PART 2 - PRODUCTS

2.8 WELDING ELECTRODES

- A. Series: E-70xx
- B. Type: Satisfy conditions of use

2.9 FABRICATION

- A. General:
 - 1. Comply with Referenced Specifications.
 - 2. Shop-fabricate and Shop-assemble Members where practicable.
 - 3. Mark and match-mark Members for accurate field-assembly.
 - 4. If and where exposed to view, remove any Run-off Tabs or other Temporary Items.
- B. Bolt Holes:
 - 1. Fabricate Holes necessary for securing other Work to Structural Steel. Cut, drill, or punch Holes perpendicular to Member Surface. Do not flame-cut or enlarge Holes by burning.
- C. Bearing Plates:
 - 1. Provide Bearing Plates under Members resting on Footings, Piers, or Walls. Attach Bearing Plates or ship loose at Contractor's option.

2.10 FABRICATION TOLERANCES

- A. Maximum deviation of individual Members from dimensions shown on Drawings as follows:
 - 1. Overall length of Members with both ends finished for compact bearing: 1/32 inch
 - 2. Overall length of Members without finished ends:
 - a. For Members up to 30 ft. long: 1/16 inch
 - b. For Members over 30 ft. long: 1/8 inch
 - 3. Compressive Structural Member Straightness: 1/1000 of axial length between Lateral Support points
- B. Twists, Bends, & Kinks: Unacceptable

(Cont.)

PART 2 - PRODUCTS

2.11 SHOP TREATMENT

- A. Surface Preparation:
 - 1. Remove Grease, Oil, Dirt, loose Rust, loose Mill Scale, and any other bond-reducing Materials.
- B. Within 8 hours of Surface Preparation, apply the following:
 - 1. Oil Treatment:
 - a. Material: Oil-based, rust-inhibiting Coating containing no Metallic Pigment.
 - b. Manufacturer & Brand: Exxon Rust-Ban 394, Houghton Rust-Veto 342, or approved.
 - c. Extent of Work: Provide at contact faces of Steel to be grouted, such as Column Base Plates.
 - 2. Paint Treatment:
 - a. Paint with Rust Inhibiting Primer specified in Section 09-90-00.
 - b. Minimum Dry Film Thickness of Primer: 1.0 mil
 - c. Do not apply Primer at the following:
 - 1. Within 2 inches of Surfaces to be field welded.
 - 2. Surfaces to be encased in Concrete.
 - 3. Surfaces to receive Oil Treatment specified above.

PART 3 - EXECUTION

3.1 EXISTING CONDITIONS

- A. Verify that surfaces to receive Structural Steel are accurately sized and located, sound, true, even, and otherwise properly prepared.
- B. Prior to starting Work, notify General Contractor about defects requiring correction.
- C. Do not start Work until conditions are satisfactory.

3.2 PROTECTING WORK OF OTHER SECTIONS

- A. Protect against damage and discoloration caused by Work of this Section.

3.3 ERECTION, GENERAL

- A. Follow Referenced Specification, except as modified herein.

PART 3 - EXECUTION

3.4 BEARING & BASE PLATE INSTALLATION

- A. Set Plates attached to Members and those requiring Hoisting Equipment to lift.
- B. Align and level with Wedges, Shims, or Leveling Nuts.

3.5 STRUCTURAL STEEL ERECTION

- A. Clean contacting bearing surfaces prior to assembling.
- B. Accurately assemble to lines and elevations indicated.
- C. Bring abutting surfaces of Compression Members into contact prior to fastening Splices.
- D. Prior to fastening, align and adjust Frame Components within erection tolerances specified below.
- E. Splices permitted only where indicated.

3.6 BOLTING

- A. Erection Bolts used in welded construction may be tightened and left in place, or removed and holes plug welded at Contractor's option.
- B. Tighten any High-Strength Bolts in accordance with AISC "Specifications for Structural Joints using ASTM A-3125 or A-490 Bolts", employing method of Contractor's choice.

3.7 WELDING

- A. Follow Referenced Specifications.
- B. Unless otherwise shown on Drawings:
 - 1. Type: Fillet
 - 2. Size: 1/16 inch thinner than thinnest Member being welded
 - 3. Length: Full-length of Connecting Surfaces

3.8 FIELD CUTTING

- A. Do not correct fabrication errors by gas-cutting without Architect's prior approval.

3.9 ALLOWABLE ERECTION TOLERANCES

- A. Follow Referenced Specifications.

PART 3 - EXECUTION

3.10 BRACING

- A. Maintain Temporary Bracing as required by ASCE 37-02 until permanent Structural Members required for Lateral Stability have been installed and accepted by Architect.

3.11 FIELD INSPECTION

- A. Do not remove Staging or Platforms before Field Connections are inspected or tested.
- B. Do no welding until Surface to be welded and Filler Metal to be used have been inspected and approved.
- C. Refer to Section 01-45-30 for inspection and testing details.

3.12 TOUCH UP PAINTING

- A. Touch up Field Connections and damaged Shop Treatment areas as erection proceeds.
- B. Immediately prior to final covering, remove Rust and retreat any Members showing evidence of Rust through Shop Treatment over approximately 5% or more of total Shop Treatment area.

3.13 WASTE MANAGEMENT

- A. Collect Scrap, Shipping Pallets, & Packaging Waste; and place where directed for recycling.

3.14 PRODUCT CLEANING & REPAIRING

- A. Remove loose Rust, heavy Mill Scale, Oil, Dirt, and other bond-reducing Foreign Substances from Members scheduled to receive Finish Painting, or other direct-to-steel Coatings.
- B. Including Work of other Trades, clean, repair and touch-up, or replace when directed, Products which have been soiled, discolored, or damaged by Work of this Section.
- C. Remove Debris from Project Site upon Work completion, or sooner if directed.

END OF SECTION

PART 1 - GENERAL

1.1 CONTRACT CONDITIONS

- A. Work of this Section is bound by the Contract Conditions and Division 1, bound herewith, in addition to this Specification and accompanying Drawings.

1.2 WORK INCLUDED

- A. In accordance with governing laws, regulations, and codes; Design Loads listed in Structural Notes on Drawings; and requirements specified in Section 01-11-50; design, engineer, fabricate, and install Roof Decking over Office Area, Air Compressor Room, Trash Room, Electrical Room, & Canopy Roof as specified herein and as shown on Drawings.

1.3 RELATED WORK SPECIFIED IN OTHER SECTIONS

- A. Structural Steel Deck Supports: Section 05-10-00
- B. Roof Insulation & Single Ply Roofing: Section 07-53-00
- C. Field Painting of Exposed Decking: Section 09-90-00

1.4 ALTERNATES

- A. Refer to Section 01-20-00 for possible effect upon Work of this Section.

1.5 COORDINATION

- A. Coordinate with other Trades affecting or affected by Work of this Section.

1.6 DESIGN LOAD REQUIREMENTS

- A. Decking shall be designed by Engineer licensed to practice in Oregon.
- B. Support Design Loads specified in Structural Notes on Drawings.

1.7 SHOP & ERECTION DRAWINGS

- A. Submit in accordance with Section 01-33-00.
- B. Show layout, framing supports, dimensions, complete construction details and installation methods, including accessories, and types and locations of welds using AWS Welding Symbols.

PART 1 - GENERAL

1.8 WELDER'S QUALIFICATIONS

- A. Welders must be qualified for Welds to be performed in accordance with AWS requirements.
- B. For each Welder, submit from approved Independent Laboratory or Inspection Service, Qualification Test Reports not older than 1 year.

1.9 PRODUCT DELIVERY, STORAGE, & HANDLING

- A. Protect against damage and discoloration.
- B. Store off ground with one end elevated for drainage. Do not bend.
- C. Underside of Decking will be exposed to view, therefore take every necessary precaution to protect Decking against damage or discoloration. Replace any damaged or unsightly Decking.

1.10 REFERENCED SPECIFICATIONS

- A. Conform to applicable requirements of Standard Deck Specifications published by Steel Deck Institute. Copies can be obtained from Institute at Box 25; Fox River Grove, IL 60021; (847) 458-4647.

1.11 FIELD MEASUREMENTS

- A. Verify prior to fabrication.
- B. If field measurements differ slightly from Drawing dimensions modify Work as required for accurate fit. If measurements differ substantially, notify Architect prior to fabrication.

PART 2 - PRODUCTS

2.1 DECKING

- A. Manufacturer: AEP Span, ASC Structural Deck, Nucor Vulcraft, United, Verco, Wheeling Corrugating, or approved.
- B. Type, Depth, & Minimum Metal Thickness before Galvanizing: See Drawings
- C. Manufacturing Standard: ASTM A-653
- D. Finish: Galvanized
- E. Minimum Coating Designation: G-90

(Cont.)

PART 2 - PRODUCTS

2.1 DECKING (Cont.)

- F. Required Accessories:
1. Vulcanized, closed-cell, synthetic-rubber Closure Devices to fill Openings between Decking and any adjacent Walls or Beams, or any exposed Cell Ends.
 2. Others necessary for complete installation.

2.2 GALVANIZE REPAIR PAINT

- A. Type: Zinc-rich
- B. Manufacturing Standard: ASTM A-780
- C. Minimum Zinc Content: 65%
- D. Minimum Coating Thickness: Match thickness on adjacent Member.

2.3 FABRICATION

- A. Except where Framing does not permit, form Decking in lengths to span 3 or more Supports. At Decking less than 2 spans long, shore Decking at mid-span.
- B. Butt End Laps and nest Side Laps.
- C. Decking will be exposed to view, therefore take every necessary precaution to protect Decking against damage or discoloration. Replace any damaged or unsightly Decking.

PART 3 - EXECUTION

3.1 EXISTING CONDITIONS

- A. Verify that Structure and Surfaces to receive Decking and Accessories are accurately sized and located, clean, dry, rigid, secure, plumb, true, and otherwise properly prepared.
- B. Prior to starting Work, notify General Contractor about defects requiring correction.
- C. Do not start Work until conditions are satisfactory.

3.2 PROTECTING WORK OF OTHER SECTIONS

- A. Protect against damage and discoloration caused by Work of this Section.
- B. Do not overload Building Structure with stored Materials.

PART 3 - EXECUTION

3.3 INSTALLATION

A. General:

1. Follow Referenced Specifications, Manufacturer's instructions, and approved Erection Drawings.
2. Decking will be exposed to view, therefore take every necessary precaution to protect Decking against damage or discoloration. Replace any damaged or unsightly Decking.
3. Accurately position Decking Ends with 3 inch minimum bearing on Support.
4. Align Decking before fastening permanently.
5. End Laps:
 - a. At Deck Ends: Extend Decking 2 inches beyond Support centerline
 - b. Elsewhere: Overlap end-joints 4 inches
6. Unless otherwise shown on Drawings, stagger End Joints.
7. Do not stretch or compress Side Lap interlocks.
8. Secure Decking flat and square to Support without warp or deflection.
9. Where necessary to prevent excessive Decking deflection, install Temporary Shoring. Maintain Shoring until Decking is capable of supporting itself and any applied loads without excessive deflection.

B. Fastening:

1. Immediately after Decking alignment, fasten Decking to Supports.
2. Weld in accordance with AWS Standards.
3. At 20 ga. and thinner Decking, if any, make Welds through 1/8 inch minimum thickness Welding Washers.
4. Weld Metal shall penetrate all Decking layers at Laps, and shall fuse to Supporting Members.

C. Cutting & Fitting:

1. Perform neat, square, trim, and true. Do not cut with Torch where Cut is exposed to final view.
2. Openings 6 inches and larger in any direction, if any:
 - a. Shop fabricate, and reinforce to support Load Capacity.
3. Opening less than 6 inches in largest dimension, if any:
 - a. Made by Trade requiring Opening.

D. Closure Strips:

1. Secure to Decking at any exposed Decking Ends or Edges, and at any voids between Decking and other Construction.

3.4 ALLOWABLE INSTALLATION TOLERANCES

- A. Maximum Decking Alignment Variations: 1/4 inch in 40 ft.
- B. Maximum Concavity or Convexity across any 3 adjacent Top Flanges: 1/16 inch

PART 3 - EXECUTION

3.5 TOUCH UP

- A. Wire brush, clean, and paint Welds, Burned and Damaged Areas, and Rust Spots.
- B. Touch up damaged Galvanized Surfaces with Galvanized Repair Paint. Match Coating thickness, and apply in accordance with ASTM A-780.
- C. Touch up damaged Paint Surfaces with matching Paint. Apply in accordance with Paint Manufacturer's instructions.

3.6 PRODUCT CLEANING & REPAIRING

- A. Remove any loose Rust, heavy Mill Scale, Oil, Dirt, or other Bond-reducing Substances from Decking scheduled to receive Finish Painting.
- B. Including Work of other Trades, clean, repair and touch-up, or replace when directed, Products which have been soiled, discolored, or damaged by Work of this Section.
- C. Remove Debris from Project Site upon Work completion, or sooner if directed.

3.7 WASTE MANAGEMENT

- A. Collect Scrap, Shipping Pallets, & Packaging Waste; and place where directed for recycling.

3.8 PROTECTING COMPLETED WORK

- A. Do not use Decking for Storage or Working Platforms until permanently secured in position.
- B. Advise General Contractor about maximum Construction Load Capacities of installed Decking.

END OF SECTION

PART 1 - GENERAL

1.1 CONTRACT CONDITIONS

- A. Work of this Section is bound by the Contract Conditions and Division 1, bound herewith, in addition to this Specification and accompanying Drawings.

1.2 WORK INCLUDED

- A. In accordance with governing laws, regulations, and codes; Design Loads listed in Structural Notes on Drawings, and Design-Bid requirements specified in Section 01-11-50; design, engineer, fabricate, and install Framing Members as specified herein and as shown on Drawings.

1.3 RELATED WORK SPECIFIED IN OTHER SECTIONS

- A. Structural Steel Framing Systems: Section 05-10-00
- B. Interior Steel Wall & Ceiling Steel Framing Systems: Section 09-10-00

1.4 ALTERNATES

- A. Refer to Section 01-20-00 for possible effect upon Work of this Section.

1.5 REFERENCED SPECIFICATION

- A. Comply with applicable requirements of Code of Standard Practice for Cold-Formed Steel Structural Framing - S202, published by American Iron & Steel Institute (AISI). Copies can be obtained from Institute at 1140 Connecticut Ave. NW; Suite 705; Washington, DC 20036.

1.6 COORDINATION

- A. Coordinate with other Trades affecting or affected by Work of this Section.

1.7 DESIGN LOAD REQUIREMENTS

- A. Framing shall be designed by Engineer licensed to practice in Oregon.
- B. Support Design Loads specified in Structural Notes on Drawings.
- C. Minimum Horizontal Wind Loads: Comply with Building Code
- D. Maximum Total Horizontal Wind-load & Seismic-load Deflection: 1/600 of Span

PART 1 - GENERAL

1.8 SHOP & ERECTION DRAWINGS

- A. Submit in accordance with Section 01-33-00.
- B. Include the following:
 - 1. Framing layout, sizes, and metal thicknesses.
 - 2. Framed openings.
 - 3. Framing Marks used to identify location of each Framing Member.
 - 4. Fastening, welding, and anchorage details.
 - 5. Reinforcing, bridging, bracing, movement joints, and attachment to adjacent construction.

1.9 PRODUCT DELIVERY, STORAGE, & HANDLING

- A. Protect against damage and discoloration.
- B. Do not distort individual or prefabricated Members.
- C. Avoid overloading Building Structure with stored Materials.

1.10 FIELD MEASUREMENTS

- A. Verify prior to fabrication.
- B. If field measurements differ slightly from Drawing dimensions modify Work as required for accurate fit. If measurements differ substantially, notify Architect prior to fabrication.

PART 2 - PRODUCTS

2.1 FRAMING MEMBERS

- A. Material: Steel
- B. Manufacturing Standard: ASTM A-653
- C. Metal Thickness before Galvanizing: As required to support Design Loads
- D. Shape: Channel
- E. Size & Spacing: See Drawings

(Cont.)

PART 2 - PRODUCTS

2.2 COLOR CODING

- A. Identify Metal Thicknesses in accordance with ASTM C-955 as follows:
 - 1. 12 ga.: Red
 - 2. 14 ga.: Orange
 - 3. 16 ga.: Green
 - 4. 18 ga.: Yellow
 - 5. 20 ga.: White

2.3 ACCESSORIES

- A. Unless otherwise shown on Drawings, provide Manufacturer's standard Track, Sills, Headers, Bridging, Clips, Stiffeners, Anchors, and other required Accessories.

2.4 FASTENERS

- A. Type: Self-drilling Screws
- B. Manufacturing Standard: ASTM C-1513
- C. Material: Steel
- D. Finish: ASTM B-766, type NS Cadmium Plated.

2.5 SILL SEALER

- A. Manufacturer: Owens-Corning Sill Sealer, or approved.
- B. Material: Fiberglass
- C. Thickness: 3/16 inch
- D. Width: Match Sill Plate
- E. Extent of Work: Provide under any Exterior Wall Sill Plates.

2.6 THERMAL INSULATION

- A. Material: Mineral Fiber type as specified in Section 07-20-00
- B. Extent of Work: Provide between any Members in Exterior Walls, which will not be accessible to Insulating Contractor.

PART 2 - PRODUCTS

2.7 SHOP TREATMENT

- A. Galvanize Members and Accessories in accordance with ASTM A-525 G-60 Coating Designation.

2.8 FABRICATION

- A. Fabricate Member Webs with Punch-out Openings to receive Utility Runs.
- B. Framing Components: Cut with Saw or Shear only; Torch-cutting not acceptable. Accurately fit against Abutting Members and secure in place until permanently anchored.
- C. Framing Panels: Fabricate square and with Members secured to prevent Panel racking or distortion.
- D. Reinforce any Shop or Field-cut Holes through Load-bearing Members as required to maintain load-bearing capacity.

2.9 MAXIMUM ALLOWABLE FABRICATION TOLERANCES

- A. Member Length: Plus 3/16 inch & minus 0 inch
- B. Twist & Camber: None permitted that could prevent System from performing for its intended use, or that could reduce intended Design Structural (load bearing) Capacity.

PART 3 - EXECUTION

3.1 EXISTING CONDITIONS

- A. Verify that Structures and Surfaces to receive Framing are accurately sized and located, clean, dry, rigid, secure, plumb, true, and otherwise properly prepared.
- B. Prior to starting Work, notify General Contractor about defects requiring correction.
- C. Do not start Work until conditions are satisfactory.

3.2 PROTECTING WORK OF OTHER SECTIONS

- A. Protect against damage and discoloration caused by Work of this Section.

(Cont.)

PART 3 - EXECUTION

3.3 INSTALLATION

A. General:

1. Erect Members and Panels plumb, level, square, and true as applicable and in accordance with approved Shop Drawings.
2. Align Punch-out Openings in Webs.
3. Unless otherwise shown on Drawings, make connections with Screws or by welding so that connections meet or exceed Member design load capacity.
4. Provide any required Temporary Bracing; remove when no longer necessary.

B. Vertical Framing Members:

1. Provide Tracks at top and bottom of Walls to receive and secure Wall Studs.
2. At End Joints between adjacent Tracks, carefully align Tracks and either secure Tracks to common Structural Member or secure to separate Splice Plate with 2 Screws or 2 Welds per Track.
3. Squarely seat any axially-loaded Studs against Web-portion of top and bottom Tracks.
4. At any non-axially loaded Studs, provide Deflection Tracks (*1 ga. thicker than adjacent Studs*) at Wall top to prevent inducing Building-settlement Loads into Studs. Do not fasten Studs to Deflection Track.
5. Provide Jack Studs or Cripples below any Window Sills, above any Window or Door Heads, and elsewhere necessary for Wall support. Securely attach to Supporting Member.
6. At any Studs not sheathed full-height on both faces, provide 1-1/2 inch wide by 16 ga. horizontal Steel Channel Bridging to prevent Stud rotation. Space Bridging 48 inches apart maximum, and secure to Stud Webs with Screws or Welds matching axial-tension capacity of Bridging.
7. At any Framed Openings, provide necessary Headers and Supporting Members.
8. Do not splice Studs or other Axially-loaded Members.
9. Temporarily brace Wall until erection is complete.
10. Provide 18 ga. x 8 inch minimum width Galvanized Steel Backing Plate behind wall-mounted items such as Door Stops, Cupboards, Railing Supports, etc.

3.4 FASTENING

- A. Screwing: Penetrate joined Materials at least 3 exposed Threads.
- B. Welding: Comply with AWS D1.1, D1.3, and AISI Manual section 4.2
- C. Wire Tying: Not acceptable

3.5 MAXIMUM ACCEPTABLE ERECTION TOLERANCES

- A. Member Plumbness, Levelness, and Trueness, as applicable: 1/8 inch per 10 ft.
- B. Member Spacing: Within 1/8 inch of specified location
- C. Panel Squareness: Within 1/8 inch per 10 ft. of opposite diagonal measurements

PART 3 - EXECUTION

3.6 TOUCH UP

- A. Touch up damaged Galvanized Coating with Zinc-Rich Paint matching original Coating thickness, and in accordance with ASTM A-780.

3.7 WASTE MANAGEMENT

- A. Collect Scrap, Shipping Pallets, & Packaging Waste; and place where directed for recycling.

3.8 PRODUCT CLEANING & REPAIRING

- A. Including Work of other Trades, clean, repair and touch-up, or replace when directed, Products which have been soiled, discolored, or damaged by Work of this Section.
- B. Remove Debris from Project Site upon Work completion, or sooner if directed.

END OF SECTION

PART 1 - GENERAL

1.1 CONTRACT CONDITIONS

- A. Work of this Section is bound by the Contract Conditions and Division 1, bound herewith, in addition to this Specification and accompanying Drawings.

1.2 EXTENT OF WORK

- A. Structural Steel Subcontractor:
1. Provide all Steel Work indicated even if also shown on Architectural Drawings, except where specifically noted to be provided by other Trades.
- B. Miscellaneous Fabricated Steel Subcontractor:
1. Except for Related Work Items specified below, provide all other Steel Work.

1.3 PRODUCTS FURNISHED, BUT INSTALLED UNDER OTHER SECTIONS

- A. Anchor Bolts installed under Section 03-10-00.

1.4 RELATED WORK SPECIFIED IN OTHER SECTIONS

- A. Chain Link Fencing: Section 02-82-00
B. Reinforcing Steel for Concrete: Section 03-20-00
C. Structural Steel: Section 05-10-00
D. Steel Decking: Section 05-30-00
E. Steel Hardware for Rough Carpentry: Section 06-10-00
F. Steel Supports for Suspended Gypsum Board Ceilings: Section 09-10-00
G. Steel Supports for Suspended Acoustic System Ceilings: Section 09-50-00
H. Field Painting of Steel Items: Section 09-90-00
I. Plastic Sleeve Cover for Pipe Bollards: Section 10-99-00

1.5 ALTERNATES

- A. Refer to Section 01-20-00 for possible effect upon Work of this Section.

(Cont.)

PART 1 - GENERAL

1.6 ABBREVIATIONS

- A. **AISC:** American Institute of Steel Construction; One East Wacker Dr.; Suite 700; Chicago, IL 60601-1802; (866) 275-2472.
- B. **ANSI:** American National Standards Institute; 1819 L St. NW; 6th Floor; Washington DC 20036; (202) 293-8020.
- C. **ASTM:** American Society for Testing and Materials; 100 Barr Harbor Dr.; West Conshohocken, PA 19428; (610) 832-9585

1.7 COORDINATION

- A. Coordinate with other Trades affecting or affected by Work of this Section.

1.8 SHOP DRAWINGS

- A. Submit in accordance with Section 01-33-00.
- B. Show locations, critical dimensions, required clearances, construction details, installation methods including any splices, attachments, and anchors.

1.9 PRODUCT DELIVERY

- A. Include all required Bolts and other Fastening Devices.

1.10 PRODUCT STORAGE & HANDLING

- A. Store Fabricated Steel above ground on Platforms, Skids, or other approved Supports.
- B. Store any Hot-dip Galvanized Steel Items with air-space between adjacent Items.
- C. Store other Materials in weather-tight and dry locations.
- D. Store packaged Materials in original unbroken Containers.
- E. Protect against damage and discoloration.

1.11 FIELD MEASUREMENTS

- A. Verify prior to fabrication.
- B. If field measurements differ slightly from Drawing dimensions modify Work as required for accurate fit. If measurements differ substantially, notify Architect prior to fabrication.

PART 2 - PRODUCTS

2.1 STEEL SHAPES, BARS, & PLATES

- A. Manufacturing Standard: ASTM A-36 or A-572
- B. Minimum Yield Strength: 36 ksi

2.2 THREADED FASTENERS

- A. Manufacturing Standard:
 - 1. Bolts & Nuts: ASTM A 307, Grade A
 - 2. Washers: ANSI Standard B 27
- B. Size & Spacing: See Drawings
- C. Finish: Manufacturer's standard

2.3 ANCHOR BOLTS

- A. Manufacturing Standard ASTM F-1554
- B. Grade: 36
- C. Size: See Drawings

2.4 SHOP PAINT

- A. Rust-Inhibiting Primer specified in Section 09-90-00.

2.5 FABRICATION

- A. General:
 - 1. Punch and shear to leave clean Surfaces.
 - 2. Weld permanent Connections; grind exposed Welds smooth.
 - 3. Provide Holes and Connections for Work of other Trades.
 - 4. Cut abutting Members to fit with full bearing contact.
 - 5. Form Elbows and Bends to uniform radii, free from buckles and twists, and with finished Surfaces smooth.
 - 6. Miter and cope Member intersections within 2°, fit to within 0.02 inches, and weld all around.
 - 7. Where exposed to weather, form to exclude water; allow for expansion and contraction.
 - 8. Do not use Screws or Bolts when they can be avoided; when used countersink Heads, draw up tight, and nick Threads to prevent loosening.

(Cont.)

PART 2 - PRODUCTS

2.5 FABRICATION (Cont.)

- B. Steel Ladder:
 - 1. Fabricate accurately; weld Joints, and grind Joints smooth.
 - 2. Vertical Members: 3/8 x 2 inch Steel, spaced 18 inches apart and at least 7 inches clear of Wall.
 - 3. Rungs: 3/4 inch round solid Steel Bars spaced 12 inches apart, unless otherwise shown on Drawings.
 - 4. Mortise Rungs into vertical Members, and weld securely.
- C. Operable Partition Headers:
 - 1. Fabricate as shown on Drawings.
 - 2. Support with regularly spaced Steel Rods secured to Overhead Structure.
- D. Pipe Bollards:
 - 1. Unless otherwise shown on Drawings, fabricate of 4 inch diameter Steel Pipe.
- E. Ductwork Cross-over Steel Stairs:
 - 1. In accordance with governing laws, regulations, and codes; Design Loads listed in Structural Notes on Drawings; and requirements specified in Section 01115; design, engineer, fabricate, and install Stairs as shown on Drawings, and as follows:
 - a. Stringers: Standard Steel Sections
 - b. Treads: Open Steel Grating
 - c. Landings: Match Treads; reinforce with Steel shapes
 - d. Risers: Open
 - e. Railings:
 - 1. Material: 1-1/2 inch outside diameter Steel Pipe
 - 2. Fabricate to true lines; weld joints and grind smooth.
 - 3. Provide Flanges and Fasteners for securing Horizontal Members.
 - 4. Return any Wall-mounted Handrail Ends to Wall.
 - 5. Close exposed Open Railing Ends with 3/16 inch Welded Plate or Prefabricated Fitting.

2.6 FABRICATION TOLERANCES

- A. Maximum deviation of individual Members from dimensions shown on Drawings as follows:
 - 1. Overall length of Members with both ends finished for compact bearing: 1/32 inch
 - 2. Overall length of Members without finished ends:
 - a. For Members up to 30 ft. long: 1/16 inch
 - b. For Members over 30 ft. long: 1/8 inch
- B. Twists, Bends, & Kinks: Unacceptable

PART 2 - PRODUCTS

2.7 SHOP TREATMENT

- A. Surface Preparation:
 - 1. Remove Grease, Oil, Dirt, loose Rust, loose Mill Scale, and any other bond-reducing Materials.
- B. Within 8 hours of Surface Preparation, apply the following:
 - 1. Apply 1 coat Shop Paint.
 - 2. Minimum Dry Film Thickness: 1.0 mil
 - 3. Do not apply Shop Paint to the following:
 - a. Within 2 inches of Surfaces to be field welded
 - b. Surfaces to be encased in Concrete

PART 3 - EXECUTION

3.1 EXISTING CONDITIONS

- A. Verify that Surfaces and Structures to receive Fabricated Steel are accurately sized and located, square, plumb, true, rigid, secure, and otherwise properly prepared.
- B. Prior to starting Work, notify General Contractor about defects requiring correction.
- C. Do not start Work until conditions are satisfactory.

3.2 PROTECTING WORK OF OTHER SECTIONS

- A. Protect against damage and discoloration caused by Work of this Section.

3.3 INSTALLATION

- A. General:
 - 1. Follow approved Shop Drawings.
 - 2. Install to true lines, plumb and level, and as detailed or required for rigidity and permanence.
- B. Steel Ladders & Stairs:
 - 1. Install plumb, to true lines; anchor securely to adjacent Construction.
- C. Operable Partition Headers:
 - 1. Set at elevation shown.
 - 2. Brace as required to prevent horizontal movements.

(Cont.)

PART 3 - EXECUTION

3.3 INSTALLATION (Cont.)

D. Pipe Bollards:

1. Bury lower section of Pipe at least 36 inches below adjacent Finish Surface.
2. Set Pipe plumb into 18 inch minimum diameter Concrete Footing.
3. Fill Pipe with Concrete Grout; slope Concrete Grout top for drainage and trowel smooth. Immediately remove any Concrete Grout residual exposed on Pipe Surface.

3.4 TOUCH UP

- A. Touch up damaged Paint Surfaces with matching Paint. Apply in accordance with Paint Manufacturer's instructions.

3.5 WASTE MANAGEMENT

- A. Collect Scrap, Shipping Pallets, & Packaging Waste; and place where directed for recycling.

3.6 PRODUCT CLEANING & REPAIRING

- A. Remove loose Rust, heavy Mill Scale, Oil, Dirt, and other bond-reducing Foreign Substances from Members scheduled to receive Finish Painting, or other direct-to-steel Coatings.
- B. Leave Surfaces ready for finishing specified in other Sections.
- C. Including Work of other Trades, clean, repair and touch-up, or replace when directed, Products which have been soiled, discolored, or damaged by Work of this Section.
- D. Remove Debris from Project Site upon Work completion, or sooner if directed.

END OF SECTION

PART 1 - GENERAL

1.1 CONTRACT CONDITIONS

- A. Work of this Section is bound by the Contract Conditions and Division 1, bound herewith, in addition to this Specification and accompanying Drawings.

1.2 RELATED WORK SPECIFIED IN OTHER SECTIONS

- A. Temporary Toilets, Field Office Buildings, Temporary Enclosures, Barricades, & Temporary Project Sign: Section 01-50-00
- B. Concrete Formwork: Section 03-10-00
- C. Custom-built Casework: Section 06-41-00
- D. Wood Paneling: Section 06-42-00
- E. Air Barrier System: Section 07-25-00
- F. Steel Wall-framing & Ceiling-framing: Section 09-10-00

1.3 ALTERNATES

- A. Refer to Section 01-20-00 for possible effect upon Work of this Section.

1.4 COORDINATION

- A. Coordinate with other Trades affecting or affected by Work of this Section.

1.5 EVIDENCE OF GRADE

- A. Grademark of Association having jurisdiction must appear on each piece of Material as follows:
 - 1. Lumber: (WWPA) Western Wood Products Assn. or other Agency certified by Board of Review of American Lumber Standards Committee.
 - 2. Plywood: (APA) Engineered Wood Assn. (formally known as American Plywood Assn.); 7011 S. 19th St.; Tacoma, WA 98466; (253) 565-6600.

1.6 PRODUCT DELIVERY, STORAGE, & HANDLING

- A. Protect against damage and discoloration.
- B. Do not store Wood materials in wet or damp areas, or in contact with Ground.

PART 2 - PRODUCTS

2.1 FASTENERS

- A. Manufacturing Standard:
 - 1. Bolts: Fed. Spec. FF-B-575
 - 2. Nuts: Fed. Spec. FF-N-836
 - 3. Expansion Shields: Fed. Spec. FF-S-325
 - 4. Lag Screw & Lag Bolts: Fed. Spec. FF-B-561
 - 5. Toggle Bolts: Fed. Spec. FF-B-588
 - 6. Wood Screws: Fed. Spec. FF-S-111
 - 7. Nails & Staples: Fed. Spec. FF-N-105B
- B. Washers: Provide Washers under Bolt heads, Lag heads, and Nuts.
- C. Material: Steel
- D. Finish:
 - 1. At Preservative or Fire-retardant treated Wood: Stainless Steel
 - 2. At Other Exterior Work: Hot-dip Galvanized
 - 3. At Interior Work: Contractor's choice
- E. Type:
 - 1. Where type is specifically noted: Use type specified.
 - 2. Elsewhere:
 - a. Where applied to Lumber: Nails or Wood Screws
 - b. Where applied to Plywood or Particle Board: Nails or Wood Screws
 - c. Where applied to Metal: Machine Screws or Bolts
- F. Length: If and where underside of any Sheathing is exposed to view, provide short Fasteners that will not be visible.
- G. Extent of Work: Provide all necessary for installation of Work specified herein.

2.2 GYPSUM WALL SHEATHING

- A. Manufacturer & Brand: G-P DensGlass Gold Exterior Guard, National Gypsum Gold Bond e2XP, USG Securock Glass-Mat, or approved.
- B. Type: Paperless and Mold-resistant
- C. Manufacturing Standard: ASTM C-1177 - Type X
- D. Thickness: 5/8 inch
- E. Extent of Work: Provide over the following:
 - 1. Office Area exterior Wall Framing
 - 2. Parapet Wall Framing

(Cont.)

PART 2 - PRODUCTS

2.3 WOOD BUMPERS

- A. Material: Framing Lumber
- B. WWPA Grade: Construction
- C. Size: See Drawings
- D. Surface: Smooth
- E. Edges & Corners: Chamfer 1/2 inch
- F. Extent of Work: Provide on interior face of Trash Room Walls.

2.4 TELEPHONE, MECHANICAL, & ELECTRICAL EQUIPMENT MOUNTING PANELS

- A. Material: Fire-retardant-treated Plywood
- B. APA Grade: A
- C. Face Size: Accommodate Equipment being mounted (Verify with affected Contractors)
- D. Minimum Thickness: 3/4 inch
- E. Surface: Smooth
- F. Extent of Work: See Drawings

2.5 EQUIPMENT CURBING

- A. Material: Framing Lumber
- B. Surface Finish: Smooth
- C. Special Treatment: Pressure-preservative as specified in Section 06-31-00
- D. Size & Shape: See Drawings

PART 3 - EXECUTION

3.1 EXISTING CONDITIONS

- A. Verify that Surfaces to receive Work specified herein are rigid, secure, accurately sized and located, and otherwise properly prepared.
- B. Prior to starting Work, notify General Contractor about defects requiring correction.
- C. Do not start Work until conditions are satisfactory.

3.2 PROTECTING WORK OF OTHER SECTIONS

- A. Protect against damage and discoloration caused by Work of this Section.

PART 3 - EXECUTION

3.3 INSTALLATION - GENERAL

- A. Install Proprietary Products in accordance with Manufacturer's instructions.
- B. Use additional Fasteners to those specified herein where necessary to insure rigidity and permanence.
- C. Provide Washers under Nuts and Heads when making Bolted or Lag Screwed connections.
- D. Accurately locate, cut, fit, and install Work secure, rigid, to true lines, plumb, and level, unless otherwise indicated.

3.4 GYPSUM WALL SHEATHING INSTALLATION

- A. Install horizontally and continuous over 2 or more Supports, with End Joints on Supports and staggered.
- B. Secure with Screws recommended by Stud Manufacturer, spaced 4 inches o.c. at each Stud.

3.5 SOFFIT VENT INSTALLATION

- A. Install with non-corrosive Fasteners in accordance with Manufacturer's instructions.

3.6 WOOD BUMPER INSTALLATION

- A. Install horizontal with Joints over Supports.
- B. Secure with countersunk Hot-dip Galvanized Steel Bolts, Nuts, and Washers.

3.7 EQUIPMENT MOUNTING PANELS INSTALLATION

- A. Secure with countersunk Screws at Panel Corners and at 12 inches o.c. maximum between.
- B. Verify and comply with Equipment Subcontractors' requirements.

3.8 EQUIPMENT MOUNTING CURBS INSTALLATION

- A. Securely attach to Roof Deck straight, plumb, and true.

3.9 WASTE MANAGEMENT

- A. Collect Scrap, Shipping Pallets, & Packaging Waste; and place where directed for recycling.

PART 3 - EXECUTION

3.10 PRODUCT CLEANING & REPAIRING

- A. Including Work of other Trades, clean, repair and touch-up, or replace when directed, Products which have been soiled, discolored, or damaged by Work of this Section.
- B. Remove Debris from Project Site upon Work completion, or sooner if directed.

END OF SECTION

PART 1 - GENERAL

1.1 CONTRACT CONDITIONS

- A. Work of this Section is bound by the Contract Conditions and Division 1, bound herewith, in addition to this Specification and accompanying Drawings.

1.2 RELATED WORK SPECIFIED IN OTHER SECTIONS

- A. Rough Carpentry to be treated: Section 06-10-00
- B. Fire-retardant Treatment of Wood: Section 06-32-00

1.3 ALTERNATES

- A. Refer to Section 01-20-00 for possible effect upon Work of this Section.

1.4 REFERENCED SPECIFICATIONS

- A. Pressure Treatments specified hereunder refer to Specifications of American Wood Preservers Assn., hereinafter referred to as AWPA; Box 361784; Birmingham, AL 35236-1784; (250) 733-4077.
- B. Specifications can be obtained from Association.

1.5 COORDINATION

- A. Coordinate with other Trades affecting or affected by Work of this Section.

1.6 CERTIFICATION

- A. Affix Quality Seal of American Wood Preservers Bureau (AWPB) to each treated Member or, submit Affidavit stating that Preservative Treatment complies with these Specifications.
- B. Indicate year of treatment, Preservative used in treatment, applicable AWPB Quality Standard, trademark of AWPB Certified Agency, proper exposure conditions, Treating Company and Plant location, and Moisture condition of treated material.

1.7 REGULATORY AGENCY REQUIREMENTS

- A. Comply with Environmental Protection Agency requirements including the following:
 - 1. Wear Dust Masks and Eye Goggles when sawing or machining Treated Wood.
 - 2. Wash Hands after working with Treated Wood.
 - 3. Do not burn Treated Wood; dispose in normal Trash Collector.

PART 1 - GENERAL

1.8 PRODUCT DELIVERY, STORAGE, & HANDLING

- A. Protect against damage.

PART 2 - PRODUCTS

2.1 PRESSURE-APPLIED TREATMENT MATERIAL

- A. Treatment: AWPAC-2
- B. Preservative:
 - 1. Manufacturer & Brand: CSI ACQ Preserve, Osmose Nature Wood, Wolmanize Natural Select, or approved.
 - 2. Material: Alkaline Copper Quat or Copper Azole (ACQ)
- C. Extent of Work: Except at Flame-spread Treated Wood specified in Section 06-32-00, apply to Wood in the following locations:
 - 1. In contact with Earth
 - 2. In contact with Concrete
 - 3. In contact with Roofing
 - 4. In contact with exterior Sheetmetal
 - 5. Elsewhere shown on Drawings or in Specifications

2.2 BRUSH-APPLIED TREATMENT MATERIAL

- A. Material: 2% minimum Copper Napthanate Solution, or approved.
- B. Extent of Work: Treat any Field Cuts to Pressure-treated Material

PART 3 - EXECUTION

3.1 EXISTING CONDITIONS

- A. Verify that Material to receive Treatment does not exceed Moisture Content specified for similar Untreated Wood.
- B. Prior to starting Work, notify General Contractor about defects requiring correction.
- C. Do not start Work until conditions are satisfactory.

PART 3 - EXECUTION

3.2 PROTECTING WORK OF OTHER SECTIONS

- A. Protect against damage and discoloration caused by Work of this Section.

3.3 PRESSURE TREATMENT

- A. Follow Referenced Specifications and Treatment Manufacturer's instructions.
- B. Incise Members prior to Treatment.
- C. Minimum Retention:
 - 1. If and where in contact with Ground or Water: 0.40 pcf
 - 2. Where above Ground: 0.25 pcf

3.4 FIELD CUTS

- A. In accordance with Treatment Manufacturer's instructions, liberally apply 2 coats of Brush-applied Treatment Material to field-cut Surfaces.

3.5 WASTE DISPOSAL

- A. Do not burn Treated Wood Scraps.
- B. Do not mix Treated Wood Scraps with Untreated Wood. Separate Scraps and lawfully dispose.

END OF SECTION

PART 1 - GENERAL

1.1 CONTRACT CONDITIONS

- A. Work of this Section is bound by the Contract Conditions and Division 1, bound herewith, in addition to this Specification and accompanying Drawings.

1.2 RELATED WORK SPECIFIED IN OTHER SECTIONS

- A. Preservative Treatment of Wood: Section 06-31-00
- B. Wood Paneling to be Fire-resistant treated: Section 06-42-00

1.3 ALTERNATES

- A. Refer to Section 01-20-00 for possible effect upon Work of this Section.

1.4 REFERENCED SPECIFICATIONS

- A. Pressure Treatments specified hereunder refer to Specifications of American Wood Preservers Assn., Box 361784; Birmingham, AL 35236-1784; (250) 733-4077.
- B. Specifications can be obtained from Association.

1.5 REGULATORY AGENCY REQUIREMENTS

- A. Maximum Flame Spread Rating: 25, maintained during 30 minute Test.
- B. Comply with Environmental Protection Agency requirements including the following:
 - 1. Wear Dust Masks and Eye Goggles when sawing or machining Treated Wood.
 - 2. Wash Hands after working with Treated Wood.
 - 3. Do not burn Treated Wood; dispose in normal Trash Collector.

1.6 COORDINATION

- A. Coordinate with other Trades affecting or affected by Work of this Section.

1.7 LABELS

- A. Affix U.L. Label or Stamp to each Treated Piece stating that Treatment complies with these Specifications.

PART 1 - GENERAL

1.8 PRODUCT DELIVERY, STORAGE, & HANDLING

- A. Protect against damage.
- B. Store Treated Material indoor and in dry location.

PART 2 - PRODUCTS

2.1 TREATMENT MATERIALS

- A. Manufacturer & Brand: Baxter Flamescape, Hickson Dricon, or approved.
- B. Chemicals:
 - 1. Type: Approved for use as Wood Preservative by U.S. Environmental Protection Agency
 - 2. Prohibited Components: Ammonium Phosphate, Formaldehyde, Halogens, & Sulfates.
- C. Maximum MIL-L-19140E Corrosion Rates of Metal in Contact with Treated Wood: 1 mil per year

PART 3 - EXECUTION

3.1 EXISTING CONDITIONS

- A. Verify that Material to receive Treatment does not exceed Moisture Content specified for similar Untreated Wood.
- B. Prior to starting Work, notify General Contractor about defects requiring correction.
- C. Do not start Work until conditions are satisfactory.

3.2 PROTECTING WORK OF OTHER SECTIONS

- A. Protect against damage and discoloration caused by Work of this Section.

3.3 TREATMENT

- A. Conform to Referenced Specifications and Underwriters Laboratories FR-S requirements.
- B. Where Plywood is scheduled for natural finish do not treat Face Veneers.

PART 3 - EXECUTION

3.4 MAXIMUM MOISTURE CONTENT AFTER TREATMENT

- A. Testing Method: ASTM D-3201
- B. Environmental Conditions during Tests:
 - 1. Maximum Relative Humidity: 95%
 - 2. Maximum Air Temperature: 80° F
 - 3. Maximum Moisture Content: 12%

3.5 FIELD CUTTING AFTER TREATMENT

- A. Do not rip, resurface, or mill Material.
- B. Only end-trimming and hole-drilling are permitted.

3.6 CLEANING

- A. After Architect's inspection remove Labels from Members exposed to view.

3.7 WASTE DISPOSAL

- A. Do not burn Treated Wood Scraps.
- B. Do not mix Treated Wood Scraps with Untreated Wood. Separate Scraps and lawfully dispose.

END OF SECTION

PART 1 - GENERAL

1.1 CONTRACT CONDITIONS

- A. Work of this Section is bound by the Contract Conditions and Division 1, bound herewith, in addition to this Specification and accompanying Drawings.

1.2 RELATED WORK SPECIFIED IN OTHER SECTIONS

- A. Solid Surface Countertops: Section 06-65-00
- B. Field Painting & Finishing: Section 09-90-00
- C. Sinks & Fittings built into Casework, including plumbing connections: See Plumbing Specifications
- D. Electrical Outlets & Conduit built into Casework, including electrical connections: See Electrical Specifications

1.3 ALTERNATES

- A. Refer to Section 01-20-00 for possible effect upon Work of this Section.

1.4 REFERENCED STANDARDS

- A. Except as herein modified, Material and Workmanship Grades shall be as defined in North American Architectural Woodwork Standards (NAAWS) 3.1 published by Woodwork Institute (WI); Box 980247; West Sacramento, CA 95798-0247; (916) 372-9943.
- B. Standards may be obtained from Institute.

1.5 DEFINITIONS

- A. Exposed Surfaces:
 - 1. Surfaces visible when Drawers and Doors are closed, including any Open Shelving
 - 2. Cabinet bottoms, if any, 42 inches or more above Floor.
 - 3. Cabinet tops, if any, less than 72 inches above Floor.
- B. Semi-exposed Surfaces:
 - 1. Surfaces which become visible after Drawers and Doors are opened, including backs of Doors.
 - 2. Cabinet bottoms, if any, more than 30 inches but less than 42 inches above Floor.
 - 3. Cabinet tops, if any, between 72 and 78 inches above Floor.
- C. Concealed Surfaces:
 - 1. Surfaces not normally visible after installation.
 - 2. Cabinet bottoms, if any, less than 30 inches above Floor.
 - 3. Cabinet tops, if any, 78 inches or more above Floor.
 - 4. Web Frames, Dust Panels, Stretchers, Blocking, and Backs behind Drawers.

PART 1 - GENERAL

1.6 COORDINATION

- A. Coordinate with other Trades affecting or affected by Work of this Section.

1.7 SHOP DRAWINGS

- A. Submit in accordance with Section 01-33-00.
- B. Show locations, arrangements, shapes, dimensions, joint details, and other pertinent items.
- C. Show connections to adjacent Work, and complete assembly, whether or not Materials are furnished by Mill.
- D. Include Manufacturer's descriptive literature for Specialty Items.
- E. Identify Material Grades, Workmanship Grades, Wood Species, and Finishes.

1.8 SAMPLES

- A. In accordance with Section 01-33-00, submit for review and acceptance 2 samples of each color of Plastic Laminate proposed for use.

1.9 PRODUCT DELIVERY

- A. Do not deliver Products to Jobsite until notified by General Contractor that Project is conditioned and prepared to handle and store Products without damage or discoloration.

1.10 PRODUCT STORAGE & HANDLING

- A. Protect against damage and discoloration.

1.11 TEMPERATURE & HUMIDITY

- A. Where Casework or Shelving are located, maintain the following:
 - 1. Minimum Ambient Air Temperature: 55°F
 - 2. Relative Humidity: 25% to 55%

1.12 ILLUMINATION

- A. Perform no work under less than 30 ft. candles of light measured 3 ft. above Floor.

PART 1 - GENERAL

1.13 FIELD MEASUREMENTS

- A. Verify prior to fabrication.
- B. If field measurements differ slightly from Drawing dimensions modify Work as required for accurate fit. If measurements differ substantially, notify Architect prior to fabrication.

PART 2 - PRODUCTS

2.1 LUMBER

- A. Species: Douglas Fir
- B. Grain: Vertical

2.2 PLYWOOD

- A. Manufacturing Standard: U.S. Product Standard PS-1
- B. Types:
 - 1. Where Exposed to Moisture: Exposure 1
 - 2. Elsewhere: Exposure 2
- C. Core: Veneer
- D. Face Veneer:
 - 1. At Reception Desk:
 - a. Manufacturer: Plyboo, or approved
 - b. Brand: Linear
 - c. Style: Where located on Drawings:
 - 1. Edge-grain Bamboo Plywood
 - 2. Grooved
 - d. Color: Amber
 - 2. Elsewhere:
 - a. Species: Douglas Fir
 - b. Cut: Rotary

2.3 PARTICLE BOARD

- A. Manufacturer & Brand: Weyerhaeuser Timblend, Champion Novaply, Willamette Industries Duraflake, or approved.
- B. Manufacturing Standard: ANSI A208.1 grade M-5
- C. Minimum Density: 45 pcf
- D. Maximum Moisture Content: 8%
- E. Formaldehyde: None added

PART 2 - PRODUCTS

2.4 CASEWORK INTERIOR LINER

- A. Material: Melamine Low Pressure Laminate
- B. Type: Thermal-pressed
- C. Color: White
- D. Extent of Work: Cover Semi-exposed Casework and Shelving Surfaces.

2.5 PLASTIC LAMINATE FACING

- A. Material: High pressure type conforming to NEMA LD-1
- B. Thickness:
 - 1. At exposed Surfaces including Door & Drawer Fronts and Backs: 0.028 inch
 - 2. At Semi-exposed Surfaces: 0.020 inch
- C. Color & Pattern: Selected after Contract award from Manufacturer's standard choices

2.6 EDGE BANDING

- A. Material: Polyvinyl Chloride (PVC)
- B. Nominal Thickness: 0.020 inches
- C. Color: Match adjacent Facing Material.

2.7 FINISH HARDWARE

- A. Case-mounted Adjustable Shelf Supports:
 - 1. Manufacturer & Model: Knape & Vogt #346 with #129 Rubber Cushion, or approved.
 - 2. Type: Dowel
 - 3. Material: Steel
 - 4. Finish: Anochrome
- B. Extension Drawer Slides:
 - 1. Manufacturer & Model: Contractor's choice
 - 2. Minimum Storage Load Capacity:
 - a. At Drawers less than 8 inches high: 75 lbs.
 - b. At Drawers 8 inches and higher: 150 lbs.
 - 3. Type: Soft-closing full-extension
 - 4. Extent of Work: Provide on all Drawers.
- C. Extension Computer Keyboard & Mouse Tray:
 - 1. Manufacturer & Model: Knape & Vogt 5710, or approved.
 - 2. Extent of Work: See Drawings

(Cont.)

PART 2 - PRODUCTS

2.7 FINISH HARDWARE (Cont.)

- D. Door Hinges:
 - 1. Manufacturer: Blum, or approved.
 - 2. Type: Concealed, soft-closing, and satisfying conditions of use.
 - 3. Opening Angle: 125°
 - 4. Finish: Nickel plated
- E. Drawer & Door Pulls:
 - 1. Manufacturer: Franklin Brass, or approved.
 - 2. Model: P35304K-SS
 - 3. Finish: Match adjacent Door Hardware specified in Section 08-71-00.
- F. Cable Grommets:
 - 1. Manufacturer: Doug Mockett (800) 523-1269, or approved.
 - 2. Series: TG Flip Top
 - 3. Nominal Diameter: 2 inches
 - 4. Material: Plastic
 - 5. Color: Match adjacent Countertop as close as possible.
 - 6. Extent of Work: See Drawings
- G. Drawer & Door Locks:
 - 1. Manufacturer: Schlage, or approved.
 - 2. Series:
 - a. At Doors: CL1000
 - b. At Drawers: CL2000
 - 3. Barrel Length: Satisfy conditions of use.
 - 4. Keying:
 - a. Key Locks in different Rooms separately.
 - b. Key Locks within each Room alike and master-key to match Room Entry Door Lock, if any.
 - 5. Finish: Match adjacent Door Hardware specified in Section 08-71-00
 - 6. Extent of Work: Provide where shown on Drawings.

2.8 FABRICATION

- A. General:
 - 1. NAAWS Fabrication Style: Flush Overlay
 - 2. NAAWS Fabrication Grade: Custom
 - 3. All Shelves adjustable, unless otherwise shown on Drawings.
 - 4. Verify dimensions of Sinks and other Items to be built into Cases and Counters.
 - 5. Assemble in Fabrication Shop where feasible.
 - 6. Prior to fabrication, obtain Architect's approval of field-splice locations.
 - 7. Fabricate exposed Joints tight and flush.

(Cont.)

PART 2 - PRODUCTS

2.9 FABRICATION (Cont.)

A. General: (Cont.)

8. Fabricate any Curves in longest practicable segments by laminating and/or machining. Do not use "Chord Segments".
9. Assemble Cases with Adhesive. Use Screws and Bolts where required for strength and rigidity. Conceal Fastenings wherever possible. Where not possible, neatly countersink Exposed Fastener and fill Surface with Material matching adjacent Surface.
10. Install Finish Hardware in Fabrication Shop.

B. Materials, unless elsewhere specifically noted otherwise:

1. Exposed Surfaces:
 - a. At Reception Counter: Plywood specified above
 - b. Elsewhere: Plastic Laminate Facing
2. Semi-exposed Surfaces:
 - a. Backside of Doors & Drawer Fronts: Match adjacent exposed Surfaces
 - b. Door & Drawer Face Edges: Edge Banding
 - c. Elsewhere: Casework Interior Liner
3. Shelving & Countertops:
 - a. Material: Plywood
 - b. Thickness:
 1. At Spans up to 36 inches: 3/4 inch
 2. At Spans between 36 and 48 inches: 1 inch
4. Concealed Casework Backs: 1/4 inch thick Cabinet Interior Liner faced toward Case Interior
5. Drawer Bottoms: 1/4 inch thick Cabinet Interior Liner faced upward
6. All Other Construction Materials: 3/4 inch thick Particle Board

C. Edge Banding, including Door & Drawer Face Edges:

1. At Plastic Laminate Faced Surfaces: Cover with PVC Edge Banding
2. At Shelving & other Semi-concealed Surfaces: Band with matching Interior Casework Liner in accordance with NAAWS Standards.

D. Adjustable Shelf Hardware:

1. Drill Holes in Case Wall to receive Shelf Support Dowels. Space Holes 1 inch o.c. maximum over full height of Wall.

E. Drawer Slides, Computer Keyboard Trays, Locks, Grommets, & Pulls:

1. Follow Manufacturer's instructions.

F. At Sink Cabinets:

1. Hold Bottom Shelf 1/2 inch back from rear face of Door to provide open space for ventilation.

G. Door Silencers:

1. Provide Felt or Rubber Silencers where necessary to prevent noisy Door-to-Frame contact.

PART 3 - EXECUTION

3.1 EXISTING CONDITIONS

- A. Verify that Surfaces to receive Casework or Shelving are straight, plumb, true, solid, rigid, and otherwise properly prepared.
- B. Prior to starting Work, notify General Contractor about defects requiring correction.
- C. Do not start Work until conditions are satisfactory.

3.2 PROTECTING WORK OF OTHER SECTIONS

- A. Protect against damage and discoloration caused by Work of this Section.

3.3 INSTALLATION

- A. Miter Corners, and bevel-cut and glue Joints.
- B. At adjacent in-line Base Cabinets where Rubber Base is scheduled, provide continuous Wood Backing to receive Rubber Base.
- C. Secure Work in place, plumb, square, true, level, and without distortion; level where necessary with concealed Shims.
- D. Secure Work to Backing with countersunk Screws.
- E. Accurately scribe Face Plates, Filler Strips, and Trim Strips to adjacent surface irregularities. Install with Finish Nails, set for puttying, except where Screws are required.
- F. Ease sharp External Corners prior to finishing.

3.4 ADJUSTMENTS

- A. Adjust Moving Parts to operate satisfactorily at time of Project Substantial Completion and during Warranty Period.

3.5 WASTE MANAGEMENT

- A. Collect Scrap, Shipping Pallets, & Packaging Waste; and place where directed for recycling.

3.6 PRODUCT CLEANING & REPAIRING

- A. Including Work of other Trades, clean, repair and touch-up, or replace when directed, Products which have been soiled, discolored, or damaged by Work of this Section.
- B. Remove Debris from Project Site upon Work completion, or sooner if directed.

END OF SECTION

PART 1 - GENERAL

1.1 CONTRACT CONDITIONS

- A. Work of this Section is bound by the Contract Conditions and Division 1, bound herewith, in addition to this Specification and accompanying Drawings.

1.2 WORK INCLUDED BUT SPECIFIED IN OTHER SECTION

- A. Fire Retardant Treatment for Paneling: Section 06-32-00

1.3 RELATED WORK SPECIFIED IN OTHER SECTIONS

- A. Rough Carpentry: Section 06-10-00

1.4 ALTERNATES

- A. Refer to Section 01-20-00 for possible effect upon Work of this Section.

1.5 REFERENCED QUALITY STANDARDS

- A. Unless otherwise specified herein, Standards shall be defined by the following:
- B. Material Quality Standards:
 - 1. APA Grading Rules of Engineered Wood Assn. (*formally known as American Plywood Assn.*); 7011 S. 19th St.; Tacoma, WA 9841; (253) 565-6600.
- C. Interior Paneling Workmanship Standards:
 - 1. North American Architectural Woodwork Standards (NAAWS) 3.1 published by Woodwork Institute (WI); Box 980247; West Sacramento, CA 95798; (916) 372-9943.
- D. Standards can be obtained from Standards Publisher.

1.6 COORDINATION

- A. Coordinate with other Trades affecting or affected by Work of this Section.

1.7 PRODUCT DELIVERY

- A. Do not deliver Products to Jobsite until notified by General Contractor that Project is conditioned and prepared to handle and store Products without damage or discoloration.

PART 1 - GENERAL

1.8 PRODUCT STORAGE & HANDLING

- A. Protect against damage and discoloration.

1.9 ILLUMINATION

- A. Perform no Work under less than 30 ft. candles of light measured 3 ft. above adjacent Floor Surface.

1.10 TEMPERATURE

- A. Maintain 50°F minimum in interior spaces where Materials are located.

PART 2 - PRODUCTS

2.1 PLYWOOD PANELING

- A. Species: Douglas Fir
- B. Face Veneer:
 - 1. Cut: Plain sliced
 - 2. Grade: APA 303 0/C (Clear)
 - 3. Face Texture: Smooth
- C. Thickness: 5/8 inches
- D. Special Treatment: Treat Paneling with Flame Retardant as specified in Section 06-32-00.

2.2 FASTENERS

- A. Material: Stainless Steel
- B. Head Shape: Oval
- C. Type: Countersunk
- D. Size & Quantity: As required to secure Members in position

(Cont.)

PART 3 - EXECUTION

3.1 EXISTING CONDITIONS

- A. Verify that Structure and Surfaces to receive Paneling are straight, plumb, true, solid, rigid, dry, and otherwise properly prepared.
- B. Prior to starting Work, notify General Contractor about defects requiring correction.
- C. Do not start Work until conditions are satisfactory.

3.2 PROTECTING WORK OF OTHER SECTIONS

- A. Protect against damage and discoloration caused by Work of this Section.

3.3 INSTALLATION

- A. NAAWS Workmanship Grade: Premium
- B. Securely install straight, plumb, level, parallel, and true as appropriate.
- C. Fit neatly at Joints and against Trim.
- D. Accurately scribe to any adjacent Surface irregularities.
- E. Locate Joints over solid bearing.
- F. Remove sharp External Corners.
- G. Fit accurately and neatly around any Projections through Paneling.
- H. Install with 1/16 inch gap between adjacent Panels.
- I. Secure with Screws spaced 6 inches apart along Panel Edges and 12 inches apart along Intermediate Supports.

3.4 WASTE MANAGEMENT

- A. Collect Scrap, Shipping Pallets, & Packaging Waste; and place where directed for recycling.

3.5 PRODUCT CLEANING & REPAIRING

- A. Including Work of other Trades, clean, repair and touch-up, or replace when directed, Products which have been soiled, discolored, or damaged by Work of this Section.
- B. Remove Debris from Project Site upon Work completion, or sooner if directed.

END OF SECTION

PART 1 - GENERAL

1.1 CONTRACT CONDITIONS

- A. Work of this Section is bound by the Contract Conditions and Division 1, bound herewith, in addition to this Specification and accompanying Drawings.

1.2 RELATED WORK SPECIFIED IN OTHER SECTIONS

- A. Gypsum Board Walls to receive Panels: Section 09-25-00

1.3 ALTERNATES

- A. Refer to Section 01-20-00 for possible effect upon Work of this Section.

1.4 COORDINATION

- A. Coordinate with other Trades affecting or affected by Work of this Section.

1.5 MAINTENANCE INSTRUCTIONS

- A. In accordance with Section 01-83-00, submit Instructions to General Contractor for inclusion in Owner's Maintenance Manual.

1.6 PRODUCT DELIVERY, STORAGE, & HANDLING

- A. Deliver in unbroken Packages with Manufacturer's legible Label thereon. Do not remove Labels or open Packages until Architect inspects and approves.
- B. Store in clean and dry Storage Area.
- C. Protect against damage and discoloration.
- D. 24 hours prior to application, remove Panels from package and allow Panels to acclimatize with Installation Area Temperature and Humidity.

(Cont.)

PART 2 - PRODUCTS

2.1 PANELS

- A. Manufacturer: Crane Composites (800) 435-0080, Panolam Industries FRP (866) 925-4377, or approved.
- B. Brand: Similar to Crane Designs
- C. Material: Fiberglass-reinforced Plastic (FRP)
- D. ASTM E-84 Fire Rating Class: A
- E. Surface Texture: Smooth
- F. Color: Selected after Contract award from Manufacturer's standard choices

2.2 TRIM

- A. Type: Recommended by Panel Manufacturer for conditions of use
- B. Color: Match adjacent Panels.
- C. Extent of Work: Provide at Panel edges.

2.3 PRIMERS & ADHESIVES

- A. Manufacturer & Brand: Contractor's choice
- B. Type: Mildew-resistant, satisfying conditions of use, and permitting removal of Panels without Substrate damage.
- C. Fire-resistiveness: No less than Panel rating.

2.4 FASTENERS

- A. Manufacturer: Contractor's choice
- B. Type: Concealed and satisfying conditions of use.

PART 3 - EXECUTION

3.1 EXISTING CONDITIONS

- A. Verify that Surfaces to receive Panels are true, sound, clean, dust-free, mildew-free, free from conditions that could damage Panels or impair Adhesive bond, and be otherwise properly prepared.
- B. Verify that Surfaces to receive Panels do not exceed 4% Moisture content.
- C. Prior to starting Work, notify General Contractor about defects requiring correction.
- D. Do not start Work until conditions are satisfactory.

PART 3 - EXECUTION

3.2 PROTECTING WORK OF OTHER SECTIONS

- A. Protect against damage and discoloration caused by Work of this Section.

3.3 PREPARATION WORK

- A. Before applying Panels, remove any Finish Hardware, Electrical Cover Plates, Mechanical Grilles or Registers, etc. which interfere with Panel application.
- B. Carefully store Removed Items, and accurately replace following Panel application.

3.4 SURFACE PREPARATION

- A. Remove any Substrate Surface Defects that could show through Panel surface.

3.5 PANEL INSTALLATION

- A. Follow Manufacturer's instructions.
- B. Except at any Color or Pattern breaks, do not install Panels with Horizontal Seams.
- C. Do not extend Panels below top of any adjacent Wall Base.
- D. Take special care to assure complete adhesion at Joints, Edges, and Corners.

3.6 TRIM INSTALLATION

- A. Follow Manufacturer's instructions.
- B. Install any necessary Butt Joints tight, neat, hairline, and no closer than 4 ft. apart.

3.7 WASTE MANAGEMENT

- A. Collect Scrap, Shipping Pallets, & Packaging Waste; and place where directed for recycling.

3.8 PRODUCT CLEANING & REPAIRING

- A. Immediately remove any Adhesive from Adjacent Surfaces.
- B. Leave Surfaces clean and defect-free at time of Substantial Project Completion.
- C. Including Work of other Trades, clean, repair and touch-up, or replace when directed, Products which have been soiled, discolored, or damaged by Work of this Section.
- D. Remove Debris from Project Site upon Work completion, or sooner if directed.

END OF SECTION

PART 1 - GENERAL

1.1 CONTRACT CONDITIONS

- A. Work of this Section is bound by the Contract Conditions and Division 1, bound herewith, in addition to this Specification and accompanying Drawings.

1.2 RELATED WORK SPECIFIED IN OTHER SECTIONS

- A. Casework to receive Countertops: Section 06-41-00
- B. Gypsum Board to receive Backsplashes: Section 09-25-00

1.3 ALTERNATES

- A. Refer to Section 01-20-00 for possible effect upon Work of this Section.

1.4 COORDINATION

- A. Coordinate with other Trades affecting or affected by Work of this Section.

1.5 SHOP DRAWINGS

- A. Submit in accordance with Section 01-33-00.
- B. Show dimensions, shapes, fabrication details, connections to adjacent Work, and other pertinent items.

1.6 SAMPLES

- A. Prior to fabrication, submit in accordance with Section 01-33-00, two 2x2 inch (min.) Solid Surface color samples for Architect's approval.

1.7 PRODUCT DELIVERY, STORAGE, & HANDLING

- A. Protect against damage and discoloration.

(Cont.)

PART 1 - GENERAL

1.8 FIELD MEASUREMENTS

- A. Verify prior to fabrication.
- B. If field measurements differ slightly from Drawing dimensions modify Work as required for accurate fit. If measurements differ substantially, notify Architect prior to fabrication.

1.9 SPECIAL WARRANTY

- A. Warrant Work of this Section for 10 years against Material defects occurring under normal usage.
- B. Repair or, when directed, replace defective Countertops.

PART 2 - PRODUCTS

2.1 COUNTERTOPS & BACKSPLASHES

- A. Manufacturer & Brand: DuPont Corian, Wilsonart Gibraltar, or approved.
- B. Color: Selected after Contract award from Manufacturer's standard choices
- C. Size, Shape, & Thickness: See Drawings

2.2 ADHESIVE

- A. Manufacturer & Brand: Contractor's choice
- B. Type: Satisfy conditions of use.

2.3 JOINT SEALANT

- A. Manufacturer: Dow, GE, or approved.
- B. Type: Silicone with Mildew-inhibiter
- C. Color: Match adjacent Solis Surface Material

(Cont.)

PART 2 - PRODUCTS

2.4 FABRICATION

- A. Fabricate to sizes and shapes shown on Drawings.
- B. Fabricate Sinks, if any, with rounded corners.
- C. Joints:
 - 1. Longitudinal Joints: None permitted
 - 2. Cross Joints: Locate no closer than 6 ft. apart and, where possible, at least 24 inches away from any Sink.
 - 3. Make Joints between adjacent Components inconspicuous and without voids, secure against movement with Adhesive, and reinforce with 2 inch minimum width Strip under each Joint.
- D. Backsplash Ends: Return along Wall to Counter front, unless otherwise shown on Drawings.
- E. Finishing:
 - 1. Ease exposed edges.
 - 2. Finish top and edge surfaces smooth and uniform.
 - 3. Polish exposed top and edge surfaces to Matte Finish with 5 to 20 Gloss Rating.

PART 3 - EXECUTION

3.1 EXISTING CONDITIONS

- A. Verify that Surfaces to receive Countertops and Backsplashes are accurately sized and located, dry, clean, smooth, sound, secure, and are otherwise properly prepared.
- B. Prior to starting Work, notify General Contractor about defects requiring correction.
- C. Do not start Work until conditions are satisfactory.

3.2 PROTECTING WORK OF OTHER SECTIONS

- A. Protect against damage and discoloration caused by work of this Section.

3.3 INSTALLATION

- A. Install Components level, square, plumb, and true in accordance with approved Shop Drawings and Manufacturer's instructions.
- B. Butt Backsplash to Countertop without Metal Trim.
- C. Secure Backsplash to Wall with Adhesive.
- D. Fill Joint between Countertop and Backsplash with Joint Sealant; strike-off Sealant flush with adjacent Surface.

PART 3 - EXECUTION

3.4 PROTECTION

- A. Protect completed Work against damage or discoloration.

3.5 WASTE MANAGEMENT

- A. Collect Scrap, Shipping Pallets, & Packaging Waste; and place where directed for recycling.

3.6 PRODUCT CLEANING & REPAIRING

- A. Promptly remove any excess Adhesive or Sealant.
- B. Remove any Stains from surfaces.
- C. Including Work of other Trades, clean, repair and touch-up, or replace when directed, Products which have been soiled, discolored, or damaged by Work of this Section.
- D. Remove Debris from Project Site upon Work completion, or sooner if directed.

END OF SECTION

PART 1 - GENERAL

1.1 CONTRACT CONDITIONS

- A. Work of this Section is bound by the Contract Conditions and Division 1, bound herewith, in addition to this Specification and accompanying Drawings.

1.2 RELATED WORK SPECIFIED IN OTHER SECTIONS

- A. Weather-Resistance Barrier System: Section 07-25-00
- B. Thermal Insulation installed as part of Single Ply Roofing: Section 07-53-00
- C. Mechanical Systems Thermal Insulation: See Plumbing & HVAC Specifications

1.3 ALTERNATES

- A. Refer to Section 01-20-00 for possible effect upon Work of this Section.

1.4 DEFINITIONS

- A. Any specified "R" values designate Thermal Resistance of Insulation only, not including Air Spaces or other factors assumed to result in higher "R" values.

1.5 COORDINATION

- A. Coordinate with other Trades affecting or affected by Work of this Section.

1.6 REFERENCED SPECIFICATIONS

- A. Install Products in compliance with the following:
 - 1. Air-infiltration Sealant: ASTM E-283.
- B. Fiber Batt Insulation: ASTM C-1320

1.7 REGULATORY AGENCY REQUIREMENTS

- A. If and where Insulation is not covered with Gypsum Board or other Fire-rated Material:
 - 1. Maximum Insulation & Facing Flame Spread: 25
 - 2. Maximum Insulation & Facing Smoke Density: 450

PART 1 - GENERAL

1.8 PRODUCT DELIVERY, STORAGE, & HANDLING

- A. Deliver to Project Site in Manufacturer's original unopened packages.
- B. Label Package Wrappers with Brand Name, Insulation type, and Thermal Rating.
- C. Store Materials off ground.
- D. Protect against damage and discoloration.
- E. Weight Foam Insulation as required to prevent wind-induced damage.
- F. Protect Foam Insulation edges against crushing and breaking.
- G. Immediately remove damaged or wet Materials from Jobsite.

1.9 ENVIRONMENTAL CONDITIONS

- A. Do not install Insulation when Surface to receive Insulation is wet or when Surface and/or Ambient Air Temperatures are lower than Manufacturer's specified minimums.

1.10 ADVANCE NOTICES

- A. Notify Architect at least 24 hours prior to covering-over Work of this Section so inspection can be made.

PART 2 - PRODUCTS

2.1 AIR-INFILTRATION SPRAY-FOAM SEALANT

- A. Manufacturer & Brand: BASF SprayTite 178, or approved.
- B. Minimum ASTM E-96 Water Vapor Permeance:
 - 1. Dry Cup: 2 perms
 - 2. Wet Cup: 30 perm
- C. ASTM C-719 Durability over more than 10 cycles: No cohesive-failure or cracking
- D. Maximum ASTM E-84 Flame Spread: 25
- E. Maximum ASTM E-84 Smoke Developed: 450
- F. Maximum ASTM E-283 Leakage Rate at 1.57 psf: 0.01 cu. ft. per sq. ft.
- G. Extent of Work: Prior to installing adjacent Thermal Insulation, apply Sealant continuously and evenly where necessary to prevent Air-passage between Conditioned and Unconditioned Spaces.

PART 2 - PRODUCTS

2.2 OFFICE BUILDING EXTERIOR WALL INSULATION

- A. Manufacturer: Therm-All, or approved.
- B. Brand: R-Seal
- C. Thickness: 2 inches

2.3 OTHER METAL BUILDING ROOF & EXTERIOR WALL INSULATION

- A. Manufacturer: Owens Corning, or approved.
- B. Brand: EcoTouch
- C. Material: Formaldehyde-free Fibrous-Glass Blanket
- D. Minimum Recycled Material Content: 65%
- E. Minimum Post-consumer Material Content: 41%
- F. Minimum Thicknesses & Thermal Resistance Values (R): See Drawings
- G. Length: Full-length, single-piece where practicable
- H. Insulation Facing:
 - 1. Manufacturer: Owens Corning, or approved.
 - 2. Brand: OptiLiner Banded Liner System
 - 3. Type: 1070
 - 4. Thickness: 9 mils
 - 5. ASTM E-96 Moisture Vapor Transmission Rate: 0.02 perms
 - 6. Color: White
 - 7. ASTM E-84 Flame Spread Rating: 0
 - 8. ASTM E-84 Smoke Development Rating: 3

2.4 VESTIBULE CEILING INSULATION

- A. Manufacturer: Certainteed, Johns Manville, Knauf, Owens/Corning, US Gypsum, or approved.
- B. Material: Formaldehyde-free Glass Fiber
- C. Manufacturing Standard: ASTM C-665
- D. Type: Blanket or Batt
- E. Vapor Retarding Facing:
 - 1. Material: Kraft Paper
 - 2. Manufacturing Standard: ASTM C-665
 - 3. Maximum Permeability Rating: 1.0 perms
- F. Minimum Thermal Resistance Factor (R): 49

(Cont.)

PART 2 - PRODUCTS

2.5 OFFICE & COMPRESSOR SHED ROOF INSULATION

- A. Manufacturer & Brand: Dow Thermax Sheathing, or approved.
- B. Insulating Material: Polyisocyanurate Foam
- C. Manufacturing Standard: ASTM C-1289, type II
- D. Blowing Agents: HCFC-free & HFC-free
- E. Ozone Depletion Potential (ODP): 0
- F. Global Warming Potential (GWP): Negligible
- G. Nominal ASTM D-1622 Density: 2 pcf
- H. Facing Material on both Faces: Aluminum Foil
- I. Thickness: 6 inches

2.6 PERIMETER FOUNDATION WALL INSULATION PANELS

- A. Manufacturer & Brand: Styro FP Ultra Lite, or approved.
- B. Thickness: 3 inches
- C. Face Texture: Stucco
- D. Maximum ASTM C-272 Moisture Absorption Rate: 3%
- E.. Extent of Work: Cover exterior surface of perimeter Concrete Foundation Walls, and extend 24 inches bellows adjacent Ground level.

2.7 INSULATION SUPPORTS

- A. Material: Plastic Mesh, Wire Devices, or approved.
- B. Size: Satisfy conditions of use
- C. Extent of Work: Provide where necessary to support Insulation against displacement.

2.8 ADHESIVE

- A. Type: Recommended by Manufacturer of Material to be secured.

2.9 VAPOR PROOF TAPE

- A. Manufacturer & Brand: Alumiseal Zero Perm (800) 235-2313, or approved.
- B. Material: Adhesive-backed, Mylar-faced Aluminum Foil.
- C. Color:
 - 1. If and where Exposed to View: Match adjacent Vapor Retarder
 - 2. Where Concealed: Contractor's choice
- D. Width: 1-1/2 inches
- E. Approximate Permeability Rating: 0.0 perms

PART 3 - EXECUTION

3.1 EXISTING CONDITIONS

- A. Verify that Work of preceding Trades is completed.
- B. Verify that Surfaces and Spaces to receive Insulation are accurately sized and located, dry, protected against inclement weather, clean, and otherwise properly prepared.
- C. Prior to starting Work, notify General Contractor about defects requiring correction.
- D. Do not start Work until conditions are satisfactory.

3.2 PROTECTING WORK OF OTHER SECTIONS

- A. Protect against damage and discoloration caused by Work of this Section.
- B. Maintain the following Minimum Clearances between Insulation and any recessed Lighting Fixtures, Metal Chimneys, Metal Gas Vents, or other similar Device, unless Device is UL-rated for Zero Clearance:
 - 1. Side Clearance: 3 inches
 - 2. Top Clearance: 24 inches

3.3 SURFACE PREPARATION

- A. Remove, or protect against, Projections which could damage Insulation or prevent proper Insulation installation.

3.4 INSULATION INSTALLATION, GENERAL

- A. Follow Manufacturer's instructions and Referenced Specifications.
- B. Fit Insulation snugly between Framing without forcing.
- C. Where Doors, Windows, or other Openings occur in Framing, fill Voids with Insulation.
- D. Where adjacent pieces of Insulation abut, fit snugly together without overlapping.
- E. Permit no gaps for Air passage.
- F. Carefully cut and fit Insulation around Pipes, Conduits, and other Obstructions.
- G. Where Pipes, Conduit, and other Obstructions are located within Insulated Walls or within other Insulated Spaces, place Insulation between cold-in-winter Surface and Obstruction, compressing Insulation where necessary.
- H. Except where indicated above, do not compress Insulation more than 10%.

3.5 AIR-INFILTRATION SPRAY-FOAM SEALANT INSTALLATION

- A. Follow Manufacturer's instructions.

PART 3 - EXECUTION

3.6 MINERAL FIBER INSULATION INSTALLATION

- A. Install Insulation with Vapor Retardant Facing on warm-in-winter side of Assembly.
- B. Use full-length, single-piece Batts wherever practicable.
- C. At Floors over Unheated Space install Insulation tight to underside of overhead Deck.
- D. Where necessary, provide Insulation Supports to prevent Insulation displacement or sagging.

3.7 RIGID BOARD INSULATION INSTALLATION

- A. Install horizontally, in regular courses, and true to line.
- B. Stagger adjacent Joints.
- C. Bring edges into moderate contact without deforming.
- D. Maintain sufficient Perimeter Edge Space for Insulation expansion.
- E. Cut to fit neatly at Corners and around Projections through Insulation.
- F. Secure Insulation to Substrate.
- G. Maintain Insulation integrity.

3.8 VAPOR RETARDER FACING TAPING & PATCHING

- A. Apply Vapor Proof Tape over Joints between adjacent Batts and Lapped Flanges.
- B. Patch Facing punctures, penetrations, tears, and voids with Vapor Proof Tape.
- C. Permit no Openings for Vapor transmission.

3.9 WASTE MANAGEMENT

- A. Reuse any Insulation Scraps where Insulation is concealed from view.
- B. Collect and place Scraps, Pallets, and Packaging Waste where directed for recycling.

3.10 PRODUCT CLEANING & REPAIRING

- A. Including Work of other Trades, clean, repair, and touch-up; or replace when directed, Products which have been soiled, discolored, or damaged by Work of this Section.
- B. Remove Debris from Project Site upon Work completion, or sooner if directed.

END OF SECTION

PART 1 - GENERAL

1.1 CONTRACT CONDITIONS

- A. Work of this Section is bound by the Contract Conditions and Division 1, bound herewith, in addition to this Specification and accompanying Drawings.

1.2 WORK INCLUDED

- A. System shall:
1. Prevent Bulk Water from entering Exterior Walls
 2. Prevent Air-passage through Exterior Walls
- B. System shall bridge and seal the following Air or Water Leakage Pathways and Gaps:
1. Connections of Exterior Walls to Roof
 2. Connections of Exterior Walls to Foundations
 3. Exterior Wall Openings and Penetrations
 4. Piping, Conduit, Duct, and Similar Penetrations
 5. Ties, Screws, Bolts, and similar Penetrations
 6. Any other Air or Water Leakage Pathways in Building Envelope

1.3 RELATED WORK SPECIFIED IN OTHER SECTIONS

- A. Wall Sheathing to receive System: Section 06-10-00
B. Thermal Insulation: Section 07-20-00
C. Sheetmetal Flashing: Section 07-62-00
D. Joints Sealants: Section 07-92-00

1.4 ALTERNATES

- A. Refer to Section 01-20-00 for possible effect upon Work of this Section.

1.5 COORDINATION

- A. Coordinate with other Trades affecting or affected by Work of this Section.

1.6 ADVANCE NOTICES

- A. Notify Architect at least 48 hours before System will be covered-over so inspections can be made.

PART 1 - GENERAL

1.7 PERFORMANCE REQUIREMENTS

- A. Provide continuous Air Barrier and Water Drainage Plane flashed to discharge Condensation and Bulk Water to Building exterior.
- B. Prevent Air-passage through Exterior Walls.
- C. Permit Water Vapor transmission to enable drying of Building Interior Products.
- D. Provide necessary Expansion and Control Joints to prevent unacceptable Air Leakage at the following:
 - 1. Openings caused by Substrate movement
 - 2. Substrate Material changes
 - 3. Penetrations
 - 4. Tie-in Anchors
 - 5. Perimeter Transitions

1.8 APPLICATOR'S QUALIFICATIONS

- A. System Applicator must be employed by or acceptable to System Manufacturer.

1.9 MANUFACTURER'S INSTRUCTIONS

- A. Maintain 1 copy of Manufacturers' written Installation Instructions at Project Site.

1.10 PRE-INSTALLATION CONFERENCE

- A. Prior to commencing Work, conduct Conference in compliance with Section 01-31-50.
- B. Required Attendance:
 - 1. General Contractor
 - 2. System Materials Manufacturer
 - 3. System Applicator
 - 4. Other adjacent Work Applicators affecting or affected by System Work.

1.11 PRODUCT DELIVERY, STORAGE, & HANDLING

- A. Follow Manufacturers' instructions.
- B. Deliver System Components to Project Site in Manufacturer's original unopened Packages. Label Package Wrappers with Manufacturer's Brand Name, and where appropriate, Material thickness and Perm Rating.
- C. Protect Products against damage.

(Cont.)

PART 1 - GENERAL

1.11 PRODUCT DELIVERY, STORAGE, & HANDLING (Cont.)

- D. Store Roll Materials on end, and in original packaging.
- E. Protect Products against direct sunlight and Inclement Weather until ready for use.
- F. Store Barrier Membranes, Adhesives, and Primers at 40°F minimum temperature.
- G. Keep Solvents away from open flame and excessive heat.

1.12 MINIMUM WEATHER REQUIREMENTS

- A. Do not perform Work during Rain or Inclement Weather, or upon Frost-covered or Wet-substrates.

1.13 WARRANTY

- A. Warrant Barrier System; including Membrane Materials, Sealants, and Flashings against failure for 10 years after Project Substantial Completion date.

PART 2 - PRODUCTS

2.1 GENERAL

- A. To ensure System compatibility and integrity, obtain Barrier Membrane Components and Accessories from single-source.

2.2 SYSTEM

- A. Manufacturer, Brand, & Material: Henry Fortifiber WeatherSmart Spun-bonded Polypropylene Sheet Membrane, Meadows Air-Shield Aluminum Sheet Membrane, or approved.
- B. Type: Drainable
- C. Physical Properties:
 - 1. ASTM D-729 - Minimum Resistance to Water Penetration Test: 60
 - 2. ASTM E84 Surface Burning Characteristics:
 - a. Flame Spread Rating Class: A
 - b. Smoke Development Classification: 105
 - 3. ASTM E-96 -Maximum Moisture Vapor Transmission: 15 perms
 - 4. ASTM E-2178 - Maximum Air Permeance @ 75 Pascals: 0.02 L/S/sqM
 - 5. ASTM E-2273 - Minimum Drainage Efficiency: 95%

PART 2 - PRODUCTS

2.3 PRIMERS, ADHESIVES, SEALANTS, & FLASHINGS

- A. Material: Recommended by System Manufacturer for conditions of use.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that surfaces and conditions are ready to accept Work of this Section. Surfaces must be sound, dry, clean, and free of oil, grease, dirt, and other contaminants detrimental to Membrane-adhesion.
- B. Verify that any Concrete Curing Compounds and Release Agents are Resin-based without Oil, Wax, or Pigments.
- C. Verify that Environmental Conditions are within Manufacturer's specified limits.
- D. Prior to starting Work, notify General Contractor about defects requiring correction.
- E. Do not start Work until conditions are satisfactory.

3.2 PREPARATION

- A. Remove any Frost, Oil, Grease, Dirt, Mortar, and other Contaminants from Surfaces to receive Membrane.
- B. Cure Concrete to receive Barrier, if any, for 14 days (min.) before applying Barrier Primer.
- C. Reset or remove any Mechanical Fasteners if and where Fastener Heads are not flush with or recessed into Substrate Surface.

3.3 BARRIER INSTALLATION

- A. General: Follow Manufacturer's instructions
- B. Primary Barrier Membrane:
1. Cut Membrane into manageable Sections,
 2. Layout Sections in horizontal and overlapping strips.
 3. Start at Wall bottom, work upward, and terminate at Wall-top.
 4. Stagger Vertical Joints.
 5. Minimum Joint Overlaps:
 - a. Vertical Laps: 6 to 12 inches
 - b. Horizontal Laps: 6 inches

(Cont.)

PART 3 - EXECUTION

3.3 BARRIER INSTALLATION (Cont.)

- C. Sheathing Corners:
 - 1. Over-lap Barrier at Inside and Outside Corners, and extend Laps 12 inches minimum beyond Corner.
- D. Transition Areas:
 - 1. Secure Membrane to any adjacent Beams, Columns, Floors, Parapets, Curbs, Walls, or Roofing, and elsewhere at interface between Dissimilar Materials.
- E. Rough Openings:
 - 1. Place Membrane across Opening Sills.
 - 2. Seal Inside Corners with bead of Termination Sealant.
 - 3. Install Window Sill Membrane and End-dam Terminations, and seal with Termination Sealant.
 - 4. Wrap Jamb and Head of Rough Openings with Membrane.
 - 5. Extend Membrane into Rough Openings sufficient to connect Membrane to Thermal Insulation Vapor Retarder.

3.4 TERMINATION SEALANT APPLICATION

- A. Seal Membrane Terminations, Penetrations, and Lap Edges with Termination Sealant.

3.5 PROTECTION

- A. Protect Membrane against damage and inclement weather.
- B. Membrane is not designed for permanent weather-exposure. Protect Membrane against exposure until Membrane is permanently covered.

3.6 WASTE MANAGEMENT

- A. Collect and place Scraps, Pallets, and Packaging Waste where directed for recycling.

3.7 PRODUCT CLEANING & REPAIRING

- A. Including Work of other Trades, clean, repair and touch-up, or replace when directed, Products which have been soiled, discolored, or damaged by Work of this Section.
- B. Remove Debris from Project Site upon work completion or sooner, if directed.

END OF SECTION

PART 1 - GENERAL

1.1 CONTRACT CONDITIONS

- A. Work of this Section is bound by the Contract Conditions and Division 1, bound herewith, in addition to this Specification and accompanying Drawings.

1.2 WORK INCLUDED

- A. In accordance with governing laws, regulations, and codes; Design Loads listed in Structural Notes on Drawings; and requirements specified in Section 01-11-50; design, engineer, fabricate, and install Panels as specified herein and as shown on Drawings.

1.3 RELATED WORK SPECIFIED IN OTHER SECTIONS

- A. Structural Steel Supports: Section 05-10-00
- B. Gypsum Sheathing to receive Panels: Section 06-10-00
- C. Thermal Insulation: Section 07-20-00
- D. Air Barrier System: Section 07-25-00
- E. Phenolic Wall Panels: Section 07-43-00
- F. Sheetmetal Roofing: Section 07-61-00
- G. Sheetmetal Gutters, Downspouts, & Flashing: Section 07-62-00
- H. Factory-engineered Building: Section 13-12-10

1.4 ALTERNATES

- A. Refer to Section 01-20-00 for possible effect upon Work of this Section.

1.5 DESIGN REQUIREMENTS

- A. Support actual Dead Loads plus the following Minimum Design Loads:
 - 1. Live Load: See Structural Notes on Drawings
 - 2. Snow Drift Load: Comply with Building Code
 - 3. Horizontal & Uplift Wind Loads: Comply with Building Code
 - 4. Thermal Expansion & Contraction: Resistant to stress from 100°F temperature shift.

1.6 COORDINATION

- A. Coordinate with other Trades affecting or affected by Work of this Section.

PART 1 - GENERAL

1.7 SHOP & ERECTION DRAWINGS

- A. Submit in accordance with Section 01-33-00.
- B. Show Panel arrangement, Joints, types and locations of Fasteners, special Shapes, Trim Pieces, Flashing, Caulking, Color, and other pertinent Details.

1.8 SAMPLES

- A. Prior to ordering Products and in accordance with Section 01-33-00, submit two 12x12 inch Samples of Wall Panels.
- B. Show Corrugations and Finish.

1.9 INSTALLER'S QUALIFICATIONS

- A. Employed by or acceptable to Panel Manufacturer.

1.10 PRODUCT DELIVERY, STORAGE, & HANDLING

- A. Protect against damage and discoloration.
- B. Handle Panels with non-marring Slings.
- C. Store above ground, with one end elevated for drainage.
- D. Do not bend Panels.
- E. Protect against moisture. Do not cover with plastic.
- F. If Panels become wet, immediately separate, wipe dry with clean cloth, and continue to separate until air-dry.

1.11 FIELD MEASUREMENTS

- A. Verify prior to fabrication.
- B. If field measurements differ slightly from Drawing dimensions modify Work as required for accurate fit. If measurements differ substantially, notify Architect prior to fabrication.

(Cont.)

PART 1 - GENERAL

1.12 MAINTENANCE WARRANTY

A. Prior to Final Acceptance and in accordance with Section 01-83-00, submit the following Maintenance Warranty for inclusion in Owner's Maintenance Manual:

1. We, the Undersigned, do hereby warrant for 2 years following Project Substantial Completion all Panels and related Flashing against failure due to defective materials and/or workmanship, for System to remain watertight and weatherproof, and to repair or replace without additional cost to Owner any water leaks (including leaks caused by penetrations performed by other Trades) and resulting damage to Building Materials and/or Building Contents as may occur under normal usage within Warranty Period.
2. We, the Undersigned, do hereby warrant for 10 years following Project Substantial Completion, Defective Work as specified above, but not including any damage to Building Materials or Building Contents.

PANEL SUBCONTRACTOR: _____
By: _____

GENERAL CONTRACTOR: _____
By: _____

3. We, the Undersigned, do hereby warrant for 25 years following Project Substantial Completion that Factory-applied Enamel Coatings on Panels will not fade, chalk, craze, chip, crack, peel, delaminate, or otherwise deteriorate.

PANEL MANUFACTURER: _____
By: _____

(Cont.)

PART 2 - PRODUCTS

2.1 PANELS

- A. Manufacturer: Carlisle, or approved.
- B. Brand: Pac-Clad
- C. Pattern:
 - 1. Wall Panels:
 - a. Type A: 7.2 Panel
 - b. Type B: 7/8 Corrugated
 - 2. Soffit Panels: Flush
- D. Material: Steel
- E. Metal Thickness:
 - 1. Within 10 ft. of adjacent Ground Level: 22 ga.
 - 2. Elsewhere: 24 ga.
- F. Length: Full-length, single-piece between Primary Structural Members
- G. Finish: Manufacturer's standard baked-on Enamel
- H. Color: See Color Schedule on Drawings.

2.2 METAL FLASHING

- A. Material: Match adjacent Panels
- B. Extent of Work: Provide where necessary to weatherproof System..

2.3 MEMBRANE FLASHING

- A. Manufacturer: Sealex, (231) 348-5020, or approved.
- B. Brand: ImmerSeal
- C. Material: 100% RTV Silicone Rubber
- D. Extent of Work: Provide where necessary to weatherproof System.

2.4 JOINT SEALANT

- A. Manufacturer & Type: Recommended by Panel Manufacturer
- B. Color: Approximately match Panel color
- C. Extent of Work: Provide where necessary to weatherproof System.

2.5 FASTENERS

- A. Type & Size: Recommended by Panel Manufacturer for conditions of use.
- B. Material: Hot-dip galvanized Steel
- C. Length: Penetrate Structural Support at least 3/4 inch
- D. Head Color: Match adjacent Panel

PART 2 - PRODUCTS

2.6 ACCESSORIES

- A. Material: Match Panels
- B. Extent of Work: Provide Closers, Fillers, Flashing, and any other Items necessary to weatherproof System.
- C. Color: Match adjacent Materials

2.7 FABRICATION

- A. Unless otherwise shown on Drawings or specified herein, fabricate Panels, Flashings, and Accessories with longest practicable lengths.
- B. Factory-form Internal and External Corners to match adjacent Panels and to maintain continuity of Panel profile.
- C. Hem any exposed edges.

PART 3 - EXECUTION

3.1 EXISTING CONDITIONS

- A. Verify that Members to receive Panels are complete, accurately sized and located, plumb, square, true, secure, and otherwise properly prepared.
- B. Prior to starting Work, notify General Contractor about defects requiring correction.
- C. Do not start Work until conditions are satisfactory.

3.2 ELECTROLYTIC PROTECTION

- A. Treat Contacting Surfaces of Dissimilar Materials to prevent Corrosion.

3.3 OTHER PROTECTION

- A. Protect Work of other Sections against damage and discoloration caused by Work of this Section.

(Cont.)

PART 3 - EXECUTION

3.4 PANEL INSTALLATION

- A. General:
 - 1. Follow Manufacturer's instructions and approved Shop Drawings.
 - 2. Provide additional Struts, Stiffeners, Girts, etc. required to securely support Panels.
 - 3. Do not stretch or compress Side-lap Interlocks.
 - 4. Secure Panels flat and square to Support Members without warp or deflection.
 - 5. Align end to end before fastening permanently.
 - 6. Use sufficient Fasteners to assure rigid and permanent installation.
 - 7. Equally space and align exposed Fasteners both vertically and horizontally.
- B. Siding Panels:
 - 1. Place Corrugations horizontally.
 - 2. Overlap adjacent Panel Edges.
- C. Accessories:
 - 1. Provide as required for weathertight installation.

3.5 ALLOWABLE ERECTION TOLERANCE

- A. Maximum Alignment Variation: 1/4 inch in 40 ft.

3.6 FLASHING

- A. Follow Panel Manufacturer's instructions.
- B. Overlap adjacent Panels 6 inches minimum.
- C. At any Flashing running perpendicular to Panel Ribs, notch and fold Flashing down into space between Ribs, or at Contractor's option, substitute Panel Manufacturer's standard Closure Panels.

3.7 CUTTING & FITTING

- A. Perform neat, square, and true. Do not torch-cut where Cut is exposed to view.
- B. Openings 6 inches and larger in any direction: Shop-fabricate and reinforce to maintain original Load Capacity.
- C. Openings smaller than 6 inches in largest dimension: Made by Trade requiring Opening.

3.8 TOUCH-UP

- A. Wire-brush, clean, and paint Welds, Scarred Areas, and Rust Areas.
- B. Touch-up damaged Paint Surfaces with same Paint used in Shop. Follow Paint Manufacturer's instructions.

PART 3 - EXECUTION

3.9 WASTE MANAGEMENT

- A. Collect and place Scraps, Pallets, and Packaging Waste where directed for recycling.

3.10 PRODUCT CLEANING & REPAIRING

- A. Remove loose Rust, heavy Mill Scale, Oil, Dirt, and other Bond-reducing Substances from Panels scheduled to receive Finish Painting.
- B. At completion of each day's work and at Work completion, sweep Panels, and Flashing clean. Do not allow Fasteners, Cuttings, Filings, or Scraps to accumulate on Finish Surfaces.
- C. Including Work of other Trades, clean, repair and touch-up, or replace when directed, Products which have been soiled, discolored, or damaged by Work of this Section.
- D. Remove Debris from Project Site upon Work completion, or sooner if directed.

END OF SECTION

PART 1 - GENERAL

1.1 CONTRACT CONDITIONS

- A. Work of this Section is bound by the Contract Conditions and Division 1, bound herewith, in addition to this Specification and accompanying Drawings.

1.2 EXTENT OF WORK

- A. In accordance with Drawings and Specifications; requirements specified in Section 01-11-50; governing Laws, Regulations, Codes, and Ordinances; design, engineer, furnish, and install Panel Systems, including Supports and Anchors.
B. Installation Method: Concealed Fasteners

1.3 RELATED WORK SPECIFIED IN OTHER SECTIONS

- A. Structural Steel Supports: Section Thermal Insulation: Section 07-20-00
B. Steel Wall Panels: Section 07-41-00
C. Sheetmetal Flashing & Trim: Section 07-62-00

1.4 ALTERNATES

- A. Refer to Section 01-20-00 for possible effect upon Work of this Section.

1.5 DESIGN REQUIREMENTS

- A. Support actual Dead Loads plus the following:
1. Minimum Live Loads: See Structural Notes on Drawings.
2. Horizontal Wind Loads: Comply with Building Code.
3. Thermal Expansion & Contraction: Resistant to stress from 100°F Temperature Shift

1.6 COORDINATION

- A. Coordinate with other Trades affecting or affected by Work of this Section.

(Cont.)

PART 1 - GENERAL

1.7 SHOP & ERECTION DRAWINGS

- A. Submit as specified in Section 01-33-00.
- B. Show Panel the following:
 - 1. Panel sizes, arrangements, and joints.
 - 2. Trim & Cap Pieces.
 - 3. Attachments, fasteners, erection instructions, and other pertinent Details.

1.8 SAMPLES

- A. Submit in accordance with Section 01-33-00.
- B. Include two 36x36 inch samples showing Panel color and finish.

1.9 CERTIFICATE OF COMPLIANCE

- A. Submit written affidavit, signed and sealed by Engineer licensed to practice in Oregon that Work complies with specified Design Requirements.

1.10 MAINTENANCE INSTRUCTIONS

- A. Deliver to General Contractor for inclusion in Owner's Maintenance Manual as specified in Section 01-83-00.

1.11 PRODUCT DELIVERY, STORAGE, & HANDLING

- A. Protect against damage and discoloration.
- B. Handle Panels with non-marring Slings. Do not bend Panels.
- C. Store above Ground.

1.12 FIELD MEASUREMENTS

- A. Verify prior to fabrication.
- B. If field measurements differ slightly from Drawing dimensions modify Work as required for accurate fit. If measurements differ substantially, notify Architect prior to fabrication.

(Cont.)

PART 1 - GENERAL

1.13 MAINTENANCE WARRANTY

A. Prior to Final Project Acceptance submit, in accordance with Section 01-83-00, the following Maintenance Warranty for inclusion in Owner's Maintenance Manual:

1. We the Undersigned do hereby warrant for 2 years following Project Substantial Completion date all Composite Panel Work against failure due to defective materials and/or workmanship, for the System to remain watertight (including both external Water and internal Condensation), and to repair or replace without additional cost to Owner any leaks and resulting damage to Building Materials and/or Building Contents as may occur under normal usage within Warranty Period.
2. We the Undersigned do hereby warrant for 10 years following Project Substantial Completion date that Finish will not fade, craze, chip, delaminate, or otherwise deteriorate.

PANEL SUBCONTRACTOR: _____

By: _____

GENERAL CONTRACTOR: _____

By: _____

PART 2 - PRODUCTS

2.1 PANELS

- A. Manufacturer: Trespa, or approved.
- B. Brand: Meteor
- C. Protective Film: Easily removable without Panel damage or discoloration.

2.2 ACCESSORIES

- A. Material & Color: Match adjacent Panels
- B. Extent of Work: Provide Perimeter Closures, Fillers, Flashings, Trim, and others necessary for completely enclosed and weatherproof System.

PART 2 - PRODUCTS

2.3 SUBGIRTS

- A. Material: Steel
- B. Manufacturing Standard: ASTM A-36
- C. Finish: Hot-dip galvanized in accordance with ASTM A-123
- D. Sizes & Spacings: As required by Contractor's design to support Panels, unless larger Members and/or closer Spacings are shown on Drawings.
- E. Extent of Work: Provide where necessary to support Panels.

2.4 STIFFENERS

- A. Material: Extruded Aluminum
- B. Size & Shape: Satisfy conditions of Contractor's design.
- C. Extent of Work: Provide behind Panel Joints and elsewhere necessary to maintain specified Panel flatness.

2.5 ATTACHMENTS & FASTENERS

- A. Material: Non-corrosive
- B. Type: Concealed
- C. Extent of Work: Provide all necessary for complete, secure, and weatherproof installation.

2.6 JOINTS SEALANTS & GASKETS

- A. Manufacturer: Made by or acceptable to Panel manufacturer.
- B. Type: Satisfy conditions of use.
- C. Extent of Work: Provide where and as necessary for weatherproof installation

2.7 FABRICATION

- A. Unless otherwise shown on Drawings, fabricate Components in longest practicable lengths.
- B. Factory-form any shaped-components to match adjacent Panels and to maintain continuity of Panel profile.
- C. Fabricate to provide Rain-screen Weatherproof-design, including Perimeter Extrusions and guttered Horizontal Members to drain External-water, Joint-leakage, and Condensation-water directly to System exterior.
- D. System shall not depend on caulking for Water-tightness.

PART 3 - EXECUTION

3.1 EXISTING CONDITIONS

- A. Verify that Structure Members to receive Work specified herein are accurately sized and located, sound, secure, plumb, true, complete, and otherwise properly prepared.
- B. Prior to starting Work, notify General Contractor about defects requiring correction.
- C. Do not start Work until conditions are satisfactory.

3.2 ELECTROLYTIC PROTECTION

- A. Treat Contacting Surfaces of Dissimilar Materials to prevent Corrosion.

3.3 OTHER PROTECTION

- A. Protect Work of other Sections against damage and discoloration caused by Work of this Section.

3.4 INSTALLATION

- A. Follow Manufacturer's instructions and approved Shop Drawings.
- B. Install Panels flat, square, and true against Support Members without warp, deflection, or internal stress.
- C. Align adjacent Panels and Accessories before fastening permanently.
- D. Use sufficient Fasteners to assure secure, weathertight, and permanent installation.

3.5 ALLOWABLE ERECTION TOLERANCES

- A. Maximum Alignment Variation: 1/4 inch per 40 ft.

3.6 FLASHING & CAULKING

- A. Follow Panel Manufacturer's instructions.

3.7 WASTE MANAGEMENT

- A. Collect and place Scraps, Pallets, and Packaging Waste where directed for recycling.

PART 3 - EXECUTION

3.8 PRODUCT CLEANING & REPAIRING

- A. Remove Protective Film as soon as possible following Work completion.
- B. Verify that Weep Holes are open.
- C. Remove Dirt and other Foreign Substances from Panels.
- D. Including Work of other Trades, clean, repair and touch-up, or replace when directed, Products which have been soiled, discolored, or damaged by Work of this Section.
- E. Remove Debris from Project Site upon Work completion, or sooner if directed.

END OF SECTION

PART 1 - GENERAL

1.1 CONTRACT CONDITIONS

- A. Work of this Section is bound by the Contract Conditions and Division 1, bound herewith, in addition to this Specification and accompanying Drawings.

1.2 EXTENT OF WORK

- A. Provide over Horizontal Roof Decks.
- B. Installation Method: Mechanically attached

1.3 RELATED WORK SPECIFIED IN OTHER SECTIONS

- A. Sheetmetal Roofing: Section 07-61-00
- B. Sheetmetal Flashing & Trim: Section 07-62-00
- C. Roof Accessories: Section 07-72-00
- D. Plastic Skylights: Section 08-62-00
- E. Translucent Panel Skylights: Section 08-64-00
- F. Roof Drains, Inside Conductors, & Flashing around Piping & Ducts passing through Roof: See Plumbing & HVAC Specifications

1.4 ALTERNATES

- A. Refer to Section 01-20-00 for possible effect upon Work of this Section.

1.5 REFERENCED SPECIFICATIONS

- A. Roofing:
 - 1. Unless otherwise specified, comply with applicable portions of Recommended Performance Criteria for Elastomeric Single Ply Roof Membrane System document ME-20, published by Midwest Roofing Contractors Assn.; 7250 Poe Ave.; Suite 410; Dayton, OH 45414; (800) 497-6722.. Copies of Specification can be obtained from Association.
 - 2. Wherever the word "should" appears it shall mean "shall".
- B. Thermal Roof Insulation:
 - 1. Test Method for determining Aged Thermal Resistance Values (R) of Insulation: 15 year time-weighted Long Term Thermal Resistance (LTTR) average as stipulated in ASTM C-1289.

PART 1 - GENERAL

1.6 COORDINATION

- A. Coordinate with other Trades affecting or affected by Work of this Section.

1.7 REGULATORY AGENCY REQUIREMENTS

- A. Comply with International Code Council Evaluation Service (ICC-ES) requirements and with wind-uplift and other Building Code requirements if more restrictive than those specified herein. Notify Architect about differences before starting work.
- B. Comply with OSHA Fall Protection Requirements.
- C. Label Products indicating compliance with U.L. fire-resistive requirements specified in Building Code.

1.8 SUBMITTALS

- A. With each Subbid proposal, submit Roofing Manufacturer's Certificate of Roofing Applicator Approval.
- B. At least 2 weeks prior to Roofing, submit to Architect, in accordance with Section 01-60-00, 1 copy of each of the following:
1. Roofing Manufacturer's applicable Installation Specifications
 2. Roofing Manufacturer's Certificate of Roofing Applicator approval
 3. Roofing Manufacturer's Affidavit that supplied Products comply with these Specifications
- C. Immediately following Work completion submit to Architect:
1. Certification that Manufacturer's Representative has inspected Work prior to, during, and after Work completion, and that Work complies with these Specifications and Manufacturer's instructions.
- D. In accordance with Section 01-83-00, submit the following to General Contractor for inclusion in Owner's Maintenance Manual:
1. Roofing Maintenance Warranty as specified below
 2. Roofing Maintenance Instructions

(Cont.)

PART 1 - GENERAL

1.9 PRE-INSTALLATION MEETING

- A. Prior to starting work, and in accordance with Section 01-31-50, Roofer shall arrange meeting to clarify any questions about Specifications, details, and other application requirements.
- B. Representatives of the following shall attend:
 - 1. General Contractor
 - 2. Roofing Subcontractor
 - 3. Roofing Manufacturer
 - 4. General Sheetmetal Subcontractor
 - 5. Roof-mounted Equipment Subcontractors
 - 6. Roof-penetrating Equipment Subcontractors.

1.10 PRODUCT DELIVERY, STORAGE, & HANDLING

- A. Deliver in unopened original packaging, with Manufacturer's legible labels thereon.
- B. Protect against damage, discoloration, and moisture.
- C. Do not cut, tear, or puncture Roofing.
- D. Store under Protective Coverings and above ground on Pallets.
- E. Store Adhesives and Flashing Materials between 60°F and 80°F for at least 4 hours immediately prior to installation.
- F. Protect Foam Insulation against Fire and direct Sunlight exposure.
- G. Protect Foam Insulation edges against crushing and breaking.
- H. Do not stack Foam Insulation higher than 8 ft.
- I. Maintain clear aisle space between Foam Insulation Stacks to facilitate Fire Suppression.
- J. Weight Foam Insulation as required to prevent wind-induced damage.
- K. Do not overload Building Structure with stored Materials.

1.11 WEATHER REQUIREMENTS

- A. Comply with Manufacturer's recommendations.

1.12 FIELD MEASUREMENTS

- A. Verify prior to fabrication.
- B. If field measurements differ slightly from Drawing dimensions modify Work as required for accurate fit. If measurements differ substantially, notify Architect prior to fabrication.

PART 1 - GENERAL

1.13 ADVANCE NOTICES

- A. Notify Architect and Roofing Manufacturer at least 2 working days before starting work.

1.14 WORK WARRANTY

- A. Roofing and Flashings are subject to 2 year Warranty called for in Supplementary Conditions, Section 00-80-00.
- B. Roofer is responsible for proper placement of Metalwork, which has been provided by other Trades, and is in contact with Roofing.

1.15 MAINTENANCE WARRANTY

- A. Prior to Final Project Acceptance submit, in accordance with Section 01-83-00, the following Warranties for inclusion in Owner's Maintenance Manual:
 - 1. We, the undersigned, do hereby warrant Single Ply Roofing and related Roof Insulation and Flashing against failure under normal usage as may occur within the following time periods after Project Substantial Completion date, and defective Work will be repaired or replaced at no additional cost to Owner:
 - a. 2 Years: Defective Work including any resulting damage to Building Materials and/or Building Contents.

ROOFER: _____
By: _____

GENERAL CONTRACTOR: _____
By: _____

- b. 10 Years: Defective Work, but not including any damaged Building Materials or Building Contents.

ROOFING MANUFACTURER: _____
By: _____

(Cont.)

PART 2 - PRODUCTS

2.1 AIR BARRIER

- A. Material: 6 Mil Thick Polyurethane Film
- B. Extent of Work: Provide between Steel Roof Deck and Roof Thermal Insulation.

2.2 METAL ROOF DECK SHEATHING

- A. Manufacturer & Brand: G-P DensDeck Prime Roof Board, or approved.
- B. Minimum Thickness: As recommended by Sheathing Manufacturer for conditions of use.
- C. Flame Spread Rating: 0
- D. Smoke Development Rating: 0
- E. Maximum ASTM C-473 Water Absorption by weight: 5%
- F. Maximum ASTM C-473 Surface Water Absorption: 1 gram
- G. Extent of Work: Provide over Deck Surfaces to receive Roofing.

2.3 VAPOR RETARDER

- A. Manufacturer & Brand: Reef Griffolyn, or approved.
- B. Maximum Perm Rating: 0.01

2.4 ROOF INSULATION

- A. Manufacturer & Brand: Contractor's choice
- B. Insulating Material: Polyisocyanurate Foam
- C. Manufacturing Standard: ASTM C-1289, Type II, Class 1
- D. Minimum Compressive Strength: 20 psi
- E. Facing Material: Coated Fiberglass
- F. Type: Free of CFC's & HCFC's
- G. Top Surface Shape: Untapered
- H. Total Overall Thickness: 6 inches

2.5 INSULATION COVER BOARD

- A. Manufacturer & Brand: G-P DensDeck Roof Board, or approved.
- B. Thickness: 1/4 inches
- C. Flame Spread Rating: 0
- D. Smoke Development Rating: 0
- E. Maximum ASTM C-473 Water Absorption by weight: 5%
- F. Maximum ASTM C-473 Surface Water Absorption: 1 gram
- G. Extent of Work: Provide over Thermal Insulation to receive Roofing.

PART 2 - PRODUCTS

2.6 CRICKET FORMING BOARD

- A. Material: Polyisocyanurate Insulation Board, or approved.
- B. Manufacturer: Contractor's choice
- C. Minimum Density: 1-1/2 pcf
- D. Shape: Tapered 1/2 inch per ft., minimum.
- E. Extent of Work: Provide where necessary to form Roof Slope Crickets.

2.7 ROOFING MEMBRANE

- A. Manufacturer & Brand: Carlisle Sure-Weld, Firestone UltraPly, JM UltraGuard, Stevens EP, or approved.
- B. Material: Reinforced Thermoplastic Polyolefin (TPO)
- C. Manufacturing Standard: ASTM D-6878
- D. Minimum UL 790 Fire-resistiveness Class: A
- E. Color: White
- F. Minimum Solar Reflectance Index (SRI) after 3-years Weather Exposure: 0.74
- G. Thickness: 60 mils

2.8 FLASHING MEMBRANE

- A. Material & Thickness: Recommended by Roofing Membrane Manufacturer for conditions of use.
- B. Color: Match Roofing Membrane

2.9 ADHESIVE, CEMENT, MASTIC, & SEALANT

- A. Furnished by Membrane Manufacturer.

2.10 NAILING STRIPS, CURBS, & BLOCKING

- A. Materials: Recommended by Membrane Manufacturer for conditions of use
- B. Source: Furnished by Membrane Manufacturer

(Cont.)

PART 2 - PRODUCTS

2.11 FASTENERS

- A. Manufacturer & Type: Approved by Membrane Manufacturer
- B. Material: Non-corrosive
- C. Length: As required to satisfy conditions of use. Note: If and where underside of Roof Sheathing is exposed to view, provide short Fasteners that will not be visible.

2.12 TRAFFIC PADS

- A. Manufacturer & Brand: Carlisle Walkway Pads, or approved.
- B. Approximate Minimum Face Size: 30x30 inches
- C. Extent of Work: Provide on Roof surface in 30 inch minimum wide strip around Roof-mounted Mechanical Equipment requiring maintenance and where necessary to connect Equipment with Roof Access Hatch.

2.13 OTHER MATERIALS

- A. Manufacturer & Type: Approved by Membrane Manufacturer
- B. Extent of Work: Provide all required for complete weatherproof installation.

PART 3 - EXECUTION

3.1 EXISTING CONDITIONS

- A. Verify that Surfaces to receive Roofing System are clean, smooth, sound, dry, and free of sharp edges, fins, grease, oil, water, ice, frost, foreign matter, and other conditions that could adversely affect Roofing execution and permanence, and are otherwise properly prepared.
- B. Prior to starting Work notify General Contractor about defects requiring correction.
- C. Do not start Work until conditions are satisfactory.
- D. Do not start until other Work which penetrates Membrane is completed.

3.2 PROTECTION

- A. Protect other Work against damage and discoloration caused by Work of this Section.
- B. Prevent Adhesive Solvent Fumes from being drawn into Building Ventilation System.

PART 3 - EXECUTION

3.3 SURFACE PREPARATION

- A. Prior to roofing, remove from Roof Deck any oil, grease, debris, obstruction, snow, ice, moisture, or projections which could damage System.

3.4 SHEATHING INSTALLATION

- A. Position Sheathing Edges so they are supported by Roof Decking.
- B. Mechanically fasten to Substrate in accordance with Regulatory Agency requirements.

3.5 VAPOR RETARDER INSTALLATION

- A. Apply, in accordance with Membrane Manufacturer's instructions, over Decks to receive Thermal Insulation.
- B. Minimum Side Laps: 2 inches
- C. Minimum End Laps: 6 inches
- D. Seal Edge, Perimeter, and Penetration Laps with Adhesive.

3.6 INSULATION INSTALLATION

- A. General:
 - 1. Apply in dry condition in accordance with Manufacturer's instructions and Regulatory Agency requirements.
 - 2. Apply in 2 or more layers to specified overall thickness.
 - 3. Stagger Joints between adjacent Insulation layers at least 8 inches.
 - 4. Maximum Open Space between adjacent Insulation Sheets: 1/8 inch
 - 5. Position long sides of Insulation Sheets with Continuous Joints. Stagger adjacent Transverse Joints.
 - 6. Neatly cut and fit Insulation at Roof Edges and at any Vertical Projections through Insulation. Fill Open Spaces with Edge Expansion Strips.
 - 7. Miter Insulation at any Ridges.
 - 8. Do not damage Insulation edges or faces during installation.
- B. At Steel Decks:
 - 1. Position Boards so that Board Joints are supported by Deck.
- C. At Roof Drains:
 - 1. Taper top layer of Insulation for 24 inches around and downward toward Drain.

3.7 INSULATION COVER BOARD INSTALLATION

- A. Apply to Roof Insulation in accordance with Manufacturers' instructions.

PART 3 - EXECUTION

3.8 CRICKET BOARD INSTALLATION

- A. Form into shapes shown on Drawings, and apply to Roof Insulation in accordance with Manufacturers' instructions.
- B. Maintain 1/2 inch per ft. minimum slope at Cricket Valleys.

3.9 MEMBRANE INSTALLATION

- A. Follow Manufacturer's instructions using Mechanically Attached method.
- B. Place Sheet in final position without stretching.
- C. Allow Sheets to relax 30 minutes minimum before making splices or anchoring to Substrate.
- D. Overlap adjacent Sheets at least 3 inches for splicing.
- E. Remove any Wrinkles or Air Pockets.
- F. Secure Membrane as instructed by Membrane Manufacturer.
- G. Make Seams and Penetrations watertight.
- H. Check Seam sealing for continuity and integrity.
- I. Prior to end of each Working Day, seal exposed Seam edges with Sealant.
- J. Flash Membrane perimeter and penetrations as instructed by Membrane Manufacturer.

3.10 TRAFFIC PAD INSTALLATION

- A. Space Pads approximately 6 inches apart to permit Water-flow.
- B. Do not install directly over field-fabricated Roofing Seams.
- C. Secure to Roofing with Adhesive recommended by Roofing Manufacturer.

3.11 PROTECTING COMPLETED WORK

- A. Prevent Water-flow beneath or behind any completed Work.
- B. Notify General Contractor to protect completed Work against damage and discoloration caused by workmen of other Trades.
- C. To any Roof-mounted Mechanical Equipment, conspicuously locate and apply brightly colored Decal, which warns Equipment Maintenance Workers against spilling Liquid Freon, Petroleum-based Products, and other Materials which can damage Roofing Membrane.

3.12 WASTE MANAGEMENT

- A. Collect and place Scraps, Pallets, and Packaging Waste where directed for recycling.

PART 3 - EXECUTION

3.13 CLEANING & REPAIRING

- A. Including Work of other Sections, clean, repair and touch-up, or replace when directed, Products which have been soiled, discolored, or damaged by Work of this Section.
- B. Remove debris from Project Site upon Work completion, or sooner if directed.

END OF SECTION

PART 1 - GENERAL

1.1 CONTRACT CONDITIONS

- A. Work of this Section is bound by the Contract Conditions and Division 1, bound herewith, in addition to this Specification and accompanying Drawings.

1.2 RELATED WORK SPECIFIED IN OTHER SECTIONS

- A. Thermal Insulation: Section 07-20-00
B. Single-ply Roofing: Section 07-53-00
C. Sheetmetal Flashing & Trim: Section 07-62-00
D. Plastic Skydomes: Section 08-62-00
E. Translucent Panel Skylights: Section 08-64-00
F. Roof Drains, Inside Conductors, & Flashing around Piping and Ducts passing through Roof: See Plumbing & HVAC Specifications

1.3 ALTERNATES

- A. Refer to Section 01-20-00 for possible effect upon Work of this Section.

1.4 COORDINATION

- A. Coordinate with other Trades affecting or affected by Work of this Section.

1.5 REFERENCED REQUIREMENTS

- A. Comply with minimum requirements specified in "Architectural Sheet Metal Manual", published by SMACNA.

1.6 DESIGN REQUIREMENTS

- A. In accordance with governing laws, regulations, codes, and requirements specified in Section 01-11-50; design, engineer, and construct Sheetmetal Roofing System to support actual Dead Loads plus the following Design Loads:
1. Design Loads indicated in Structural Notes located on Drawings.
 2. Horizontal & Uplift Wind Loads: Comply with Building Code
 3. Thermal Expansion & Contraction: Resistant to stress from 120°F temperature shift without over-stressing Roofing or Fasteners.
 4. Maximum Deflection: 1/480 of Span

PART 1 - GENERAL

1.7 PERFORMANCE REQUIREMENTS

- A. Prevent Sheet Metal buckling, oil-canning, joint-opening, over-stressing, attachment-failure, and other detrimental effects caused by thermally-induced-movement induced by Solar Heat Gain and Night-time Heat Loss temperature changes.
- B. Design, engineer, and construct System to comply with the following:
 - 1. Maximum ASTM E-283 Air Infiltration at 20 psf: 0.010 cfm per sq. ft.
 - 2. Maximum ASTM E-331 Water Penetration at 20 psf: No visible leakage

1.8 REGULATORY AGENCY REQUIREMENTS

- A. Comply with Wind Uplift and other Building Code requirements if more restrictive than those specified herein. Notify Architect about differences before starting work.
- B. Comply with OSHA Fall Protection Requirements.

1.9 SAMPLES

- A. Submit in accordance with Section 01-33-00.
- B. Include two 12x12 inch samples of Sheetmetal Material showing pattern, color, and thickness.

1.10 INSTALLER'S QUALIFICATIONS

- A. To be eligible to perform Work specified herein Installer must have successfully completed at least 2 similar projects.

1.11 PRE-APPLICATION MEETING

- A. Prior to roofing, and in accordance with Section 01-31-50, Roofer shall arrange Meeting to clarify any questions about Specifications, details, and application requirements.
- B. Representatives of the following shall attend:
 - 1. General Contractor
 - 2. Thermal Insulation Subcontractor
 - 3. Roofing Subcontractor
 - 4. Sheetmetal Flashing & Trim Subcontractor
 - 5. Roof-mounted Equipment Subcontractors
 - 6. Roof-penetrating Equipment Subcontractors

PART 1 - GENERAL

1.12 PRODUCT DELIVERY, STORAGE, & HANDLING

- A. Package Factory-painted Materials with Non-sticking Paper or Strippable Film Coating between adjacent Sheets.
- B. Protect against damage and discoloration.
- C. Do not bend, warp, or twist Panels.
- D. Ventilate stored Panels as required to prevent Condensation build-up between Panels.
- E. Do not overload Roof Structure with Stored Materials.

1.13 FIELD MEASUREMENTS

- A. Verify prior to fabrication.
- B. If field measurements differ slightly from Drawing dimensions modify Work as required for accurate fit. If measurements differ substantially, notify Architect prior to fabrication.

1.14 MAINTENANCE WARRANTY

- A. Prior to Final Acceptance and in accordance with Section 01-83-00, submit the following Maintenance Warranty for inclusion in Owner's Maintenance Manual:
 - 1. We, the Undersigned, do hereby warrant for 2 years following Project Substantial Completion all Sheetmetal Roofing and related Sheetmetal Flashing against failure due to defective materials and/or workmanship, for System to remain watertight and weatherproof, and to repair or replace without additional cost to Owner any water leaks (including leaks caused by penetrations performed by other Trades) and resulting damage to Building Materials and/or Building Contents as may occur under normal usage within Warranty Period.
 - 2. We, the Undersigned, do hereby warrant for 10 years following Project Substantial Completion, Defective Work as specified above, but not including any damage to Building Materials or Building Contents.
 - 3. We, the Undersigned, do hereby warrant for 10 years following Project Substantial Completion against defective Fall Protection Work, including any damage to any adjacent Landscaping or Vehicles, or injury to Individuals.
ROOFER: _____
By: _____
GENERAL CONTRACTOR: _____
By: _____
 - 4. We, the Undersigned, do hereby warrant for 25 years following Project Substantial Completion that Factory-applied Enamel Coatings on Sheetmetal will not fade, chalk, craze, chip, crack, peel, delaminate, or otherwise deteriorate.
ROOFING MANUFACTURER: _____
By: _____

PART 2 - PRODUCTS

2.1 GALVANIZED STEEL SHEETS

- A. Metal Manufacturing Standards: ASTM A-653
- B. Quality: Lock-forming
- C. Pattern: Smooth without texture
- D. Minimum Galvanizing Coating Designation: G-90
- E. Minimum Metal Thickness: 24 ga.
- F. Factory-applied Finish where exposed to Ground Level View:
 - 1. Material: Fluoropolymer Enamel complying with AAMA 2605
 - 2. Minimum polyvinylidene (PVDF) Content: 70%
 - 3. Minimum Dry Film Thickness: 1.2 mils
 - 4. Color: See Color Schedule on Drawings.

2.2 STAINLESS STEEL SHEETS

- A. Manufacturing Standard: ASTM A-167
- B. Type: 304
- C. Temper: Soft (fully annealed)
- D. Finish: 4D (dull)
- E. Thickness: 26 ga.(0.0187 inches)
- F. Pattern: Smooth without texture

2.3 FASTENERS

- A. Type: Screws
- B. Manufacturing Standard: Fed. Spec. FF-S-107
- C. Head: Flat
- D. Material: Match adjacent Cleat Material.
- E. Minimum Size: No. 7
- F. Minimum Length: 1 inch

2.4 PRIME COATING & UNDERCOATING

- A. Material: Galvanized Primer specified in Section 09-90-00

2.5 ASPHALT COATING COMPOUND

- A. Manufacturing Standard: Fed. Spec. TT-C-153
- B. Type: II

PART 2 - PRODUCTS

2.6 UNDERLAYMENT

- A. Manufacturer: Henry, or approved.
- B. Brand: Blueskin PE200HT
- C. Surface Material: Cross-laminated Polyethylene Film
- D. Minimum Performance Standard: ASTM D-1970

2.7 SLIP SHEET

- A. Material: Smooth, rosin-sized Kraft Paper.
- B. Minimum Weight: 4 lbs. per 100 sq. ft.

2.8 FALL PROTECTION SYSTEM

- A. Manufacturer: Super Anchor Safety, or approved/
- B. Model: RS-20
- C. Extent of Work: Provide at Roofing Ridge Line.

2.9 FABRICATION

- A. General:
 - 1. Form to shapes and dimensions shown with planes and lines in true alignment.
 - 2. Unless otherwise shown on Drawings or specified, fabricate with longest practicable lengths.
 - 3. Hem exposed edges.
- B. Cleats:
 - 1. Material: 28 ga. Stainless Steel.

PART 3 - EXECUTION

3.1 EXISTING CONDITIONS

- A. Do not proceed until surfaces to receive Roofing are smooth, sound, clean, dry, and otherwise properly prepared.
- B. Prior to starting Work, notify General Contractor about defects requiring correction.
- C. Do not start Work until conditions are satisfactory.

PART 3 - EXECUTION

3.2 PROTECTING WORK OF OTHER SECTIONS

- A. Protect against damage and discoloration caused by Work of this Section.

3.3 PAINTING

- A. Protect contacting dissimilar Metals against Galvanic Corrosion with Asphaltic Compound, 7-1/2 mil dry film minimum thickness, applied to each contacting Metal Face.
- B. Protect Metals against Oxidation by back-painting with Galvanized Iron Primer as specified in Section 09-90-00.

3.4 WORKMANSHIP

- A. Form to shapes and dimensions shown, free from defects which impair strength or mar appearance.
- B. Form Planes and Lines to true alignment.

3.5 INSTALLATION

- A. General:
 - 1. Install Plane Surfaces and Seams without waves, warps, buckles, tool marks, fastening stresses, or distortion, allowing fully for Material expansion and contraction.
- B. Underlayment:
 - 1. Secure to Roof Deck with minimum possible anchorage.
 - 2. Lap Joints 2 inches minimum, and install in direction of water-flow.
- C. Slip Sheets:
 - 1. Install over Underlayment, and secure with minimum possible anchorage.
 - 2. Lap Joints 2 inches minimum in direction of water-flow.
- D. Roof Panels:
 - 1. Install in full-length single-piece lengths over Slip Sheets, and secure to Substrate with Cleats spaced at 12 inch centers.
 - 2. Secure Cleats with 2 Fasteners to prevent Cleat rotation, and cover Fastener Heads with Cleat Tabs.
 - 3. Flash Roof Penetrations with Material matching Roof Panels, and make watertight by soldering.
 - 4. Anchor Panels to Substrate at Ridge to prevent Panel slippage.
 - 5. Hem bottom edge of Panel and secure to Substrate with Clip.

(Cont.)

PART 3 - EXECUTION

3.5 INSTALLATION (Cont.)

- E. Seams:
 - 1. General: Form in direction of water-flow; make watertight.
 - 2. Longitudinal Seams:
 - a. Type: 5-ply double locked standing.
 - b. Height: 2 inches
 - c. Approximate Spacing between adjacent Seams: 18 inches
 - 3. Ridge Treatment: Finish with Standing Seams.
- F. Soldering:
 - 1. At Factory-painted Sheetmetal: Substitute Sealant in lieu of soldering.
 - 2. Elsewhere:
 - a. Clean and flux Metals prior to soldering.
 - b. Sweat Solder completely through Seam widths using Soldering Iron not Torch which can over-heat Sheetmetal.

3.6 FALL PROTECTION SYSTEM INSTALLATION

- A. Follow Manufacturer's instructions.

3.7 PROTECTING COMPLETED WORK

- A. Do not store Material or allow traffic on completed Roof surfaces.

3.8 WASTE MANAGEMENT

- A. Collect and place Scraps, Pallets, and Packaging Waste where directed for recycling.

3.9 CLEANING & REPAIRING

- A. As Work progresses, neutralize excess Flux with 5% to 10% Washing Soda Solution, and thoroughly rinse.
- B. Immediately after installation remove Protective Covering from Factory Painted Sheetmetal.
- C. Touch-up any exposed Bare Metal or Soldered Joints to match Factory Finish.
- D. Including Work of other Trades, clean, repair and touch-up, or replace when directed, Products which have been soiled, discolored, or damaged by Work of this Section.
- E. Remove Debris from Project Site upon Work completion, or sooner if directed.

END OF SECTION

PART 1 - GENERAL

1.1 CONTRACT CONDITIONS

- A. Work of this Section is bound by the Contract Conditions and Division 1, bound herewith, in addition to this Specification and accompanying Drawings.

1.2 PRODUCTS FURNISHED, BUT INSTALLED UNDER OTHER SECTIONS

- A. Sheet Metal built into Roofing.

1.3 RELATED WORK SPECIFIED IN OTHER SECTIONS

- A. Wood Curbing: Section 06-10-00
- B. Flashing for Metal Panels: Section 07-41-00
- C. Flashing for Phenolic Panels: Section 07-43-00
- D. Single-Ply Roofing: Section 07-53-00
- E. Sheet Metal Roofing: Section 07-61-00
- F. Roof Accessories: Section 07-72-00
- G. Plastic Skylights: Section 08-62-00
- H. Translucent Panel Skylights: Section 08-64-00
- I. Field Painting: Section 09-90-00
- J. Roof Drains, Inside Conductors, & Flashing around Piping passing through Roof: See Plumbing Specifications

1.4 ALTERNATES

- A. Refer to Section 01-20-00 for possible effect upon Work of this Section.

1.5 COORDINATION

- A. Coordinate with other Trades affecting or affected by Work of this Section.

1.6 REGULATORY AGENCY REQUIREMENTS

- A. Comply with OSHA Fall Protection Requirements.

PART 1 - GENERAL

1.7 REFERENCED REQUIREMENTS

- A. Comply with minimum requirements specified in “Architectural Sheet Metal Manual”, published by SMACNA.

1.8 PERFORMANCE REQUIREMENTS

- A. Prevent Sheet Metal buckling, oil-canning, joint-opening, over-stressing, attachment-failure, and other detrimental effects caused by thermally-induced-movement induced by Solar Heat Gain and Night-time Heat Loss temperature changes.

1.9 SAMPLES

- A. Prior to starting Work and in accordance with Section 01-33-00, submit two 12x12 inch samples of Factory-painted Sheetmetal.
- B. Show color and thickness.

1.10 PRODUCT DELIVERY, STORAGE, & HANDLING

- A. Package Factory-painted Materials with Non-sticking Paper or Strippable Film Coating between adjacent Sheets.
- B. Protect against damage and discoloration.
- C. Do not bend, warp, or twist Sheets.
- D. Ventilate stored Sheets as required to prevent Condensation build-up between Sheets.
- E. Do not overload Roof Structure with Stored Materials.

1.11 FIELD MEASUREMENTS

- A. Verify prior to fabrication.
- B. If field measurements differ slightly from Drawing dimensions modify Work as required for accurate fit. If measurements differ substantially, notify Architect prior to fabrication.

(Cont.)

PART 1 - GENERAL

1.12 MAINTENANCE WARRANTY

- A. Prior to Final Acceptance and in accordance with Section 01-83-00, submit the following Maintenance Warranty for inclusion in Owner's Maintenance Manual:
1. We, the Undersigned, do hereby warrant for 2 years following Project Substantial Completion all Sheetmetal Flashing against failure due to defective materials and/or workmanship; for System to remain watertight and weatherproof; and to repair or replace without additional cost to Owner any water leaks and resulting damage to Building Materials and/or Building Contents as may occur under normal usage within Warranty Period.
 2. We, the Undersigned, do hereby warrant for 10 years following Project Substantial Completion, Defective Work as specified above, but not including any damage to Building Materials or Building Contents.
FLASHING SUBCONTRACTOR: _____
By: _____
GENERAL CONTRACTOR: _____
By: _____
 3. We, the Undersigned, do hereby warrant for 25 years following Project Substantial Completion that Factory-applied Enamel Coatings on Sheet Metal will not fade, chalk, craze, chip, crack, peel, delaminate, or otherwise deteriorate.
FLASHING MANUFACTURER: _____
By: _____

PART 2 - PRODUCTS

2.1 GALVANIZED STEEL SHEETS

- A. Metal Manufacturing Standards: ASTM A-653
- B. Quality: Lock-forming
- C. Pattern: Smooth without texture
- D. Minimum Galvanizing Coating Designation: G-90
- E. Minimum Metal Thickness: Specified below
- F. Factory-applied Finish where exposed to Ground Level View:
 1. Material: Fluoropolymer Enamel complying with AAMA 2605
 2. Minimum polyvinylidene (PVDF) Content: 70%
 3. Minimum Dry Film Thickness: 1.2 mils
 4. Color: Match adjacent Sheet Metal Roofing specified in Section 07-61-00.

PART 2 - PRODUCTS

2.2 STAINLESS STEEL SHEETS

- A. Manufacturing Standard: ASTM A-167
- B. Type: 304
- C. Temper: Soft, fully annealed.
- D. Thickness: Specified below
- E. Finish: 2D, dull.
- F. Pattern: Flat without texture

2.3 NAILS

- A. Manufacturing Standard: Fed. Spec. FF-N-105B
- B. Type: Barbed, slating.
- C. Head: Flat
- D. Material: Stainless Steel Wire
- E. Minimum Length: 1 inch

2.4 SCREWS

- A. Manufacturing Standard: Fed. Spec. FF-S-107
- B. Type: Self-tapping
- C. Head: Pan
- D. Material: Stainless Steel
- E. Minimum Size: No. 7
- F. Minimum Length: 1 inch

2.5 RIVETS

- A. Type: As required by conditions of use
- B. Material: Stainless Steel
- C. Minimum Diameter: 1/8 inch
- D. Length: Recommended by Rivet Manufacturer for conditions of use

2.6 SEALANT

- A. Manufacturer & Brand: Dow 999-A, GE Silicone II, Mameco Vulkem 116, Ruscoe Permanent Sealer, Sonneborn NP-1, Tremco Gutter Seal, or approved.

PART 2 - PRODUCTS

2.7 SOLDER

- A. Manufacturing Standard: ASTM B-32
- B. At Stainless Steel:
 - 1. Lead Content: 30%
 - 2. Tin Content: 70%
- C. At Galvanized Steel:
 - 1. Lead Content: 50%
 - 2. Tin Content: 50%

2.8 FLUX

- A. Material: Rosin, cut Muriatic Acid, or Commercial Preparation suitable for use.

2.9 ASPHALT PLASTIC CEMENT

- A. Manufacturing Standard: Fed. Spec. SS-C-153
- B. Type: I

2.10 PRIME COATING & UNDERCOATING

- A. For Galvanized Steel: Galvanized Primer specified in Section 09-90-00
- B. For Stainless Steel: Zinc Chromate Primer specified in Section 09-90-00

2.11 ASPHALT COATING COMPOUND

- A. Manufacturing Standard: Fed. Spec. TT-C-494
- B. Type: II

2.12 DOWNSPOUT STRAINERS

- A. Type: Removable Wire Basket
- B. Material: 0.054 inch minimum diameter Stainless Steel Wire
- C. Extent of Work: Tightly fit in each Sheet Metal Downspout Inlet.

PART 2 - PRODUCTS

2.13 FABRICATION

A. General:

1. Form to shapes and dimensions shown with planes and lines in true alignment.
2. Unless otherwise shown on Drawings or specified, fabricate with longest practicable lengths.
3. Form Openings Head and Sill Flashing with End Dams.
4. Hem exposed edges.
5. Angle bottom edges of vertical surfaces to form drip.

B. Seams:

1. Common Lock Seams: 3/4 inch finish width; 4-ply loose-locked.
2. Flat Lock Seams: 5/8 inch finish width; 4-ply flat locked, malleted tight; sweat full with Solder.
3. Single Corner Seams: 3/4 inch finish width; 3-ply loose locked.
4. Double Corner Seams: 5/8 inch finish width; 4-ply loose locked.
5. Lap Seams: 3 inch finish width.
6. Solder-Lap Seams: 1 inch finish width; sweat full with Solder.
7. Cover Plate Seams:
 - a. Space abutting Sheets 1/2 inch; cover Joint with 4 inch wide Cover and Back-up Plates set in Sealant.
 - b. Match Plates to Flashing profile.
 - c. Secure Plates to Substrate with Screw installed through Open Space between adjacent Flashing Sheets.
8. S-Lock Seams: Form 1-1/4 inch wide "S" shaped Seam on one edge of Flashing Sheet for concealed fastening.

C. Cleats:

1. Material: 28 ga. Stainless Steel.

PART 3 - EXECUTION

3.1 EXISTING CONDITIONS

- A. Verify that Surfaces to receive Sheet Metal are smooth, clean, and otherwise properly prepared.
- B. Verify that Nailers to receive Sheet Metal are properly placed.
- C. Prior to starting Work notify General Contractor of defects that require correction.
- D. Do not start Work until conditions are satisfactory.

3.2 PROTECTING WORK OF OTHER SECTIONS

- A. Protect against damage and discoloration caused by Work of this Section.

3.3 INSTALLATION, GENERAL

- A. Install Work watertight, without waves, warps, buckles, tool marks, fastening stresses, distortion, or defects which impair strength or mar appearance.
- B. Install planes and lines in true alignment.
- C. Allow for Sheet Metal expansion and contraction.

3.4 CLEAT INSTALLATION

- A. Space 2 ft on center, unless continuous Cleats or other spacings are specified hereunder.
- B. Secure spaced Cleats to Substrate with 2 Fasteners to prevent Cleat rotation.
- C. Secure Continuous Cleats to Substrate with Fasteners spaced at 12 inch maximum centers.
- D. Cover Fastener Heads with Cleat Tabs folded back over Fastener Head.

3.5 SOLDERING

- A. At Factory-painted Sheetmetal: Substitute Sealant in lieu of soldering.
- B. Elsewhere:
 - 1. Clean and flux Metals prior to soldering.
 - 2. Sweat Solder completely through Seam widths using Soldering Iron not Torch which can over-heat Sheetmetal.

3.6 SEALANT INSTALLATION

- A. Apply 1/4 inch diameter Bead, centered in full length of Joint.

3.7 ASPHALT PLASTIC CEMENT INSTALLATION

- A. Trowel apply 1/8 inch thick.

3.8 PAINTING

- A. If and where Sheet Metal is scheduled to receive Field Painting, shop-apply Primer Coat as specified in Section 09-90-00. Minimum Primer Coat Dry Film Thickness: 1-1/2 mils.
- B. Protect Galvanized Steel against corrosion with Asphaltic Coating Compound. Minimum Dry Film Thickness applied to each Contacting Face: 7-1/2 mils

PART 3 - EXECUTION

3.9 COUNTER FLASHING

- A. Form of 24 ga. Galvanized Steel.
- B. Overlap Base Flashing 4 inches minimum.
- C. Install Bottom Edge spring-tight against Base Flashing, or at Contractor's option secure Bottom Edge with 1 inch wide Clips spaced no greater than 24 inch o.c. Attach Clips to Substrate with concealed Fasteners. Reinforce Clips by double-bending Clip 3/4 inch back over bottom edge of Counter Flashing.
- D. Lap-seam Vertical Joints, and apply Sealant.
- E. Miter, Lap-seam, and close Corner Joints with Solder.
- F. Provide where Roof abuts Vertical Surfaces, and elsewhere shown on Drawings.

3.10 APRON FLASHING WHERE ROOF SLOPES AWAY FROM VERTICAL SURFACE

- A. Form of 24 ga. Galvanized Steel.
- B. Extend up Vertical Surface 4 inches minimum and onto Roof Surface 4 inches minimum.
- C. Secure top edge to adjacent Substrate.
- D. Hem bottom edge 1/2 inch.
- E. Lap-seam Vertical Joints 3 inches minimum.
- F. Engage hemmed edges.
- G. Miter Flashing and extend around Corner 3 inches minimum, and solder Joints.
- H. Install Bottom Edge spring-tight against Roofing.

3.11 COPINGS

- A. Form of 24 ga. Galvanized Steel.
- B. Fabricate with Cover Plate Seams spaced approximately 10 ft. apart.
- C. Miter and join Corners with Cover Plate Seams.
- D. Lock Exterior Edges over Continuous Cleats secured to Substrate.
- E. Lock Interior Edges over Spaced Cleats secured to Substrate.
- F. Slope Coping top to drain toward Roof.

(Cont.)

PART 3 - EXECUTION

3.12 PARAPET WALL COVERING

- A. Form of 24 ga. Galvanized Steel.
- B. At Parapet Walls 24 inches & Higher: Fabricate with vertical S-lock Seams spaced approximately 2 ft. apart.
- C. At Parapet Walls lower than 24 inches: Fabricate with continuous Horizontal Seams.
- D. Anchor Seams to Substrate with Cleats spaced 12 inches apart, maximum.
- E. Hook top edge of Covering into hemmed edge of Coping.
- F. Attach bottom edge of Covering to top of Counter Flashing with Common Lock Seams.
- G. Bend Covering around Corners 12 inches, minimum.
- H. Cover inside face of Parapet Walls, unless otherwise shown on Drawings.

3.13 THRU-WALL SCUPPERS

- A. Form of 26 ga. Stainless Steel.
- B. Line Opening and slope toward Drain.
- C. Join Liner to Inside Flange with flat Lock Seams; extend Inside Flange 4 inches on top of Roofing and 4 inches in all other directions.
- D. Secure Roof Flange to Substrate with Nails spaced 6 inches apart.
- E. Join Liner to Outside Flange with Single Corner Seams.
- F. Extend Outside Flange 1-1/2 inches in all directions.
- G. Counterflash top edges of Inside and Outside Flanges, or if not practicable, make watertight with Sealant installed between Flange and Wall face.

3.14 HUNG GUTTERS

- A. Form to detail of 24 ga. Galvanized Steel.
- B. Lap Gutter Joints 1 inch minimum, rivet, and solder.
- C. Locate Gutter Front Edge 1/2 inch minimum lower than Rear Edge.
- D. Stiffen Gutter Front Edge with hemmed return.
- E. Counterflash Gutter Rear Edge.
- F. Secure End Caps with 1 inch minimum width Flanges riveted and soldered to Gutter.
- G. Secure Gutter to Roof Framing with Brackets spaced 4 ft. o.c., maximum. Shape Brackets to match Gutter profile.
- H. Provide Expansion Joints midway between Downspouts; overlap Gutter sections 2-1/2 inches and provide End Caps spaced 1/2 inch apart.
- I. Cover Expansion Joints tops with Loose-lock Cover; extend Cover over outer edge of Gutter, and embed in Sealant.
- J. Size Thimble slightly smaller than Downspout, and extend Thimble 2 inches below Gutter bottom.
- K. Rivet and solder Thimble flanges to Gutter bottom.

PART 3 - EXECUTION

3.15 CONDUCTOR HEADS

- A. Form of 24 ga. Galvanized Steel.
- B. Fabricate with riveted and Lap-soldered Seams.
- C. Extend Downspout Thimble 2 inches below Conductor Head bottom, shape Thimble to fit Downspout, and size slightly smaller than Downspout.
- D. Rivet and solder Thimble Flanges to Conductor Head bottom.
- E. Fabricate with Overflow Openings in face of Conductor Heads; locate below Roof flood line.
- F. Connect to Downspout Heads where Downspouts are adjacent to Wall Scuppers. Secure to Wall where and as shown on Drawings.

3.16 DOWNSPOUTS

- A. Form to detail of uncorrugated 24 ga. Galvanized Steel.
- B. Fabricate longitudinal joints with Double Corner Seams.
- C. Telescope upper into lower Sections 1-1/2 inches minimum, rivet and solder.
- D. At open Downspout ends provide elbow bends away from Building.
- E. Attach to Wall with 1-1/4 inch wide Straps matching downspout material, and 1 gage heavier.
- F. Locate Straps at Downspout tops, bottoms, horizontal joints, and 10 ft. maximum centers.
- G. Secure Straps to Wall with Fastener Heads covered with Strap-tabs.
- H. Except where otherwise shown on Drawings, install Downspouts plumb (modify Straps if necessary), and carefully align with Storm Drain Hub.
- I. Except where Downspouts are open-ended, extend Downspouts 3 inches minimum into Storm Drain Hub, and close opening with Plastic Transition Hub.

3.17 ROOF PENETRATION FLASHING

- A. General:
 - 1. Form of 24 ga. Galvanized Steel.
- B. Base Flashing:
 - 1. Extend Flange onto Roof 8 inches minimum in all directions away from Penetration and upward around Penetration to position at least 2 inches above Roof surface.
 - 2. At Sheetmetal Roofing fold upper and side edges at least 1/2 inch back over Flange.
 - 3. Solder-lap Joints.
 - 4. Furnish to Roofer for installation.
- C. Counter Flashing:
 - 1. Overlap Base Flashing at least 1 inch with Storm Collar sloped away from Penetration.
 - 2. Secure to Penetration with Solder or with Draw Band and Sealant.

PART 3 - EXECUTION

3.18 EQUIPMENT SUPPORT FLASHING

- A. Form of 18 ga. Galvanized Steel.
- B. Fully cap Support.
- C. Overlap Base Flashing 4 inches.
- D. Solder-lap Joints.
- E. Provide Sealant around Penetrations, if any.
- F. Provide at Roof-mounted Equipment.

3.19 OPENINGS FLASHING

- A. Provide 24 ga. Galvanized Steel Head, Jamb, and Sill Flashing around Doors, Windows, and other Openings in exterior Walls; where shown on Drawings; and elsewhere necessary to maintain Building watertight. Fabricate Horizontal Flashing with End Dams.

3.20 WASTE MANAGEMENT

- A. Collect and place Scraps, Pallets, and Packaging Waste where directed for recycling.

3.21 CLEANING & REPAIRING

- A. As Work progresses, neutralize excess flux with 5% to 10% Washing Soda Solution, and thoroughly rinse.
- B. Immediately after installation remove Protective Covering from Factory Painted Sheetmetal.
- C. Including Work of other Sections, clean, repair and touch-up, or replace when directed, Products which have been soiled, discolored, or damaged by Work of this Section.
- D. Remove Debris from Project Site upon Work completion, or sooner if directed.

END OF SECTION

PART 1 - GENERAL

1.1 CONTRACT CONDITIONS

- A. Work of this Section is bound by the Contract Conditions and Division 1, bound herewith, in addition to this Specification and accompanying Drawings.

1.2 RELATED WORK SPECIFIED IN OTHER SECTIONS

- A. Single-Ply Roofing: Sheetmetal Roofing: Section 07-61-00
- B. Sheetmetal Flashing: Section 07-62-00

1.3 ALTERNATES

- A. Refer to Section 01-20-00 for possible effect upon Work of this Section.

1.4 DESIGN REQUIREMENTS

- A. Design, engineer, and fabricate Hatches to support actual Dead Loads plus the following Design Loads:
 - 1. Minimum Design Loads: See Structural Notes on Drawings.
 - 2. Snow Drift Load: Comply with Building Code
 - 3. Horizontal & Uplift Wind Loads: Comply with Building Code
 - 4. Thermal Expansion & Contraction: Resistant to stress from 100°F temperature shift.

1.5 COORDINATION

- A. Coordinate with other Trades affecting or affected by Work of this Section.

1.6 REGULATORY AGENCY REQUIREMENTS

- A. Comply with OSHA Fall Protection Requirements.

1.7 SHOP DRAWINGS

- A. Submit in accordance with Section 01-33-00.
- B. Show complete assembly including Curbs, Joints, Gaskets, Drainage, Insulation, Accessories, Anchorage, and other pertinent details.
- C. Include installation instructions.

PART 1 - GENERAL

1.8 WARRANTY

- A. Warrant Roof Hatch Work to be weatherproof for 2 years following Project Substantial Completion date, and repair and/or replace without additional cost to Owner any water leaks and resulting damage to Building Materials and/or Building Contents as may occur under normal usage within Warranty Period.

PART 2 - PRODUCTS

2.1 ROOF ACCESS HATCH

- A. Manufacturer: Babcock-Davis, Bilco, Dur-Red, Milcor, Nystrom, or approved.
- B. Series: Similar to Bilco Thermal Break
- C. Opening: Single leaf
- D. Size: 36x36 inches
- E. Minimum Thermal Resistance Rating (R): 20
- F. Finish:
1. Material: Manufacturer's standard baked-on Enamel
 2. Color: Selected after Contract award from Manufacturer's standard choices
- G. Required Accessories:
1. Watertight, insulated Curb.
 2. Shock-absorbing, spring-balanced, insulated Cover.
 3. Inside Closing Handle.
 4. Spring Latch with Inside and Outside Handles and Padlock Hasp.
 5. Hinges equipped with non-removable Pins.
 6. Telescoping Steel Tube extension mounted to Ladder top; Bilco Ladder Up, or approved.
 7. OSHA-compliant Hatch-opening Guard Rail including self-closing and latching Swinging Gate. Bilco Bil-Guard 2.0, or approved.
- H. Extent of Work: Provide where shown on Drawings.

2.2 PAINT PRIMER

- A. For Galvanized Steel: Galvanized Primer as specified in Section 09-90-00
- B. For Aluminum: Zinc Chromate Primer as specified in Section 09-90-00

2.3 ASPHALTIC COMPOUND

- A. Manufacturing Standard: Fed. Spec. TT-C-494
- B. Type: II

PART 2 - PRODUCTS

2.4 JOINT SEALANT

- A. Material: Modified-Silicone type as specified in Section 07-92-00
- B. Extent of Work: Provide where necessary to produce weatherproof installation.

PART 3 - EXECUTION

3.1 EXISTING CONDITIONS

- A. Do not proceed until Surface to receive Hatch is secure, level, true, smooth, clean, dry, and prepared in accordance with approved Shop Drawings.
- B. Prior to starting Work, notify General Contractor about defects requiring correction.
- C. Do not start Work until conditions are satisfactory.

3.2 PROTECTING WORK OF OTHER SECTIONS

- A. Protect against damage and discoloration caused by Work of this Section.
- B. Do not overload Roof with stored Materials.

3.3 CORROSION PROTECTION

- A. Protect contacting dissimilar Metals against galvanic corrosion with Asphaltic Compound, 7-1/2 mil thickness minimum, applied to each contacting face.

3.4 INSTALLATION

- A. Accurately secure Hatch plumb, level, true to line, without warp or rack, and in accordance with manufacturer's instructions and reviewed Shop Drawings.

3.5 ADJUSTMENTS

- A. Adjust Moving Parts to operate satisfactorily at time of Project Substantial Completion and during Warranty Period.

PART 3 - EXECUTION

3.6 WASTE MANAGEMENT

- A. Collect and place Scraps, Pallets, and Packaging Waste where directed for recycling.

3.7 PRODUCT CLEANING & REPAIRING

- A. Including Work of other Trades, clean, repair and touch-up, or replace when directed, Products which have been soiled, discolored, or damaged by Work of this Section.
- B. Remove Debris from Project Site upon Work completion, or sooner if directed.

END OF SECTION

PART 1 - GENERAL

1.1 CONTRACT CONDITIONS

- A. Work of this Section is bound by the Contract Conditions and Division 1, bound herewith, in addition to this Specification and accompanying Drawings.

1.2 WORK INCLUDED

- A. In accordance with governing laws, regulations, ordinances; and codes; and requirements specified in Section 01-11-50; seal Openings through Fire-rated Assemblies as required to prevent the passage or spread of Flame, Smoke, and Hot Gases, including the following:
1. Piping, Ductwork, Cable, and Conduit passing through Fire-rated Walls, Floors, and Ceilings.
 2. Open Joints located between adjacent Fire-rated Walls, Floors, & Ceilings.
 3. Open Joints located between Exterior Walls and Floor edges.
 4. Open Cells between Steel Decking and adjacent Fire-rated Construction.

1.3 RELATED WORK SPECIFIED IN OTHER SECTIONS

- A. Joint Sealants: Section 07-92-00

1.4 ALTERNATES

- A. Refer to Section 01-20-00 for possible effect upon Work of this Section.

1.5 WORKER'S QUALIFICATIONS

- A. Employed by or acceptable to Fire Stopping Manufacturer, with at least 2-years successful experience performing Work specified herein, and certified in compliance with FM 4991.
- B. Manufacturer's willingness to sell Firestopping Products to Applicator in itself does not establish Applicator's qualifications to perform Work..

1.6 REGULATORY AGENCY REQUIREMENTS

- A. Fire Stopping shall comply with governing Building Code requirements, including successfully passing Hose Stream Tests specified in IBC Sections 712 & 713.
- B. Minimum Fire-resistance Rating of Firestopping: Equal to or greater than Construction Assembly being penetrated.

PART 1 - GENERAL

1.7 COORDINATION

- A. Coordinate with other Trades affecting or affected by Work of this Section.

1.8 CERTIFICATE OF COMPLIANCE

- A. Upon Work completion, submit Manufacturer's written certification that Fire Stopping has been installed in accordance with these Specifications and in compliance with Regulatory Agency Requirements.

1.9 ADVANCE NOTICES

- A. Upon Work completion, notify General Contactor to delay concealing Firestopping until Laboratory Testing specified in Section 01-45-30 has been satisfactorily completed.

1.10 FIELD MOCK UP

- A. Provide typical examples of each type of Fire Stopping for Architect's review.
- B. Reprepare, if necessary, until Mock Ups are accepted.
- C. Accepted Mock Ups represent minimum standard of acceptability, and Work of lesser quality is subject to rejection.
- D. Approved Mock Ups may be used on Project Work.

1.11 PRODUCT DELIVERY, STORAGE, & HANDLING

- A. Deliver Products to Jobsite in original unopened Containers. Save Containers for Architect's inspection.
- B. Protect Products against damage or deterioration.
- C. Do not exceed Product "shelf life".
- D. Immediately remove from Project Site any damaged or out-of-date Products.

1.12 ENVIRONMENTAL REQUIREMENTS

- A. Perform no Work when Work Conditions exceed Fire Stopping Manufacturers' specified limits.

FIRE STOPPING**PART 2 - PRODUCTS****2.1 FIRE STOPPING**

- A. Manufacturer: Firestop Systems, Hilti, Specified Technologies Inc., STI, 3M, or approved.
- B. Material: Free of Asbestos, Halogens, Lead, Flammable Solvents, Ethylene Glycol, or Volatile Solvents.
- C. Maximum VOC Emission: 250 g/l
- D. Types: Caulks, Wraps, Strips, Sheets, Mortars, Collars, Foams, Sprays, Mastics, Pillows, Pads, Boards, or Putties as required by conditions of use; compatible with adjacent Products; and obtained from single Manufacturer.
- E. Fire-resistiveness Certifications:
 - 1. At Penetrations through Fire-rated Walls & Ceilings: ASTM E-1966 or UL 2079
 - 2. In Joints between adjacent Fire-rated Walls & Ceilings: ASTM E-814 or UL 1479
- F. Performance Requirements: Fire Stopping shall be flexible, moisture resistant, and it shall not dissolve, re-emulsify, leach, break-down, deteriorate, shrink, or pull away from contact surfaces.
- G. Intumescent Products, if any, shall not contain Sodium Silicate or other water-soluble ingredients.
- H. Paintability: Fire Stopping, if and where exposed to view, shall be paintable or capable of receiving Finish Materials where so specified in other Sections.

2.2 OTHER REQUIRED PRODUCTS

- A. Collars, Cable Pathways, Grommets, Plugs, and other Devices necessary to prevent Fire or Smoke passage.

PART 3 - EXECUTION**3.1 EXISTING CONDITIONS**

- A. Verify that Surfaces to receive Fire Stopping are clean, dry, and free from Scale, Dust, Oil, Grease, Rust, Lacquer, loose Mortar, Laitance, Ice, Frost, or other Bond-reducing Matter.
- B. Allow Concrete Surfaces to cure at least 4 weeks before applying Sealant.
- C. Prior to starting Work, notify General Contractor about defects requiring correction.
- D. Do not start Work until conditions are satisfactory.

3.2 PROTECTING WORK OF OTHER SECTIONS

- A. Protect against damage and discoloration caused by Work of this Section.
- B. Mask Surfaces adjacent to Fire Stopping as required for protection.
- C. Do not remove adjacent Pipe Insulation.

PART 3 - EXECUTION

3.3 SURFACE PREPARATION

- A. Remove Dust, Dirt, Wax, Moisture, Ice, Frost, and any other Foreign Matter from Surfaces to receive Fire Stopping.
- B. If and where necessary, provide Backing Support to receive Fire Stopping.
- C. If and where so recommended by Fire Stopping Manufacturer, prime Surfaces to receive Fire Stopping. Follow Primer Manufacturer's instructions.

3.4 FIRE STOPPING INSTALLATION

- A. Follow Manufacturer's instructions and Building Code requirements.
- B. Fill Openings as required to ensure effective Fire and Smoke Barrier.
- C. Where necessary, provide Openings with Bond Breaker to prevent 3-sided Compound-adhesion.
- D. Trim excess Fire Stopping flush with adjacent Surface.
- E. Remove any Masking Materials.
- F. Leave exposed Surfaces neat and smooth.

3.5 WARNING LABEL INSTALLATION

- A. In any concealed Attic Areas, conspicuously locate and apply the following brightly colored Decals:
 - 1. On Fire Rated Walls, if any:
 - a. THIS WALL IS FIRE-RATED.
CONTACT FACILITY OWNER
PRIOR TO PENETRATING
THIS WALL
 - 2. Adjacent to Firestop Devices, if any:
 - a. MAXIMUM CAPACITY OF THIS
DEVICE IS ___ CABLES

3.6 WASTE MANAGEMENT

- A. Collect and place Scraps, Pallets, and Packaging Waste where directed for recycling.

3.7 PRODUCT CLEANING & REPAIRING

- A. Including Work of other Trades, clean, repair and touch-up, or replace when directed, Products which have been soiled, discolored, or damaged by Work of this Section.
- B. When removing spilled or excess Fire Stopping, do not damage adjacent Surfaces.
- C. Remove Debris from Project Site upon Work completion, or sooner if directed.

END OF SECTION

PART 1 - GENERAL

1.1 CONTRACT CONDITIONS

- A. Work of this Section is bound by the Contract Conditions and Division 1, bound herewith, in addition to this Specification and accompanying Drawings.

1.2 EXTENT OF WORK

- A. Caulk Exterior Joints as follows
1. Joints around Window Frames, Door Frames, and other Openings in Exterior Walls: Modified Silicone (STPe) Sealant
 2. Joints between Floor and bottom of Exterior Door Frames: Modified Silicone (STPe) Sealant
 3. Joints between adjacent Dissimilar Materials: Modified Silicone (STPe) Sealant
 4. Elsewhere caulking is shown on Drawings or required to weatherproof Building: Modified Silicone (STPe) Sealant
- B. Caulk within Exterior Frame Walls as follows:
1. Space between Wall Framing Members and Windows, Doors, and other Openings where subject to Air-infiltration: Foam Air-Infiltration Sealant
- C. Caulk Interior Joints as follows:
1. Joints around Window Frames, Door Frames, and other Openings in Exterior Walls: Acrylic Latex Sealant
 2. Joints between Resilient Flooring and Shower Receptacle: Modified Silicone (STPe) Sealant
 3. Joints between adjacent Dissimilar Materials: Acrylic Latex Sealant
 4. Elsewhere caulking is shown on Drawings or required to fill Open Joints: Acrylic Latex Sealant

1.3 RELATED WORK SPECIFIED IN OTHER SECTIONS

- A. Sealing Sheetmetal Joints: Sections 07-61-00 & 07-62-00
- B. Sealant-type Firestopping: Section 07-84-00
- C. Glazing Compounds employed to set Glass: Section 08-80-00
- D. Acoustic Caulking at Metal Wall Framing: Section 09-10-00
- E. Acoustic Caulking at Gypsum Board: Section 09-25-00

1.4 ALTERNATES

- A. Refer to Section 01-20-00 for possible effect upon Work of this Section.

PART 1 - GENERAL

1.5 COORDINATION

- A. Coordinate with other Trades affecting or affected by Work of this Section.

1.6 INSTALLER'S QUALIFICATIONS

- A. Installer must have successfully completed at least 2 similar Projects, and be in full-time business performing Work of this type.

1.7 FIELD MOCK UP

- A. Provide examples of each type of Joint Sealant for Architect's review.
- B. Reprepare, if necessary, until Mock Up is accepted.
- C. Accepted Mock Ups represent minimum standard, and Work of lesser quality is subject to rejection.
- D. Approved Mock Ups may be used on Project Work.

1.8 PRODUCT DELIVERY, STORAGE, & HANDLING

- A. Protect against damage and discoloration.
- B. Store in original, tightly sealed Containers, and with original legible Labels thereon. Do not open Containers or remove Labels until Architect reviews.
- C. Do not exceed Sealant shelf life.

1.9 WEATHER REQUIREMENTS

- A. Perform no Work when weather exceeds Manufacturer's specified limits.
- B. Prohibited Air Temperature:
 - 1. Minimum: 40°F and falling
 - 2. Maximum: 90°F and rising

1.10 WARRANTY

- A. Warrant exterior Joint Sealant Work for 10 years following Project Substantial Completion date that Sealants will not loose their adhesion or cohesion, that Work of this Section will remain weatherproof, and that Contractor will repair and/or replace without additional cost to Owner any water leaks and resulting damage to Building Materials and/or Building Contents as may occur under normal usage within Warranty Period.

PART 2 - PRODUCTS

2.1 MODIFIED SILICONE (STPe) SEALANT

- A. Manufacturer & Brand: BASF Masterseal 150 (formally Sonneborn Sonolastic 150), or approved.
- B. Material: 1-component Silyl Terminated Polyester
- C. Manufacturing Standard: ASTM C-920, Type S, Class 25, Grade NS.
- D. ASTM C-661 Shore A Hardness Range: 15-20
- E. Joint Movement Range: Plus 100% to Minus 50%

2.2 ACRYLIC LATEX SEALANT

- A. Manufacturer & Brand: Contractor's choice
- B. Components: 1
- C. Manufacturing Standard: ASTM C-834
- D. Minimum ASTM C-736 Recovery: 75%
- E. Joint Movement Range: Plus or Minus 7½ %

2.3 FOAM AIR-INFILTRATION SEALANT

- A. Manufacturer Standard: AAMA 812

2.4 SEALANT COLORS

- A. Foam Sealant: Contractor's choice
- B. Modified Silicone Sealant: Clear Translucent, unless otherwise indicated.
- C. All Other: Approximate color of Adjacent Surfaces, unless otherwise indicated, and subject to Architect's approval. Obtain Architect's instructions if Sealant is adjacent to different colors.

2.5 PRIMER & SURFACE CONDITIONER

- A. Manufacturer & Type: Recommended by Sealant Manufacturer

(Cont.)

PART 2 - PRODUCTS

2.6 BACKER ROD

- A. Manufacturer & Brand: Contractor's choice
- B. Material: Combined open-cell & closed-cell Polyolefin, non-off gassing, non-exuding, non-absorbing, round, soft-rod, recommended by Sealant Manufacturer for conditions of use.
- C. Manufacturing Requirements: Comply with 1990 Clean Air Act.
- D. Diameter: 25% greater than Joint width
- E. Extent of Work: Provide for all Sealants, except Foamed types, where necessary to prevent 3-sided adhesion of Sealant to Substrate

2.7 BOND-BREAKER TAPE

- A. Manufacturer & Brand: Contractor's choice
- B. Material: Polyethylene Tape, or approved.
- C. Extent of Work: Where Backer Rod can not be used, provide Tape where necessary to prevent 3-sided adhesion of Sealant to Substrate

2.8 FOAM SEALANT DAMS

- A. Material: Contractor's choice
- B. Minimum UL Fire Resistance Rating:
 - 1. At Dams Remaining in Place: Match adjacent Wall or Floor Rating.
 - 2. At Dams to Be Removed: None required

PART 3 - EXECUTION

3.1 EXISTING CONDITIONS

- A. Verify that Joints to be sealed are clean, dry, and free from Dust, Oil, Grease, Rust, Lacquer, loose Mortar, Ice, Frost, or other Bond-reducing Matter. If necessary, remove Bond-reducing Matter by grinding.
- B. Verify that Sealants are compatible with Substrate.
- C. Allow Concrete Surfaces to cure at least 4 weeks before applying Sealant.
- D. Prior to starting Work, notify General Contractor about defects requiring correction.
- E. Do not start Work until conditions are satisfactory.

PART 3 - EXECUTION

3.2 PROTECTING WORK OF OTHER SECTIONS

- A. Protect against damage and discoloration caused by work of this Section.
- B. Mask Surfaces adjacent to Joints as required for complete protection.

3.3 SURFACE PREPARATION

- A. Remove Dust, Dirt, Moisture, and any other Foreign Matter from Joints to be sealed.

3.4 PRIMING

- A. Unless otherwise recommended by Sealant Manufacturer, prime Surfaces to receive Sealant.
- B. Apply with Bristle Brush.
- C. Do not flood surfaces.

3.5 INSTALLATION - GENERAL

- A. Follow Manufacturers' instructions and ASTM C-1193.

3.6 BACKER ROD INSTALLATION

- A. Using dry Wheeled Tool, install Backer Rod behind Sealant in accordance with Sealant Manufacturer's instructions. Do not use Lubricants to ease installation.
- B. Provide in continuous, one-piece lengths where practicable. Where discontinuous pieces are necessary, butt Rod Joints neatly and snugly.
- C. At Corners, miter and snugly abut adjacent Rod ends.
- D. Depth behind adjacent Surface: Approximately 1/2 Joint width (*1/4 inch minimum and 5/8 inch maximum*).
- E. Do not stretch, twist, puncture, or tear Rods. Replace any damaged Rods.

3.7 DAM INSTALLATION

- A. Provide around Wall and Floor Penetrations to receive Foam Penetration Sealant.

(Cont.)

PART 3 - EXECUTION

3.8 FOAM SEALANT INSTALLATION

- A. Inject Sealant continuously until Opening is filled.
- B. If Opening is not filled within Sealant Snap Time or maximum of 3 minutes, stop application for at least 15 minutes before resuming work.
- C. Trim cured Foam flush with Adjacent Surface.
- D. Remove any combustible Dams.

3.9 MODIFIED SILICONE (STPe) & ACRYLIC LATEX SEALANT INSTALLATION

- A. Apply in accordance with Manufacturer's instructions using Hand or Pressure Gun-type Dispenser.
- B. Size Gun Nozzle to fit Joint.
- C. Force Sealant into Joints firmly against Joint Sides to fill Joints and Voids solid; superficial pointing with Skin Bead not acceptable.
- D. Prevent 3-sided adhesion of Sealant to Substrate.
- E. Install Sealant flush with Adjacent Surface.
- F. Within 10 minutes after installation, and using Dry Tool finish Sealant to smooth, uniform, and slightly concave shape.
- G. Remove excess Sealant and Masking Materials, if any, immediately after Sealant installation.
- H. Leave Sealant Surfaces neat and smooth.

3.10 WASTE MANAGEMENT

- A. Place used Sealant Tubes, Dispensers, and Pails in Hazardous Materials containers.
- B. Collect and place Scraps, Pallets, and Packaging Waste where directed for recycling.

3.11 PRODUCT CLEANING & REPAIRING

- A. Including Work of other Trades, clean, repair and touch-up, or replace when directed, Products which have been soiled, discolored, or damaged by Work of this Section.
- B. Remove Debris from Project Site upon Work completion, or sooner if directed.

END OF SECTION

PART 1 - GENERAL

1.1 CONTRACT CONDITIONS

- A. Work of this Section is bound by the Contract Conditions and Division 1, bound herewith, in addition to this Specification and accompanying Drawings.

1.2 RELATED WORK SPECIFIED IN OTHER SECTIONS

- A. Caulking Exterior Door Frames: Section 07-92-00
- B. Wood Doors: Section 08-21-00
- C. Steel Access Hatches: Section 08-30-00
- D. Aluminum Doors & Frames: Section 08-40-00
- E. Door Hardware: Section 08-71-00
- F. Glazing: Section 08-80-00
- G. Grouting Frames in Gypsum Board Walls: Section 09-25-00
- H. Field Painting: Section 09-90-00
- I. Electric Conduit & Wiring for Electric Door Strikes: See Electrical Specifications

1.3 ALTERNATES

- A. Refer to Section 01-20-00 for possible effect upon Work of this Section.

1.4 REFERENCED SPECIFICATIONS

- A. Except as modified herein, conform to the following Recommended Specifications published by Steel Door Inst.; 30200 Detroit Rd.; Cleveland, OH 44145-1967; (216) 892-1404.
- 1. S.D.I. 100 Standard Steel Doors and Frames
 - 2. S.D.I. 105 Steel Frame Erection Instructions
 - 3. S.D.I. 107 Hardware on Steel Doors
 - 4. S.D.I. 117 Manufacturing Tolerances
 - 5. S.D.I. 118 Basic Fire Door Requirements
 - 6. A.N.S.I. A151.1 Acceptance Criteria for Steel Doors & Hardware Reinforcings.
 - 7. A.N.S.I. A224.1 Acceptance Criteria for Painted Surfaces
- B. Specifications can be obtained from Institute.

1.5 COORDINATION

- A. Coordinate with other Trades affecting or affected by Work of this Section.

PART 1 - GENERAL

1.6 SHOP DRAWINGS

- A. Submit in accordance with Section 01-33-00.
- B. Show locations, elevations, principal construction features, and dimensions of each Door type and Frame type, cut-outs, reinforcement, joints, welds, finish, anchoring, and other pertinent details.
- C. Locate and detail Field Splice Joints for any Frames too large to ship in one piece. Indicate instructions for making Field Splices.
- D. Manufacturer's published details may be substituted for Standard Stock Items, provided required information is included.

1.7 REGULATORY AGENCY REQUIREMENTS

- A. Fabricate Doors and Frames, where scheduled to be Fire-resistive, in accordance with requirements of Underwriters Laboratories, Factory Mutual, or other Agency approved by Building Official. Affix Agency Acceptance Label on each piece.
- B. If and where Doors are required to be "Positive Pressure" type, accompany Code-compliance Installation Instructions with Door shipment.

1.8 EVIDENCE OF COMPLIANCE

- A. As defined in Referenced Specifications, affix Certifying Label on each Unit stating that Units conform to specified Regulatory Agency Requirements

1.9 PRODUCT DELIVERY, STORAGE, & HANDLING

- A. Protect against damage and discoloration.
- B. Remove Door Wrappings upon Jobsite delivery.
- C. Store Doors and Frames upright in protected dry area, at least 1 inch above Ground or Floor, and with at least 1/4 inch open-space between adjacent pieces.
- D. Brace bottom ends of Frame Jambs against displacement.

1.10 FIELD MEASUREMENTS

- A. Verify prior to fabrication.
- B. If field measurements differ slightly from Drawing dimensions modify Work as required for accurate fit. If measurements differ substantially, notify Architect prior to fabrication.

PART 1 - GENERAL

1.11 SPECIAL WARRANTY

- A. For 2 years following Substantial Completion date, and in accordance with Contract Conditions, warrant the following:
 - 1. Exterior installations against water-leakage
 - 2. Doors against delamination

PART 2 - PRODUCTS

2.1 DOORS

- A. SDI Model: 1 (Full flush, hollow, and with exposed Edge Seams only)
- B. SDI Grade: II (Heavy Duty)
- C. Minimum Metal Thickness: 18 ga.
- D. Core:
 - 1. Exterior Doors: Manufacturer's standard Thermal Insulation (U Value: 0.36)
 - 2. Interior Doors: 90 lb. minimum Phenolic Resin impregnated Honeycomb
 - 3. Completely fill Core and bond Core to both Face Skins.
- E. Sizes & Shapes: See Door Schedule and Drawings.

2.2 FRAMES

- A. Type: Head and Jamb Intersections mechanically-interlocked, and Frame Face mitered and welded.
- B. Minimum Metal Thickness: 16 ga.
- C. Sizes & Shapes: See Door Schedule and Drawings.

2.3 FRAME ANCHORS

- A. General: Follow Referenced Specifications
- B. To Floors: Provide Base Anchors at each Jamb.
- C. To Stud Walls:
 - 1. Full Frame width and depth, and welded to Frame.
 - 2. Minimum quantity:
 - a. Frames up to 7'-6" high: 4 per Jamb
 - b. Frames 7'-6" to 8'-0" high: 5 per Jamb
 - c. Frames higher than 8'-0": 5 Anchors plus 1 additional for each 2 ft. or fraction thereof over 8'-0"

PART 2 - PRODUCTS

2.4 FABRICATION

- A. Follow Referenced Specification.
- B. Accurately form Metal to required sizes and shapes.
- C. Bevel Lock-side Edge of Doors 1/8 inch in 2 inches. Square edged Doors not acceptable.
- D. Minimum Reinforcement Thickness:
 - 1. At Hinges: 8 ga.
 - 2. At Locks: 16 ga.
 - 3. At Surface Hardware: 12 ga.
 - 4. At Panic Devices: Fully reinforce. (*Thru-bolting not acceptable*)
- E. Assemble Components and grind and dress Welds to form smooth, flush surfaces, which do not show Weld or Fabrication Marks after painting when viewed from oblique angle. Do not use Metallic Fillers to conceal Defects.
- F. Fabricate with 26 ga. minimum Cover Boxes at Hardware Mortises.
- G. Provide High Frequency Reinforcement at top and bottom of Top Hinges.
- H. Weld Anchors to Door Frames.
- I. Fabricate with the following clearances:
 - 1. Between Doors and Frames: 1/8 inch
 - 2. Between Door Bottoms and Thresholds: 1/4 inch
 - 3. Between Door Bottoms and Floor: 3/4 inch
 - 4. Between Meeting Edges of pairs of Doors: 3/32 inch
- J. Prepare Door Frames to receive Silencers specified in Section 08-71-00.
- K. Hardware Mounting Heights: See Mounting Heights Drawing in Section 08-71-00.
- L. Fabricate Glazing Stops with butted Corner Joints.
- M. Glazing Stops shall not interfere with installation of any Flat Bar Panic Devices or any Lever Handle Door Latches or Locks.
- N. Fabricate any exterior, out-swinging Doors with flush tops.
- O. Fabricate Junction Boxes, Raceways, and Wiring necessary for Electrically-operated Hardware specified in Section 08-71-00.
- P. Fabricate any closed-section Mullions with internal Web Reinforcement.

2.5 SHOP FINISH

- A. Dress Surface irregularities to smooth surface.
- B. Chemically treat and clean exposed Surfaces.
- C. Treatment:
 - 1. Exterior Surface of Doors & Frames: Manufacturer's standard Rust Inhibiting Primer
 - 2. Interior Surface of Door Frames: Manufacturer's standard Waterproof Asphalt Compound

(Cont.)

PART 3 - EXECUTION

3.1 EXISTING CONDITIONS

- A. Verify that Openings to receive Hollow Steelwork are accurately sized and located, square, plumb, and otherwise properly prepared.
- B. Prior to starting Work, notify General Contractor about defects requiring correction.
- C. Do not start Work until conditions are satisfactory.

3.2 PROTECTING WORK OF OTHER SECTIONS

- A. Protect against damage and discoloration caused by Work of this Section.

3.3 INSTALLATION

- A. Follow Referenced Specifications and Manufacturer's instructions.
- B. Secure Anchors to Adjacent Construction.
- C. Set Frames true with Adjacent Construction.
- D. Accurately position Work.
- E. Set Doors flush with Frame face.
- F. Set Doors plumb to hold any desired position.
- G. Fill any exposed Fastener Heads, and finish to match adjacent Surface.

3.4 ADJUSTMENTS

- A. Adjust Moving Parts to operate satisfactorily at time of Project Substantial Completion and during Warranty Period.

3.5 WASTE MANAGEMENT

- A. Collect and place Scraps and Packaging Waste where directed for recycling.

3.6 PRODUCT CLEANING & REPAIRING

- A. Including Work of other Trades, clean, repair and touch-up, or replace when directed, Products which have been soiled, discolored, or damaged by Work of this Section.
- B. Leave surfaces ready for Finish Painting specified in Section 09-90-00.
- C. Remove Debris from Project Site upon Work completion, or sooner if directed.

END OF SECTION

PART 1 - GENERAL

1.1 CONTRACT CONDITIONS

- A. Work of this Section is bound by the Contract Conditions and Division 1, bound herewith, in addition to this Specification and accompanying Drawings.

1.2 RELATED WORK SPECIFIED IN OTHER SECTIONS

- A. Custom Built Casework Doors: Section 06-41-00
- B. Hollow Steel Door Frames: Section 08-11-00
- C. Door Hardware: Section 08-71-00
- D. Door Glazing: Section 08-80-00
- E. Field Painting & Finishing: Section 09-90-00

1.3 OPTIONS

- A. Pre-fitting Doors to Frames and preparing for Door Hardware specified in Section 08-71-00 may, at Contractor's option, be performed at Factory.

1.4 ALTERNATES

- A. Refer to Section 01-20-00 for possible effect upon Work of this Section.

1.5 REFERENCED SPECIFICATIONS

- A. Architectural Standards published by Window & Door Manufacturing Assn., hereinafter referred to as WDMA.
- B. Standards can be obtained from Association at 401 N. Michigan Ave; Suite 2220; Chicago, IL 60611; (312) 321-6802.

1.6 COORDINATION

- A. Coordinate with other Trades affecting or affected by Work of this Section.

(Cont.)

PART 1 - GENERAL

1.7 SHOP DRAWINGS

- A. Submit as specified in Section 01-34-00.
- B. For each Door show Location, Size, Core material, Face material, required Undercuts, Blocking for Hardware, Openings together with full size Glass installation Mouldings, and Factory-machining for Hardware.

1.8 SAMPLES

- A. Submit as specified in Section 01-33-00.
- B. Include two 12x12 inch samples of Face Veneers complete with Factory-applied Finish.

1.9 REGULATORY AGENCY REQUIREMENTS

- A. Fabricate Doors, where scheduled to be Fire-resistive, in accordance with Underwriters Laboratories (UL) requirements. Affix UL Label to each Door.
- B. If and where Doors are required to be "Positive Pressure" type, accompany Code-compliance Installation Instructions with Door Shipment.

1.10 PRODUCT DELIVERY

- A. Do not deliver Doors to Jobsite until notified by General Contractor that Project is conditioned and prepared to handle and store Doors without damage or discoloration.
- B. Prior to delivery, factory-apply Manufacturer's standard Waterproof Sealer to Door Edges.
- C. Individually wrap each Door with Protective Covering. Upon Jobsite delivery, open Coverings to promote ventilation, however do not remove Covering until adjacent Painting and Finishing Work is completed.

1.11 PRODUCT STORAGE & HANDLING

- A. Protect against damage and discoloration.
- B. Do not store in damp or wet locations, including Spaces containing wet Materials.
- C. Store flat, at least 3-1/2 inches above level and dry surface, and in well-ventilated space.
- D. Protect Doors against direct Sunlight that could bleach Door Face Veneers.
- E. Handle Doors with clean Hands or clean Gloves.
- F. Do not drag Doors across other Doors or other Surfaces.

(Cont.)

PART 1 - GENERAL

1.12 STORAGE & WORK AREA ENVIRONMENTAL REQUIREMENTS

- A. Humidity Range: 30% to 60%
- B. Air Temperature: 50°F to 90°F

1.13 WARRANTY

- A. Lifetime warranty required
- B. Replace, rehang, and refinish without additional cost to Owner any delaminated Doors or any Doors exceeding Tolerance limits.

PART 2 - PRODUCTS

2.1 DOORS

- A. Manufacturers: Algoma, Eggers, Graham, Lynden, Marshfield, Mohawk, Oregon Door, Vancouver, VT Industries, or approved.
- B. WDMA Manufacturing Standard: 1A
- C. WDMA Performance Grade: Heavy Duty
- D. WDMA Appearance Grade: Premium
- E. Type: Flush Face
- F. Construction: 5 ply
- G. Sizes: See Door Schedule
- H. Core:
 - 1. At Doors fire-rated for longer than 20 minutes: Manufacturer's standard non-combustible type without Asbestos.
 - 2. At all other Doors:
 - a. At Doors with Openings: Stile & Rail
 - b. Elsewhere: LD-2 grade Particle Board
- I. Face Veneer:
 - 1. Species: Maple
 - 2. Grain: Rift Sliced
 - 3. Veneer Match: Slip
- J. Head Rail Minimum Height: 8 inches
- K. Bottom Rail Minimum Height: 10 inches

(Cont.)

PART 2 - PRODUCTS

2.1 DOORS (Cont.)

- L. Edge Bands:
 - 1. At Doors fire-rated for longer than 20 minutes, if any:
 - a. Material: Door Manufacturer's standard Multiple-ply Laminate capable of improving Screw-holding capacity.
 - b. Provide Intumescent Material behind Edge Bands in compliance with IBC Section 71-5.-30 and label in compliance with NFPA 80.
 - 2. At All Other Doors:
 - a. Species: Manufacturer's standard Hardwood matching Door Veneer color.
 - b. Minimum Thickness: 1/2 inch
 - c. Extent of Work: Provide at Side Stiles only.

2.2 FABRICATION

- A. Prepare Doors in accordance with Referenced Specifications.
- B. Bond Edge Banding to Core with Adhesive, and plane smooth before applying Face Veneers.
- C. At Paired Doors "pair match" Face Veneers on adjacent Door Faces and identify matching Faces.
- D. Fabricate any Fire-rated Doors with Inner Blocking which will permit secure Hardware installation without thru-bolting.
- E. Glazing Stops:
 - 1. In Fire-rated Doors, if any: Install with Manufacturer's standard Steel Stops installed with counter-sunk Screws.
 - 2. In Non-fire-rated Doors, if any: Install with Manufacturer's standard Wood Stops installed with counter-sunk Screws.
 - 3. Prevent Glazing Stops from interfering with installation of any Panic Devices or any Lever Handle Door Latches or Locks.
- F. Machine and hand sand exposed surfaces.
- G. Hardware Mounting Heights: See Mounting Heights Drawing in Section 08-71-00.

2.3 ALLOWABLE FABRICATION TOLERANCES

- A. Thickness: 1/16 inch plus or minus.
- B. Size: 1/16 inch plus or minus; 1/32 inch for Factory-fit door.
- C. Squareness: 1/8 inch maximum difference between opposite diagonal measurements.
- D. Maximum Warp: 1/4 inch space measured from horizontal, vertical, or diagonal straight edge to point of maximum bow, cup, or twist.
- E. Maximum Stile, Rail, and Core telegraphing show-through at Door Face: 1/100 inch in any 3 inch span.

PART 2 - PRODUCTS

2.4 FACTORY-APPLIED FINISH

- A. Finish: Satin-gloss Catalyzed Polyurethane

PART 3 - EXECUTION

3.1 EXISTING CONDITIONS

- A. Verify that Door Frames are correct type, accurately located and sized, square, plumb, true, and otherwise properly prepared.
- B. Prior to starting Work, notify General Contractor about defects requiring correction.
- C. Do not start Work until conditions are satisfactory.

3.2 PROTECTING WORK OF OTHER SECTIONS

- A. Protect against damage and discoloration caused by Work of this Section.

3.3 PREPARATION OF DOORS FOR HANGING

- A. Undercut bottom edge of Doors where and as required for Floor Covering and Threshold clearances.
- B. Fitting Doors to Frames:
1. At Non-fire-rated Doors: Fit for width by planing both sides of Door equally, and for height by sawing.
 2. At Fire-rated Doors: Fit for width by planing from lock-side only, and for height by sawing from bottom only.
 3. To prevent chipping, knife-cut Face Veneers before sawing.
- C. Seal job-cut surfaces with 2 coats of Waterproof Sealer compatible with Door Finish.

3.4 HANGING

- A. Position Doors flush with Frame face.
- B. Set plumb so that Door will hold any desired opening position.
- C. Install with the following Clearances:
1. Between Door & Frame: 1/8 inch
 2. Between Door Bottom & Threshold: 1/4 inch
 3. Between Door Bottom & Floor: 1/4 inch
 4. Between Meeting Edges of pairs of Doors: 1/8 inch

PART 3 - EXECUTION

3.5 ADJUSTMENTS

- A. Adjust Doors to operate smoothly at time of Project Substantial Completion and during Warranty Period.

3.6 WASTE MANAGEMENT

- A. Collect and place Scraps and Packaging Waste where directed for recycling.

3.7 PRODUCT CLEANING & REPAIRING

- A. Including Work of other Trades, clean, repair and touch-up, or replace when directed, Products which have been soiled, discolored, or damaged by Work of this Section.
- B. Remove Debris from Project Site upon Work completion, or sooner if directed.

END OF SECTION

PART 1 - GENERAL

1.1 CONTRACT CONDITIONS

- A. Work of this Section is bound by the Contract Conditions and Division 1, bound herewith, in addition to this Specification and accompanying Drawings.

1.2 PRODUCTS FURNISHED BUT INSTALLED AS WORK OF OTHER SECTIONS

- A. Deliver Access Hatches to Gypsum Board Subcontractor for installation as specified in Section 09-25-00.

1.3 RELATED WORK SPECIFIED IN OTHER SECTIONS

- A. Field Painting: Section 09-90-00

1.4 ALTERNATES

- A. Refer to Section 01-20-00 for possible effect upon Work of this Section.

1.5 COORDINATION

- A. Coordinate with other Trades affecting or affected by Work of this Section.

1.6 SHOP DRAWINGS

- A. Submit in accordance with Section 01-33-00.
- B. Show dimensions, fabrication details, required clearances, and Head and Jamb conditions.

1.7 INSTALLER'S QUALIFICATIONS

- A. Acceptable to Door Manufacturer.

1.8 REGULATORY AGENCY REQUIREMENTS

- A. Fabricate Hatches, where scheduled to be fire-resistive, in accordance with Underwriters Laboratories requirements. Affix UL Acceptance Label on each piece.

PART 1 - GENERAL

1.9 PRODUCT DELIVERY, STORAGE, & HANDLING

- A. Protect against damage and discoloration.

PART 2 - PRODUCTS

2.1 ACCESS HATCHES

- A. Manufacturer: Bilco, JL Industries, Miami-Carey, Milcor, Nystrom, or approved.
- B. Material: Steel
- C. Factory-applied Finish: Rust Inhibiting Primer specified in Section 09-90-00
- D. Mounting Method: Satisfy conditions of use
- E. Frame Flange: Exposed
- F. Sizes: See Drawings
- G. Minimum UL Fire Resistance Ratings: See Drawings
- H. Gasket Material: Flame-retardant Polyurethane
- I. Hinges: Concealed Pivot
- J. Locks: Screw Driver operated Cam
- K. Extent of Work: Provide where shown on Drawings.

PART 3 - EXECUTION

3.1 EXISTING CONDITIONS

- A. Verify that Openings to receive Hatches are square, plumb, and accurately sized and located.
- B. Prior to starting Work, notify General Contractor about defects requiring correction.
- C. Do not start Work until conditions are satisfactory.

3.2 PROTECTING WORK OF OTHER SECTIONS

- A. Protect against damage and discoloration caused by Work of this Section.

3.3 CORROSION PROTECTION

- A. Protect contacting Dissimilar Materials against Electrolytic Corrosion.

PART 3 - EXECUTION

3.4 INSTALLATION

- A. Install Work including Hardware in accordance with Manufacturer's instructions and approved Shop Drawings.
- B. Accurately locate and anchor Work plumb, square, true, rigid, secure, and with proper clearances.

3.5 ADJUSTMENTS

- A. Adjust Moving Parts to operate satisfactorily at time of Project Substantial Completion and during Warranty Period.

3.6 WASTE MANAGEMENT

- A. Collect and place Scraps and Packaging Waste where directed for recycling.

3.7 PRODUCT CLEANING & REPAIRING

- A. Including Work of other Trades, clean, repair and touch-up, or replace when directed, Products which have been soiled, discolored, or damaged by Work of this Section.
- B. Leave surfaces ready for Painting specified in Section 09-90-00.
- C. Remove Debris from Project Site upon Work completion, or sooner if directed.

END OF SECTION

PART 1 - GENERAL

1.1 CONTRACT CONDITIONS

- A. Work of this Section is bound by the Contract Conditions and Division 1, bound herewith, in addition to this Specification and accompanying Drawings.

1.2 RELATED WORK SPECIFIED IN OTHER SECTIONS

- A. Sectional Overhead Doors: Section 08-36-00
- B. Field Painting: Section 09-90-00
- C. Electric Conduit and Wiring from Power Supply to Motors, Controls, and Disconnect Switches of electrically-operated Doors: See Electrical Specifications

1.3 ALTERNATES

- A. Refer to Section 01-20-00 for possible effect upon Work of this Section.

1.4 COORDINATION

- A. Coordinate with other Trades affecting or affected by Work of this Section.

1.5 SHOP & INSTALLATION DRAWINGS

- A. Submit in accordance with Section 01-33-00.
- B. Indicate location, construction and installation details including Motor and Control locations, Counterbalances, Guides, Anchors, and required clearances.

1.6 INSTALLER'S QUALIFICATIONS

- A. Employed by or acceptable to Door Manufacturer.

1.7 PRODUCT DELIVERY, STORAGE, & HANDLING

- A. Protect against damage and discoloration.

PART 1 - GENERAL

1.8 FIELD MEASUREMENTS

- A. Verify prior to fabricating Doors.
- B. If field measurements differ slightly from Drawing dimensions, modify Work as required for accurate fit. If measurements differ substantially, notify Architect prior to fabrication.

PART 2 - PRODUCTS

2.1 DOORS

- A. Manufacturer: Cookson, Cornell, North American, Overhead, Pacific, Raynor, R&S, Wilson, or approved.
- B. Actuator: Motor-driven
- C. Mounting Method: To Wall Face
- D. Slat Design: Manufacturer's standard Flat type
- E. Material: Galvanized Steel
- F. Factory-applied Finish: Manufacturer's standard Rust-Inhibiting Primer as specified in Section 09-90-00
- G. Minimum UL Fire-resistance Rating: None required
- H. Storage Coil:
 - 1. Mounting Location: Where shown on Drawings
 - 2. Finish: Match Door Slats
- I. Accessories: Manufacturer's standard types. Provide all required for secure and properly operating System, including the following:
 - 1. High-cycle Springs
 - 2. Speed Control Governor to prevent Door from free-falling
 - 3. At Doors:
 - a. Safety Device to automatically stop and reverse Door-travel should Obstruction interfere with downward Door-travel.
 - b. Chain-drive Override Device for emergency Door-operation in case of Power failure.
 - 4. Security Lock: Equip with provisions for Padlock

2.2 POWER OPERATORS

- A. Size & Type: Manufacturer's standard for conditions of use
- B. Operating Switches:
 - 1. At both Door Faces: 1-button instantaneous type not requiring continuous pressure to operate
 - 2. Location: See Drawings

COILING DOORS**PART 3 - EXECUTION****3.1 EXISTING CONDITIONS**

- A. Verify that Openings to receive Doors are true, square, plumb, accurately sized and located, with level Headers and Sills, and otherwise properly prepared.
- B. Prior to starting Work, notify General Contractor about defects requiring correction.
- C. Do not start Work until conditions are satisfactory.

3.2 PROTECTING WORK OF OTHER SECTIONS

- A. Protect against damage and discoloration caused by Work of this Section.

3.3 CORROSION PROTECTION

- A. Protect contacting Dissimilar Metals against Galvanic Corrosion.

3.4 INSTALLATION

- A. Follow Manufacturer's instructions and approved Shop Drawings.
- B. Install Guide Rails and Tracks true within 1/4 inch per 10 ft., non-accumulating.
- C. Secure against displacement.
- D. Install Doors free of warp, twist, and distortion.
- E. Make Electric Utility connections.

3.5 ADJUSTMENTS

- A. Adjust Moving Parts to operate satisfactorily at time of Project Substantial Completion and during Warranty Period.

3.6 WASTE MANAGEMENT

- A. Collect and place Scraps and Packaging Waste where directed for recycling.

3.7 PRODUCT CLEANING & REPAIRING

- A. Including Work of other Trades, clean, repair and touch-up, or replace when directed, Products which have been soiled, discolored, or damaged by Work of this Section.
- B. Leave Steel Surfaces ready for Painting specified in Section 09-90-00.
- C. Remove Debris from Project Site upon Work completion, or sooner if directed.

END OF SECTION

PART 1 - GENERAL

1.1 CONTRACT CONDITIONS

- A. Work of this Section is bound by the Contract Conditions and Division 1, bound herewith, in addition to this Specification and accompanying Drawings.

1.2 RELATED WORK SPECIFIED IN OTHER SECTIONS

- A. Coiling Door: Section 08-33-00
- B. Vertical-lift Bi-fold Door: Section 08-36-50
- C. Field Painting: Section 09-90-00
- D. Fused Disconnect Switch, Conduit and Wiring from Power Supply through Control Switches to operate Door-activator Motor: See Electrical Specifications

1.3 ALTERNATES

- A. Refer to Section 01-20-00 for possible effect upon Work of this Section.

1.4 COORDINATION

- A. Coordinate with other Trades affecting or affected by Work of this Section.

1.5 INSTALLER'S QUALIFICATIONS

- A. Employed by or acceptable to Door Manufacturer.

1.6 SHOP & INSTALLATION DRAWINGS

- A. Submit in accordance with Section 01-33-00.
- B. Indicate construction and installation details including Motor and Control locations, Counter Balances, Guides, Anchors, and required clearances.

1.7 PRODUCT DELIVERY, STORAGE, & HANDLING

- A. Protect against damage, rust, and discoloration.

(Cont.)

PART 1 - GENERAL

1.8 FIELD MEASUREMENTS

- A. Verify prior to fabrication.
- B. If field measurements differ slightly from Drawing dimensions modify Work as required for accurate fit. If measurements differ substantially, notify Architect prior to fabrication.

1.9 SPECIAL WARRANTY

- A. For 2 years following Substantial Completion date, warrant Doors against faulty operation and warrant exterior installations against water-leakage and air-infiltration.

PART 2 - PRODUCTS

2.1 DOORS

- A. Manufacturer: Crawford, Overhead, Wayne Dalton, or approved.
- B. Type: Thermally insulated (2 inches min.)
- C. Operation: Motorized
- D. Door Panel Material: Steel
- E. Finish: Specified below

2.2 TRACK, COUNTERBALANCE, & OPERATING HARDWARE

- A. Size & Type: Manufacturer's standard for conditions of use
- B. Rollers: Ball-bearing case-hardened Steel

2.3 POWER OPERATOR

- A. Size & Type: Manufacturer's standard for conditions of use
- B. Special Requirement: Doors easily operable during Power failure or Motor repair
- C. Operating Switches:
 - 1. Exterior: None required
 - 2. Interior: 3-button (Up/Stop/Down) instantaneous type not requiring continuous pressure to operate
 - 3. Location: See Drawings
- D. Protection Switch: Provide to instantly reverse downward Door movement should Obstruction interfere with Door travel.

PART 2 - PRODUCTS

2.4 ACCESSORIES

- A. Equip Doors with the following:
 - 1. Double-contact Door Bottom Weatherstripping.
 - 2. Track-mounted Spring Bumper to limit Door overrun.

2.5 FINISHES

- A. Tracks: Hot-dip galvanize in accordance with ASTM A-123
- B. Door Panels: Factory-apply Rust-inhibiting Primer as specified in Section 09-90-00

PART 3 - EXECUTION

3.1 EXISTING CONDITIONS

- A. Verify that Openings to receive Doors are true, square, plumb, and accurately sized and located.
- B. Verify that Lighting Fixtures and other Equipment will not obstruct Door operations or vice versa.
- C. Prior to starting Work, notify General Contractor about defects requiring correction.
- D. Do not start Work until conditions are satisfactory.

3.2 PROTECTING WORK OF OTHER SECTIONS

- A. Protect against damage and discoloration caused by Work of this Section.

3.3 INSTALLATION

- A. Follow Manufacturer's instructions and approved Shop Drawings.

3.4 ADJUSTMENTS

- A. Adjust Moving Parts to operate satisfactorily at time of Project Substantial Completion and during Warranty Period.

PART 3 - EXECUTION

3.5 WASTE MANAGEMENT

- A. Collect and place Scraps and Packaging Waste where directed for recycling.

3.6 PRODUCT CLEANING & REPAIRING

- A. Including Work of other Trades, clean, repair and touch-up, or replace when directed, Products which have been soiled, discolored, or damaged by work of this Section.
- B. Remove Debris from Project Site upon Work completion or sooner, if directed.

END OF SECTION

PART 1 - GENERAL

1.1 CONTRACT CONDITIONS

- A. Work of this Section is bound by the Contract Conditions and Division 1, bound herewith, in addition to this Specification and accompanying Drawings.

1.2 RELATED WORK SPECIFIED IN OTHER SECTIONS

- A. Coiling Door: Section 08-33-00
- B. Sectional Overhead Doors: Section 08-63-00
- C. Door Glazing: Section 08-80-00
- D. Fused Disconnect Switch, Conduit and Wiring from Power Supply through Control Switches to operate Door-activator Motor: See Electrical Specifications

1.3 ALTERNATES

- A. Refer to Section 01-20-00 for possible effect upon Work of this Section.

1.4 COORDINATION

- A. Coordinate with other Trades affecting or affected by Work of this Section.

1.5 INSTALLER'S QUALIFICATIONS

- A. Employed by or acceptable to Door Manufacturer.

1.6 SHOP & INSTALLATION DRAWINGS

- A. Submit in accordance with Section 01-33-00.
- B. Indicate construction and installation details including Motor and Control locations, Counter Balances, Guides, Anchors, and required clearances.

1.7 PRODUCT DELIVERY, STORAGE, & HANDLING

- A. Protect against damage, rust, and discoloration.

(Cont.)

PART 1 - GENERAL

1.8 FIELD MEASUREMENTS

- A. Verify prior to fabrication.
- B. If field measurements differ slightly from Drawing dimensions modify Work as required for accurate fit. If measurements differ substantially, notify Architect prior to fabrication.

1.9 SPECIAL WARRANTY

- A. For 2 years following Substantial Completion date, warrant Doors against faulty operation and warrant exterior installations against water-leakage and air-infiltration.

PART 2 - PRODUCTS

2.1 DOORS

- A. Manufacturer: FullView Door Co., or approved.
- B. Brand: Vista Bi-Fold
- C. Type: 2-leaf, hinged, vertical-lift, stacking Overhead Doors
- D. Operation: Motorized
- E. Material: Aluminum
- F. Finish: Specified below

2.2 TRACK, COUNTERBALANCE, & OPERATING HARDWARE

- A. Size & Type: Manufacturer's standard for conditions of use
- B. Rollers: Ball-bearing Nylon for quiet performance

2.3 POWER OPERATOR

- A. Size & Type: Manufacturer's standard for conditions of use
- B. Special Requirement: Doors easily operable during Power failure or Motor repair
- C. Operating Switches:
 - 1. Exterior: None required
 - 2. Interior: 1-button instantaneous type not requiring continuous pressure to operate
 - 3. Location: See Drawings
- D. Protection Switch: Provide to instantly reverse downward Door movement should Obstruction interfere with Door travel.

PART 2 - PRODUCTS

2.4 ACCESSORIES

- A. Equip Doors with the following:
 - 1. Double-contact Door Bottom Weatherstripping.
 - 2. Glazed Openings where shown on Drawings.
 - 3. Track-mounted Spring Bumper to limit Door overrun.

2.5 FINISHES

- A. Tracks: Hot-dip galvanize in accordance with ASTM A-123
- B. Door Panels: Anodized
- C. Color: Match Aluminum specified in Section 08-40-00

PART 3 - EXECUTION

3.1 EXISTING CONDITIONS

- A. Verify that Openings to receive Doors are true, square, plumb, and accurately sized and located.
- B. Verify that Lighting Fixtures and other Equipment will not obstruct Door operations or vice versa.
- C. Prior to starting Work, notify General Contractor about defects requiring correction.
- D. Do not start Work until conditions are satisfactory.

3.2 PROTECTING WORK OF OTHER SECTIONS

- A. Protect against damage and discoloration caused by Work of this Section.

3.3 INSTALLATION

- A. Follow Manufacturer's instructions and approved Shop Drawings.

3.4 ADJUSTMENTS

- A. Adjust Moving Parts to operate satisfactorily at time of Project Substantial Completion and during Warranty Period.

PART 3 - EXECUTION

3.5 WASTE MANAGEMENT

- A. Collect and place Scraps and Packaging Waste where directed for recycling.

3.6 PRODUCT CLEANING & REPAIRING

- A. Including Work of other Trades, clean, repair and touch-up, or replace when directed, Products which have been soiled, discolored, or damaged by work of this Section.
- B. Remove Debris from Project Site upon Work completion or sooner, if directed.

END OF SECTION

PART 1 - GENERAL

1.1 CONTRACT CONDITIONS

- A. Work of this Section is bound by the Contract Conditions and Division 1, bound herewith, in addition to this Specification and accompanying Drawings.

1.2 PRODUCTS INSTALLED, BUT FURNISHED UNDER OTHER SECTIONS

- A. Door Hardware specified in Section 08-71-00.
- B. Glazing specified in Section 08-80-00

1.3 RELATED WORK SPECIFIED IN OTHER SECTIONS

- A. Joint Caulking & Sealing: Section 07-92-00
- B. Hollow Steel Doors & Frames: Section 08-11-00
- C. Wood Doors: Section 08-21-00
- D. Electric Conduit & Wiring for Electric Door Strikes: See Electrical Specifications

1.4 ALTERNATES

- A. Refer to Section 01-20-00 for possible effect upon Work of this Section.

1.5 REFERENCED SPECIFICATIONS

- A. Comply with applicable portions of manufacturing and installation recommendations of American Architectural Manufacturer's Association, hereinafter referred to as AAMA; 1827 Walden Office Square; Suite 550; Schaumburg, IL 60173; (847) 303-5664.
- B. Copies can be obtained from Association.

1.6 SYSTEM DESIGN REQUIREMENTS

- A. In accordance with governing laws, regulations, and codes; and requirements specified in Section 01-11-50; design, engineer, fabricate, and install Work of this Section including System Supports & Attachments, in compliance with Drawings, Specifications, and the following Design Loads:
 - 1. Loads listed in Structural Notes on Drawings
 - 2. Maximum Surface Deflection:
 - a. Spans up to 14 ft.: $L/240$
 - b. Spans 14 ft. & Greater: $L/300$
 - c. Do not cause loss of Glass Bite greater than 25% of Design Dimension

PART 1 - GENERAL

1.7 SYSTEM PERFORMANCE REQUIREMENTS

- A. Design, engineer, fabricate, and install Work of this Section to satisfy the following:
 - 1. Withstand Thermal Expansion induced by up to 60°F Temperature Shift without System buckling, Glass stress, Sealant failure, Fastener damage, or other detrimental effects.
 - 2. Minimum AAMA 1502.7 Condensation Resistance Factor (CRF): 60
 - 3. AAMA System Water Penetration Field Test 501.2: No penetration

1.8 CERTIFICATE OF COMPLIANCE

- A. Submit certification, signed and sealed by Engineer registered to practice in Oregon, which stipulates that Work of this Section complies with Design & Performance Requirements specified above.
- B. If Work, as specified herein and shown on Drawings, is not capable of complying with Design & Performance Requirements specified above, so notify Architect at least 5 working days prior to Contract award.

1.9 COORDINATION

- A. Coordinate with other Trades affecting or affected by Work of this Section.

1.10 INSTALLER'S QUALIFICATIONS

- A. Employed by or acceptable to Manufacturer.

1.11 SHOP DRAWINGS

- A. Submit in accordance with Section 01-33-00.
- B. Show construction, materials, profiles, thicknesses, dimensions, fasteners, supports, anchors, required clearances, and other pertinent details.

1.12 SAMPLES

- A. Submit in accordance with Section 01-33-00.
- B. Include two 12 inch long Samples of specified Metal Finishes.
- C. Match fabricated Work with accepted Samples.

PART 1 - GENERAL

1.13 PRODUCT DELIVERY

- A. Coordinate with General Contractor's work schedule.

1.14 PRODUCT STORAGE & HANDLING

- A. Protect against damage and discoloration.

1.15 FIELD MEASUREMENTS

- A. Verify prior to fabrication.
- B. If field measurements differ slightly from Drawing dimensions modify Work as required for accurate fit. If measurements differ substantially, notify Architect prior to fabrication.

1.16 SPECIAL WARRANTY

- A. For 2 years following Substantial Completion date, and in accordance with Contract Conditions, warrant exterior installations against water-leakage and air-infiltration, and to repair or replace without additional cost to Owner any water leaks and resulting damage to Building Materials and/or Building Contents as may occur under normal usage within Warranty Period.
- B. We, the undersigned, do hereby warrant for 10 years following project substantial completion, defective work as specified above, but not including any damage to Building Materials or Building Contents.

SYSTEM SUBCONTRACTOR: _____

By: _____

GENERAL CONTRACTOR: _____

By: _____

(Cont.)

PART 2 - PRODUCTS

2.1 ALUMINUM

- A. Alloys & Tempers, unless otherwise modified, as follows:
 - 1. Exposed Extrusions: 6063-T6
 - 2. Structural Shapes, Blocking, Bracing, & other Concealed Members: 06063-T6
 - 3. Casting: 214-T6
 - 4. Sheetmetal: 5005-H32
 - 5. Special Finishes: Modify Alloys and Tempers specified above as necessary for proper application of any Special Finishes specified hereunder.
- B. Finish:
 - 1. Concealed Work: Mill finish
 - 2. Exposed Work:
 - a. AAMA 611 Class 1
 - b. Anodic Color: Clear
 - c. Minimum Coating Thickness: 0.7 mils

2.2 STEEL REINFORCING

- A. Manufacturing Standard: ASTM A-36

2.3 FASTENERS

- A. Type: Recommended by Manufacturer for conditions of use
- B. Material: Galvanically compatible with Adjacent Materials
- C. Finish:
 - 1. Where Exposed to View: Match Adjacent Material
 - 2. Where Concealed: Contractor's choice

2.4 CORROSION INSULATING COMPOUND

- A. Material: Asphaltic Coating Compound
- B. Manufacturing Standard: Fed. Spec. TT-C-494 type II

2.5 DOOR FRAMES, WINDOW FRAMES, & WINDOW WALL FRAMES

- A. Material: Aluminum
- B. Manufacturer: Arcadia, Kawneer, US Aluminum, Vistawall, or approved.
- C. Series:
 - 1. Exterior Units: Match Kawneer Trifab 451T
 - 2. Interior Units: Match Kawneer 450

PART 2 - PRODUCTS

2.6 DOORS

- A. Material: Aluminum
- B. Manufacturer: Arcadia, Kawneer, US Aluminum, Vistawall, or approved.
- C. Stile Width: 5 inches
- D. Bottom Rail: 10"
- E. Mid Rail: 7-1/2"
- F. Top Rail: 3-1/2"

2.7 DOOR HARDWARE

- A. See Section 08-71-00

2.8 DOOR WEATHERSTRIPPING

- A. Material: Flexible nonporous Polymeric Strip
- B. Features:
 - 1. All Weatherstripping: Easily replaceable
 - 2. Sill Weatherstripping: Easily adjustable for wear

2.9 ACCESSORIES

- A. Provide Attachment Embeds, Flashings, Break-metal Closures, Connectors, Trim, etc. necessary for complete, weatherproof, and secure installation.

2.10 FABRICATION

- A. Comply with applicable portions of Referenced Specifications.
- B. Hardware Mounting Heights: See Mounting Heights Drawing in Section 08-71-00.
- C. Provide concealed Steel Reinforcement where indicated or required to resist Wind or other Applied Loads.
- D. Fabricate Connections as required for strength and rigidity using concealed Mechanical Fastenings wherever possible. Where not possible, welding may be used.
- E. Drain Glazing Channels to prevent Insulating Glass from standing in Water.
- F. Fabricate with Weep Holes to evacuate to Building Exterior any exterior Water or interior Condensation.
- G. Cut Horizontal Members between Vertical Members.
- H. Match exposed Welds with adjacent Material, free of porosity, cracks, and blow-holes.
- I. Select Materials carefully for matching Color and Texture after finishing.
- J. Fabricate Flat Surface smooth and true, and free from waves, buckles, and seams.

ALUMINUM ENTRANCE & WINDOW WALL SYSTEMS

- K. Fabricate Edges, Corners, and Angles clean, sharp, and square.
- L. Fit Members with hairline, virtually invisible joints.

(Cont.)

PART 2 - PRODUCTS**2.10 FABRICATION (Cont.)**

- M. Allow for expansion and contraction.
- N. Prevent Noise resulting from thermally-induced Material movement, Vibration harmonics, or Wind passage.
- O. Make Exterior Work permanently weathertight.
- P. Fabricate with the following clearances:
 - 1. Between Doors & Frames: 1/8 inch
 - 2. Between Door Bottoms & Thresholds: 1/4 inch
 - 3. Between Door Bottoms & Floor: 3/4 inch
 - 4. Between Meeting Edges of pairs of Doors: 1/8 inch
- Q. Fabricate Junction Boxes, Raceways, and Wiring necessary for Electric Strikes specified in Section 08-71-00.

PART 3 - EXECUTION**3.1 EXISTING CONDITIONS**

- A. Verify that Openings to receive Work of this Section are plumb, rigid, accurately sized and located, and otherwise properly prepared.
- B. Prior to starting Work, notify General Contractor about defects requiring correction.
- C. Do not start Work until conditions are satisfactory.

3.2 PROTECTING WORK OF OTHER SECTIONS

- A. Protect against damage and discoloration caused by Work of this Section.

3.3 CORROSION PROTECTION

- A. Coat contacting Dissimilar Materials with Corrosion Insulating Compound, 7-1/2 mil dry film thickness, minimum, applied to each Contacting Face.

3.4 INSTALLATION

ALUMINUM ENTRANCE & WINDOW WALL SYSTEMS

- A. Follow Manufacturer's instructions, approved Shop Drawings, and applicable portions of Referenced Specifications.
- B. Install plumb, square, true, rigid, secure, weather tight, and in alignment with adjacent Other Work.

PART 3 - EXECUTION**3.5 ALLOWABLE INSTALLATION TOLERANCES**

- A. Member Alignment:
 - 1. True within 1/8 inch per 12 feet.
- B. Openings:
 - 1. Accurately size and locate within 1/4 inch.
 - 2. Squareness: 1/8 inch maximum difference between opposite Diagonal Measurements.

3.6 ADJUSTMENTS

- A. Adjust Moving Parts to operate satisfactorily at time of Project Substantial Completion and during Warranty Period.

3.7 TOUCH-UP PAINTING

- A. Touch-up any exposed Metal Finish damaged by cutting. Match adjacent Finish.

3.8 WASTE MANAGEMENT

- A. Collect and place Scraps and Packaging Waste where directed for recycling.

3.9 PRODUCT CLEANING & REPAIRING

- A. Remove Protective Coatings.
- B. Including Work of other Trades, clean, repair and touch-up, or replace when directed, Products which have been soiled, discolored, or damaged by work of this Section.
- C. Final Glass cleaning specified in Section 01-74-00.
- D. Remove Debris from Project Site upon work completion or sooner, if directed.

END OF SECTION

PART 1 - GENERAL

1.1 CONTRACT CONDITIONS

- A. Work of this Section is bound by the Contract Conditions and Division 1, bound herewith, in addition to this Specification and accompanying Drawings.

1.2 RELATED WORK SPECIFIED IN OTHER SECTIONS

- A. Metal Roof Decking: Section 05-30-00
- B. Single-Ply Roofing: Section 07-53-00
- C. Sheetmetal Roofing: Section 07-61-00

1.3 ALTERNATES

- A. Refer to Section 01-20-00 for possible effect upon Work of this Section.

1.4 DESIGN REQUIREMENTS

- A. In accordance with governing laws, regulations, codes, and requirements specified in Section 01-11-50; design, engineer, and fabricate Assembly to support actual Dead Loads plus the following Minimum Loads:
 - 1. Minimum Design Loads: See Structural Notes on Drawings
 - 2. Snow Load: Comply with Building Code
 - 3. Horizontal & Uplift Wind Loads: Comply with Building Code
 - 4. Thermal Expansion & Contraction: Resistant to stress from 100°F temperature shift.
 - 5. ASTM E-330 Structural Performance at 150% of Design Load: No failure

1.5 PERFORMANCE REQUIREMENTS

- A. Minimum Light Transmission: 92%

1.6 COORDINATION

- A. Coordinate with other Trades affecting or affected by Work of this Section.

(Cont.)

PART 1 - GENERAL

1.7 SHOP DRAWINGS

- A. Submit in accordance with Section 01-33-00.
- B. Show complete assembly including Curbs, Joints, Flashing, Drainage, Accessories, Anchorage, and other pertinent details.
- C. Include installation instructions.

1.8 PRODUCT DELIVERY, STORAGE, & HANDLING

- A. Protect against damage and discoloration.

1.9 WARRANTY

- A. For 5 years following Project Substantial Completion date, warrant Plastic Skylight Work to be weatherproof, and without additional cost to Owner, repair and/or replace Work causing water leaks as well as any resulting damage to Building Materials and/or Building Contents as may occur under normal usage within Warranty Period.

PART 2 - PRODUCTS

2.1 SKYLIGHTS

- A. Manufacturer: Naturalite, O'Keefe, Velux, Wasco, or approved.
- B. Shape: Dome
- C. Nominal Size: 4x4 ft & 3x4 ft. where located on Drawings
- D. Frames: Factory assembled extruded Aluminum.
- E. Aluminum Finish:
 - 1. Concealed Surfaces: Mill finish
 - 2. Exposed Surfaces:
 - a. Manufacturer & Brand: Atochem Kynar 500, or approved.
 - b. Material: 2 coats Fluoropolymer Enamel
 - c. Color: White
- F. Dome Material: Acrylic Plastic conforming to Building Code Sect. 2603.
- G. Dome Type: Double ply, with clear transparent Outer Dome and white translucent Inner Dome.
- H. Maximum U-value: 0.41

PART 2 - PRODUCTS

2.2 DISSIMILAR MATERIAL ISOLATION COMPOUND

- A. Manufacturer & Brand: 3-M Scotchwrap, or approved.
- B. Material: Black Vinyl
- C. Thickness: 10 mils

2.3 FABRICATION

- A. Provide Weep Holes to discharge Condensation and Infiltrated Water directly to outside.

PART 3 - EXECUTION

3.1 EXISTING CONDITIONS

- A. Do not proceed until Surfaces to receive Skylights are secure, level, true, smooth, clean, dry, and prepared in accordance with approved Shop Drawings.
- B. Prior to starting Work, notify General Contractor about defects requiring correction.
- C. Do not start Work until conditions are satisfactory.

3.2 PROTECTING WORK OF OTHER SECTIONS

- A. Protect against damage and discoloration caused by Work of this Section.
- B. Do not overload Roof with stored Materials.

3.3 ISOLATING DISSIMILAR MATERIALS

- A. Protect contacting dissimilar Metals against galvanic corrosion with Isolation Compound applied in accordance with Compound Manufacturer's instructions.

3.4 INSTALLATION

- A. Accurately secure true to line, without warp or rack, and in accordance with manufacturer's instructions and reviewed Shop Drawings.

PART 3 - EXECUTION

3.5 WASTE MANAGEMENT

- A. Collect and place Scraps and Packaging Waste where directed for recycling.

3.6 PRODUCT CLEANING & REPAIRING

- A. Including Work of other Trades, clean, repair and touch-up, or replace when directed, Products which have been soiled, discolored, or damaged by Work of this Section.
- B. Remove Debris from Project Site upon Work completion, or sooner if directed.

END OF SECTION

PART 1 - GENERAL

1.1 CONTRACT CONDITIONS

- A. Work of this Section is bound by the Contract Conditions and Division 1, 1, bound herewith, in addition to this Specification and accompanying Drawings.

1.2 EXTENT OF WORK

- A. Provide Wall Panels where shown on Drawings.

1.3 RELATED WORK SPECIFIED IN OTHER SECTIONS

- A. Sheetmetal Flashing & Trim: Section 07-62-00
B. Plastic Skylights: Section 08-62-00

1.4 ALTERNATES

- A. Refer to Section 01-20-00 for possible effect upon Work of this Section.

1.5 DESIGN REQUIREMENTS

- A. In accordance with governing laws, regulations, codes, Design Loads listed in Structural Notes on Drawings, and requirements specified in Section 01-11-50; design, engineer, and construct Assembly to support actual Dead Loads plus the following Design Loads:
1. Minimum Live Load: See Structural Notes on Drawings
 2. Minimum Snow Drift Load: Comply with Building Code
 3. Horizontal & Uplift Wind Loads: Comply with Building Code
 4. Thermal Expansion & Contraction: Resistant to stress from 100°F temperature shift.
 5. Maximum ASTM E-72 System Deflection measured 5 minutes after release of 3.5 inch Short Term Deflection over 12 ft. Clear Span: 0.10 inch
 6. Maximum ASTM E-330 System Deflection when Fully Loaded: 1/100 of Span or 1 inch maximum.
 7. ASTM E-330 System Structural Performance at 150% of Design Load: No failure

1.6 COORDINATION

- A. Coordinate with other Trades affecting or affected by Work of this Section.

PART 1 - GENERAL

1.7 INSTALLER'S QUALIFICATIONS

- A. Employed by or acceptable to Panel Manufacturer.
- B. Minimum Similar Experience: 5 years

1.8 REGULATORY AGENCY REQUIREMENTS

- A. Submit written certification by Independent Laboratory of compliance with IBC Requirements

1.9 SHOP DRAWINGS

- A. Submit in accordance with Section 01-33-00.
- B. Include Panel layout, dimensions, required clearances, assembly, construction, anchorage, joinery, flashing, sealing, drainage, accessories, materials, finishes, and any other pertinent information.

1.10 CERTIFICATE OF COMPLIANCE

- A. Submit written affidavit, prepared and stamped by Engineer licensed to practice in Oregon, certifying that Assemblies will support Minimum Design Loads specified above and will provide for Assembly expansion and contraction.

1.11 PRODUCT DELIVERY, STORAGE, & HANDLING

- A. Protect against damage and discoloration.
- B. Store Panels under cover, above ground, and on long edge.
- C. Allow Air to circulate freely around and under Panels to prevent Condensation within Panels.
- D. Instruct General Contractor to not use Combustion type Heaters within proximity of Panels that could stain Panels.

1.12 PREINSTALLATION CONFERENCE

- A. Prior to starting Work, and in accordance with Section 01-31-50, this Subcontractor shall arrange meeting to clarify any questions about Specifications, fabrication details, and installation requirements.
- B. Representatives of the following shall attend:
 - 1. General Contractor
 - 2. Sandwich Panel Subcontractor
 - 3. Roofing Subcontractor
 - 4. Sheetmetal Flashing Subcontractor

PART 1 - GENERAL

1.13 FIELD MEASUREMENTS

- A. Verify prior to fabrication.
- B. If field measurements differ slightly from Drawing dimensions modify Work as required for accurate fit. If measurements differ substantially, notify Architect prior to fabrication.

1.14 WARRANTY

- A. For 5 years following Project Substantial Completion date, warrant Translucent Sandwich Skylight Panel Work to be weatherproof, and without additional cost to Owner, repair and/or replace Work causing water leaks as well as any resulting damage to Building Materials and/or Building Contents as may occur under normal usage within Warranty Period.
- B. For 25 years following Project Substantial Completion Date, warrant Exterior Face Sheets against Fiber-exposure due to loss of Resin.

PART 2 - PRODUCTS

2.1 SYSTEM MANUFACTURER

- A. Kalwall, or approved.

2.2 GLAZING PANELS

- A. Thickness: 2-3/4 inches
- B. Pattern: Shoji
- C. "U" Factor when tested in accordance with National Fenestration Rating Council specification NFRC 100: 0.29
- D. Grid Core:
 - 1. Material: 6063-T6 Extruded Aluminum
 - 2. Grid Size: 12x24 inches
 - 3. Type: Mechanical-interlocked

(Cont.)

PART 2 - PRODUCTS

2.2 GLAZING PANELS (Cont.)

E. Face Sheets:

1. Material: Glass-fiber-reinforced, thermoset, full-thickness color-fast (without relying on Film or Coating) Resin designed for architectural use.
2. Type: Translucent
3. Thickness, plus or minus 10%:
 - a. Exterior Sheets: 0.070 inch
 - b. Interior Sheets: 0.045 inch
4. Color:
 - a. Exterior Sheets: Crystal
 - b. Interior Sheets: Crystal
5. Grade: Architectural
6. Exterior Sheet Weatherability:
 - a. Maximum ASTM D-2244 Delta E 5-year Color Change: 3.0 Units
 - b. Maximum ASTM D-2244 Delta L 2-week Darkening @ 150° F: 0.2 Units
7. Interior Sheet Flammability:
 - a. Maximum ASTM E-84 Flame Spread: 50
 - b. Maximum ASTM E-84 Smoke Development: 250
 - c. Maximum ASTM D-635 Burn Distance: 1 inch
 - d. Allowable Sheet Deformation, Deflection, or Drip when exposed to Fire or Flame: None
8. Protective Surface:
 - a. Material: Factory-applied, high-performance, self-cleaning thermo-set Acrylic Urethane
 - b. Minimum Thickness: 1.2 mils
 - c. Required Feature: Surface must be restorable in field.

2.3 SUPPORT SYSTEM

- A. Shape: Vertical Wall
- B. Material: 6063-T5 & 6063-T6 Extruded Aluminum
- C. Aluminum Finish:
 1. Concealed Surfaces: Mill finish
 2. Exposed Exterior & Interior Surfaces: Anodic Color selected after Contract award from Manufacturer's standard choices

2.4 REQUIRED ACCESSORIES

- A. Flashing, Gutters, Condensate Weeps, and other Devices necessary for complete and weatherproof installation.

PART 2 - PRODUCTS

2.5 SEALANT TAPE

- A. Manufacturer & Type: Recommended by Panel Manufacturer

2.6 SEALANTS

- A. Manufacturer & Brand: Contractor's choice
- B. Type: Neutral-cure, non-hardening, and satisfying conditions of use.

2.7 GALVANIC CORROSION PROTECTION MATERIAL

- A. Material: Manufacturer's choice satisfying conditions of use.

2.8 FASTENERS

- A. Material: 300 series Stainless Steel
- B. Finished where exposed to View: Match adjacent exposed Framing Member.

2.9 FABRICATION

- A. Where possible, factory-fabricate and assemble Components into largest practicable sizes.
- B. Carefully fit exposed Members with hair-line, nearly invisible Joints.
- C. Provide Weep Holes to drain any Condensate Water or Intruded Water directly to Assembly exterior.

PART 3 - EXECUTION

3.1 EXISTING CONDITIONS

- A. Do not proceed until:
 - 1. Structure and Surfaces to receive Panels are accurately sized and located, secure, true, smooth, clean, dry, sound, and otherwise properly prepared in accordance with approved Shop Drawings.
 - 2. Flashings are properly installed.
- B. Prior to starting Work, notify General Contractor about defects requiring correction.
- C. Do not start Work until conditions are satisfactory.

PART 3 - EXECUTION

3.2 PROTECTING WORK OF OTHER SECTIONS

- A. Protect against damage and discoloration caused by Work of this Section.
- B. Avoid overloading Building Structure with Stored Materials.
- C. Protect contacting Dissimilar Materials against Galvanic Corrosion with Galvanic Protection Paint, 7-1/2 mil minimum dry thickness, applied to each contacting face.

3.3 PANEL INSTALLATION

- A. Accurately locate and secure true to line, without warp or rack, and in accordance with Manufacturer's instructions and approved Shop Drawings.

3.4 WASTE MANAGEMENT

- A. Collect and place Scraps and Packaging Waste where directed for recycling.

3.5 PRODUCT CLEANING & REPAIRING

- A. Including Work of other Trades, clean, repair and touch-up, or replace when directed, Products which have been soiled, discolored, or damaged by Work of this Section.
- B. Remove Protective Materials, Identification Labels, and excess Sealant.
- C. Remove Debris from Project Site upon Work completion, or sooner if directed.

END OF SECTION

PART 1 - GENERAL

1.1 CONTRACT CONDITIONS

- A. Work of this Section is bound by the Contract Conditions and Division 1, bound herewith, in addition to this Specification and accompanying Drawings.

1.2 RELATED WORK SPECIFIED IN OTHER SECTIONS

- A. Hardware for the following Items:
1. Fence Gates: Section 02-83-00
 2. Roof Hatches: Section 07-72-00
 3. Access Hatches: Section 08-30-00
 4. Coiling Doors: Section 08-33-00
 5. Sectional Overhead Doors: Section 08-36-00
 6. Vertical-lift Bi-fold Doors: Section 08-36-50
 7. Toilet Compartments: Section 10-16-00
 8. Metal Lockers: Section 10-50-00
 9. Operable Partitions: Section 10-65-00
 10. Fire Extinguisher Cabinets: Section 10-99-00
 11. Manufactured Display Cases: Section 12-30-00
 12. Electrical Work to accommodate remotely-controlled Door Strikes, Delayed Egress Locking Systems, etc., if any: See Electrical Specifications
- B. The following items of Hardware:
1. Cabinet Hardware: Section 06-41-00
 2. Metal Toilet Accessories: Section 10-80-00

1.3 PRODUCT SUBSTITUTIONS

- A. Comply with requirements specified in Section 01-63-00.
- B. Include with Request: Specified Item, Design, Catalog Number, and Finish for each Item on which approval is being requested. Blanket approval by Manufacturer's Name only will not be given.

1.4 ALTERNATES

- A. Refer to Section 01-20-00 for possible effect upon Work of this Section.

1.5 COORDINATION

- A. Coordinate with other Trades affecting or affected by Work of this Section.
- B. No later than 10 working days following Hardware Schedule acceptance, furnish Hardware Templates to Door and Frame Manufacturers.

PART 1 - GENERAL

1.6 SUPPLIER'S HARDWARE SCHEDULE

- A. Submit similar to Shop Drawings in accordance with Section 01-33-00.
- B. Organize into Hardware Sets, and indicate each Item, Opening, Door size, Door hand, Frame Material, Fire-resistance Label Rating, Keying, Material, Finish, and Manufacturer's Model Number.

1.7 SUPPLIER'S REPRESENTATIVE

- A. Hardware Supplier shall employ AHC-certified Consultant, who shall be available at reasonable times for consultation with Owner, Architect, and Contractor during course of Work.
- B. Supplier's Representative shall meet with Owner's Representative to prepare final Keying Schedule.
- C. Prior to Final Project Acceptance, Supplier's Representative shall:
 - 1. Make 1 field inspection and notify Architect if Hardware installation complies with Manufacturers' instructions and these Specifications.
 - 2. Instruct Owner how to properly adjust and maintain Hardware.

1.8 REGULATORY AGENCY REQUIREMENTS

- A. Conform to UL requirements for Fire-rated Openings.
- B. Conform to applicable requirements of Americans with Disabilities Act.

1.9 CERTIFICATION OF COMPLIANCE

- A. Prior to Substantial Completion, certify in writing that Hardware provided complies with these Specifications and approved Hardware Schedule.

1.10 PRODUCT DELIVERY

- A. Package each Item separately, and identify with Hardware Schedule Number.
- B. Deliver to General Contractor for installation, in original, unopened Containers with legible Labels intact.
- C. Include Manufacturers' Installation Instructions.
- D. Package Items individually in Manufacturers' original containers, complete with proper Fasteners and related Items. Clearly label Packages to indicate contents, Hardware Schedule Number, and Door Numbers.

(Cont.)

PART 1 - GENERAL

1.10 PRODUCT DELIVERY (Cont.)

- E. If necessary, include complete set of specialized Hardware Maintenance and Removal Tools for Owner's use. Store where directed by Owner.
- F. Ship tagged and identified Permanent Keys and Interchangeable Cores, if any, by Registered Mail to:
 - Craig Campbell
 - Oregon Manufacturing & Innovation Center
 - 33701 Charles T. Parker Way
 - Scappoose, OR 97056
- G. Ship Construction Keys directly to Contractor.

1.11 PRODUCT STORAGE & HANDLING

- A. Protect against theft, damage, and discoloration.

1.12 FIELD MEASUREMENTS

- A. Verify Door Openings and Field Measurements prior to fabrication.
- B. Modify Hardware where necessary to fit Door Opening.
- C. If field measurements differ slightly from Drawing dimensions modify Work as required for accurate fit. If measurements differ substantially, notify Architect prior to fabrication.

1.13 SPECIAL WARRANTY

- A. Warrant the following, if any, against failure and faulty operation:
 - 1. Closers: 25 years
 - 2. Mortise Locks: 10 years
 - 3. Locksets: 10 years
 - 4. Exit Devices:
 - a. Mechanical Type: 10 years
 - b. Electrical Type: 2 years
 - 5. Other Hardware: 2 years

(Cont.)

PART 2 - PRODUCTS

2.1 MANUFACTURERS, MODELS, SIZES, & FINISHES

- A. See Schedule at end of Section.
- B. For each type of Hardware: Products shall be produced by single manufacturer, regardless of whether multiple manufacturers are specified.
- C. Lock Cylinders:
 - 1. Type: Tumbler
 - 2. Core: 6-pin
- D. Permanent Core Face Finish: Match adjacent Lock or Latch finish.
- E. Strike Lip: Curved and long enough to protect Door Frame Trim.
- F. Strike Box: Manufacturer's standard type
- G. Minimum Dead Bolt & Latch Bolt extension into Lock Case: 3/8 inch
- H. Lever Handles, if any, shall be solid and not hollow cavity.
- I. Lock backset-distance from adjacent Door Edge: 2-3/4 inches, unless otherwise required to accommodate any Weather-stripping or Gasketing
- J. Chassis: Cylindrical design, corrosion-resistant plated cold-rolled steel, through-bolted.
- K. Locking Spindle: Stainless steel, integrated spring, and spindle design.
- L. Latch Retractors: Forged steel, corrosion-resistant plated steel, or stainless steel.
- M. Latch bolt: Solid steel.
- N. Lever Trim: ADA-compliant design, independent operation, spring-cage supported, minimum 2 inches clearance from Lever mid-point to Door-face.

2.2 HINGES

- A. Type: Mortise

2.3 DOOR SILENCERS

- A. Manufacturer & Model: Ives SR64, or approved.
- B. Required Quantity per Door:
 - 1. At Doors Frames equipped with Gasketing or Weatherstripping: None
 - 2. Elsewhere:
 - a. At Frames for Single Doors: 3
 - b. At Frames for Paired Doors: 4

(Cont.)

PART 2 - PRODUCTS

2.4 DOOR CLOSERS

- A. Hydraulic Fluid at Exterior & Vestibule Doors: Consistent Viscosity within plus 120°F to minus 30°F Temperature Range
- B. Internal Pressure Relief Valves and Debris Screens: Not permitted
- C. At Positive Pressure Doors, if any: Comply with IBC Section 71-5.-30.7.
- D. Mounting Plates:
 - 1. At any Parallel Arm Closers: Soffit Plate Type
 - 2. Where Necessary: Drop type
 - 3. Elsewhere: Surface Shoe type
- E. Equip any Parallel Arm Closers with heavy-duty Arms.
- F. Fasteners: Concealed
- G. Hold-open Devices: Adjust to any predetermined angle within limit of Door swing.

2.5 DOOR STOPS

- A. In lieu of scheduled Wall Stops or Floor Stops, substitute Concealed Overhead Stays or Closers with Spring Stops, if and where:
 - 1. Stops create Pedestrian or Vehicle traffic hazard.
 - 2. 50%, or more, of Door width projects beyond point where Door contacts Door Stop.
 - 3. Wall Stops or Floor Stops are inappropriate.

2.6 FLUSH BOLTS

- A. Size: Follow ANSI and Steel Door Institute recommendations.
- B. Furnish any Floor Bolts with Dust-proof Strikes.
- C. Equip any U.L. approved Bolts with Positive Latching and Automatic Unlocking.

2.7 EXTERIOR EMERGENCY BUILDING-ACCESS KEY-STORAGE BOX

- A. Manufacturer: Knox Co., (800) 552-5669, or approved.
- B. Brand & Model: Knox-Box 1433
- C. Mounting: Surface
- D. Mounting Height above adjacent Ground Level: 5 ft.
- E. Mounting Location: Adjacent to following Building Entrances where located on Drawings:
 - 1. Main Building Entry
 - 2. South Shop Entry
 - 3. North Shop Entry
 - a. Confirm exact locations with Architect

PART 2 - PRODUCTS

2.8 FASTENERS

- A. Extent of Work: Provide all required
- B. Material & Finish: Match adjacent Hardware
- C. Types:
 - 1. If and where applied to Metal: Machine Screws and Bolts. Do not use Self-tapping Screws unless furnished by Frame Manufacturer.
 - 2. If and where applied to Wood: Full-thread Wood Screws
 - 3. If and where applied to Plywood or Particle Board: Sheetmetal Screws
 - 4. If and where applied to Concrete: Machine Screws with Expansion Shields
 - 5. Through-bolting: Not permitted, unless otherwise approved by Architect. Do not use Grommet Nuts, Sleeve Nuts or other such clamping-type Fasteners.
- D. Head Types:
 - 1. Where Exposed: Phillips
 - 2. Where Concealed: Contractor's choice

2.9 DOOR KEYS

- A. Material: Nickel-Silver, or approved.
- B. Cylinders & Cylinder Cores: Factory-keyed at Lock Manufacturer where permanent records are maintained. Locks and cylinders manufactured at same Factory.
- C. Construction Keying:
 - 1. Furnish Keys with Factory-keyed Construction Cylinders.
 - 2. Include 6 Construction Keys for Contractor's use.
 - 3. Following construction, Hardware Supplier shall convert Locks to Owner's permanent Keying System.
- D. Required Permanent Keys:
 - 1. Obtain the following Key quantities from Owner:
 - a. Change Keys for each Lock
 - b. Master Keys for each Master Key Set
 - c. Grand Master Keys
 - d. Key Blanks
- E. Stamping:
 - 1. On plain side of Keys, stamp "Do Not Duplicate".
 - 2. Do not stamp Master Keys with "M" or "Master".
 - 3. Do not stamp "Bitting Numbers" on Keys.

(Cont.)

PART 2 - PRODUCTS

2.10 FABRICATION

- A. Make Hardware for pre-fitted Doors and Frames to Template. Send Templates, together with Hardware Schedule, to Door and Frame Manufacturers no later than 2 weeks after Hardware Schedule approval.
- B. Lock and Latch Components shall be fabricated by only 1 Manufacturer, and carry that Manufacturer's Warranty.
- C. Cut and fit any Threshold or Floor Plates to Door Frame profile and with mitered Corner Joints. Where necessary weld Multiple Pieces together to form single Unit. Fabricate Joints with straight, smooth, and hair-line Seams.

PART 3 - EXECUTION

3.1 EXISTING CONDITIONS

- A. Verify that Surfaces to receive Hardware are properly prepared, including necessary Backing.
- B. Verify that Electrical Rough-ins are correctly installed.
- C. Prior to starting Work, notify General Contractor about defects requiring correction.
- D. Do not start Work until conditions are satisfactory.

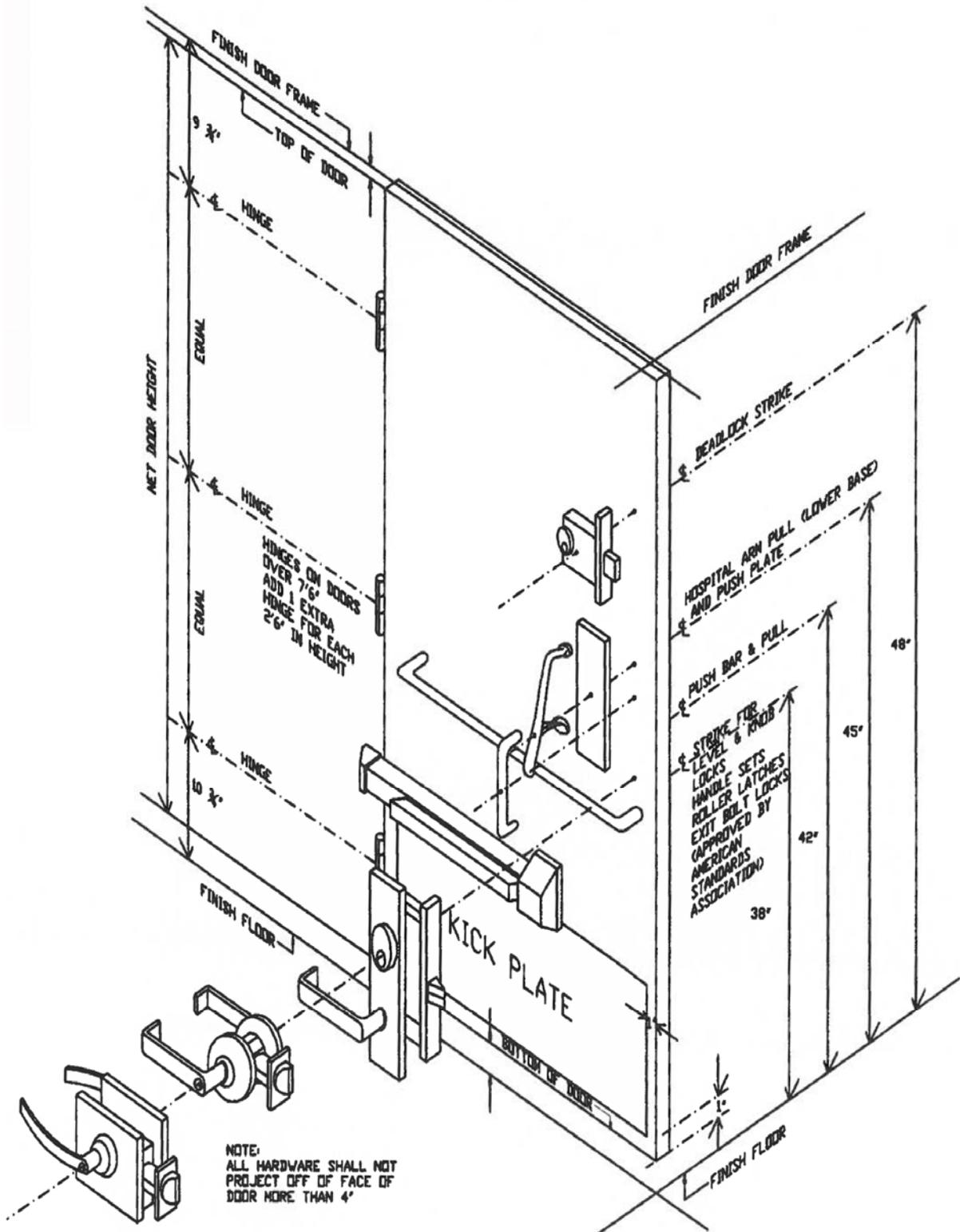
3.2 PROTECTING WORK OF OTHER SECTIONS

- A. Protect against damage and discoloration caused by Work of this Section.

3.3 INSTALLATION

- A. Accurately locate, fit, and install square, plumb, and secure in accordance with Manufacturer's instructions and Templates.
- B. Mount Hardware at height shown on the following Mounting Heights Drawing.
- C. Locate any Roller Bumpers at Door top.
- D. Locate any Door Stops at Contact Point.
- E. Install any Kick Plates on push side of Door.
- F. Install Exterior Thresholds in full-bed of Exterior Sealant as specified in Section 07-92-00. Do not plug any Weep Holes. Remove any excess Sealant.
- G. Door Closer Mounting Locations:
 - 1. At Exterior Doors: On interior-side of Door
 - 2. At Vestibule Doors, if any: On Vestibule-side of Door
 - 3. At Corridors: On Room-side of Door
 - 4. Unless specifically specified elsewhere, do not restrict Door swing.
- H. After fitting any Mortised Hardware to Surfaces to be painted, remove and store Hardware in Original Package until Painting completion, then permanently install.

FINISH HARDWARE MOUNTING HEIGHTS



PART 3 - EXECUTION

3.4 ADJUSTMENTS

- A. At time of Project Substantial Completion and during Warranty Period, test, adjust, and where necessary, using Fine Powdered Graphite, lubricate Locks, Latches, other Moving Parts including Lock Keyways, and Gaskets for smooth and easy operation.
- B. After Building Ventilation System has been balanced, Supplier's Representative shall test and adjust Door Closers for:
 - 1. Complete, silent, and smooth operation.
 - 2. Compliance with the following:
 - a. Maximum Closing Time from 70° open to 3 inches from Latch: 5 seconds
 - b. Maximum Required Door Opening Force (excluding unlatching force):
 - 1. Fire-rated Doors: Least possible Force to close and latch Door
 - 2. Non-fire-rated Exterior & Interior Doors: 5 lbs.
- C. Conduct Tests as follows:
 - 1. Equipment: Calibrated Push/Pull Scale
 - 2. Method: Apply Testing-Force perpendicular to Door at Door Lock/Latch or 30 inches from Hinge-edge of Door, whichever is farther from Hinge.
 - 3. Frequency: Repeat Tests at least 3 times to assure that Test results do not vary widely.
 - 4. Record: Submit written Test Record for Architect's review and approval.

3.5 WASTE MANAGEMENT

- A. Collect and place Scraps and Packaging Waste where directed for recycling.

3.6 PRODUCT CLEANING & REPAIRING

- A. Remove temporary Protective Coverings from Hardware.
- B. Including Work of other Trades, clean, repair and touch-up, or replace when directed, Products which have been soiled, discolored, or damaged by Work of this Section.
- C. Remove Debris from Project Site upon Work completion, or sooner if directed.

3.7 HARDWARE SCHEDULE

END OF SECTION

HARDWARE SCHEDULE

Hardware Group No. 01

For use on Door #(s):

S01F S01H S01L

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
3	EA	HINGE	5BB1HW 4.5 X 4.5 NRP		630	IVE
1	EA	PANIC HARDWARE	98-NL		626	VON
1	EA	RIM CYLINDER	20-057 ICX		626	SCH
1	EA	FSIC CORE	23-030		626	SCH
1	EA	CLOSER W/STOP ARM	4111 SCUSH WMS		689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS		630	IVE
1	EA	RAIN DRIP	142AA		AA	ZER
1	EA	DOOR SWEEP	8198AA		AA	ZER
1	EA	THRESHOLD	546A-223		A	ZER
1	EA	GASKETING	488SBK PSA		BK	ZER

Hardware Group No. 02

For use on Door #(s):

S01G S01D S01K

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
3	EA	HINGE	5BB1HW 4.5 X 4.5 NRP		630	IVE
1	EA	PANIC HARDWARE	98-NL		626	VON
1	EA	RIM CYLINDER	20-057 ICX		626	SCH
1	EA	FSIC CORE	23-030		626	SCH
1	EA	ELECTRIC STRIKE	6111 FSE CON 12/24 VAC/VDC		630	VON
1	EA	CLOSER W/STOP ARM	4111 SCUSH WMS		689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS		630	IVE
1	EA	RAIN DRIP	142AA		AA	ZER
1	EA	DOOR SWEEP	8198AA		AA	ZER
1	EA	THRESHOLD	546A-223		A	ZER
1	EA	GASKETING	488SBK PSA		BK	ZER
1			CARD READER - WORK OF DIVISION 28			
1			POWER SUPPLY - WORK OF DIVISION 28			

SECTION 08-71-10
DOOR HARDWARE

08-71-10-2

Hardware Group No. 03

For use on Door #(s):

S01A S01B S01C

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
3	EA	HINGE	5BB1HW 4.5 X 4.5 NRP		652	IVE
1	EA	POWER TRANSFER	EPT10 CON		⚡ 689	VON
1	EA	DELAYED FIRE EXIT HARDWARE	CX98-L-NL-F-06-CON 24 VDC		⚡ 626	VON
1	EA	RIM CYLINDER	20-057 ICX		626	SCH
1	EA	MORTISE CYLINDER	20-061-T X K510-730 36-083 36-082-037		626	SCH
2	EA	FSIC CORE	23-030		626	SCH
1	EA	ELECTRIC STRIKE	6111 FSE CON 12/24 VAC/VDC		⚡ 630	VON
1	EA	SURFACE CLOSER	4111 EDA WMS		689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS		630	IVE
1	EA	WALL STOP	WS406/407CVX		630	IVE
1	EA	GASKETING	488SBK PSA		BK	ZER
1	EA	WIRE HARNESS	CON-(LENGTH TO SUIT)			VON
2	EA	WIRE HARNESS	CON-6W (FROM INCOMING POWER SUPPLY)			SCH
1	EA	POWER SUPPLY	PS902 900-2RS 900-BBK 120/240 VAC		⚡	VON
2			CARD READER - WORK OF DIVISION 28			

Hardware Group No. 04

For use on Door #(s):

115 S06A

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5 NRP		652	IVE
1	EA	STOREROOM LOCK	ND80TD RHO LLL		626	SCH
1	EA	FSIC CORE	23-030		626	SCH
1	EA	ELECTRIC STRIKE	6211 FSE CON 12/16/24/28 VAC/VDC		⚡ 630	VON
1	EA	SURFACE CLOSER	4011 WMS		689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS		630	IVE
1	EA	WALL STOP	WS406/407CVX		630	IVE
1	EA	GASKETING	488SBK PSA		BK	ZER
1			CARD READER - WORK OF DIVISION 28			
1			POWER SUPPLY - WORK OF DIVISION 28			

SECTION 08-71-10
DOOR HARDWARE

08-71-10-3

Hardware Group No. 05

For use on Door #(s):

114 S03A

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5 NRP		652	IVE
1	EA	CLASSROOM LOCK	ND70TD RHO K510-066		626	SCH
1	EA	FSIC CORE	23-030		626	SCH
1	EA	SURFACE CLOSER	4011 WMS		689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS		630	IVE
1	EA	WALL STOP	WS406/407CVX		630	IVE
1	EA	GASKETING	488SBK PSA		BK	ZER

Hardware Group No. 06

For use on Door #(s):

111A 111B

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5 NRP		652	IVE
1	EA	LONG DOOR PULL	PR 9264F 48" 32" N		630-316	IVE
1	EA	CLOSER W/STOP ARM	4111 SCUSH WMS		689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS		630	IVE
1	EA	GASKETING	488SBK PSA		BK	ZER

Hardware Group No. 07

For use on Door #(s):

111 112B 112A

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
4	EA	HINGE	5BB1HW 4.5 X 4.5 NRP		652	IVE
1	EA	PANIC HARDWARE	LD-98-NL-OP-110MD		626	VON
1	EA	RIM CYLINDER	20-057 ICX		626	SCH
1	EA	FSIC CORE	23-030		626	SCH
1	EA	ELECTRIC STRIKE	6111 FSE CON 12/24 VAC/VDC		630	VON
1	EA	LONG DOOR PULL	9264 48" 32" O		630	IVE
1	EA	SURFACE CLOSER	4111 EDA WMS		689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS		630	IVE
1	EA	WALL STOP	WS406/407CVX		630	IVE
1	EA	GASKETING	488SBK PSA		BK	ZER
1			CARD READER - WORK OF DIVISION 28			
1			POWER SUPPLY - WORK OF DIVISION 28			

SECTION 08-71-10
DOOR HARDWARE

08-71-10-4

Hardware Group No. 08

For use on Door #(s):

107 S07

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5 NRP		652	IVE
1	EA	STOREROOM LOCK	ND80TD RHO K510-066		626	SCH
1	EA	FSIC CORE	23-030		626	SCH
1	EA	SURFACE CLOSER	4011 WMS		689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS		630	IVE
1	EA	WALL STOP	WS406/407CVX		630	IVE
1	EA	GASKETING	488SBK PSA		BK	ZER

Hardware Group No. 09

For use on Door #(s):

108 109 121

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5 NRP		652	IVE
1	EA	PRIVACY WITH OCC IND	L9056T 06A L583-363 L283-722		626	SCH
1	EA	FSIC CORE	23-030		626	SCH
1	EA	SURFACE CLOSER	4011 WMS		689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS		630	IVE
1	EA	WALL STOP	WS406/407CVX		630	IVE
1	EA	GASKETING	488SBK PSA		BK	ZER

Hardware Group No. 10

For use on Door #(s):

105 106 119 120

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5 NRP		652	IVE
1	EA	PUSH PLATE	8200 8" X 16"		630	IVE
1	EA	PULL PLATE	8302 8" 8" X 16"		630	IVE
1	EA	SURFACE CLOSER	4011 WMS		689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS		630	IVE
1	EA	WALL STOP	WS406/407CVX		630	IVE
1	EA	GASKETING	488SBK PSA		BK	ZER

SECTION 08-71-10
DOOR HARDWARE

08-71-10-5

Hardware Group No. 11

For use on Door #(s):
 113

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
4	EA	HINGE	5BB1 4.5 X 4.5 NRP		652	IVE
1	EA	LONG DOOR PULL	PR 9264F 48" 32" N		630-316	IVE
1	EA	SURFACE CLOSER	4011 WMS		689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS		630	IVE
1	EA	WALL STOP	WS406/407CVX		630	IVE
1	EA	GASKETING	488SBK PSA		BK	ZER

Hardware Group No. 12

For use on Door #(s):
 118

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
1	EA	CONT. HINGE	112HD		US28	IVE
1	EA	PANIC HARDWARE	98-NL		626	VON
1	EA	RIM CYLINDER	20-057 ICX		626	SCH
1	EA	FSIC CORE	23-030		626	SCH
1	EA	ELECTRIC STRIKE	6111 FSE CON 12/24 VAC/VDC		630	VON
1	EA	CLOSER W/STOP ARM	4111 SCUSH WMS		689	LCN
1	EA	CUSH SHOE SUPPORT	4110-30		689	LCN
1	EA	BLADE STOP SPACER	4110-61		689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS		630	IVE
1	EA	RAIN DRIP	142AA		AA	ZER
1	EA	DOOR SWEEP	8198AA		AA	ZER
1	EA	THRESHOLD	546A-223		A	ZER
1		CARD READER - WORK OF DIVISION 28				
1		POWER SUPPLY - WORK OF DIVISION 28				
1		WEATHERSTRIP BY DOOR/FRAME MANUFACTURER				

SECTION 08-71-10
DOOR HARDWARE

08-71-10-6

Hardware Group No. 13

For use on Door #(s):

S01E S01J S03B S10B 103C 104C

Provide each SGL door(s) with the following:

QTY	DESCRIPTION	CATALOG NUMBER	FINISH	MFR
		HARDWARE BY DOOR		
		MANUFACTURER		

Hardware Group No. 14

For use on Door #(s):

110

Provide each SGL door(s) with the following:

QTY	DESCRIPTION	CATALOG NUMBER	FINISH	MFR
4	EA HINGE	5BB1 4.5 X 4.5 NRP	652	IVE
1	EA LONG DOOR PULL	PR 9264F 48" 32" N	630-316	IVE
1	EA SURFACE CLOSER	4111 EDA WMS	689	LCN
1	EA KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
1	EA WALL STOP	WS406/407CVX	630	IVE
1	EA GASKETING	488SBK PSA	BK	ZER

Hardware Group No. 15

For use on Door #(s):
 S06B

Provide each PR door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
6	EA	HINGE	5BB1HW 4.5 X 4.5 NRP		630	IVE
1	EA	POWER TRANSFER	EPT10 CON		689	VON
1	EA	PANIC HARDWARE	LD-9847-EO		626	VON
1	EA	ELEC PANIC HARDWARE	QEL-9847-L-NL-06-CON 24 VDC		626	VON
1	EA	MORTISE CYLINDER	20-061-T X K510-730 36-083 36-082-037		626	SCH
1	EA	FSIC CORE	23-030		626	SCH
2	EA	OH STOP	100S ADJ		630	GLY
2	EA	SURFACE CLOSER	4040XP		689	LCN
1	EA	TOP JAMB MTG PLATE	4040XP-18TJ		689	LCN
1	EA	RAIN DRIP	142AA		AA	ZER
2	EA	DOOR SWEEP	8198AA		AA	ZER
1	EA	THRESHOLD	656A-223		A	ZER
2	EA	GASKETING	488SBK PSA		BK	ZER
2	EA	WIRE HARNESS	CON-(LENGTH TO SUIT)			VON
1			CARD READER - WORK OF DIVISION 28			
1			POWER SUPPLY - WORK OF DIVISION 28			
1			PROVIDE FACTORY POINT TO POINT WIRING DIAGRAMS			

SECTION 08-71-10
DOOR HARDWARE

08-71-10-8

Hardware Group No. 16

For use on Door #(s):
 100

Provide each PR door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
2	EA	CONT. HINGE	112HD EPT		628	IVE
2	EA	POWER TRANSFER	EPT10 CON		↗ 689	VON
1	EA	ELEC PANIC HARDWARE	QEL-9847-EO-CON 24 VDC		↗ 626	VON
1	EA	ELEC PANIC HARDWARE	QEL-9847-TL-376T-CON 24 VDC		↗ 626	VON
1	EA	MORTISE CYLINDER	20-061-T X K510-730 36-083 36-082-037		626	SCH
1	EA	FSIC CORE	23-030		626	SCH
2	EA	LONG DOOR PULL	9264 72" 56" O MB		630	IVE
2	EA	OH STOP	100S ADJ		630	GLY
2	EA	SURFACE CLOSER	4040XP		689	LCN
1	EA	TOP JAMB MTG PLATE	4040XP-18TJ		689	LCN
1	EA	RAIN DRIP	142AA		AA	ZER
2	EA	DOOR SWEEP	8198AA		AA	ZER
1	EA	THRESHOLD	656A-223		A	ZER
4	EA	WIRE HARNESS	CON-(LENGTH TO SUIT)			VON
1			CARD READER - WORK OF DIVISION 28			
1			POWER SUPPLY - WORK OF DIVISION 28			
1			PROVIDE FACTORY POINT TO POINT WIRING DIAGRAMS			
1			WEATHERSTRIP BY DOOR/FRAME MANUFACTURER			

Hardware Group No. 17

For use on Door #(s):
 101

Provide each PR door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
2	EA	CONT. HINGE	112HD		US28	IVE
2	EA	DUMMY PUSH BAR	350		626	VON
2	EA	LONG DOOR PULL	9264 72" 56" O MB		630	IVE
2	EA	OH STOP	100S ADJ		630	GLY
2	EA	SURFACE CLOSER	4040XP		689	LCN
1	EA	TOP JAMB MTG PLATE	4040XP-18TJ		689	LCN
2	EA	DOOR SWEEP	8198AA		AA	ZER
1	EA	THRESHOLD	656A-223		A	ZER
1			WEATHERSTRIP BY DOOR/FRAME MANUFACTURER			

SECTION 08-71-10
DOOR HARDWARE

08-71-10-9

Hardware Group No. 18

For use on Door #(s):
 102

Provide each PR door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
2	EA	CONT. HINGE	112HD EPT		628	IVE
2	EA	POWER TRANSFER	EPT10 CON		↘ 689	VON
1	EA	ELEC PANIC HARDWARE	QEL-9847-EO-CON 24 VDC		↘ 626	VON
1	EA	ELEC PANIC HARDWARE	QEL-9847-TL-376T-CON 24 VDC		↘ 626	VON
1	EA	MORTISE CYLINDER	20-061-T X K510-730 36-083 36-082-037		626	SCH
1	EA	FSIC CORE	23-030		626	SCH
2	EA	LONG DOOR PULL	9264 72" 56" O MB		630	IVE
2	EA	OH STOP	100S ADJ		630	GLY
2	EA	SURFACE CLOSER	4040XP		689	LCN
1	EA	TOP JAMB MTG PLATE	4040XP-18TJ		689	LCN
4	EA	WIRE HARNESS	CON-(LENGTH TO SUIT)			VON
1			CARD READER - WORK OF DIVISION 28			
1			POWER SUPPLY - WORK OF DIVISION 28			
1			PROVIDE FACTORY POINT TO POINT WIRING DIAGRAMS			
1			WEATHERSTRIP BY DOOR/FRAME MANUFACTURER			

Hardware Group No. 19

For use on Door #(s):
 103A 104A

Provide each PR door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
8	EA	HINGE	5BB1HW 4.5 X 4.5 NRP		652	IVE
2	EA	PANIC HARDWARE	9827-L-LBR-06		626	VON
2	EA	RIM CYLINDER	20-057 ICX		626	SCH
2	EA	FSIC CORE	23-030		626	SCH
2	EA	CLOSER W/STOP ARM	4111 SCUSH WMS		689	LCN
2	EA	KICK PLATE	8400 10" X 1" LDW B-CS		630	IVE
1	EA	GASKETING	488SBK PSA		BK	ZER

SECTION 08-71-10
DOOR HARDWARE

08-71-10-10

Hardware Group No. 20

For use on Door #(s):

103B 104B

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
1	EA	CONT. HINGE	112HD		US28	IVE
1	EA	PANIC HARDWARE	98-NL		626	VON
1	EA	RIM CYLINDER	20-057 ICX		626	SCH
1	EA	FSIC CORE	23-030		626	SCH
1	EA	CLOSER W/STOP ARM	4111 SCUSH WMS		689	LCN
1	EA	CUSH SHOE SUPPORT	4110-30		689	LCN
1	EA	BLADE STOP SPACER	4110-61		689	LCN
1	EA	RAIN DRIP	142AA		AA	ZER
1	EA	DOOR SWEEP	8198AA		AA	ZER
1	EA	THRESHOLD	546A-223		A	ZER
1		WEATHERSTRIP BY DOOR/FRAME MANUFACTURER				

Hardware Group No. 21

For use on Door #(s):

S04 S05

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5 NRP		652	IVE
1	EA	PASSAGE SET	ND10S RHO K510-066		626	SCH
1	EA	MAGNETIC LOCK	M420P ATS/LED 12/24 VDC		628	SCE
1	EA	CLOSER W/STOP ARM	4111 SCUSH WMS		689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS		630	IVE
1	EA	DOOR SWEEP	111AA		AA	ZER
1	EA	THRESHOLD	546A-223		A	ZER
1	EA	GASKETING	488SBK PSA		BK	ZER
1	EA	PUSH BUTTON	623GIDEX DA 12/24 VDC		630	SCE
1	EA	POWER SUPPLY	PS904 BBK 900-4RL-FA 120/240 VAC		LGR	SCE
2		CARD READER - WORK OF DIVISION 28				

OPENING S04 AND S05 TO SHARE POWER SUPPLY. INTERLOCK BETWEEN S04 AND S05. OVERRIDE BUTTON TO BE LOCATED 5' OF THE OPENINGS.

SECTION 08-71-10
DOOR HARDWARE

08-71-10-11

Hardware Group No. 22

For use on Door #(s):
 S02

Provide each PR door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
6	EA	HINGE	5BB1 4.5 X 4.5 NRP		652	IVE
1	EA	AUTO FLUSH BOLT	FB31T		630	IVE
1	EA	STOREROOM LOCK	ND80TD RHO K510-066		626	SCH
1	EA	COORDINATOR	COR7G		626	IVE
2	EA	OH STOP	90S		630	GLY
2	EA	SURFACE CLOSER	4011 WMS		689	LCN
2	EA	KICK PLATE	8400 10" X 1" LDW B-CS		630	IVE
1	EA	ASTRAGAL	383AA		AA	ZER
2	EA	GASKETING	488SBK PSA		BK	ZER

Hardware Group No. 23

For use on Door #(s):
 S08A S09A

Provide each PR door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
6	EA	HINGE	5BB1 4.5 X 4.5 NRP		652	IVE
1	SET	AUTO FLUSH BOLT	FB32		630	IVE
1	EA	STOREROOM LOCK	ND80TD RHO K510-066		626	SCH
1	EA	COORDINATOR	COR X FL		628	IVE
2	EA	MOUNTING BRACKET	MB		689	IVE
2	EA	CLOSER W/STOP ARM	4111 SCUSH WMS		689	LCN
2	EA	KICK PLATE	8400 10" X 1" LDW B-CS		630	IVE
1	EA	ASTRAGAL	383AA		AA	ZER
1	EA	GASKETING	488SBK PSA		BK	ZER

Hardware Group No. 24

For use on Door #(s):
 122

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5 NRP		652	IVE
1	EA	CLASSROOM LOCK	ND70TD RHO K510-066		626	SCH
1	EA	FSIC CORE	23-030		626	SCH
1	EA	OH STOP	90S		630	GLY
1	EA	SURFACE CLOSER	4011 WMS		689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS		630	IVE
1	EA	GASKETING	488SBK PSA		BK	ZER

SECTION 08-71-10
DOOR HARDWARE

08-71-10-12

Hardware Group No. 25

For use on Door #(s):
S10A

Provide each PR door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
6	EA	HINGE	5BB1 4.5 X 4.5 NRP		652	IVE
1	EA	AUTO FLUSH BOLT	FB31T		630	IVE
1	EA	STOREROOM LOCK	ND80TD RHO K510-066		626	SCH
1	EA	COORDINATOR	COR7G		626	IVE
2	EA	OH STOP	90S		630	GLY
2	EA	SURFACE CLOSER	4011 H WMS		689	LCN
2	EA	ARMOR PLATE	8400 34" X 1" LDW B-CS		630	IVE
1	EA	ASTRAGAL	383AA		AA	ZER
2	EA	GASKETING	488SBK PSA		BK	ZER

Hardware Group No. 26

For use on Door #(s):
S11

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5 NRP		652	IVE
1	EA	STOREROOM LOCK	ND80TD RHO K510-066		626	SCH
1	EA	FSIC CORE	23-030		626	SCH
1	EA	CLOSER W/STOP ARM	4111 SCUSH WMS		689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS		630	IVE
1	EA	GASKETING	488SBK PSA		BK	ZER

Hardware Group No. 27

For use on Door #(s):

116 117

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
4	EA	HINGE	5BB1 4.5 X 4.5 NRP		652	IVE
1	EA	STOREROOM LOCK	ND80TD RHO LLL		626	SCH
1	EA	FSIC CORE	23-030		626	SCH
1	EA	ELECTRIC STRIKE	6211 FSE CON 12/16/24/28 VAC/VDC	 ⚡	630	VON
1	EA	SURFACE CLOSER	4011 WMS		689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS		630	IVE
1	EA	WALL STOP	WS406/407CVX		630	IVE
1	EA	GASKETING	488SBK PSA		BK	ZER
1			CARD READER - WORK OF DIVISION 28			
1			POWER SUPPLY - WORK OF DIVISION 28			

END OF SECTION

PART 1 - GENERAL

1.1 CONTRACT CONDITIONS

- A. Work of this Section is bound by the Contract Conditions and Division 1, bound herewith, in addition to this Specification and accompanying Drawings.

1.2 RELATED WORK SPECIFIED IN OTHER SECTIONS

- A. Hollow Steel Doors & Frames: Section 08-11-00
B. Wood Doors: Section 08-21-00
C. Aluminum Entrance & Window Wall Systems: Section 08-40-00
D. Vertical-lift Bi-fold Overhead Doors: Section 08-36-50
E. Fire Extinguisher Cabinet Glazing: Section 10-99-00
F. Glass Display Cases: Section 12-30-00

1.3 OPTIONS

- A. Contractor may, at Contractor's option, install Glazing in Field or in Factory.

1.4 ALTERNATES

- A. Refer to Section 01-20-00 for possible effect upon Work of this Section.

1.5 REFERENCED SPECIFICATION

- A. Comply with applicable portions of:
1. Glazing Manual published by Flat Glass Marketing Association, hereinafter referred to as FGMA; White Lakes Professional Bldg.; 3310 Harrison; Topeka, Kansas 66611; (913) 266-7013.
 2. Insulating Glass manufacturing and installation recommendations of Sealed Insulating Glass Mfrs. Assn, hereinafter referred to as SIGMA; 111 E. Wacker Dr.; Chicago, IL 60610; (312) 644-6610.
- B. Copies can be obtained from Associations.

1.6 COORDINATION

- A. Coordinate with other Trades affecting or affected by Work of this Section.

PART 1 - GENERAL

1.7 REGULATORY AGENCY REQUIREMENTS

- A. Comply with Safety Glazing requirements of IBC Section 24-06-.0

1.8 PRODUCT DELIVERY

- A. Schedule to coincide with glazing schedule.
- B. For each piece of Glass affix Label identifying the following:
 - 1. Glass Manufacturer, quality, and thickness.
 - 2. On Low-E type Insulating Glass identify Glass "U" Factor, Shading Coefficient, and Light Transmission Ratings as certified by National Fenestration Rating Council (NFRC).
- C. Where Labels must be removed for Glass cutting, save Labels for Architect's review.
- D. Deliver other Glazing Materials in Original Containers with Manufacturer's original legible Labels thereon.

1.9 PRODUCT STORAGE & HANDLING

- A. Protect against damage and discoloration.
- B. Prevent Glass to Glass contact.
- C. Do not overload Structure with stored Materials.
- D. Store crated Glass in cool, dry, shady, well ventilated area, which is not subject to Sun, Rain, or other Elements.
- E. Block Crates 2 to 6 inches above Floor.
- F. Secure Crates against accidental overturning.
- G. Cover Crates with Waterproof Plastic or Canvas. Maintain sufficient air circulation under Cover to prevent Condensation within Crates.

1.10 ENVIRONMENTAL CONDITIONS

- A. Do no glazing when:
 - 1. Air Temperature is below 40°F.
 - 2. Sufficient Dust is present that could impair Glazing Compound adhesion.
 - 3. During Wet Weather except under Cover.

1.11 FIELD MEASUREMENTS

- A. Verify prior to fabrication.
- B. If field measurements differ slightly from Drawing dimensions modify Work as required for accurate fit. If measurements differ substantially, notify Architect prior to fabrication.

PART 1 - GENERAL

1.12 EXTENDED WARRANTIES

- A. In accordance with Supplementary Conditions, Section 00-80-00, provide the following Extended Warranties:
1. Exterior Glazing against Air and Water Infiltration: 2 years
 2. Insulating Glass against Edge Seal or other Failures, including Dust, Moisture, or Film on Interior Surface of Glass: 10 years (*Note: Failed Units shall be replaced and not repaired.*)
 3. Mirrors against De-silvering, Discoloring, Black Spots, or Clouding of Silver Film: 5 years
 4. Spontaneous in-place Glass-breakage as follows:
 - a. Warranty Period: 5 years
 - b. Replace Broken Panels at no additional cost to Owner.
 - c. Warranty includes Glass-replacement plus any consequential damage to Building Materials or Building Contents, and any consequential medical expenses incurred by personal injury to Building Occupants.

PART 2 - PRODUCTS

2.1 APPROVED GLASS MANUFACTURERS

- A. AFG Industries, hereinafter called AFG
- B. AHC Float Glass Operations, hereinafter called AHC
- C. Cardinal Glass, hereinafter called CG.
- D. Ford Glass, hereinafter called FG.
- E. Guardian Glass, hereinafter called GG.
- F. Libbey, Owens, Ford, hereinafter called LOF.
- G. Pilkington North American, hereinafter called PLK
- H. Pittsburgh Plate Glass (Now known as Vitro), hereinafter called PPG.
- I. Saint-Gobain Glass, hereinafter called SG.
- J. Vitro Architectural Glass (formally PPG Glass), hereinafter called VIT
- K. Other Manufacturers may be approved by request in accordance with Section 01-63-00.

2.2 GLASS-GENERAL

- A. Color & Pattern: All Glass shall be clear and smooth, unless otherwise specified herein or otherwise shown on Drawings
- B. Thickness: Follow Building Code requirements.

GLAZING**PART 2 - PRODUCTS****2.3 FLOAT GLASS**

- A. Approved Manufacturers: AFG, AHC, FG, GG, LOF, PLK, SG, VIT, or approved.
- B. Manufacturing Standard: ASTM C-1036
- C. Quality: Glazing Select

2.4 LAMINATED EXPLOSION-RESISTANCE GLASS

- A. Manufacturing Standard: US General Services Administration (GSA) Level D
- B. Minimum UL Fire-resistance Rating: 120 minutes

2.5 OBSCURE GLASS (Base Bid)

- A. Manufacturer: FG, GG, LOF, PLK, SG, VIT, or approved.
- B. Pattern: Similar to GG type P516

2.6 ELECTRONICALLY-CONTROLLED PRIVACY GLASS (Alternate Bid)

- A. Manufacturer: Polytronix, or approved.
- B. Brand: Polyvision
- C. Color: Clear
- D. Thickness: Satisfy conditions of use.
- E. Minimal Optical Transparency: 75%
- F. Control Switch Location: See Drawings

2.7 WIRELESS FIRE-RATED SAFETY GLASS

- A. Manufacturer & Brand: Interedge Pyrobel, PLK Pyrostop, Schott Pyran, SG Vetrotech Swissflam, Technical Glass Products FireLite Plus, or approved.
- B. Glass Type: Clear Transparent
- C. Minimum Impact Safety Rating: CPSC 16CFR1201 (Level II)
- D. Minimum UL Fire-resistance Rating: 120 minutes
- E. Label: Permanently imprint Glass with Safety Rating & Fire Resistance Rating

2.8 CERAMIC FRIT GLASS

- A. Fabricator: VIT, or approved.
- B. Type: Float Glass with Ceramic Frit on Glass backside.
- C. Frit Color & Pattern: Selected after Contract award from Manufacturer's standard choices

GLAZING**PART 2 - PRODUCTS****2.9 TEMPERED GLASS**

- A. Manufacturing Standard: ASTM C-1048
- B. Safety Performance Standard: CPSC 16-CFR-1201-C11
- C. Glass Type & Thickness: As specified above
- D. Extent of Work: See Glazing Schedule at end of Section.

2.10 THERMAL INSULATING GLASS

- A. Approved Manufacturers: AFG, AHC, FG, GG, LOF, PLK, SG, VIT, or approved.
- B. Brand: Similar to VIT Solarban 70XL Clear+Clear
- C. Manufacturing Standard: SIGMA CBA
- D. Edge Material: Sealant conforming to ASTM E-6-P3
- E. Assembly Type: Soft Coat Low-E (Vacuum Deposition) on Surface #2
- F. National Fenestration Rating Council (NFRC) Certified Performance Requirements:
 - 1. Maximum Summer "U" Value: 0.26
 - 2. Maximum Winter "U" Value: 0.28 0.
 - 3. Maximum Shading Coefficient: 0.32
 - 4. Maximum Solar Heat Gain Coefficient: 0.27
 - 5. Minimum Light Transmission: 64%
- G. Glass Layers: 2
- H. Overall Thickness: 1 inch
- I. Glass Type:
 - 1. Exterior Sheet: Clear Float Glass
 - 2. Interior Sheet: Clear Float Glass

2.11 SETTING BLOCKS

- A. Material: EPDM or Neoprene Rubber, unless otherwise required for compatibility with Glazing Compound and Sealant.
- B. Shore A Durometer Hardness: 80-90
- C. Width: 1/8 inch wider than Glass Unit to be supported and 1/16 to 1/8 inch narrower than Glazing Pocket
- D. Length: Sufficient to support Glass Unit without excessive pressure on Glass edge

(Cont.)

GLAZING**PART 2 - PRODUCTS****2.12 GLAZING COMPOUND**

- A. Manufacturer: Dow, Gibson-Homans, Momentive Performance Materials (*formerly GE Advanced Materials*), 3-M, Sonneborn, Tremco, or approved.
- B. Material:
 - 1. For Insulating Glass:
 - a. Compatible with Glass Edge Sealant and recommended by Insulating Glass Fabricator for conditions of use.
 - 2. For Factory-glazed Units:
 - a. Unit Manufacturer's standard Glazing Compound
 - 3. For Field-glazed Units:
 - a. At Hollow Steelwork: Closed Cell Tape Bedding with Silicone Compound
 - b. At Aluminum Entrance & Window Wall Sections: Neoprene or Vinyl Extruded Bead recommended by Section Manufacturer
 - c. At Woodwork: Closed Cell Tape Bedding with Acrylic Latex Compound

2.13 MIRRORS

- A. Mirror Glass:
 - 1. Glass Type: Float
 - 2. Glass Thickness: 1/4 inch
 - 3. Quality: No. 1
 - 4. Silvering: Standard
 - 5. Backing: Copper protected by Paint or Varnish
 - 6. Glass Edges at unframed Mirrors, if any: Ground & Polished
- B. Back Covering where Metal Frames are specified: Painted Steel or Hardboard
- C. Metal Frame:
 - 1. Material: Extruded Aluminum
 - 2. Finish: Anodic
 - 3. Color: Natural
 - 4. Approximate Face Width: 1/2 inch
 - 5. Corners: Square and mitered
- D. Size: See Drawings

(Cont.)

PART 3 - EXECUTION

3.1 EXISTING CONDITIONS

- A. Verify that Openings to be glazed are accurately sized, shaped and located, and free of Fasteners and other Projections which will interfere with glazing.
- B. Verify that Weep System is open.
- C. Verify that Glazing Surfaces are free of Moisture, Dirt, Grease, Oil, or other Deleterious Material.
- D. Verify that any Steel or Wood Glazing Rabbets and any contacting Dissimilar Materials are painted.
- E. Verify that Surfaces to receive Mirrors are structurally sound and capable of supporting Mirrors.
- F. Prior to starting Work, notify General Contractor about defects requiring correction.
- G. Do not start Work until conditions are satisfactory.

3.2 PROTECTING WORK OF OTHER SECTIONS

- A. Protect against damage and discoloration caused by Work of this Section.

3.3 PREPARATION WORK

- A. Prior to glazing, clean, dry, and remove any Protective Coatings from Glass and from Surfaces to be glazed.
- B. Grind and polish exposed Mirror edges.
- C. Clean inside faces of Double-glazed Openings before setting Glass in place.
- D. Tape Laminated Glass edges before setting.

3.4 GLASS INSTALLATION

- A. General:
 - 1. Follow Referenced Specifications and Manufacturer's instructions.
 - 2. Allow for Glass expansion and contraction.
 - 3. Do not impact Glass against Framing.
 - 4. Install Glass with Setting Blocks placed at Sill quarter points.
 - 5. Do not set any Glass Flares or Bevels adjacent to Setting Blocks.
 - 6. Install any Glass Surface Waves running horizontal.
 - 7. Shift Glass with Suction Cups; do not use Pry Bar.
 - 8. Remove Identity Labels immediately after installation; save for Architect's review.
- B. Tempered Glass:
 - 1. Take particular care to prevent Glass-edge damage.

(Cont.)

PART 3 - EXECUTION

3.4 GLASS INSTALLATION (Cont.)

- C. Fire-rated Laminated Safety Glass:
 - 1. Do not expose Glass edge to Moisture, Organic Solvents, or Glazing Compounds containing such Solvents.
- D. Obscure Glass:
- E. Install Patterned Face toward Building interior.
- F. Thermal Insulating Glass:
 - 1. Follow Glazing Specification for Sealed Insulating Glass Units, SIGMA No. 70-7-1.

3.5 MIRROR INSTALLATION

- A. Install Mirrors plumb, level, after Finish Painting is completed, and with open Ventilation Space behind Mirror.
- B. Secure to Backing with concealed Mechanical Fasteners, where possible, or with Adhesive which will not damage Mirror Silvering.

3.6 PRODUCT CLEANING & REPAIRING

- A. Remove excess Glazing Compound from Glazing and adjacent Surfaces.
- B. Final Glass Cleaning: Specified in Section 01-74-00.
- C. Remove Debris from Project Site upon Work completion, or sooner if directed.
- D. Including Work of other Trades, clean, repair and touch-up, or replace when directed, Products which have been soiled, discolored, or damaged by Work of this Section.

3.7 WASTE MANAGEMENT

- A. In accordance with Section 01-64-00:
 - 1. Glass Waste: Separate by type and color for reuse or recycling.
 - 2. Metal & Cardboard Waste: Collect and place where directed for recycling.

3.8 PROTECTING COMPLETED WORK

- A. Protect installed Glazing against breakage and staining.
- B. Identify Glazed Areas with Streamers or other suitable Warning Placard.
- C. Notify General Contractor to prohibit Material storage close enough to Glass to create sufficient Heat Trap to cause Glass breakage.

PART 3 - EXECUTION

3.9 GLAZING SCHEDULE

- A. Provide specified Glass in the following locations:
1. Exterior Glazing: Clear Insulating Glass
 2. Interior Glazing:
 - a. In Doors & Windows located in Fire-rated Corridors: Fire-rated Safety Glass
 - b. Where located on Drawings: Mirrors
 - c. Where located on Drawings: Obscure Glass
 - d. Where located on Drawings: Fritted Glass
 - e. Where located on Drawings: Laminated Fire-rated Explosion-resistant Glass
 - f. Where located on Drawings: Electronically-controlled Privacy Glass
 - g. Elsewhere: Clear Float Glass
- B. Except at Laminated Fire-rated Explosion-resistant Glass, temper any Exterior or Interior Glass where so stipulated by Building Code Sec. 2406, and elsewhere shown on Drawings or Schedules.

END OF SECTION

PART 1 - GENERAL

1.1 CONTRACT CONDITIONS

- A. Work of this Section is bound by the Contract Conditions and Division 1, bound herewith, in addition to this Specification and accompanying Drawings.

1.2 RELATED WORK SPECIFIED IN OTHER SECTIONS

- A. Steel Wall Framing System to receive Vents: Section 05-40-00

1.3 ALTERNATES

- A. Refer to Section 01-20-00 for possible effect upon Work of this Section.

1.4 SYSTEM DESCRIPTION

- A. Automatically opening Vents to relieve any explosion-created pressure generated within building.

1.5 PERFORMANCE REQUIREMENTS

- A. Minimum NFPA 68 Explosion-created Vent-activating Pressure: 20 psf
- B. Maximum Wind-created Vent-activating Pressure: 30 psf
- C. Permit non-destructive Field Testing to measure specified Performance Requirements.
- D. Permit manual-retrieval of Pressure Relief System after Pressure-release.

1.6 COORDINATION

- A. Coordinate with other Trades affecting or affected by Work of this Section.

1.7 SHOP DRAWINGS

- A. Submit in accordance with Section 01-33-00.
- B. Show dimensions, required clearances, methods of joining to other Work, and other pertinent information.
- C. Manufacturer's Printed Data may be substituted provided required information is included.

PART 1 - GENERAL

1.8 OPERATING & MAINTENANCE DATA

- A. In accordance with Section 01-83-00, submit to General Contractor for inclusion in Owner's Maintenance Manual.

1.9 INSTALLER'S QUALIFICATIONS

- A. Employed by or acceptable to Equipment Manufacturer.

1.10 REGULATORY AGENCY REQUIREMENTS

- A. Building Code requirements govern, if more rigid than those specified herein. Notify Architect of differences prior to fabrication.

1.11 PRODUCT DELIVERY, STORAGE, & HANDLING

- A. Protect against damage and discoloration.

1.12 FIELD MEASUREMENTS

- A. Verify prior to fabricating Equipment.
- B. If field measurements differ slightly from Drawing dimensions, modify adjacent Construction as required for accurate fit. If measurements differ substantially, notify Architect prior to fabricating Equipment.

PART 2 - PRODUCTS

2.1 VENTS

- A. Manufacturer: Construction Specialties (C/S), or approved.
- B. Brand: Explovent
- C. Panels:
 - 1. Types where located on Drawings: Insulated Aluminum & Translucent Polycarbonate
 - 2. Assemblies: 2 -piece, interlocking, permitting expansion and contraction, and permitting individual Panel removability.

(Cont.)

PART 2 - PRODUCTS

2.1 VENTS (Cont.)

- D. Frames:
 - 1. Material: 0.063 inch thick 6063-T52 Extruded Aluminum
 - 2. Finish:
 - a. Concealed Work: Mill finish
 - b. Exposed Work:
 - 1. Material: Fluoropolymer Enamel complying with AAMA 2605
 - 2. Minimum polyvinylidene (PVDF) Content: 70%
 - 3. Minimum Dry Film Thickness: 1.2 mils
 - 4. Color: Selected by Architect after Contract award
- E. Size: See Drawings

PART 3 - EXECUTION

3.1 EXISTING CONDITIONS

- A. Verify that Surfaces to receive Vents are properly prepared.
- B. Prior to starting Work, notify General Contractor about defects requiring correction.
- C. Do not start Work until conditions are satisfactory.

3.2 PROTECTING WORK OF OTHER SECTIONS

- A. Protect against damage and discoloration caused by Work of this Section.

3.3 INSTALLATION

- A. Follow Manufacturer's instructions.
- B. Position plumb, level, square, straight, and true as applicable.
- C. Securely anchor to adjacent Construction.

3.4 ADJUSTMENTS

- A. Adjust Moving Parts to operate satisfactorily at time of Project Substantial Completion and during Warranty Period.

PART 3 - EXECUTION

3.5 PRODUCT CLEANING & REPAIRING

- A. Including Work of other Trades, clean, repair and touch-up, or replace when directed, Products which have been soiled, discolored, or damaged by work of this Section.
- B. Remove Debris from Project Site upon work completion or sooner, if directed.

3.6 WASTE MANAGEMENT

- A. Collect Metal Strapping & Packaging Waste, and place where directed for recycling.

END OF SECTION

NON-STRUCTURAL STEEL WALL FRAMING & CEILING SUSPENSION SYSTEMS**PART 1 - GENERAL****1.1 CONTRACT CONDITIONS**

- A. Work of this Section is bound by the Contract Conditions and Division 1, bound herewith, in addition to this Specification and accompanying Drawings.

1.2 EXTENT OF WORK

- A. Non-axially-loaded Wall Framing and Ceiling Framing to receive Gypsum Board.

1.3 RELATED WORK SPECIFIED IN OTHER SECTIONS

- A. Exterior Wall Steel Framing: Section 05-40-00
- B. Gypsum Board: Section 09-25-00
- C. Metal Suspension System for Acoustic Tile: Section 09-50-00

1.4 OPTIONS

- A. Contractor may, at Contractor's option, substitute Drywall Ceiling Suspension Systems by Armstrong, Donn, USG, or approved, in lieu of Ceiling Suspension System specified herein.

1.5 ALTERNATES

- A. Refer to Section 01-20-00 for possible effect upon work of this Section.

1.6 REFERENCED SPECIFICATIONS

- A. General:
 - 1. Conform to Referenced Specifications hereinafter named, as Architect judges them applicable, and as modified and supplemented herein.
 - 2. Recommended materials and methods are mandatory; those proposed as equivalent by Contractor must be accepted by Architect.
- B. Metal Framing and Furring for Gypsum Board.
 - 1. Installation of Steel Framing Members to receive Screw-attached Gypsum Wallboard, Backing Board, or Water-resistant Backing Board; ASTM C-754.
- C. Exceptions:
 - 1. Provide Items not covered by above Standards, or herein, in accordance with Manufacturer's instructions.

NON-STRUCTURAL STEEL WALL FRAMING & CEILING SUSPENSION SYSTEMS**PART 1 - GENERAL****1.7 COORDINATION**

- A. Coordinate with other Trades affecting or affected by Work of this Section.

1.8 BUILDING CODE

- A. If and where Fire-rated Partitions or Ceilings are required, construct to obtain Code-required Rating.
- B. Prior to starting Work submit certification to Architect that Ceiling System complies with Seismic Loading requirements of Building Code, and that System is acceptable to Building Official.

1.9 PRODUCT DELIVERY, STORAGE, & HANDLING

- A. Protect Metal Materials against rust and other damage.
- B. Do not distort Members.
- C. Do not overload Structure with stored Products.

PART 2 - PRODUCTS**2.1 MANUFACTURERS**

- A. Cemco, ClarkWestern Dietrich, Scafco, Steeler, Steel Systems, Western, or approved.

2.2 WALL FRAMING STUDS

- A. Material: Steel
- B. Manufacturing Standard: ASTM C-645
- C. Shape: Channel
- D. Size: See Drawings
- E. Metal Finish: Galvanize in accordance with ASTM A-653 class G-40
- F. Minimum Metal Thickness, unless otherwise indicated on Drawings:
 - 1. At Double Studs adjacent to Door Jambs: 20 ga. (0.0296 inch)
 - 2. At Studs supporting any Plumbing Fixtures or other Wall-hung Items: 20 ga. (0.0296 inch)
 - 3. At Studs taller than 12 ft.: 20 ga. (0.0296 inch)
 - 4. Elsewhere: 25 ga. (0.0179 inch)
- G. Required Accessories: Runner Track and other Devices necessary for complete installation.

NON-STRUCTURAL STEEL WALL FRAMING & CEILING SUSPENSION SYSTEMS**PART 2 - PRODUCTS****2.3 FRAMING & FURRING CHANNELS**

- A. Material: Steel
- B. Manufacturing Standard: ASTM C-645 Class B
- C. Size: See Referenced Specifications
- D. Shape: Channel
- E. Metal Finish: Electro-galvanize in accordance with ASTM A-591 class B

2.4 FURRING ACCESSORIES

- A. Type: Contractor's choice
- B. Provide as indicated or required for complete installation.

2.5 WIRE

- A. Material: Galvanized Steel Wire
- B. Manufacturing Standard: Fed. Spec. QQ-W-461
- C. Minimum Wire Size:
 - 1. For Tying: 16 ga.
 - 2. For Hanging: 9 ga.

2.6 FASTENERS & ATTACHMENT DEVICES

- A. Manufacturer: Made or recommended by Accessory Manufacturer.
- B. Manufacturing Standard: ASTM C-1002
- C. Provide all required for complete installation.

2.7 SILL SEALER

- A. Manufacturer: Owens-Corning Sill Sealer, or approved.
- B. Material: Fiberglass
- C. Thickness: 3/16 inch
- D. Width: Match Sill Plate
- E. Extent of Work: Provide under any Exterior Wall Sill Plates.

2.8 ACOUSTIC SEALANT

- A. Manufacturer & Brand: Pecora BA 98, Tremco Acoustic Sealant, U.S. Gypsum Acoustic Sealant, or approved.
- B. Extent of Work: Provide at Sound-attenuated Walls.

NON-STRUCTURAL STEEL WALL FRAMING & CEILING SUSPENSION SYSTEMS**PART 3 - EXECUTION****3.1 EXISTING CONDITIONS**

- A. Verify that Structures and Surfaces to receive Work specified herein are straight, true, plumb, square, secure, rigid, and otherwise properly prepared.
- B. Prior to starting Work, notify General Contractor about defects requiring correction.
- C. Do not start Work until conditions are satisfactory.

3.2 PROTECTING WORK OF OTHER SECTIONS

- A. Protect against damage and discoloration caused by Work of this Section.

3.3 GENERAL INSTALLATION REQUIREMENTS

- A. Follow Referenced Specifications and Manufacturer's instructions, unless otherwise specified hereunder.

3.4 ACOUSTIC SEALANT INSTALLATION

- A. Prior to Stud and Runner installation, apply 2 beads of Sealant to back side of Studs and Runners which directly contact adjacent Solid Surface.
- B. Permit no Voids for Sound passage.

3.5 WALL FRAMING INSTALLATION

- A. Accurately locate and install plumb, true, and secure.
- B. Maximum Stud Spacing, unless otherwise shown on Drawings: 16 inches o.c.
- C. Isolate Stud Partitions from Structure to prevent transfer of loads or movement into Partitions.
- D. Where Stud Partitions stop at or slightly above Ceiling, brace Partition to Structure as required to stabilize Partitions.
- E. If, and where, Studs extend vertically past adjacent horizontal Structural Members, connect Stud to Structural Member with Side Clips.
- F. Do not splice Studs.
- G. Align Utility Openings in Stud Webs.
- H. Form Corners and Intersections with three Studs.
- I. Locate Studs within 2 inches of Internal Corners.
- J. Frame around Openings.

(Cont.)

NON-STRUCTURAL STEEL WALL FRAMING & CEILING SUSPENSION SYSTEMS**PART 3 - EXECUTION****3.5 WALL FRAMING INSTALLATION (Cont.)**

- K. At any Studs not sheathed full-height on both faces, provide 1-1/2 inch wide by 16 ga. horizontal Steel Channel Bridging to prevent Stud rotation. Space Bridging 48 inches apart maximum, and secure to Stud Webs.
- L. Provide Partition-height Stud adjacent to Door Frame Jambs and secure to Jambs. Provide additional Partition-height Stud approximately 2 inches from each Jamb-stud and attach to Jamb-studs with Spacers 18 inches above Floor and at 12 and 27 inches below Door Frame top.
- M. Provide 18 ga. x 8 inch minimum width Galvanized Steel Backing Plate behind Wall-mounted Door Stops, and elsewhere to support Wall-hung loads such as Cupboards, Tackboards, Railings, Toilet Room Accessories, Building Equipment, etc. Verify exact locations.

3.6 SUSPENDED CEILING FRAMING INSTALLATION

- A. Follow Referenced Specifications, except as otherwise specified herein.
- B. Provide Runner Channels within 6 inches of Walls and other Ceiling interruptions.
- C. Where Mechanical and Electrical Equipment interfere with regular spacing of Hangers provide additional Hangers and Channels, and make necessary adjustments in Ceiling construction.
- D. Do not attach or pass Hangers through Ducts.
- E. Provide Framing around any recessed Light Fixtures, Expansion Joints, or other Ceiling Openings.
- F. At Exterior Soffits, provide Stiffeners as required to prevent Wind Uplift displacement.

3.7 TYING FRAMING & FURRING MEMBERS

- A. Material: Double-strand Tie Wire
- B. Splicing: Double-wrap tie
- C. Horizontal Stiffeners to Channel Brackets: Figure-eight tie
- D. Framing Members perpendicular to each other: Saddle tie

3.8 ALLOWABLE INSTALLATION TOLERANCES

- A. Maximum Deviation from:
 - 1. Specified Member Spacing: Plus or minus 1/8 inch
 - 2. True, Plumb, & Level where applicable: 1/8 inch per 10 ft.

NON-STRUCTURAL STEEL WALL FRAMING & CEILING SUSPENSION SYSTEMS**PART 3 - EXECUTION****3.9 WASTE MANAGEMENT**

- A. Collect Metal Cut-offs and Scrap, and place where directed for recycling.

3.10 PRODUCT CLEANING & REPAIRING

- A. Including Work of other Trades, clean, repair and touch-up, or replace when directed, Products which have been soiled, discolored, or damaged by Work of this Section.
- B. Remove Debris from Project Site upon Work completion, or sooner if directed.

END OF SECTION

PART 1 - GENERAL

1.1 CONTRACT CONDITIONS

- A. Work of this Section is bound by the Contract Conditions and Division 1, bound herewith, in addition to this Specification and accompanying Drawings.

1.2 EXTENT OF WORK

- A. Where Spaces are scheduled to receive Gypsum Board, include any Closets or Alcoves opening off these Spaces and any Pilasters within Spaces, unless otherwise shown on Drawings.

1.3 PRODUCTS INSTALLED, BUT FURNISHED UNDER OTHER SECTIONS

- A. Access Hatches: Section 08-30-00

1.4 RELATED WORK SPECIFIED IN OTHER SECTIONS

- A. Exterior Gypsum Wall Sheathing: Section 06-10-00
B. Steel Wall Framing & Ceiling Suspension Systems: Section 09-10-00
C. Mineral Fiber Acoustic Insulation: Section 09-51-00
D. Finish Painting: Section 09-90-00
E. Wall Corner Guards: Section 10-26-00

1.5 ALTERNATES

- A. Refer to Section 01-20-00 for possible effect upon Work of this Section.

1.6 REFERENCED SPECIFICATIONS

- A. General:
1. Conform to Referenced Specifications hereinafter named, as Architect judges them applicable, and as modified and supplemented herein.
2. Recommended materials and methods are mandatory; those proposed as equivalent by Contractor must be accepted by Architect.
- B. Metal Furring Installation:
1. Comply with applicable requirements specified in ASTM C-754.
- C. Gypsum Board Application & Finishing:
1. Standard Specifications for the Application and Finishing of Gypsum Board, ASTM Document C-840.

PART 1 - GENERAL

1.7 COORDINATION

- A. Coordinate with other Trades affecting or affected by Work of this Section.

1.8 REGULATORY AGENCY REQUIREMENTS

- A. If and where Fire-rated Partitions or Ceilings are called for on Drawings, construct to obtain specified Rating.

1.9 FIELD MOCK UP

- A. Build Sample Panel at least 4x8 ft. size, where approved, and show typical Joint and Surface treatment, Corners, Control Joints, and Board termination against other Materials.
B. Obtain Architect's review before proceeding.
C. Accepted Sample, in like-new condition, may be used as part of Contract Work.

1.10 PRODUCT DELIVERY, STORAGE, & HANDLING

- A. Deliver Products to Site with Manufacturer's original, legible Labels intact.
B. Identify Fire-rated Materials with Testing Agency Label.
C. Indicate Adhesive "open time" on Container Label.
D. Protect Gypsum Material against moisture and Metal Materials against rust.
E. Stack Gypsum Board on edge; do not stack flat or with longer lengths overhanging shorter lengths.

1.11 ENVIRONMENTAL REQUIREMENTS

- A. Perform Work only under the following conditions:
1. Air Temperature for 24 hours before and during Work, and for 24 hours after Materials have dried: 55°F to 75°F
 2. Minimum Work Space Illumination measured 3 ft. above adjacent Floor: 30 ft. candles
 3. Ventilation: Maintain sufficient for proper Joint Treatment drying.

(Cont.)

PART 2 - PRODUCTS

2.1 PRODUCTS - GENERAL

- A. Manufacturers:
1. Metal Products: Beadex, Scafco, Steeler, Steel Systems, US Gypsum, Western, or approved.
 2. Gypsum Products: Celotex, G.P., Gypsum, Gold Bond, James Hardie, Manville, National Gypsum, US Gypsum, or approved.
 3. Other Products: As specified hereunder.

2.2 GYPSUM BOARD

- A. Backer Board:
1. Type: X
 2. Edges: Square or T&G
 3. Extent of Work: Use as base layer for double layer construction, except where Water-resistant Board is required.
- B. Water-resistant Board:
1. Core: Asphalt-impregnated
 2. Type: X
 3. Extent of Work: Provide in Restroom & Kitchen Areas, and elsewhere within 6 ft. of Dishwashing Equipment, Sinks, and other Plumbing Fixtures.
- C. All Other Board:
1. Type: X
 2. Edges: Tapered

2.3 FASTENERS

- A. Material: Steel
- B. Manufacturing Standard: ASTM C-1002
- C. Type & Length: Screws recommended by Board Manufacturer to satisfy conditions of use.

2.4 ACCESSORIES & TRIM

- A. At External Corners: Paper-faced similar to USG Beadex B1
- B. At Exposed Gypsum Board Edges & where Gypsum Board abuts other Materials: Paper-faced, J-shaped, similar to USG Beadex B9
- C. At Shrinkage Control Joints: Similar to USG 093

PART 2 - PRODUCTS

2.5 JOINT TAPE & COMPOUND

- A. Manufacturer & Brand: Contractor's choice
- B. Manufacturing Standard: ASTM C-475
- C. Type: Satisfy conditions of use.

2.6 LAMINATING ADHESIVE

- A. Made or recommended by Board Manufacturer.

2.7 SURFACE SEALER

- A. Manufacturer: Hamilton (714) 637-2770, or approved.
- B. Brand: Prep Coat Plus
- C. Extent of Work: Apply over Gypsum Board after taping and prior to applying Spray Texture.

2.8 SPRAY-APPLIED TEXTURE COMPOUND

- A. Manufacturer & Brand: U.S. Gypsum Spray Texture Finish, or approved.
- B. Extent of Work: Unless otherwise shown on Drawings, provide at Gypsum Board surfaces scheduled to receive Paint finish, except in the following locations:
 - 1. Entry Halls
 - 2. Multipurpose Rooms

2.9 ACOUSTIC SEALANT

- A. Manufacturer & Brand: Pecora BA-98 & AC-20, Tremco Acoustic Sealant, U.S. Gypsum Acoustic Sealant, or approved.
- B. Extent of Work: Provide at Sound-attenuating Walls.

2.10 WATER RESISTANT SEALANT

- A. Manufacturer: G.E., Dow, or approved.
- B. Material: Silicone with Mildew Inhibiter
- C. Manufacturing Standard: Fed. Spec. TT-S-001543
- D. Type: Satisfy conditions of use
- E. Color: Clear translucent

PART 2 - PRODUCTS

2.11 OTHER MATERIALS

- A. Made or recommended by Gypsum Board Manufacturer.
- B. Provide all indicated or required for complete installation.

PART 3 - EXECUTION

3.1 EXISTING CONDITIONS

- A. Verify that Surfaces to receive Gypsum Board are accurately located, plumb, square, true, secure, dry, and otherwise properly prepared.
- B. Prior to starting Work, notify General Contractor about defects requiring correction.
- C. Do not start Work until conditions are satisfactory.

3.2 PROTECTING WORK OF OTHER SECTIONS

- A. Protect against damage and discoloration caused by Work of this Section.
- B. To prevent damage to Electrical Wiring, accurately cut openings in Board for Electrical Boxes prior to installing Board. Do not make Openings with Router after Board installation.

3.3 GENERAL INSTALLATION REQUIREMENTS

- A. Follow Referenced Specifications and Manufacturer's instructions, except as supplemented or modified herein.

3.4 METAL ACCESS HATCH INSTALLATION

- A. Follow Manufacturer's instructions.
- B. Accurately locate and securely anchor plumb, level, square, and true.

(Cont.)

PART 3 - EXECUTION

3.5 ACOUSTIC SEALANT INSTALLATION

- A. Apply Sealant around Electrical Boxes, Pipes, etc., located in or passing through Sound-attenuating Walls.
- B. Prior to installing Gypsum Board, provide Acoustic Sealant around Sound-attenuating Wall Perimeters in Angle between Walls, Floor, and Ceiling; press Board into Sealant forming bond between Framing Member face and backside of Board.
- C. Provide in Joints between Sound-attenuating Walls and other adjacent Materials.
- D. Permit no Voids for sound passage.

3.6 GYPSUM BOARD INSTALLATION

- A. Install Wallboard horizontally, and extend to within 1/4 inch of Floor.
- B. Loosely butt Joints.
- C. Except at Corners, place Tapered Edges together.
- D. Do not place Butt Edges against Tapered Edges.
- E. Offset Joints between successive layers, if any, and on opposite faces of walls.
- F. Where possible apply Boards without Butt Joints. Where Butt Joints are necessary, locate as far from Wall and Ceiling centers as possible and offset.
- G. Maintain 3/8 inch minimum distance between Fastener and Board Edge.
- H. Dimple Board Surface 1/32 inch with Fastener; do not fracture Face Paper.
- I. Secure Single-ply Boards and Base Layer of 2-ply Assemblies to Framing as follows:
 - 1. At Metal Wall Framing: Screw at 8 inches o.c. along Board perimeter and at 12 inches o.c. at Intermediate Supports.
 - 2. At Metal Ceiling Framing: Screw at 8 inches o.c. along each Support.
 - 3. At Metal Furring: Screw at 8 inches o.c. along each Furring Member.
 - 4. Board may, at Contractor's option, be secured to Wall and Ceiling Framing with Adhesive if also screwed to Wall Supports at 16 inches o.c. and to Ceiling Supports at 12 inches o.c.
- J. Secure Face Layer of 2-ply Assemblies to Base Layer as follows:
 - 1. Install Screws long enough to penetrate Metal Framing at least 1/4 inch and, space 12 inches o.c. along each Supporting Member, or
 - 2. Apply Full Adhesive covering between plies. Until Adhesive develops full bond, temporarily support Wall Face Layer in position with Fasteners or Shoring and permanently support Ceiling Face Layer with Fasteners.

(Cont.)

PART 3 - EXECUTION

3.7 SHRINKAGE CONTROL JOINTS

- A. Provide Control Joints, unless otherwise shown on Drawings, as follows:
 - 1. If and where Framing changes direction
 - 2. Over Joints between dissimilar Substrates
 - 3. Where necessary to divide Gypsum Board into areas not exceeding:
 - a. 2-1/2 to 1 length to height Ratio
 - b. 30 ft. o.c.
 - 4. Elsewhere shown on Drawings
- B. Obtain Architect's Joint-location approval prior to starting Work.

3.8 ALLOWABLE INSTALLATION TOLERANCES

- A. Maximum Ceiling Deflection: 1/360 of span.
- B. Maximum Deviation from True Plane: 1/8 inch per 10 ft. and 1/16 inch in any running ft.

3.9 JOINT, CORNER, & SURFACE TREATMENT

- A. Protect External Corners and Exposed Edges with Metal Trim.
- B. Except at Backer Board, fill Board Joints, Internal Corners and Angles, Fastener Head Depressions, and Accessories as follows:
 - 1. At Gypsum Board: to receive Spray Texture:
 - a. Embed Tape in Joint Compound plus 3 additional coats of Compound.
 - b. Remove Tool Marks, Ridges, and excess Compound.
 - c. Cover Surface with Surface Sealer.
 - 2. At all other Gypsum Board:
 - a. Embed Tape in Joint Compound plus 3 additional coats of Compound.
 - b. Remove Tool Marks, Ridges, and excess Compound.
 - c. Cover Surface with Skim Coat of Compound.
 - d. Lightly sand or sponge to produce smooth surface.

3.10 WATER RESISTANT SEALANT

- A. Provide at Raw Edges and around Cutouts in Water-resistant Gypsum Board.

(Cont.)

GYPSUM BOARD**PART 3 - EXECUTION****3.11 GROUTING HOLLOW STEEL DOOR FRAMES**

- A. Where Frames are installed in Gypsum Board Walls, hand-trowel Door Frame Heads and Jambs (not Mullions) full with the following:
 - 1. Material: Masonry Mortar made with Lime, Portland Cement, Sand, and Water.
(*Do not use Plaster Mix or Taping Compound.*)
 - 2. Maximum Slump: 4 inches
- B. Allow Mortar to dry prior to installing Frames.

3.12 SURFACE TEXTURE

- A. At Surfaces to be Painted, except in Entry Halls & Multipurpose Rooms:
 - 1. Spray-apply Texture Compound to produce fine-spray Texture Finish in accordance with approved Mock Up.
 - 2. Follow Manufacturer's instructions.
- B. At all other Gypsum Board:
 - 1. Leave smooth without Texture.

3.13 GYPSUM BOARD REPAIRING

- A. General:
 - 1. After installation and before finishing, correct any Surface Damage or Defects.
 - 2. Leave Surfaces clean, uniform, and ready for Finishing specified in other Sections.
- B. Screw Pops:
 - 1. Repair by installing new Screw approximately 1-1/2 inch away from Projecting Screw and reset Projecting Screw.
 - 2. Where Face Paper is fractured install new Fastener approximately 1-1/2 inch away from Projecting Screw and remove Projecting Screw.
 - 3. Fill Damaged Surface with Joint Compound and finish flush and smooth.
- C. Ridging:
 - 1. Sand Ridges smooth without cutting Joint Tape.
 - 2. Fill Concave Areas on both sides of Ridge with Compound and finish flush and smooth.
- D. Cracks:
 - 1. Fill with Joint Compound and finish flush and smooth.

3.14 WASTE MANAGEMENT

- A. Collect Gypsum and Metal Scrap, and place where directed for recycling.
- B. Do not include Asphalt-impregnated Gypsum Board, or Gypsum Board coated with Paint or other Finish.
- C. Protect Gypsum Waste against Moisture and Contamination.

PART 3 - EXECUTION

3.15 PRODUCT CLEANING & OTHER REPAIRING

- A. Including Work of other Trades, clean, repair and touch-up, or replace when directed, Products which have been soiled, discolored, or damaged by Work of this Section.
- B. Remove excess Joint Compound and any other Finishing Compounds from Floors and other Surfaces.
- C. Broom-clean Work areas.
- D. Leave Surface ready for Finishing specified in other Sections.
- E. Remove Debris from Project Site upon Work completion, or sooner if directed.

END OF SECTION

PART 1 - GENERAL

1.1 CONTRACT CONDITIONS

- A. Work of this Section is bound by the Contract Conditions and Division 1, bound herewith, in addition to this Specification and accompanying Drawings.

1.2 RELATED WORK SPECIFIED IN OTHER SECTIONS

- A. Acoustic Caulking: Section 09-25-00
- B. Mineral Fiber Acoustic Insulation: Section 09-51-00

1.3 ALTERNATES

- A. Refer to Section 01-20-00 for possible effect upon Work of this Section.

1.4 REFERENCED SPECIFICATIONS

- A. For Suspension Systems, hereinafter specified, comply with:
 - 1. "Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings": ASTM C-635
 - 2. "Recommended Practice for Installation of Metal Ceiling Suspension Systems for Acoustic Tile and Lay-in Panels": ASTM C-636

1.5 COORDINATION

- A. Coordinate with other Trades affecting or affected by Work of this Section.

1.6 CERTIFICATION OF CODE COMPLIANCE

- A. Prior to starting Work, submit to Architect written certification that Ceiling System complies with Seismic Loading requirements of Building Code and that System is acceptable to Building Official.

1.7 PRODUCT DELIVERY

- A. Deliver Tile in original, unopened, protective packages with Manufacturer's legible Labels indicating brand name, pattern, size, thickness, and fire rating, if any.

PART 1 - GENERAL

1.8 PRODUCT STORAGE & HANDLING

- A. Protect against moisture, damage, and discoloration.
- B. Store Tile Cartons open at each end to stabilize moisture content and temperature.
- C. Do not store Tile near Materials that could off-gas or emit Harmful Fumes, such as Gas Heaters, fresh Paint, Adhesives, etc.

1.9 ENVIRONMENTAL REQUIREMENTS

- A. Delay installation of Acoustic Units until Work Spaces are dry.
- B. Perform Work only under the following conditions for 24 hours before, and during and after installation:
 - 1. Humidity: Approximately match final-use Humidity
 - 2. Ambient Air Temperature: 55°F to 80°F

1.10 FIELD MEASUREMENTS

- A. Verify prior to fabrication.
- B. If field measurements differ slightly from Drawing dimensions modify Work as required for accurate fit. If measurements differ substantially, notify Architect prior to fabrication.

1.11 EXTRA STOCK

- A. Submit 2 extra unopened-cases of Acoustic Tile in unopened protective packages.
- B. Store on Project Premises where directed by Owner.

PART 2 - PRODUCTS

2.1 ACOUSTIC TILE

- A. Manufacturer:
 - 1. Armstrong, Celotex, USG Interiors, or approved.
 - 2. Manufacturers listed above are approved provided they can supply Units that match specified pattern to Architect's satisfaction.

(Cont.)

PART 2 - PRODUCTS

2.1 ACOUSTIC TILE (Cont.)

- B. Facing:
 - 1. Material: Manufacturer's standard factory-applied Paint finish
 - 2. Color: White
- C. Minimum U.L. Fire Resistance Rating: None required
- D. ASTM E-84 Flame Spread Class: A
- E. Maximum ASTM E-84 Smoke Development Rating: 450
- F. Pattern: Match the following Armstrong Patterns:
 - 1. Tile Type 1 (In Collaborative Offices): Soundscapes Hexagon
 - 2. Tile Type 2 (In General Office): Soundscapes Blades
 - 3. Tile Type 3 (Elsewhere): Calla
- G. Face Sizes
 - 1. Tile Types 1 & 2: 24x48 inches:
 - 2. Tile Type 3: 24x24 inches
- H. Edge Shape: Match Armstrong Tegular

2.2 UTILITIES-SERVICES CEILING PANELS

- A. Manufacturer: CiF Lab Solutions, or approved.
- B. Model: Ceiling Service Panel
- C. Material: Steel
- D. Finish: Manufacturer's standard Enamel
- E. Color: Match adjacent Acoustic Tile.
- F. Nominal (Actual) Size: 24x24 (23-5/8 x 23-5/8) inches

2.3 TILE SUSPENSION SYSTEM

- A. Manufacturer: Armstrong, Chicago Metallic, Donn, or approved.
- B. Material: Steel
- C. Type: Heavy-duty, exposed Tee in 2 directions, all Tile removable for access to Space above.
- D. Face Width: 15/16 inch
- E. Minimum U.L. Fire Resistance Rating: None required
- F. Edge Trim: Match Suspension System
- G. Finish: Manufacturer's standard Enamel
- H. Color: Match adjacent Acoustic Tile.
- I. Layout: See Drawings

2.4 FASTENERS & ACCESSORIES

- A. Type & Sizes: Recommended by Suspension System Manufacturer

PART 3 - EXECUTION

3.1 EXISTING CONDITIONS

- A. Verify that structure and surfaces to receive System Components are properly prepared to receive Components.
- B. Prior to starting Work, notify General Contractor about defects requiring correction.
- C. Do not start Work until conditions are satisfactory.

3.2 PROTECTING WORK OF OTHER SECTIONS

- A. Protect against damage and discoloration caused by Work of this Section.

3.3 INSTALLATION

- A. General:
 - 1. Follow Referenced Specifications, Manufacturer's instructions, and Layout Drawings, except as modified hereunder.
 - 2. Delay start of Work until above-ceiling Work by other Trades has been completed.
- B. Tile Suspension System:
 - 1. Where Mechanical and Electrical Work interferes with regular spacing of Hangers, provide additional Hangers and Channels and make necessary adjustments in Ceiling construction.
 - 2. Do not attach to or pass Hangers through Mechanical or Electrical Ductwork.
 - 3. Provide Framing around any recessed Lighting Fixtures and other Openings.
 - 4. Maximum Vertical Hanger Splay: 6 inches per 4 ft.
- C. Acoustic Tile:
 - 1. Install in level plane, in straight line courses, and with solid bearing on Support Members.
 - 2. Minimum Border Tile Width: 1/2 Unit dimension, unless otherwise shown on Drawings.
 - 3. Install any Pattern grain in one direction.
 - 4. Seal Openings around any Pipe, Duct, or other penetrations through Tile with Foam Penetration Sealant specified in Section 07-92-00.
 - 5. Where Acoustic Tiles abut Vertical Surfaces, trim Joints with Suspension System Metal Edge Trim.
- D. Hold Down Clips:
 - 1. Provide at any time during Warranty Period where Ceiling Units are dislodged by Air Pressure.
 - 2. Provide at any Fire-rated Ceiling Units weighing less than 1 psf.

PART 3 - EXECUTION

3.4 ALLOWABLE INSTALLATION TOLERANCES

- A. Maximum fully loaded Ceiling Deflection in accordance with ASTM C-635: 1/360 of Span
- B. Install Finish Surfaces level and true within 1/8 inch per 12 ft.
- C. Maximum Ceiling Suspension System Runner rotation from plumb: 2°

3.5 WASTE MANAGEMENT

- A. Collect Metal Cut-offs, Scrap and Packaging, and place where directed for recycling.
- B. Store where directed 2 sq. ft. & larger Tile pieces for Patching and Infill Work.
- C. Determine and take advantage of Manufacturer's recycling options.

3.6 PRODUCT CLEANING & REPAIRING

- A. Including Work of other Trades, clean, repair and touch-up, or replace when directed, Products which have been soiled, discolored, or damaged by Work of this Section.
- B. Remove Debris from Project Site upon Work completion, or sooner if directed.

END OF SECTION

PART 1 - GENERAL

1.1 CONTRACT CONDITIONS

- A. Work of this Section is bound by the Contract Conditions and Division 1, bound herewith, in addition to this Specification and accompanying Drawings.

1.2 RELATED WORK SPECIFIED IN OTHER SECTIONS

- A. Gypsum Board to receive Wall Tiles: Section 09-25-00

1.3 ALTERNATES

- A. Refer to Section 01-20-00 for possible effect upon Work of this Section.

1.4 COORDINATION

- A. Coordinate with other Trades affecting or affected by Work of this Section.

1.5 SHOP DRAWINGS

- A. Submit in accordance with Section 01-33-00.
- B. Show dimensions, attachment methods, and other pertinent information.

1.6 SAMPLES

- A. Submit in accordance with Section 01-33-00.
- B. Include 2 full-size Tiles showing size, shape, surface texture, and color.

1.7 INSTALLER'S QUALIFICATIONS

- A. Employed by or acceptable to Tile Manufacturer.

1.8 PRODUCT DELIVERY, STORAGE, & HANDLING

- A. Protect against damage and discoloration.

PART 2 - PRODUCTS

2.1 TILES

- A. Manufacturer: Kirei USA, or approved.
- B. Brand: Echopanel Tiles
- C. Style: Mura Wave
- D. Color: Selected after Contract-award from Manufacturer's standard choices
- E. Nominal Face Size: 20x20 inches
- F. Nominal Thickness: 2.33 inches
- G. ASTM C-423 Noise Reduction Coefficient (NRC) Rating: 55
- H. ASTM E-84 Fire Resistance Class: A

PART 3 - EXECUTION

3.1 EXISTING CONDITIONS

- A. Verify that Surfaces to receive Tiles are properly prepared.
- B. Prior to starting Work, notify General Contractor about defects requiring correction.
- C. Do not start Work until conditions are satisfactory.

3.2 PROTECTING WORK OF OTHER SECTIONS

- A. Protect against damage and discoloration caused by Work of this Section.

3.3 INSTALLATION

- A. Follow Manufacturer's instructions.
- B. Position plumb, level, square, straight, and true as applicable.
- C. Securely anchor to adjacent Construction.

3.4 WASTE MANAGEMENT

- A. Collect Metal Strapping & Packaging Waste, and place where directed for recycling.

(Cont.)

PART 3 - EXECUTION

3.5 PRODUCT CLEANING & REPAIRING

- A. Including Work of other Trades, clean, repair and touch-up, or replace when directed, Products which have been soiled, discolored, or damaged by work of this Section.
- B. Remove Debris from Project Site upon work completion or sooner, if directed.

END OF SECTION

PART 1 - GENERAL

1.1 CONTRACT CONDITIONS

- A. Work of this Section is bound by the Contract Conditions and Division 1, bound herewith, in addition to this Specification and accompanying Drawings.

1.2 RELATED WORK SPECIFIED IN OTHER SECTIONS

- A. Thermal Insulation: Section 07-20-00
- B. Steel Framing to receive Acoustic Insulation: Section 09-10-00
- C. Acoustic Caulking: Section 09-25-00

1.3 ALTERNATES

- A. Refer to Section 01-20-00 for possible effect upon Work of this Section.

1.4 COORDINATION

- A. Coordinate with other Trades affecting or affected by Work of this Section.

1.5 PRODUCT DELIVERY, STORAGE, & HANDLING

- A. Protect against moisture, damage, and discoloration.
- B. Do not store Insulation near Materials that could off-gas or emit Harmful Fumes, such as Gas Heaters, fresh Paint, Adhesives, etc.

1.6 ENVIRONMENTAL REQUIREMENTS

- A. Delay Insulation installation until Work Spaces are dry.

1.7 ADVANCE NOTICES

- A. Notify Architect at least 24 hours prior to covering-over Work of this Section so inspection can be made.

PART 2 - PRODUCTS

2.1 ACOUSTIC INSULATION

- A. Manufacturer: Contractor's choice
- B. Material: Formaldehyde-free Mineral Wool Insulation
- C. Manufacturing Standard: ASTM C-665
- D. Type: Friction-fit Batt
- E. Length: Full-length, single-piece where practicable
- F. Special Requirement: UL Rated for Plenum-use if and where located above Ceiling.
- G. Thickness: Fill Wall-framing and Ceiling-framing Cavity
- H. Extent of Work: Provide in Sound-attenuating Walls, including where Walls extend above Ceiling.

PART 3 - EXECUTION

3.1 EXISTING CONDITIONS

- A. Verify that Surfaces provided by other Trades are clean, dry, and otherwise properly prepared to receive Acoustic Insulation.
- B. Prior to starting Work, notify General Contractor about defects requiring correction.
- C. Do not start Work until conditions are satisfactory.

3.2 PROTECTING WORK OF OTHER SECTIONS

- A. Protect against damage and discoloration caused by Work of this Section.

3.3 INSTALLATION

- A. Install Insulation between Framing Members butting joints tight with no voids.
- B. Extend Insulation behind Electrical Boxes located in Sound-attenuating Walls.

3.4 WASTE MANAGEMENT

- A. Collect Scrap and Packaging, and place where directed for recycling.

(Cont.)

PART 3 - EXECUTION

3.5 PRODUCT CLEANING & REPAIRING

- A. Including Work of other Trades, clean, repair and touch-up, or replace when directed, Products which have been soiled, discolored, or damaged by Work of this Section.
- B. Remove Debris from Project Site upon Work completion, or sooner if directed.

END OF SECTION

PART 1 - GENERAL

1.1 CONTRACT CONDITIONS

- A. Work of this Section is bound by the Contract Conditions and Division 1, bound herewith, in addition to this Specification and accompanying Drawings.

1.2 AREAS TO BE COVERED

- A. Where Floor Covering is scheduled:
1. Cover any Closet or Alcove Floors opening off these Spaces with same Material.
 2. Provide Floor Covering under Operable Partitions.
 3. Covering not permitted under permanently built-in Casework and Equipment, unless otherwise indicated elsewhere.
- B. Where Base is scheduled:
1. Provide around perimeter of Room or Space, unless otherwise indicated elsewhere.
 2. Include Casework, Free-standing Columns, Pilasters, and other Projections, if any.

1.3 RELATED WORK SPECIFIED IN OTHER SECTIONS

- A. Leveling uneven Concrete Floor Slabs: Section 03-30-00
B. Carpet: Section 09-68-00

1.4 ALTERNATES

- A. Refer to Section 01-20-00 for possible effect upon Work of this Section.

1.5 REFERENCED SPECIFICATIONS

- A. Comply with applicable requirements of Standard Specifications and Recommended Work Procedures for Resilient Floor Coverings published by the Resilient Floor Covering Institute.
- B. Copies can be obtained from Institute at 966 Hungerford Dr.; Suite 12-B; Rockville, MD 20850; (301) 340-8580.

1.6 COORDINATION

- A. Coordinate with other Trades affecting or affected by Work of this Section.

PART 1 - GENERAL

1.7 SAMPLES

- A. In accordance with Section 01-33-00, submit the following:
 - 1. Two full size samples of each specified Floor Tile.
 - 2. Two 12x12 inch wide samples of each specified Sheet Covering.

1.8 MAINTENANCE INSTRUCTIONS

- A. In accordance with Section 01-83-00, submit Manufacturer's recommended Maintenance Products and Methods to General Contractor, for inclusion in Owner's Maintenance Manual.

1.9 INSTALLER'S QUALIFICATIONS

- A. Acceptable to Covering Manufacturer.

1.10 REGULATORY AGENCY REQUIREMENTS

- A. Install Conductive Floor Tile in compliance with Building Code and NFPA Bulletin 56 requirements, if more restrictive than those specified herein.
- B. Notify Architect about any of differences prior to starting work.

1.11 PRODUCT DELIVERY

- A. Deliver in unopened Packages with Manufacturer's original, legible Labels thereon.
- B. Matching Coverings shall bear Manufacturer's Run Number.
- C. Do not remove Labels or open Packages until Architect inspects.

1.12 PRODUCT STORAGE & HANDLING

- A. Protect against damage and discoloration.
- B. Store in dry place.
- C. Maintain Storage Place Temperature above 70°F for immediate 48 hours prior to and during storage.

(Cont.)

PART 1 - GENERAL

1.13 CONDUCTIVE FLOOR TILE PRE-APPLICATION MEETING

- A. Prior to starting Work and in accordance with Section 01-31-50, Conductive Floor Tile Applicator shall arrange Meeting to clarify any questions about Specifications or application requirements.
- B. Representatives of the following shall attend:
 - 1. General Contractor
 - 2. Flooring Applicator
 - 3. Substrate Applicator
 - 4. Electrical Work Subcontractor

1.14 ENVIRONMENTAL REQUIREMENTS

- A. Perform Work only under the following Minimum Conditions:
 - 1. Ambient Air Temperature during application and thereafter: 70°F
 - 2. Substrate Surface Temperature: 70°F
 - 3. Work Area Illumination measured 3 ft. above Floor: 30 foot candles
 - 4. Ventilation: If and when using offensive smelling Adhesive, provide sufficient Ventilation to maintain healthy and pleasant environment for Building Occupants.

1.15 EXTRA STOCK

- A. Leave with Owner 1 extra unopened case of each Floor Tile.
- B. Leave with Owner 4 ft. minimum length of full-width Sheet Covering remnants.
- C. Store on Project Premises where directed by Owner.

PART 2 - PRODUCTS

2.1 GENERAL

- A. Covering Materials shall have uniform size and thickness, straight edges, square corners, uniform pattern, and uniform color extending through entire thickness of Material.

2.2 COLORS & PATTERNS

- A. Selected by Architect after Contract award from Manufacturer's standard choices.
- B. Manufacturers listed herein are approved, provided their Material matches selected color and pattern to Architect's satisfaction.

PART 2 - PRODUCTS

2.3 LUXURY VINYL TILE

- A. Manufacturer: Armstrong, or approved.

2.4 STATIC DISSIPATIVE VINYL COMPOSITION TILE

- A. Manufacturer & Brand: Armstrong SDT, or approved.
B. Manufacturing Standard: Fed. Spec. SS-T-312B(1) type IV Composition 1, except for para. 3.9.2 Deflection
C. Thickness: 1/8 inch
D. Face Size: 12x12 inches
E. Required Accessories:
1. 2x24 inch Copper Grounding Strips
2. Static Dissipative Adhesive
3. Static Dissipative Polish

2.5 SHEET VINYL

- A. Manufacturer: Armstrong, or approved.
B. Manufacturing Standard: ASTM F1303 Type 1, Grade 1
C. Minimum Wear Level Thickness: 0.080 inches
D. Factory Finish: UV-cured Polyurethane

2.6 RUBBER BASE

- A. Manufacturer: Armstrong, Burke, Flexco, Goodrich, Johnsonite, Mercer, Noramet, Roppe, Textile, VPI, or approved.
B. Manufacturing Standard: ASTM F-1861
C. Type: Top-set with Coved Toe
D. Height:
1. At Restroom Areas: 6 inches
2. Elsewhere: 4 inches
E. Length: Continuous Rolls
F. Required Accessories:
1. Mitered Internal Corners
2. Factory-formed External Corners equipped with Tab Extensions for installation behind adjacent Wall Base
3. Factory-formed End Stops

PART 2 - PRODUCTS

2.7 REDUCING EDGE STRIPS

- A. Manufacturer: Contractor's choice
- B. Material: Rubber
- C. Shape: Beveled
- D. Maximum Thickness: Match adjacent Flooring.
- E. Width: 1 inch
- F. Extent of Work: Provide at any exposed Resilient Flooring edges.

2.8 PRIMER, SEALER, CRACK FILLER, & ADHESIVE

- A. Water-resistant type made or recommended by Covering Manufacturer for conditions of use, including Moisture-content and Substrate-porosity. Both Tests are specified in Section 01-45-30

2.9 SEALANT

- A. Material: Silicone
- B. Manufacturer & Brand: Contractor's choice
- C. Color: Clear Translucent
- D. Manufacturing Standard: ASTM C-920, Type S, Class 25, Grade NS.
- E. Required Ingredient: Mildew Inhibitor
- F. Extent of Work: Provide in Restrooms at Joint between Rubber Base and Floor.

2.10 CLEANER

- A. Low-VOC and neutral type made or recommended by Covering Manufacturer for conditions of use.

2.11 POLISH

- A. Low-VOC, non-slip, non-yellowing type made or recommended by Flooring Manufacturer for conditions of use, and compatible with Owner's normal polishing materials and methods.
- B. Extent of Work: Provide if and where recommended by Flooring Manufacturer.

(Cont.)

PART 3 - EXECUTION

3.1 EXISTING CONDITIONS

- A. Verify that Surfaces to receive Work specified herein are solid, clean, level, and otherwise properly prepared.
- B. Verify that Concrete Slabs to receive Covering do not exceed Moisture and Vapor limits specified by Covering Manufacturer, as determined by Tests specified in Section 01-45-30.
- C. Verify that any Walls to receive Wall Base extend to within 1/4 inch of Floor.
- D. Prior to starting Work, notify General Contractor of defects requiring correction.
- E. Do not start Work until conditions are satisfactory.

3.2 PROTECTING WORK OF OTHER SECTIONS

- A. Protect against damage and discoloration caused by Work of this Section.

3.3 SURFACE PREPARATION

- A. Fill Concrete Slab Cracks less than 1/16 inch wide and Depressions less than 1/8 inch deep with Crack Filler. Notify General Contractor to correct wider Cracks and deeper Depressions.

3.4 LAYOUT

- A. Tile Patterns:
 - 1. Unless otherwise shown on Drawings, layout Tile Field so that no Perimeter Tile is narrower than 1/2 of a full-size Tile.
 - 2. Layout Tile as shown on Drawings.
 - 3. Install Tile in 'quarter-turn' checkerboard pattern.

3.5 INSTALLATION

- A. General:
 - 1. Follow Manufacturer's Instructions and applicable sections of Referenced Specifications.
- B. Tile:
 - 1. At least 24 hours before installing, remove Tile from Shipping Cartons and back-stack.
- C. Sheet Flooring:
 - 1. Install with minimum practicable Seams in accordance with Manufacturer's recommended method.

(Cont.)

PART 3 - EXECUTION

3.5 INSTALLATION (Cont.)

- D. Static Dissipative Tile:
 - 1. Locate Grounding Strips approximately 25 ft. apart around installation perimeter. Extend Strips 18 inches into Adhesive and 6 inches up Wall face for connection to Grounding System by Electrician.
- E. Rubber Base:
 - 1. General: Install Factory-formed External Corners with Contact Cement.
 - 2. At Restrooms:
 - a. Set Base in Sealant Bead previously applied to Floor.
 - b. Strike-off any surplus Sealant flush with Base.
 - c. Remove any surplus Sealant from Base and Floor.
- F. Reducing Edge Strips:
 - 1. Provide wherever Flooring edges are exposed.
 - 2. If Flooring terminates at Door opening, center Strip under Door.

3.6 STATIC DISSIPATIVE TILE TESTING

- A. Approximately 1 month after installation, make tests prescribed by Federal Test Specification 4046 Method 101C.
- B. Remove, re-lay, and re-test Floors which fail to meet Tests.

3.7 WASTE MANAGEMENT

- A. Half-size & Larger Surplus Tile: Set aside for Owner's reuse or donate to Organizations such as Habitat for Humanity.
- B. Partly-used Adhesive Containers: Tightly-seal and store in protected, well-ventilated, and fire-safe area maintained at moderate temperature.
- C. Cardboard & Metal Waste: Collect and place where directed for recycling.

3.8 CLEANING, REPAIRING, & POLISHING

- A. Do not let Dirt or Soil accumulate on installed Surfaces; if necessary sweep or vacuum daily.
- B. After Covering and Adhesive have set sufficiently, wash with Cleaner.
- C. After rinsing and drying, apply one coat of Polish to Covering. Machine-buff to smooth and dull-gloss. Hand-buff inaccessible areas.
- D. Leave Surfaces smooth and defect-free.
- E. Including Work of other Sections, clean, repair and touch-up, or replace when directed, Products which have been soiled, discolored, or damaged by Work of this Section.
- F. Remove Debris from Project Site upon Work completion, or sooner if directed.

PART 3 - EXECUTION

3.9 PROTECTING COMPLETED WORK

- A. Rope-off Work areas and/or provide necessary Coverings to protect Work of this Section.

END OF SECTION

PART 1 - GENERAL

1.1 CONTRACT CONDITIONS

- A. Work of this Section is bound by the Contract Conditions and Division 1, bound herewith, in addition to this Specification and accompanying Drawings.

1.2 AREAS TO BE COVERED

- A. Where Carpet is scheduled:
1. Cover any Closet or Alcove Floors opening off these Spaces with same Material.
 2. Provide Carpet under Operable Partitions.
 3. Do not provide Carpet under permanently built-in Casework or Equipment, unless otherwise shown on Drawings.

1.3 RELATED WORK SPECIFIED IN OTHER SECTIONS

- A. Leveling of uneven Concrete Slabs: Section 03-30-00
B. Rubber Base at Carpet Perimeters: Section 09-65-00

1.4 ALTERNATES

- A. Refer to Section 01-20-00 for possible effect upon Work of this Section.

1.5 COORDINATION

- A. Coordinate with other Trades affecting or affected by Work of this Section.

1.6 SAMPLES

- A. Prior to ordering and in accordance with Section 01-33-00, submit the following:
1. Two full-size Carpet Tile samples of each Carpet type and color.
 2. Two 12 inch long samples of each type of Edge Strip.

1.7 MAINTENANCE INSTRUCTIONS

- A. In accordance with Section 01-83-00, submit Instructions to General Contractor for inclusion in Owner's Maintenance Manual.

CARPET**PART 1 - GENERAL****1.8 REGULATORY AGENCY REQUIREMENTS**

- A. Maximum Carpet System Flame Spread & Smoke Development: Comply with applicable Building Code requirements.

1.9 CERTIFICATION OF COMPLIANCE

- A. Submit Carpet Manufacturer's affidavit which certifies that:
 - 1. Installer is authorized to perform Work.
 - 2. Installed Carpet was manufactured in accordance with Specification requirements.
- B. Replace non-complying Products at no cost to Owner.

1.10 PRODUCT DELIVERY

- A. Do not deliver Carpet until installation is ready to start.

1.11 PRODUCT STORAGE & HANDLING

- A. Protect against damage and discoloration.
- B. Do not store Rolled Goods on end.

1.12 ENVIRONMENTAL REQUIREMENTS

- A. Perform Work only under the following Minimum Conditions:
 - 1. Ambient Air Temperature:
 - a. During installation & for 72 hours thereafter: 65°F - 95°F
 - b. Beyond 72 hours after installation: 55°F minimum
 - 2. Substrate Surface Temperature: 65°F
 - 3. Work Area Illumination measured 3 ft. above Floor: 30 ft. candles
 - 4. Ventilation: If and when using offensive smelling Adhesive, provide sufficient Ventilation to maintain healthy and pleasant environment for Building Occupants.

1.13 SPECIAL WARRANTY

- A. Warrant for 5 years that Carpet will maintain specified limits of Static Electricity generation.
- B. Warrant for 10 years that Carpet will lose no more than 10% Face Fiber by weight.
- C. At no additional cost to Owner, correct defects in materials and workmanship which appear during Warranty Period by repairing, or when directed by replacing.

PART 1 - GENERAL

1.14 MAINTENANCE MATERIALS

- A. For each type, pattern, and color of Carpet leave 1 extra unopened case of each type and color of Carpet Tile.
- B. Store on Project Premises where directed by Owner.

PART 2 - PRODUCTS

2.1 CARPET TILE

- A. Manufacturer: Interface, or approved.
- B. Brand, Pattern, Color, & Size: Selected by Architect after Contract award from Manufacturer's standard choices.
- C. Static Electricity Control Fiber: Manufacturer's standard type blended with Carpet Fiber. Maximum Electrostatic Charge: 3.5 KV at 20% relative humidity at 70°F.

2.2 CUSHION

- A. None required.

2.3 CONCRETE SEALER

- A. Manufacturer & Brand: Contractor's choice
- B. Type: Satisfy conditions of use.
- C. Maximum VOC Emission Level: 250 g/l
- D. Extent of Work: Provide if and where recommended by Carpet Manufacturer.

2.4 EDGE STRIP

- A. Manufacturer & Brand: Mercer Snap Down, Roberts Universal Moulding System, or approved.
- B. Insert Material: Vinyl
- C. Insert Color: Match adjacent Rubber Base specified in Section 09-65-00.

PART 2 - PRODUCTS

2.5 ADHESIVE & FLOOR FILLER

- A. Manufacturer: Contractor's choice
- B. Material: Non-flammable type recommended by Carpet Manufacturer

2.6 PROTECTIVE COVERING

- A. Manufacturer & Brand: Velcro Carpet Protection (800) 225-0180, or approved.
- B. Material: Non-woven, water-resistant, breathable, without pressure-sensitive adhesives.

PART 3 - EXECUTION

3.1 EXISTING CONDITIONS

- A. Verify that Subfloor is clean, dry, level, and solid; with no projections or holes that will damage Carpet System; that Work Spaces have specified illumination, humidity, and temperature; and that Surfaces are otherwise properly prepared.
- B. Prior to starting Work notify General Contractor about defects requiring correction.
- C. Verify that Concrete to receive Covering does not exceed Moisture and Vapor limits specified by Covering Manufacturer, as determined by Tests specified in Section 01-45-30.
- D. Do not start Work until conditions are satisfactory.

3.2 PROTECTING WORK OF OTHER SECTIONS

- A. Protect against damage and discoloration caused by Work of this Section.

3.3 PREPARATION WORK

- A. Fill Concrete Slab Cracks less than 1/16 inch wide and Depressions less than 1/8 inch deep with Floor Filler. Notify General Contractor to correct wider Cracks and deeper Depressions.
- B. Remove any Dust, Foreign Matter, or Moisture from Substrate.
- C. Air-out Carpet in well-ventilated and uninhabited space for 24 hours minimum.
- D. Acclimate Carpet to Work Space Environment for at least 48 hours before starting Work.

CARPET**PART 3 - EXECUTION****3.4 EDGE STRIP INSTALLATION**

- A. Follow Manufacturer's instructions.
- B. Provide Edge Stripping at exposed Carpet edges.
- C. Where Carpet terminates at Door opening, center Edge Strip under Door.

3.5 CARPET TILE LAYOUT

- A. Minimum Perimeter Tile Width: 1/2 of full Tile size, unless otherwise shown on Drawings or otherwise approved by Architect.
- B. Install Tile in Stack Bond with continuous straight line joints in both directions.
- C. Install any Tile "grain" in quarter-turn checkerboard-pattern.

3.6 ADHESIVE APPLICATION

- A. Follow Manufacturer's instructions.
- B. Apply uniformly over full area to receive Carpet Tile.
- C. Application Method: Thin-coat
- D. Apply only to area that can be covered by Carpet within Adhesive working-time.
- E. Promptly remove any Adhesive spillages.

3.7 CARPET TILE INSTALLATION

- A. Follow Manufacturer's instructions.
- B. Installation Method: Direct Glue-down
- C. Match any Layout Pattern shown on Drawings.
- D. Fit neatly into Breaks and Recesses; against Bases; around Pipes and Penetrations; under Saddles, Ventilator Grilles, and Thresholds; and around Cabinet and Equipment perimeters.
- E. Where Tile terminates at Door openings center exposed Tile edge directly under Door.

3.8 WASTE MANAGEMENT

- A. Where possible, take advantage of Manufacturer's Recycling Program.
- B. Remnants, other than those set aside for Owner's future use: Donate to Organizations such as Habitat for Humanity.
- C. Partly-used Adhesive Containers: Tightly-seal and store in protected, well-ventilated, and fire-safe area maintained at moderate temperature.
- D. Packaging & Metal Waste: Collect and place where directed for recycling.

PART 3 - EXECUTION

3.9 CLEANING & REPAIRING

- A. Do not let Dirt or Soil accumulate on installed Carpet; vacuum daily if necessary.
- B. After completing Work, vacuum-clean Carpet.
- C. Remove Debris from Project Site upon Work completion, or sooner if directed.
- D. Including Work of other Sections, clean, repair and touch-up, or replace when directed, Products which have been soiled, discolored, or damaged by Work of this Section.

3.10 DEMONSTRATIONS

- A. After installation, instruct Owner on proper care, cleaning, and maintenance of Carpet and proper Tile relocation procedures.

3.11 PROTECTING COMPLETED WORK

- A. Provide Coverings and Barricades necessary to protect completed Work.

END OF SECTION

PART 1 - GENERAL

1.1 CONTRACT CONDITIONS

- A. Work of this Section is bound by the Contract Conditions and Division 1, bound herewith, in addition to this Specification and accompanying Drawings.

1.2 EXTENT OF WORK

- A. In Spaces scheduled to receive Covering:
1. Include any Closet and Alcove surfaces opening off Spaces.
 2. Covering not required under permanently built-in Case Work and Equipment unless otherwise noted on Drawings.

1.3 RELATED WORK SPECIFIED IN OTHER SECTIONS

- A. Concrete Substrate: Section 03-30-00

1.4 ALTERNATES

- A. Refer to Section 01-20-00 for possible effect upon Work of this Section.

1.5 COORDINATION

- A. Coordinate with other Trades affecting or affected by Work of this Section.

1.6 SAMPLES

- A. Prior to ordering Materials, submit Manufacturer's standard Color Samples to Architect for selection.

1.7 APPLICATOR'S QUALIFICATIONS

- A. To be eligible to perform Work specified herein Applicator must have successfully completed 2 similar projects, and be employed by or acceptable to Covering Manufacturer.

PART 1 - GENERAL

1.8 PRODUCT DELIVERY, STORAGE, & HANDLING

- A. Deliver in unopened Containers with Manufacturer's original, legible Labels thereon.
- B. Do not remove Labels or open Packages until Architect inspects.
- C. Protect against damage.
- D. Maintain Storage Space dry and between 60° F to 70° F.

1.9 ENVIRONMENTAL REQUIREMENTS

- A. Perform Work only under the following Minimum Conditions:
 - 1. Ambient Air Temperature during application and thereafter: 70°F
 - 2. Substrate Surface Temperature: 60°F
 - 3. Work Area Illumination measured 3 ft. above Floor: 30 foot candles
 - 4. Ventilation:
 - a. Air Changes per hour: 3
 - b. Exhaust Contaminated Air directly to Building outside, unless otherwise approved.

1.10 PRE-INSTALLATION MEETING

- A. Prior to starting work, and in accordance with Section 01-31-50, Covering Subcontractor shall arrange meeting to clarify any questions about Specifications, details, and other application requirements.
- B. Representatives of the following shall attend:
 - 1. General Contractor
 - 2. Covering Subcontractor
 - 3. Covering Manufacturer
 - 4. Covering-mounted Equipment Subcontractors, if any
 - 5. Covering-penetrating Equipment Subcontractors, if any.

(Cont.)

PART 1 - GENERAL

1.11 MAINTENANCE WARRANTY

- A. Prior to Final Project Acceptance and in accordance with Section 01-83-00, submit the following Maintenance Warranty for inclusion in Owner's Maintenance Manual:
1. We, the Undersigned, do hereby warrant Covering for 2 years following Project Substantial Completion date, against failure due to defective materials and/or workmanship, for System to remain watertight, and to repair or replace without additional cost to Owner any water leaks and resulting damage to Building Materials and/or Building Contents as may occur under normal usage within Warranty Period.

FLOORING SUBCONTRACTOR: _____
By: _____

GENERAL CONTRACTOR: _____
By: _____

PART 2 - PRODUCTS

2.1 EPOXY AGGREGATE SYSTEM

- A. Manufacturer & Brand: Crossfield Dex-O-Tex Decor-Flor, or approved.
- B. Color: Selected by Architect after Contract award from Manufacturer's standard choices.

2.2 EDGE STRIPS

- A. Manufacturer: American Terrazzo Strip Co., or approved.
- B. Material: 1-piece Stainless Steel
- C. Depth: Match adjacent Flooring System
- D. Extent of Work: Provide at any exposed Flooring Edges.

(Cont.)

PART 3 - EXECUTION

3.1 EXISTING CONDITIONS

- A. Verify that Substrate to receive Covering is clean, solid, smooth, and true within 1/8 inch plus or minus per 10 ft. in any direction.
- B. Verify that Concrete Slabs to receive Covering do not exceed Moisture and Vapor limits specified by Covering Manufacturer, as determined by Tests specified in Section 01-45-30.
- C. Prior to starting Work, notify General Contractor about defects requiring correction.
- D. Do not start Work until conditions are satisfactory.

3.2 PROTECTION

- A. Take necessary precautions to avoid Fire and Explosion.
- B. Protect Work of other Sections against damage and discoloration caused by Work of this Section.

3.3 COVERING INSTALLATION

- A. Follow Manufacturer's instructions.
- B. Minimum Thickness: 1/8 inch
- C. Texture: Smooth

3.4 EDGE STRIPS

- A. Follow Manufacturer's instructions.
- B. Anchor at ends and at 12 inch maximum centers between.
- C. Where Flooring terminate at Door opening, center Strip under Door.

3.5 WASTE MANAGEMENT

- A. Surplus Covering: Set aside for Owner's reuse or donate to Organization such as Habitat for Humanity.
- B. Partly-used Covering Containers: Tightly-seal and store in protected, well-ventilated, fire-safe area maintained at moderate temperature, and designated for hazardous materials
- C. Metal Waste: Collect and place where directed for recycling.

(Cont.)

PART 3 - EXECUTION

3.6 PRODUCT CLEANING & REPAIRING

- A. Remove Protective Covering from other finish surfaces.
- B. Including Work of other Trades, clean, repair and touch-up, or replace when directed, Products which have been soiled, discolored, or damaged by Work of this Section.
- C. Remove Debris from Project Site upon Work completion, or sooner if directed.

3.7 PROTECTING COMPLETED WORK

- A. Provide necessary Barricades and Coverings to protect Work of this Section against damage and discoloration until Work is sufficiently cured to protect itself.

END OF SECTION

PART 1 - GENERAL

1.1 CONTRACT CONDITIONS

- A. Work of this Section is bound by the Contract Conditions and Division 1, bound herewith, in addition to this Specification and accompanying Drawings.

1.2 RELATED WORK SPECIFIED IN OTHER SECTIONS

- A. Temporary Sign Painting, Temporary Heat, & Temporary Light: Section 01-50-00
- B. Fabricated Steel Shop Painting: Sections 05-10-00 & 05-50-00
- C. Sheetmetal Shop Painting: Sections 07-61-00 & 07-62-00
- D. Roof Accessories Shop Painting: Section 07-72-00
- E. Joint Sealants: Section 07-92-00
- F. Hollow Steelwork Shop Painting: Section 08-11-00
- G. Wood Door Factory-finishing: Section 08-21-00
- H. Access Hatches Shop Painting: Section 08-30-00
- I. Sectional Overhead Door Shop Painting: Sections 08-36-00 & 08-36-50
- J. Acoustic System Suspension Tee Shop Painting: Section 09-50-00
- K. Seamless Floor Covering: Section 09-72-00
- L. Mechanical Equipment Screens Shop Painting: Section 10-20-00
- M. Metal Locker & Locker Room Equipment Shop Painting: Section 10-50-00
- N. Miscellaneous Specialties Shop Painting: Section 10-99-00
- O. Equipment Shop Painting: Division 11
- P. Window Blind Shop Painting: Section 12-51-00
- Q. Crane Shop Painting: Section 14-60-00
- R. Mechanical Equipment Shop Painting: See HVAC & Plumbing Specifications
- S. Electrical Equipment Shop Painting: See Electrical Specifications

1.3 ALTERNATES

- A. Refer to Section 01-20-00 for possible effect upon Work of this Section.

1.4 COORDINATION

- A. Coordinate with other Trades affecting or affected by Work of this Section.

1.5 PRODUCTS LIST

- A. Before ordering, submit complete List of Materials proposed for use.
- B. Obtain Architect's acceptance before ordering.

PART 1 - GENERAL

1.6 COLOR SAMPLES

- A. In accordance with Section 01-33-00, submit 2 Samples of each specified Finish, Color, and Sheen.
- B. Minimum Sample Size: 8-1/2 x 11 inches
- C. Sample Substrates:
 - 1. For Paint: Stiff Paper, or approved.
 - 2. For Stains & Varnishes: Specified Wood
- D. Obtain Architect's acceptance before proceeding with Contract Work.

1.7 FIELD MOCK UP

- A. Before proceeding with Contract Work, apply where directed each specified Coating on actual Work Surfaces.
- B. Include at least the following:
 - 1. Walls: 100 sq. ft.
 - 2. Ceilings: 100 sq. ft.
 - 3. Doors & Door Frames: 1
 - 4. Wood-faced Cabinets: 1
- C. Simulate Contract Lighting during Architect's review.
- D. Prior to starting Project Work, adjust Mock-up Colors as directed by Architect at no additional cost to Owner.
- E. Accepted Mock Up represents Minimum Acceptance Standard for Subsequent Work.
- F. Accepted Mock Up, in like-new condition, may be used in Contract Work.

1.8 CERTIFICATE OF COMPLIANCE

- A. Submit Affidavit from Paint Manufacturer's Architectural Service Representative that Products and Work of this Section comply with these Specifications.

1.9 PRODUCT DELIVERY, STORAGE, & HANDLING

- A. Deliver in Manufacturer's original, unopened Containers with legible Labels intact.
- B. Do not open Containers or remove Labels until Architect inspects.
- C. Store in suitable location where directed by General Contractor.
- D. Protect against damage and contamination.
- E. Remove unacceptable Materials from Project Site.

PART 1 - GENERAL

1.10 PRODUCT LABELS

- A. Each Product Container Label shall include:
 - 1. Manufacturer's Name
 - 2. Type of Material
 - 3. Manufacturer's Product Number
 - 4. Manufacturer's Batch Number
 - 5. Color
 - 6. Instructions for reducing when applicable

1.11 WORK SPACE ENVIRONMENTAL REQUIREMENTS

- A. Comply with Manufacturer's recommendations.
- B. Perform Work only under the following conditions, unless otherwise instructed by Manufacturer:
 - 1. Maximum Relative Humidity: 85%
 - 2. Minimum Dew Point Variance between Air & Surface Temperature: 5°F.
 - 3. Minimum Ambient Air & Surface Temperature during application and until Film is dry-hard thereafter: 45°F.
- C. Do not work:
 - 1. Where Dust, Air-borne Particles, or Insects are present.
 - 2. Where Inclement Weather may damage Coating Surface.
 - 3. With less than 30 ft. candles of Available Light measured 3 ft. above adjacent Ground or Floor.

1.12 EXTRA STOCK

- A. Submit, in previously unopened Containers, 1 gallon of each color of each Top Coat.
- B. Label each Container with Product-identification and Use-location.
- C. Store on Project Premises where directed by Owner.

PART 2 - PRODUCTS

2.1 GENERAL

- A. Products for each general purpose shall be of same Manufacturer. Do not use Products of different Manufacturers over one another, except for Shop Prime Coats specified in other Sections.

(Cont.)

PART 2 - PRODUCTS

2.1 GENERAL (Cont.)

- B. Products shall be free of Lead and Mercury and must comply with Federal VOC requirements.
- C. Products shall have good flowing and brushing properties and shall dry or cure free of Blemishes or Sags.
- D. Products shall not exceed Code-required Flame-spreads or Smoke-developments.

2.2 GALVANIZED STEEL PRETREATMENT MATERIAL

- A. Manufacturer & Brand: Amchem Galvaprep, Devoe Dev Prep 88, or approved.

2.3 OTHER COATINGS

- A. Products listed below in Paint Schedule shall comply with latest edition of Approved Products List published by Master Painters Institute (MPI). Copies can be obtained from Institute at (888) 674-8937, or they can be viewed by Computer at www.paintinfo.com and clicking-on either "Product Index Alphabetical" or "Product Index by MPI Number".
- B. Approved Manufacturers:
 - 1. Except for specific Products stipulated above, only those Manufacturers who maintain a full-time Local or Regional Architectural Representative are approved for use on this Project.
 - 2. Benjamin Moore, Devoe, GliddenProfessional, Kelly Moore, Miller, Parker, Rodda, & Sherwin Williams are approved. Others may be approved if they attest to maintaining a full-time Representative.

2.4 COLORS

- A. Selected by Architect after Contract award.
- B. Manufacturers listed in Approved Products List are approved provided they can supply Colors that match selected Colors to Architect's satisfaction.

2.5 MIXING & TINTING

- A. Follow Manufacturer's instructions.
- B. Unless otherwise instructed by Manufacturer, deliver Coatings factory-mixed to Jobsite.
- C. Job-mix and Job-tint only when required by Manufacturer.
- D. Mix only in clean, rust-resistant Containers.
- E. Use Tinting Colors recommended by Coating Manufacturer.
- F. Where Thinner is used, do not exceed Coating Manufacturer's recommendations. Do not use Kerosene or Organic Solvents to thin Water-based Coatings.

PART 3 - EXECUTION

3.1 EXISTING CONDITIONS

- A. Examine Surfaces to receive Coatings for existing conditions that could adversely effect Work execution, permanence, or quality. Give particular attention to Primer Coatings applied by other Trades.
- B. Verify that General Contractor has removed Door Hardware, as specified in Section 08-71-00.
- C. Do not apply Coating over Substrates which exceed the following Maximum Moisture Content:
 - 1. Wood: 15%
 - 2. Gypsum Board: 12%
- D. Prior to starting Work, notify General Contractor about defects requiring correction.
- E. Do not start Work until conditions are satisfactory. Applying Coatings to defective Substrates indicates acceptance of Defective Substrate by Painter, and Painter shall bear all costs to produce acceptable Work, including re-painting entire Surface (*No touch-up painting allowed.*).

3.2 PROTECTING WORK OF OTHER SECTIONS

- A. Protect against damage and discoloration caused by Work of this Section.
- B. Prior to painting, remove or otherwise protect any Finish Hardware, Accessories, Cover Plates, Lighting Fixtures, and similar Items. After painting, reinstall Removed Items and remove Protective Coverings.
- C. Do not dump Waste Materials, including Thinners, into Landscape Planting Beds, Plumbing Fixtures, or Storm Drains.
- D. Cover or otherwise protect Paint Storage and Mixing Rooms.

3.3 FIRE PROTECTION

- A. Take extraordinary care to prevent Fire.
- B. Open Coating Containers only when needed.
- C. Keep Rubbing Cloths and Oily Rags submersed in Water.

3.4 SURFACE PREPARATION

- A. General:
 - 1. Follow Coating Manufacturer's instructions.
 - 2. Remove any Loose Material, Dirt, Dust, or Foreign Matter.
- B. Gypsum Board:
 - 1. Repair any Holes, Cracks, Ridges, etc.; and smooth Repairs by sanding.
 - 2. Wipe-down or vacuum Surfaces to remove any residual Dust.

(Cont.)

PART 3 - EXECUTION

3.4 SURFACE PREPARATION (Cont.)

- C. Zinc Alloy & Galvanized Steel:
 - 1. Thoroughly clean with Solvent or pressure-wash with Detergent in hot Water.
 - 2. Etch Metal with Metal Conditioner or in accordance with Steel Structures Painting Council Specifications.
 - 3. Preparations to receive Enamel: ASTM D-6386
- D. Stainless Steel:
 - 1. Thoroughly clean with Solvent, or pressure-wash with Detergent in hot Water.
- E. All other Non-galvanized Ferrous Metal:
 - 1. Remove any Rust, Grease, Oil, or loose Scale.
- F. Aluminum:
 - 1. Etch with Phosphoric Acid, or approved.
- G. Wood Doors:
 - 1. Hand-block-sand Faces and Edges to remove any Handling Marks or Raised Grain. Do not use Steel Wool on Open-grain Species.
 - 2. Fill any Voids. At any Natural-finished Doors, color Filler to match Wood.
- H. Other Wood:
 - 1. Clean Soiled Surfaces with Alcohol, or approved.
 - 2. Remove any Mildew by scrubbing with Trisodium Phosphate Solution, treat with Bleach Solution, rinse with clean Water, and allow Surfaces to completely dry before proceeding with remaining work.
 - 3. Except any at Rough-sawn Surfaces, hand-block-sand Surfaces to remove any Raised Grain. Do not use Steel Wool on Open-grain Species.
 - 4. At Opaque Coatings seal any Knots, Pitch, and Resinous Sapwood before Primer Coat application.
 - 5. Fill any Voids, including set Nail and other Fastener Holes. At any Natural-finished Wood, color Filler to match Wood.
 - 6. Apply Clear Sealer-primer to any smooth-surfaced Softwood Species before applying any scheduled Penetrating Stain.

3.5 COATING APPLICATION

- A. General:
 - 1. Follow Coating Manufacturer's instructions.
 - 2. Do not apply initial Coating until Surface Moisture Content is within limitations recommended by Coating Manufacturer. Where in doubt test with Moisture Meter.
 - 3. Except as otherwise specified hereunder, apply Coatings with suitable Brush, Roller, or Spray Equipment recommended by Coating Manufacturer.
 - 4. Back-roll or brush-in spray-applied Primer Coats to assure Coating penetration.
 - 5. Maintain Brushes, Rollers, and Spray Equipment clean, free from contaminates, and suitably prepared for conditions of use.

(Cont.)

PART 3 - EXECUTION

3.5 COATING APPLICATION (Cont.)

A. General: (Cont.)

6. Do not exceed Coating Manufacturer's specified Coating Application Rate.
7. Follow Coating Manufacturer's recommended Drying Time between succeeding Coats.
8. Apply Finish Coats smooth, free of Brush Marks, Streaks, Laps, Coating Pile-up, and Skips.
9. Leave any Moldings and Ornaments clean, true to detail, and without excessive Coating build-up in Corners and Depressions.
10. Where Coating abuts other Materials or Colors cut Coating Edge clean, sharp, and with no overlap.
11. In addition to Door Faces, finish Door Tops, Bottoms, and Edges as specified below. If necessary, remove Doors from Frames.
12. Tint each Coat progressively lighter to enable confirmation of Coat quantities.
13. Sand and dust between each Coat to provide anchor for succeeding Coats, and to remove any Defects visible from 36 inch minimum distance.
14. Extend Paint Finish behind Mirrors and other similar Wall-mounted Items.
15. If and where recoating Existing Surface, apply New Coating over entire Existing Surface and extend New Coating to nearest Surface-break such as Wall Corners, Floor abutments, and Ceiling abutments.

B. Painted Work:

1. Woodwork: Immediately upon Jobsite delivery, prime all Surfaces including Concealed Surfaces.
2. Flat Metalwork, including Doors: Apply Paint with Roller or Airless Spray Equipment only. Do not apply by Brush.
3. If, and when, painting Door Hinges such as on Electrical Panels, open and close Doors several times after painting to prevent Paint bridging across Hinge Knuckles.
4. Roller-applied High-build Coatings: Do not "move" Paint with roller, or stop rolling prior to roller going dry. Remove roller marks by back-rolling, using minimum possible pressure, and rolling in 1 direction only.

C. Transparent Finish Woodwork:

1. Immediately upon Jobsite delivery, apply 1 coat of Clear Sealer-Primer to concealed surfaces of Wood, if any, to be installed at the following locations:
 - a. Building exterior
 - b. Within High Humidity areas
 - c. Adjacent to new Concrete
2. Adjust Finish Color where necessary to produce uniform appearance between adjacent Matching Materials.
3. At any Rough-textured Wood, back-brush any Spray-applied or Dip-applied Coating.

PART 3 - EXECUTION

3.6 FIELD QUALITY CONTROL

- A. Before proceeding with remaining Work, request Architect to inspect each first-finished Room, Space, and Item for acceptability.
- B. Immediately following application, Wet Film Thickness of Coatings may be tested in compliance with ASTM D-4414.
- C. After 14 calendar days following application, Coatings may be tested as follows:
 - 1. In compliance with ASTM D-4138, Dry Film Paint Thicknesses may be measured using a Mark II Tooke Coating Inspection Gage, or a similar Precision Instrument, designed for measuring Paint Coating Thicknesses. Touch-up Test Surface, which will measure approximately 1 sq. inch per Test.
 - 2. In compliance with ASTM D-3359 Tape Test, Coating Adhesion may be determined.
- D. Recoat any Work which fails Test.

3.7 WASTE MANAGEMENT

- A. Surplus Paint: Set aside for Owner's reuse, donate to organization such as Habitat for Humanity, or deliver to Re-manufacturer,
- B. Partly-used Paint Containers: Tightly-seal and store in protected, well-ventilated, fire-safe area maintained at moderate temperature, and designated for hazardous material storage.
- C. Do not dispose of Coatings, Solvents, or Cleaning Fluids by pouring onto Ground, into Toilets, or into Storm Drains. Place in suitable Containers and lawfully dispose.
- D. Hazardous Products (Paint, Stain, Wood Preservative Finish, Thinner, Solvent, etc.) are subject to disposal regulations. Comply with governing Federal, State, and Local requirements.
- E. When recycling is available, segregate and recycle Waste Materials. Treat Materials that cannot be recycled as Hazardous Waste and lawfully dispose.
- F. Appropriately launder Solvent-soaked and Oil-soaked Rags.
- G. Prior to disposal, dry Empty Material Containers

3.8 PRODUCT CLEANING & REPAIRING

- A. Remove any Spills, Splatters, and Stains including those in Paint Storage and Mixing Room.
- B. Unless otherwise approved, refinish entire Surface where portion of Coating is unacceptable.
- C. Including Work of other Trades, clean, repair and touch-up, or replace when directed, Products which have been soiled, discolored, or damaged by Work of this Section.
- D. Remove Debris from Project Site upon Work completion, or sooner if directed.

PART 3 - EXECUTION

3.9 PROTECTING COMPLETED WORK

- A. Post Signs and install Barricades where necessary to protect Completed Work of this Section against damage and discoloration.

3.10 PAINTING SCHEDULE

- A. General:
1. Prime Coats specified below may be omitted where Factory-applied Shop Coatings have been applied by other Trades.
 2. Quantities of Coats specified below are minimum. Finished Work shall be even, uniform, and free from cloudy and mottled appearance. Apply additional Coats (4 minimum) of any Deep or Bright Tone Colors where necessary to hide Substrate.
 3. Minimum Dry Film Thicknesses specified below include Prime Coat and Finish Coats combined.
- B. Surfaces not coated, unless otherwise indicated elsewhere:
1. Items having complete Factory-applied Finish
 2. Exterior Traffic Markings
 3. Irrigation System
 4. Plastic Laminate Covering
 5. Joint Sealants
 6. Factory-finished Wood Doors
 7. Finish Hardware
 8. Glass
 9. Acoustic Tile
 10. Flooring
 11. Roofing
 12. Visual Display Boards
 13. Toilet Compartments
 14. Cast Metal Plaque
 15. Signs
 16. Lockers & Locker Room Benches
 17. Operable Partitions
 18. Toilet & Bath Accessories
 19. Window Blinds
 20. Instructional Labels including Fire-resistance Rating Labels

(Cont.)

PART 3 - EXECUTION

3.10 PAINTING SCHEDULE (Cont.)

- C. Exterior Aluminum: & Stainless Steel:
 - 1. Latex Enamel
 - a. 1 coat Galvanized Primer (MPI Product #134 - *Min. Solids Volume 38% & Max. VOC 100 grams/liter*), followed by:
 - b. 2 coats Semi-gloss (MPI Level #5) Latex Enamel (MPI Product #11 - *Min. Solids Volume 39% & Max. VOC 50 grams/liter*)
 - c. Minimum Total Dry Film Thickness: 4.0 mils
- D. Exterior Galvanized Steel:
 - 1. Latex Enamel
 - a. 1 coat Galvanized Primer, (MPI Product #134 - *Min. Solids Volume 38% & Max. VOC 100 grams/liter*), followed by:
 - b. 2 coats Semi-gloss (MPI Level #5) Latex Enamel (MPI Product #11 - *Min. Solids Volume 39% & Max. VOC 50 grams/liter*)
 - c. Minimum Total Dry Film Thickness: 4.0 mils
- E. All Other Exterior Ferrous Metal:
 - 1. Latex Enamel
 - a. 1 coat Bonding Primer (MPI Product #107 - *Min. Solids Volume 38% & Max. VOC 100 grams/liter*), followed by:
 - b. 2 coats Semi-gloss (MPI Level #5) Latex Enamel (MPI Product #11 - *Min. Solids Volume 39% & Max. VOC 50 grams/liter*)
 - c. Minimum Total Dry Film Thickness: 4.0 mils
- F. Interior Gypsum Board in Restrooms:
 - 1. Latex Enamel
 - a. 1 coat Latex Primer (MPI Product #149), followed by:
 - b. 2 coats Semi-gloss (MPI Level #5) Latex Enamel (MPI Product #147)
 - c. Minimum Total Dry Film Thickness: 4.0 mils
- G. Interior Gypsum Board Elsewhere:
 - 1. Latex Enamel
 - a. 1 coat Latex Primer (MPI Product #149), followed by:
 - b. 2 coats Eggshell-gloss (MPI Level #3) Latex Enamel (MPI Product #145)
 - c. Minimum Total Dry Film Thickness: 4.0 mils
- H. Interior Ferrous Metal:
 - 1. Latex Enamel
 - a. 1 coat Rust Inhibiting Primer (MPI Product #107), followed by:
 - b. 2 coats Semi-gloss (MPI Level #5) Latex Enamel (MPI Product #147)
 - c. Minimum Total Dry Film Thickness: 4.0 mils

(Cont.)

PART 3 - EXECUTION

3.10 PAINTING SCHEDULE (Cont.)

- I. Interior Woodwork:
 - 1. Polyurethane Varnish
 - a. 1 coat Paste Filler (MPI Product #91) colored to match Wood, on Open-grained Woods only, followed by:
 - b. 1 coat Sanding Sealer (MPI Product #102 - *Min. Solids Volume 25% & Max. VOC 250 grams/liter*)
 - c. 3 coats Semi-gloss (MPI Level #5) Polyurethane Varnish (MPI Product #74 - *Min. Solids Volume 26% & Max. VOC 250 grams/liter*)
 - 2. Stain & Varnish
 - a. 1 coat Penetrating Oil Stain, (MPI Product #90 - *Min. Solids Volume 31% & Max. VOC 250 grams/liter*), followed by:
 - b. 1 coat Sanding Sealer (MPI Product #103) followed by:
 - c. 3 coats Semi-gloss (MPI Level #5) Polyurethane Varnish (MPI Product #74 - *Min. Solids Volume 26% & Max. VOC 250 grams/liter*)
 - 3. Latex Enamel
 - a. 1 coat Latex Primer (MPI Product #5 - *Min. Solids Volume 75% & Max. VOC 200 grams/liter*), followed by:
 - b. 2 coats Semi-gloss (MPI Level #5) Latex Enamel (MPI Product #147 - *Min. Solids Volume 38% & Max. VOC 50 grams/liter*)
 - c. Minimum Total Dry Film Thickness: 4.0 mils
- J. Custom-built Wood Casework:
 - 1. Wood Surfaces exposed when Doors & Drawers are closed:
 - a. Finish same as similar Interior Woodwork.
 - 2. Wood Door & Drawer Backs & Edges:
 - a. Finish same as exposed Cabinet surfaces.
 - 3. Casework Backs & Sides against Exterior Walls & Bottoms:
 - a. 1 thick coat Paint, Varnish, or Sealer.
 - b. No Surface without some type of Finish.
- K. Exposed Mechanical & Electrical Work:
 - 1. Exterior Metal, including Work on Roof & Utility Meter Box Bases:
 - a. Finish same as other Exterior Metal of same kind.

(Cont.)

PART 3 - EXECUTION

3.10 PAINTING SCHEDULE (Cont.)

- L. Traffic Control Markings:
 - 1. Traffic Paint
 - a. 1 coat Traffic Paint (MPI Product #97)
 - b. Extent of Work: Paint Parking Stall Lines 4 inches wide, face and top of any painted curbs, and any other Pavement Markings shown on Drawings.
 - c. Colors:
 - 1. Parking Stall Lines, if any: White
 - 2. Driving Lane Dividers, if any: Yellow
 - 3. No Parking Zone Curbs, if any: Yellow
 - 4. No Parking Fire Lanes, if any: Red
 - 5. Pedestrian Crosswalk Lines, if any: White
 - 6. Accessible Vehicle Parking Symbols, if any: Blue & White
 - 7. Traffic Direction Arrows, if any: White
 - d. Minimum Total Dry Film Thickness: 9.0 mils

END OF SECTION

PART 1 - GENERAL

1.1 CONTRACT CONDITIONS

- A. Work of this Section is bound by the Contract Conditions and Division 1, bound herewith, in addition to this Specification and accompanying Drawings.

1.2 RELATED WORK SPECIFIED IN OTHER SECTIONS

- A. Gypsum Board to receive Boards: Section 09-25-00
- B. Signs: Section 10-44-00

1.3 ALTERNATES

- A. Refer to Section 01-20-00 for possible effect upon Work of this Section.

1.4 COORDINATION

- A. Coordinate with other Trades affecting or affected by Work of this Section.

1.5 SAMPLES

- A. Submit samples showing Manufacturer's full range of Tackboard Fabric Facing standard Colors and Patterns for Architect's selection.
- B. Do not proceed until Colors have been selected.

1.6 MAINTENANCE INSTRUCTIONS

- A. In accordance with Section 01-83-00, submit Instructions to General Contractor for inclusion in Owner's Maintenance Manual.
- B. Install permanent Dry Marker Board Maintenance Instructions Plate mounted on, or adjacent to, 1 Board in each Room where Boards are installed. Plate shall include instructions for proper Board care.

1.7 PRODUCT DELIVERY, STORAGE, & HANDLING

- A. Deliver in Protective Container with manufacturer's original, legible Label intact.
- B. Store in clean, dry area.
- C. Protect against damage and discoloration.
- D. Store Rolled Material on end and Sheet Material flat.
- E. Maintain Storage Area temperature above 55°F.

PART 1 - GENERAL

1.8 ENVIRONMENTAL REQUIREMENTS

- A. Maintain Installation Area temperature greater than 55°F for 24 hours prior to, during, and continuously after installation.
- B. When using offensive smelling Adhesives provide adequate ventilation to maintain healthy and pleasant Working Environment for Building Occupants.

1.9 FIELD MEASUREMENTS

- A. Verify prior to fabrication.
- B. If field measurements differ slightly from Drawing dimensions modify Work as required for accurate fit. If measurements differ substantially, notify Architect prior to fabrication.

PART 2 - PRODUCTS

2.1 APPROVED MANUFACTURERS

- A. Manufacturers listed herein are approved provided their Material matches selected Color and or Pattern to Architect's satisfaction at no additional cost to Owner.

2.2 TACK BOARD

- A. Manufacturer: Fabricmate (866) 622-2996, or approved.
- B. Core:
 - 1. Brand: ReCore
 - 2. Material: Impact-resistant and tackable Polyester Fiber
 - 3. Thickness: 1/2 inch
- C. Perimeter Trim:
 - 1. Style: FS100
 - 2. Type: Front-loading
 - 3. Color: Match adjacent Fabric Facing
- D. Facing Fabric:
 - 1. Manufacturer & Brand: Guilford (800) 544-0200, or approved.
 - 2. Brand: FR701
 - 3. Style: 2100
 - 4. Edges: Concealed
 - 5. Material: 100% recycled Polyester
 - 6. Color: Selected by Architect after Contract award from Manufacturer's standard choices.
- E. Extent of Work: Provide where located on Drawings.

PART 2 - PRODUCTS

2.3 DRY MARKER BOARD

- A. In Multipurpose Room & Conference Rooms:
 - 1. Manufacturer: US Markerboard, or approved.
 - 2. Brand: Visionary
 - 3. Size: See Drawings
- B. In Collaborative Space:
 - 1. Manufacturer: Claurus, or approved.
 - 2. Brand: Glide
 - 3. Width: 16'-0"
 - 4. Height: 6'-9"
- C. Material: White Glass magnetized to adhere Magnetic Devices
- D. Marker Pens:
 - 1. Type: Dry-wipe Ink
 - 2. Colors: Selected by Owner
 - 3. Quantity: 3 Pens plus 1 Eraser for each Room in which Dry Marker Boards are located
- E. Extent of Work: Provide where located on Drawings.

2.4 METAL TRIM

- A. General:
 - 1. Material: Extruded Aluminum
 - 2. Finish: Satin Mechanical with class II clear Anodic Coating matching AA-M31A31
 - 3. Minimum Thickness: 1/16 inch
- B. Perimeter Frames:
 - 1. Approximate Face Width: 1/2 inch
 - 2. Extent of Work: Except at Fabric-faced Tackboard, cover perimeter edges of Boards.
- C. Dry Marker Board Pen Holding Trough:
 - 1. Type: Open End
 - 2. Corners: Rounded or angled
 - 3. Extent of Work: Provide continuously across bottom of Dry Marker Boards.
- D. Accessories:
 - 1. Provide Tackable Cork Strip at top of Dry Marker Boards.
 - 2. Provide 4 Magnets for each Dry Marker Board:

2.5 FASTENERS

- A. Type: Phillips headed Screws
- B. Material & Finish: Match adjacent Surface
- C. Size: As required by conditions of use

PART 2 - PRODUCTS

2.6 FABRICATION

- A. Fabricate Boards full size and without Intermediate Joints, unless otherwise shown on Drawings or otherwise approved.
- B. If Intermediate Joints are approved, locate Joints no closer than 8 ft. apart and where approved.
- C. Fabricate Openings in Boards where necessary to receive any Electrical Boxes or other Penetrations through Boards.
- D. Remove any Backing Board Surface imperfections that would interfere with Board installation or mar Display Board appearance.
- E. Prime Backing Board Surface prior to applying Adhesive, where recommended by Adhesive Manufacturer.

PART 3 - EXECUTION

3.1 EXISTING CONDITIONS

- A. Verify that Blocking and Surfaces to receive Boards are smooth, true, clean, sound, dry, secure, and otherwise properly prepared.
- B. Prior to starting Work, notify General Contractor about defects requiring correction.
- C. Do not start Work until conditions are satisfactory.

3.2 PROTECTING WORK OF OTHER SECTIONS

- A. Protect against damage and discoloration caused by Work of this Section.

3.3 SURFACE PREPARATION

- A. Remove any Wall Surface imperfections that could interfere with Board installation or mar Board appearance.

3.4 INSTALLATION

- A. General:
 - 1. Follow Manufacturer's instructions.
 - 2. Keep Perimeter Lines straight, plumb, level, and true to Wall Plane.
 - 3. Fit Board accurately and neatly around any Projections or Electrical Boxes.
 - 4. Fit any Butt Joints tight and in same plane on both sides of Joints.
 - 5. Secure Boards to Wall with Mechanical Fasteners only. Do not use Adhesive.

(Cont.)

PART 3 - EXECUTION

3.4 INSTALLATION (Cont.)

B. Metal Trim:

1. Provide Metal Trim around Board perimeter.
2. Locate Trim Joints no closer than 4 ft. o.c., unless otherwise approved.
3. Secure 24 inch o.c. maximum with Screws, unless otherwise approved.
4. Fit with precise Hairline Joints.
5. Remove any Burrs or sharp Edges.

3.5 WASTE MANAGEMENT

- A. Collect Cut-offs, Scrap, Shipping Pallets, Metal Strapping, & Packaging Waste; and place where directed for recycling.

3.6 PRODUCT CLEANING & REPAIRING

- A. Including Work of other Trades, clean, repair and touch-up, or replace when directed, Products which have been soiled, discolored, or damaged by Work of this Section.
- B. Remove Debris from Project Site upon Work completion, or sooner if directed.

END OF SECTION

PART 1 - GENERAL

1.1 CONTRACT CONDITIONS

- A. Work of this Section is bound by the Contract Conditions and Division 1, bound herewith, in addition to this Specification and accompanying Drawings.

1.2 RELATED WORK SPECIFIED IN OTHER SECTIONS

- A. Toilet Accessories: Section 10-80-00

1.3 ALTERNATES

- A. Refer to Section 01-20-00 for possible effect upon Work of this Section.

1.4 COORDINATION

- A. Coordinate with other Trades affecting or affected by Work of this Section.

1.5 SHOP DRAWINGS

- A. Submit in accordance with Section 01-33-00.
- B. Show layout dimensions, colors, methods of anchoring and reinforcing, core construction, and other pertinent details.

1.6 SAMPLES

- A. Submit in accordance with Section 01-33-00.
- B. Submit two 12x12 inch Compartment Color Samples.
- C. Obtain Architect's approval before ordering.

1.7 REGULATORY REQUIREMENTS

- A. Fabricate and install Compartments intended for use by Disabled Users in accordance with governing requirements of Americans with Disabilities Act.

(Cont.)

PART 1 - GENERAL

1.8 PRODUCT DELIVERY, STORAGE, & HANDLING

- A. Protect against damage and discoloration.
- B. Deliver in Manufacturer's original unopened and undamaged Packages.
- C. Clearly label Packages with Manufacturer's brand name, contents, color, stock number, and order number.
- D. Include Bolt Hole location Templates.

1.9 FIELD MEASUREMENTS

- A. Verify prior to fabrication.
- B. If field measurements differ slightly from Drawing dimensions modify Work as required for accurate fit. If measurements differ substantially, notify Architect prior to fabrication.

PART 2 - PRODUCTS

2.1 MANUFACTURER

- A. Accurate, American Sanitary, Ampco, Flush-Metal, General, Global, Knickerbocker, Santana, or approved.
- B. Manufacturers listed above are approved for use provided their Material matches selected Color to Architect's satisfaction at no additional cost to Owner.

2.2 SOLID PLASTIC TOILET COMPARTMENTS

- A. Compartments:
 - 1. System Type: High-privacy
 - 2. Panel type: Flush
 - 3. Support: Floor to Ceiling Pilasters
- B. Material: High-density Polyethylene (HDPE) complying with NFPA 286
- C. Color: Selected by Architect from Manufacturer's standard choices.

2.3 URINAL SCREENS

- A. Manufacturer, Series, & Materials: Match adjacent Toilet Compartments
- B. Mounting Method: Wall-hung

PART 2 - PRODUCTS

2.4 HARDWARE & FITTINGS

- A. Material: Manufacturer's standard
- B. For Each Door:
 - 1. 1 pair self-lubricating, gravity type Hinges. Except at out-swinging Doors which shall close tightly, Hinges shall hold Door partially open when Compartment is unoccupied.
 - 2. 1 Coat Hook
 - 3. 1 Rubber Wall Bumper
 - 4. 1 ADA-compliant Paddle-type Latch with combination Stop & Latch Keeper
 - 5. 1 Pull on each face of out-swinging Doors
- C. Fasteners:
 - 1. Material: Corrosion-resistant
 - 2. Finish: Match Fittings

2.5 FABRICATION

- A. Accurately form to required sizes and shapes.
- B. Factory-prepare Cutouts and Drilled Holes to receive Compartment Hardware.
- C. Fabricate Panels, Doors, and Pilasters with concealed Reinforcement to receive Hardware, Fittings, and Accessories.
- D. Fabricate Panels, Doors, and Pilasters of single-piece without Joints or Seams.
- E. Dimensions:
 - 1. Compartments: See Drawings.
 - 2. Minimum clear dimension at Doors:
 - a. At Compartments serving Disabled Users: 32 inches
 - b. Elsewhere: 24 inches

PART 3 - EXECUTION

3.1 EXISTING CONDITIONS

- A. Verify that Blocking and Surfaces to receive Compartments are straight, plumb, square, secure, accurately sized and located, and otherwise properly prepared.
- B. Prior to starting Work, notify General Contractor about defects requiring correction.
- C. Do not start Work until conditions are satisfactory.

PART 3 - EXECUTION

3.2 PROTECTING WORK OF OTHER SECTIONS

- A. Protect against damage and discoloration caused by Work of this Section.

3.3 PREPARATORY WORK

- A. Provide Structural Blocking within adjacent Wall and Ceiling Framing, if any, as required to secure Compartment and Urinal Screen installation.

3.4 COMPARTMENT & SCREEN INSTALLATION

- A. Install rigid, straight, parallel, plumb, and level in accordance with Manufacturer's instructions and approved Shop Drawings.
- B. Align closed Doors with adjacent Panel tops and bottoms.
- C. Prevent Pilaster Hangers from transmitting load to Ceiling.

3.5 HARDWARE INSTALLATION

- A. Follow Manufacturer's instructions.
- B. Provide no less than 2 Wall Brackets; locate near Panel top and bottom.
- C. Conceal evidence of field-drilling, cutting, and fitting.

3.6 ADJUSTMENTS

- A. Adjust Moving Parts to operate satisfactorily at time of Project Substantial Completion and during Warranty Period.

3.7 WASTE MANAGEMENT

- A. Collect Cut-offs, Scrap, Shipping Pallets, Metal Strapping, & Packaging Waste; and place where directed for recycling.

3.8 PRODUCT CLEANING & REPAIRING

- A. Including Work of other Trades, clean, repair and touch-up, or replace when directed, Products which have been soiled, discolored, or damaged by Work of this Section.
- B. Remove Debris from Project Site upon Work completion, or sooner if directed.

END OF SECTION

PART 1 - GENERAL

1.1 CONTRACT CONDITIONS

- A. Work of this Section is bound by the Contract Conditions and Division 1, bound herewith, in addition to this Specification and accompanying Drawings.

1.2 EXTENT OF WORK

- A. In compliance with governing laws, regulations, codes, and ordinances; Design-Build requirements specified in Section 01-11-50; and Drawings & these Specifications; design, engineer, fabricate, and install Work of this Section.

1.3 ALTERNATES

- A. Refer to Section 01-20-00 for possible effect upon Work of this Section.

1.4 COORDINATION

- A. Coordinate with other Trades affecting or affected by Work of this Section.

1.5 SHOP DRAWINGS

- A. Submit in accordance with Section 01-33-00.
- B. Show layout, dimensions, required clearances, details of construction, method of anchoring, and other pertinent items.

1.6 SAMPLES

- A. In accordance with Section 01-33-00, submit two 12 sq. inch minimum Samples of specified Metal finishes for Architect's approval.

1.7 PRODUCT DELIVERY, STORAGE, & HANDLING

- A. Protect against damage and discoloration.

(Cont.)

PART 1 - GENERAL

1.8 FIELD MEASUREMENTS

- A. Verify prior to fabrication.
- B. If field measurements differ slightly from Drawing dimensions modify Work as required for accurate fit. If measurements differ substantially, notify Architect prior to fabrication.

1.9 WARRANTY

- A. Warrant that Work of this Section will not prevent adjacent Roofing from being weatherproof and waterproof for 2 years following Project Substantial Completion date, and repair and/or replace without additional cost to Owner any water leaks and resulting damage to Building Materials and/or Building Contents as may be created by Work of this Section under normal usage within Warranty Period.

PART 2 - PRODUCTS

2.1 SCREENS

- A. Manufacturer: RoofScreen Mfg. or approved.
- B. Screens:
 - 1. Brand: VisionGuard
 - 2. Model: L10
 - 3. Style: 45° Angled Louver
 - 4. Material: Extruded Aluminum
 - 5. Finish:
 - a. Material: PVDF Fluoropolymer baked-on Enamel
 - b. Type: 79% solids
 - c. Color:
 - 1. Exterior Face: Selected after Contract award from Manufacturer's standard choices
 - 2. Rear Face: White
- C. Frames:
 - 1. Model: SC3
 - 2. Style: 3-member cantilever
 - 3. Material: Galvanized Steel
 - 4. Finish: 3-layer Corrosion-resistant Coating

PART 2 - PRODUCTS

2.2 FASTENERS & ACCESSORIES

- A. Material: Stainless Steel
- B. Extent of Work: Provide all required.

2.3 PROTECTIVE COATING

- A. Manufacturer: Contractor's choice
- B. Type: Easily removable
- C. Extent of Work: Provide where necessary to protect exposed Metal against damage and discoloration.

2.4 FABRICATION

- A. Flat Surfaces: Smooth, true, and free from waves and buckles.
- B. Edges, Corners, & Angles: Clean, sharp, and square.
- C. Joints: Precision fitted without burrs.
- D. Allow for Material expansion and contraction.

2.5 WELDING

- A. Employ Workmen experienced in welding Aluminum.
- B. Perform work carefully.
- C. Match adjacent color and finish.
- D. Fabricate Welds without porosity, cracks, and blow holes.
- E. Thoroughly fuse Welds without undercutting or overlapping.
- F. Grind exposed Welds smooth, and finish to match adjacent Material.

PART 3 - EXECUTION

3.1 EXISTING CONDITIONS

- A. Verify the Surfaces to receive Louvers are accurately sized and located, sound, true, and otherwise properly prepared.
- B. Prior to starting Work, notify General Contractor about defects requiring correction.
- C. Do not start Work until conditions are satisfactory.

PART 3 - EXECUTION

3.2 PROTECTING WORK OF OTHER SECTIONS

- A. Protect against damage and discoloration caused by Work of this Section.

3.3 CORROSION PROTECTION

- A. Coat contacting Dissimilar Materials with Corrosion Insulating Compound, 7-1/2 mil minimum dry film thickness, applied to each contacting face.

3.4 INSTALLATION

- A. Follow Manufacturer's instructions and approved Shop Drawings.
- B. Accurately position within 1/8 inch per ft. of specified location.
- C. Set plumb, level, square, and secure.

3.5 WASTE MANAGEMENT

- A. Collect Cut-offs, Scrap, Shipping Pallets, Metal Strapping, & Packaging Waste; and place where directed for recycling.

3.6 PRODUCT CLEANING & REPAIRING

- A. After all Trades have completed their work, remove Protective Coverings and clean exposed Louver surfaces with plain Water, White Gasoline, or Distillate. Do not use Acid or Abrasive Cleaners.
- B. Including Work of other Trades, clean, repair and touch-up, or replace when directed, Products which have been soiled, discolored, or damaged by Work of this Section.
- C. Remove Debris from Project Site upon Work completion, or sooner if directed.

END OF SECTION

PART 1 - GENERAL

1.1 CONTRACT CONDITIONS

- A. Work of this Section is bound by the Contract Conditions and Division 1, bound herewith, in addition to this Specification and accompanying Drawings.

1.2 RELATED WORK SPECIFIED IN OTHER SECTIONS

- A. Gypsum Board Walls to receive Guards: Section 09-25-00

1.3 ALTERNATES

- A. Refer to Section 01-20-00 for possible effect upon Work of this Section.

1.4 COORDINATION

- A. Coordinate with other Trades affecting or affected by Work of this Section.

1.5 SHOP DRAWINGS

- A. Submit in accordance with Section 01-33-00.
- B. Show locations, dimensions, fabrication details, attachment methods, materials, colors, and other pertinent information.

1.6 SAMPLES

- A. Submit in accordance with Section 01-33-00.
- B. Include two 24 inch long Samples of each Guard.

1.7 PRODUCT DELIVERY, STORAGE, & HANDLING

- A. Protect against damage and discoloration.

1.8 FIELD MEASUREMENTS

- A. Verify prior to fabrication.
- B. If field measurements differ slightly from Drawing dimensions modify Work as required for accurate fit. If measurements differ substantially, notify Architect prior to fabrication.

PART 2 - PRODUCTS

2.1 VERTICAL CORNER GUARDS

- A. Manufacturer: Arden, Balco, C/S, IPC, Koroseal, Pawling, or approved.
- B. Model: Similar to C/S CO-8
- C. Mounting Method: Surface
- D. Material: Stainless Steel
- E. Length: Extend in single-piece from top of adjacent Wall Base for 48 inches.
- F. Required Accessory: Exposed End Caps matching adjacent Guard
- G. Extent of Work: Provide at the following locations:
 - 1. At External Corners of Entrance, Corridor, & Restroom Walls
 - 2. Elsewhere shown on Drawings.

2.2 BLOCKING & BACKING

- A. Provide all required where necessary for secure installation.

PART 3 - EXECUTION

3.1 EXISTING CONDITIONS

- A. Verify that Surfaces to receive Guards are properly prepared.
- B. Prior to starting Work, notify General Contractor about defects requiring correction.
- C. Do not start Work until conditions are satisfactory.

3.2 PROTECTING WORK OF OTHER SECTIONS

- A. Protect against damage and discoloration caused by Work of this Section.

3.3 INSTALLATION

- A. Follow Manufacturer's instructions.
- B. Secure Retainer Assemblies to Structural Backing.
- C. Install Guards plumb, straight, and true as applicable.

PART 3 - EXECUTION

3.4 WASTE MANAGEMENT

- A. Collect Cut-offs, Scrap, Shipping Pallets, Metal Strapping, & Packaging Waste; and place where directed for recycling.

3.5 PRODUCT CLEANING & REPAIRING

- A. Including Work of other Trades, clean, repair and touch-up, or replace when directed, Products which have been soiled, discolored, or damaged by Work of this Section.
- B. Remove Debris from Project Site upon Work completion, or sooner if directed.

END OF SECTION

SIGNS**PART 1 - GENERAL****1.1 CONTRACT CONDITIONS**

- A. Work of this Section is bound by the Contract Conditions and Division 1, bound herewith, in addition to this Specification and accompanying Drawings.

1.2 RELATED WORK SPECIFIED IN OTHER SECTIONS

- A. Temporary Project Sign: Section 01-50-00
- B. Painted Traffic Control Markings: Section 09-90-00

1.3 ALTERNATES

- A. Refer to Section 01-20-00 for possible effect upon Work of this Section.

1.4 COORDINATION

- A. Coordinate with other Trades affecting or affected by Work of this Section.

1.5 SUBMITTALS

- A. Prior to starting Work and in accordance with Section 01-33-00, submit the following for review and acceptance:
 - 1. Overall Sign Shapes, Sizes, Styles, Symbols, Graphic Layouts, Colors, Finishes, & Mounting.
 - 2. Material, Color, & Finish Samples for each Sign type
 - 3. 1 completed Sign of each type
 - 4. Layout and Mounting of each Sign type
- B. In accordance with Section 01-83-00, submit the following:
 - 1. Maintenance instructions for each Sign type.
 - 2. Ordering instructions for Replacement Parts and new Signs.

1.6 REGULATORY AGENCY REQUIREMENTS

- A. Signs shall comply with requirements specified in Americans with Disabilities Act Accessibilities Guidelines (ADAAG), published by the US Dept. of Justice.

(Cont.)

SIGNS**PART 1 - GENERAL****1.7 PRODUCT DELIVERY, STORAGE, & HANDLING**

- A. Protect against damage and discoloration.
- B. Store any Adhesives at Room Temperature (55°F min.)

1.8 ADVANCE NOTICES

- A. Prior to enclosure of Wall and Ceiling Framing, notify General Contractor about Special Anchoring, Backing, and Blocking requirements for Signage.

PART 2 - PRODUCTS**2.1 ROOM IDENTITY SIGNS**

- A. Manufacturer: Contractor's choice
- B. Material: Photopolymer Acrylic or Polyvinylchloride
- C. Letter & Numeral Style, Case, Color, & Size: Selected after Contract award from Manufacturer's standard choices
- D. Sign Length: 1 inch longer on each end than Sign wording
- E. Sign Height: 1/4 inch beyond each edge of Sign wording
- F. Special Requirement: Include Symbols and Braille Language where required by specified Regulatory Agency Requirements.
- G. Wording & Locations: See Drawings

2.2 SIGN FABRICATION

- A. Assemble in Shop where possible.
- B. Fabricate with tight, hairline, and smooth Joints.
- C. Ease Corners and Edges.
- D. Prohibit Surface Oil-canning, cupping, and other deflections.

(Cont.)

PART 2 - PRODUCTS

2.3 GRAPHICS

- A. General:
 - 1. Reproduce Graphic Elements, including Text & Symbols, from Computer-generated Digital Artwork.
 - 2. Produce with sharp Corners and Edges without pinholes, scratches, banding, or orange-peel texture.
- B. Braille & Tactile Size, Position, Spacing, Capitalization, & Profile Characteristics:
 - 1. Comply with specified Regulatory Agency Requirements.

PART 3 - EXECUTION

3.1 EXISTING CONDITIONS

- A. Verify that Backing and Surfaces to receive Signs are complete, clean, dry, secure, and otherwise properly prepared.
- B. Prior to starting Work, notify General Contractor about defects requiring correction.
- C. Do not start Work until conditions are satisfactory.

3.2 PROTECTING WORK OF OTHER SECTIONS

- A. Protect against damage and discoloration caused by Work of this Section.

3.3 INSTALLATION

- A. Follow Manufacturer's instructions.
- B. Install plumb, level, square, and true as applicable.
- C. Secure to Substrate.

3.4 WASTE MANAGEMENT

- A. Collect Scrap and Packaging, and place where directed for recycling.

(Cont.)

PART 3 - EXECUTION

3.5 PRODUCT CLEANING & REPAIRING

- A. Including Work of other Trades, clean, repair and touch-up, or replace when directed, Products which have been soiled, discolored, or damaged by Work of this Section.
- B. Do not scratch or otherwise damage Sign surfaces.
- C. Remove Debris from Project Site upon Work completion, or sooner if directed.

3.6 SIGN SCHEDULE

- A. See Sign Schedule on Drawings.

END OF SECTION

PART 1 - GENERAL

1.1 CONTRACT CONDITIONS

- A. Work of this Section is bound by the Contract Conditions and Division 1, bound herewith, in addition to this Specification and accompanying Drawings.

1.2 WORK BY OWNER

- A. Locker Padlocks furnished and installed by Owner.

1.3 RELATED WORK SPECIFIED IN OTHER SECTIONS

- A. Wood Curbing to support Lockers: Section 06-10-00

1.4 ALTERNATES

- A. Refer to Section 01-20-00 for possible effect upon Work of this Section.

1.5 COORDINATION

- A. Coordinate with other Trades affecting or affected by Work of this Section.

1.6 REGULATORY AGENCY REQUIREMENTS

- A. Comply with American with Disabilities Act (ADA) Requirements.

1.7 SHOP DRAWINGS

- A. Submit in accordance with Section 01-33-00.
- B. Show dimensions, details of construction, joining of Equipment to adjacent Construction, Color, and other pertinent Items.

1.8 COLOR SAMPLES

- A. Prior to ordering and in accordance with Section 01-33-00, submit 2 Samples of Manufacturer's Standard Colors for Architect's selection.

PART 1 - GENERAL

1.9 INSTALLER'S QUALIFICATIONS

- A. Employed by or acceptable to Manufacturer.

1.10 PRODUCT DELIVERY, STORAGE, & HANDLING

- A. Deliver in Manufacturer's Protective Container with legible, identifying labels intact.
- B. Store flat and above ground.
- C. Protect against damage and discoloration.

1.11 FIELD MEASUREMENTS

- A. Verify prior to fabrication.
- B. If field measurements differ slightly from Drawing dimensions modify Work as required for accurate fit. If measurements differ substantially, notify Architect prior to fabrication.

PART 2 - PRODUCTS

2.1 APPROVED MANUFACTURERS

- A. Manufacturers listed herein are approved for use provided they match selected Color to Architect's satisfaction at no additional cost to Owner.

2.2 LOCKER DIMENSIONS

- A. Locker Dimensions listed below are nominal, are for each Unit, and are exclusive of any Base or Sloping Tops.

2.3 STANDARD STEEL LOCKERS

- A. Manufacturer: Interior, List, Lyon, Penco, Republic, or approved.
- B. Type: Single Tier
- C. Height: 72 inches
- D. Width: 15 inches
- E. Depth: 18 inches

(Cont.)

PART 2 - PRODUCTS

2.3 STANDARD STEEL LOCKERS (Cont.)

- F. Metal Thicknesses:
 - 1. Doors, Shelves, Bottoms. and any Exposed Tops: 16 ga.
 - 2. Exposed Ends, if any: 20 ga. (*Outer Panel to conceal Inner Panel Fasteners, Fabrication Holes, etc.*)
 - 3. Elsewhere: Manufacturer's standard.
- G. Finish:
 - 1. Material: Manufacturer's standard baked-on Enamel
 - 2. Color: Selected by Architect after Contract award from Manufacturer's standard choices

2.4 NUMBER PLATES

- A. Material: Non-corrosive
- B. Numbering: Sequentially number each Locker starting with "1".

2.5 ACCESSORIES

- A. Required:
 - 1. Coat Hooks
 - 2. Ventilation Louvers in Doors
 - 3. Top Shelves
 - 4. Sloping Tops
- B. Not Required:
 - 1. Finishing Strips for built-in Lockers
 - 2. Metal Legs
 - 3. Closed Metal Base

2.6 HARDWARE

- A. Door Lock: Hasp for Padlock, with Protective Armor Plate to prevent damage to Locker Paint by Padlock.
- B. Rubber Cushions: Provide for quiet Door operation.
- C. All Other: Manufacturer's standard type for conditions of use; provide all required.

(Cont.)

PART 2 - PRODUCTS

2.7 LOCKER ROOM BENCHES

- A. Benches:
 - 1. Material: Clear Hardwood
 - 2. Minimum Width: 9-1/2 inches
 - 3. Length: See Drawings
 - 4. Finish: 3 coats Satin-gloss Urethane Varnish as specified in Section 09-90-00
- B. Supports:
 - 1. Material: Steel
 - 2. Type: Manufacturer's standard
 - 3. Finish: Match Lockers
 - 4. Spacing: 1 ft. from each Bench end, and not more than 6 ft. apart between.
- C. Attachments:
 - 1. Material: Stainless Steel
 - 2. Type:
 - a. Bench to Support: Screws from Bench underside
 - b. Support to Floor: Expansion Bolts set in Lead Shields

PART 3 - EXECUTION

3.1 EXISTING CONDITIONS

- A. Verify that surfaces to receive Work of this Section are solid, true, square, plumb, accurately sized and located, and otherwise properly prepared.
- B. Prior to starting Work, notify General Contractor about defects requiring correction.
- C. Do not start Work until conditions are satisfactory.

3.2 PROTECTING WORK OF OTHER SECTIONS

- A. Protect against damage and discoloration caused by Work of this Section.

3.3 INSTALLATION

- A. Follow Manufacturer's instructions.
- B. Install plumb, true, rattle-free, and with uniform joints.
- C. Fasten securely together and to adjacent Construction.

PART 3 - EXECUTION

3.4 ADJUSTMENTS

- A. Adjust Moving Parts to operate satisfactorily at time of Project Substantial Completion and during Warranty Period.

3.5 WASTE MANAGEMENT

- A. Collect Scrap and Packaging, and place where directed for recycling.

3.6 PRODUCT CLEANING & REPAIRING

- A. Including Work of other Trades, clean, repair and touch-up, or replace when directed, Products which have been soiled, discolored, or damaged by Work of this Section.
- B. Remove Debris from Project Site upon Work completion, or sooner if directed.

END OF SECTION

PART 1 - GENERAL

1.1 CONTRACT CONDITIONS

- A. Work of this Section is bound by the Contract Conditions and Division 1, bound herewith, in addition to this Specification and accompanying Drawings.

1.2 ALTERNATES

- A. Refer to Section 01-20-00 for possible effect upon Work of this Section.

1.3 COORDINATION

- A. Coordinate with other Trades affecting or affected by Work of this Section.

1.4 DESIGN MODIFICATIONS

- A. Prior to fabricating Partitions verify installation conditions, and if necessary, modify Partition System to accommodate Building design.
- B. No additional payment to Contractor for work of this type will be made.

1.5 SHOP DRAWINGS

- A. Submit in accordance with Section 01-33-00.
- B. Show locations, opening sizes, stacking space, construction details, anchorage, required clearances, head and jamb details, hardware, facing pattern and color, and installation methods.

1.6 SAMPLES

- A. In accordance with Section 01-33-00, submit Partition Covering Samples prior to fabrication for Architect's selection.

1.7 MANUFACTURER'S INSTRUCTIONS

- A. In accordance with Section 01-83-00, submit Manufacturer's Operating and Maintenance Instructions to General Contractor for inclusion in Owner's Maintenance Manual.

PART 1 - GENERAL

1.8 INSTALLER'S QUALIFICATIONS

- A. Employed by or acceptable to Manufacturer.

1.9 CERTIFICATES OF COMPLIANCE

- A. For each Partition type, submit one copy of the following Independent Laboratory test results signed by Laboratory Official:
 - 1. Flame Spread Classification: ASTM E-84
 - 2. Sound Transmission Class: ASTM E-90 using 14x9 ft. minimum Test Opening. Operate Partitions 10 times minimum prior to Test.
- B. For each Partition type, submit one copy of the following signed by Building Official:
 - 1. Certification that Partition Systems comply with Seismic-force Restraint Requirements stipulated in governing Building Code.

1.10 PRODUCT DELIVERY, STORAGE, & HANDLING

- A. Deliver in unopened crates with Manufacturer's legible label intact.
- B. Labels shall contain Manufacturer's name, product, and size.
- C. Protect against damage and discoloration.

1.11 FIELD MEASUREMENTS

- A. Verify prior to fabrication.
- B. If field measurements differ slightly from Drawing dimensions modify Work as required for accurate fit. If measurements differ substantially, notify Architect prior to fabrication.

PART 2 - PRODUCTS

2.1 OPERABLE PARTITIONS

- A. Manufacturer & Brand: Modernfold Acousti-Seal, or approved.
- B. Model: 932
- C. Type: Paired
- D. Operation: Manual
- E. Minimum Sound Transmission Classification (STC): 50
- F. Minimum ASTM E-152 Fire-resistance Rating: None required

(Cont.)

PART 2 - PRODUCTS

2.1 OPERABLE PARTITIONS (Cont.)

- G. Panels:
 - 1. Construction: Manufacturer's standard type
 - 2. Facing Material: Upholstery Fabric
 - 3. Maximum ASTM E-84 Flame-spread Rating: 25
 - 4. Facing Pattern & Color: Selected by Architect after Contract award from Manufacturer's standard choices
- H. Track & Trolley:
 - 1. Standard with Manufacturer; sized for loads; and designed for ease of operation, maintenance, and adjustment. Include any necessary Switches.
- I. Hardware:
 - 1. Pulls & Latches: Manufacturer's standard type
 - 2. Bottom Seal Operation: Automatic
 - 3. Hinges: Soss Invisible

PART 3 - EXECUTION

3.1 EXISTING CONDITIONS

- A. Verify that Opening to receive Partitions are square, plumb, accurately sized and located, and with level floor.
- B. Prior to starting Work, notify General Contractor about defects requiring correction.
- C. Do not start Work until conditions are satisfactory.

3.2 PROTECTING WORK OF OTHER SECTIONS

- A. Protect against damage and discoloration caused by Work of this Section.

3.3 INSTALLATION

- A. Follow Manufacturer's instructions.
- B. Accurately locate and secure in plumb position.

3.4 ALLOWABLE INSTALLATION TOLERANCE

- A. Set Horizontal Tracks level within 1/4 inch in 10 ft., non-accumulating.

PART 3 - EXECUTION

3.5 ADJUSTMENTS

- A. Adjust Moving Parts to operate satisfactorily at time of Project Substantial Completion and during Warranty Period.

3.6 WASTE MANAGEMENT

- A. Collect Scrap and Packaging, and place where directed for recycling.

3.7 PRODUCT CLEANING & REPAIRING

- A. Including Work of other Trades, clean, repair and touch-up, or replace when directed, Products which have been soiled, discolored, or damaged by Work of this Section.
- B. Remove Debris from Project Site upon Work completion, or sooner if directed.

END OF SECTION

PART 1 - GENERAL

1.1 CONTRACT CONDITIONS

- A. Work of this Section is bound by the Contract Conditions and Division 1, bound herewith, in addition to this Specification and accompanying Drawings.

1.2 EXTENT OF WORK

- A. In accordance Drawings and Specifications, and in compliance with governing laws, regulations, codes, and requirements specified in Section 01-11-50; design, engineer, fabricate, and install Work of this Section, including System Supports & Attachments.

1.3 RELATED WORK SPECIFIED IN OTHER SECTIONS

- A. Aluminum Entrance & Window Wall Systems to receive Screens: Section 08-40-00
- B. Joint Caulking & Sealing: Section 07-92-00

1.4 ALTERNATES

- A. Refer to Section 01-20-00 for possible effect upon Work of this Section.

1.5 PERFORMANCE REQUIREMENTS

- A. Support Design Loads listed in Structural Notes on Drawings.
- B. Support Wind Loads listed in Building Code.
- C. Withstand Thermal-expansion Stresses induced by up to 60°F temperature-shift without System buckling, fastener-damage, or other detrimental effects.

1.6 REFERENCED SPECIFICATIONS

- A. Comply with applicable portions of manufacturing and installation recommendations of American Architectural Manufacturer's Association, hereinafter referred to as AAMA; 1827 Walden Office Square; Suite 550; Schaumburg, IL 60173; (847) 303-5664.
- B. Copies can be obtained from Association.

(Cont.)

PART 1 - GENERAL

1.7 CERTIFICATE OF COMPLIANCE

- A. Submit certification, signed and sealed by Engineer registered to practice in Oregon, which stipulates that Work of this Section complies with Performance Requirements specified above.
- B. If Work, as specified herein and as shown on Drawings, is not capable of complying with Performance Requirements specified above, so notify Architect at least 5 working days prior to Contract-award date.

1.8 COORDINATION

- A. Coordinate with other Trades affecting or affected by Work of this Section.

1.9 INSTALLER'S QUALIFICATIONS

- A. Employed by or acceptable to Manufacturer.

1.10 SHOP DRAWINGS

- A. Submit in accordance with Section 01-33-00.
- B. Show construction, materials, profiles, thicknesses, dimensions, fasteners, supports, anchors, required clearances, and other pertinent details.

1.11 PRODUCT DELIVERY

- A. Coordinate with General Contractor's work schedule.

1.12 PRODUCT STORAGE & HANDLING

- A. Protect against damage and discoloration.

1.13 FIELD MEASUREMENTS

- A. Verify prior to fabrication.
- B. If field measurements differ slightly from Drawing dimensions modify Work as required for accurate fit. If measurements differ substantially, notify Architect prior to fabrication.

PART 2 - PRODUCTS

2.1 SHADES

- A. Manufacturer: Architectural Louvers, or approved
- B. Brand: H6A Stationary Sun Shade
- C. Orientation: Vertical
- D. Material: Extruded Aluminum
- E. Finish:
 - 1. Concealed Work: Mill finish
 - 2. Exposed Work:
 - a. Material: Fluoropolymer Enamel complying with AAMA 605.2
 - b. Manufacturer & Brand: Atochem Kynar 500, or approved.
 - c. Minimum Fluoropolymer: 70%
 - d. Minimum Dry Film Thickness: 1.2 mils
 - e. Color: Selected by Architect after Contract award
- F.. Blades:
 - 1. Size: 6 inches
 - 2. Spacing: 6 inches
 - 3. Angle: 42°
- G. Trim Shape: Tube

2.2 FASTENERS

- A. Type: Recommended by Manufacturer for conditions of use
- B. Material: Galvanically compatible with Adjacent Materials
- C. Finish:
 - 1. Where Exposed to View: Match Adjacent Material
 - 2. Where Concealed: Contractor's choice

2.3 CORROSION INSULATING COMPOUND

- A. Material: Asphaltic Coating Compound
- B. Manufacturing Standard: Fed. Spec. TT-C-494 type II

2.4 CLOSURES, COVERS, TRIM, FLASHINGS, & ACCESSORIES

- A. Provide Attachment Embeds, Panels, Connectors, Trim, etc. necessary for complete and secure installation.

(Cont.)

SUN SHADES**PART 2 - PRODUCTS****2.5 FABRICATION**

- A. Comply with applicable portions of Referenced Specifications.
- B. Provide concealed Steel Reinforcement where indicated or required to resist Wind or other Applied Loads.
- C. Fabricate Connections as required for strength and rigidity using concealed Mechanical Fastenings wherever possible. Where not possible, welding may be used.
- D. Match exposed Welds with adjacent Material, free of porosity, cracks, and blow-holes.
- E. Select Materials carefully for matching Color and Texture after finishing.
- F. Fabricate Flat Surface smooth and true, and free from waves, buckles, and seams.
- G. Fabricate Edges, Corners, and Angles clean, sharp, and square.
- H. Fit Members with hairline, virtually invisible joints.
- I. Allow for expansion and contraction.
- J. Prevent Noise resulting from thermally-induced Material movement, Vibration harmonics, or Wind passage.

PART 3 - EXECUTION**3.1 EXISTING CONDITIONS**

- A. Verify that Structure to receive Work of this Section is plumb, rigid, accurately sized and located, and otherwise properly prepared.
- B. Prior to starting Work, notify General Contractor about defects requiring correction.
- C. Do not start Work until conditions are satisfactory.

3.2 PROTECTING WORK OF OTHER SECTIONS

- A. Protect against damage and discoloration caused by Work of this Section.

3.3 CORROSION PROTECTION

- A. Coat contacting Dissimilar Materials with Corrosion Insulating Compound, 7-1/2 mil dry film thickness, minimum, applied to each Contacting Face.

3.4 INSTALLATION

- A. Follow Manufacturer's instructions, approved Shop Drawings, and applicable portions of Referenced Specifications.
- B. Install level, square, true, rigid, secure, and in alignment with adjacent Other Work.

PART 3 - EXECUTION

3.5 ALLOWABLE INSTALLATION TOLERANCES

- A. Member Alignment: True within 1/8 inch per 12 feet.
- B. Sunshade Panel Squareness: 1/8 inch maximum difference between opposite Diagonal Measurements.

3.6 TOUCH-UP PAINTING

- A. Touch-up any exposed Metal Finish damaged by cutting. Match adjacent Finish.

3.7 PRODUCT CLEANING & REPAIRING

- A. Remove Protective Coatings.
- B. Including Work of other Trades, clean, repair and touch-up, or replace when directed,
- C. Products which have been soiled, discolored, or damaged by work of this Section.
- D. Collect Cut-offs and Scrap, and place where directed for recycling.
- E. Remove Debris from Project Site upon work completion or sooner, if directed.

END OF SECTION

PART 1 - GENERAL

1.1 CONTRACT CONDITIONS

- A. Work of this Section is bound by the Contract Conditions and Division 1, bound herewith, in addition to this Specification and accompanying Drawings.

1.2 RELATED WORK SPECIFIED IN OTHER SECTIONS

- A. Mirrors: Section 08-80-00
- B. Toilet Compartments to receive Accessories: Section 10-16-00
- C. Electrical Conduit & Wiring for Warm Air Dryers: See Electrical Specifications

1.3 ALTERNATES

- A. Refer to Section 01-20-00 for possible effect upon Work of this Section.

1.4 COORDINATION

- A. Coordinate with other Trades affecting or affected by Work of this Section.

1.5 MANUFACTURER'S LITERATURE

- A. In accordance with Section 01-33-00, show Rough Opening and Installation Details.
- B. Manufacturer's standard drawings may be used, provided required information is shown.

1.6 REGULATORY AGENCY REQUIREMENTS

- A. Accessories shall comply with applicable requirements of Americans with Disabilities Act (ADA)

1.7 PRODUCT DELIVERY, STORAGE, & HANDLING

- A. Protect against damage and discoloration.
- B. Do not remove Protective Covers until final Project clean-up.
- C. Deliver Accessory Keys to Architect for forwarding to Owner.

PART 2 - PRODUCTS

2.1 GENERAL

- A. Approved Manufacturers & Models:
 - 1. Unless otherwise indicated, Manufacturers and Model Numbers listed below are selected from Bobrick Catalog, which are approved for use. Comparable Products by American Specialties, Bradley, McKinney/Parker, and TSM are also approved.
 - 2. Products by other Manufacturers may be approved in accordance with requirements specified in Section 01-63-00.
- B. Prior to ordering Products:
 - 1. Verify type of Paper to be used by Owner.
 - 2. Verify types and thicknesses of Wall Construction. Provide all required Fasteners, Clamps, Adapters, etc. necessary for conditions encountered.

2.2 TOILET PAPER DISPENSERS

- A. Manufacturer & Model: Bobrick B-4288, or approved.
- B. Type: Single Roll with automatically positioned Spare Roll
- C. Material: Stainless Steel
- D. Mounting: Surface
- E. Extent of Work: Provide 1 adjacent to each Toilet.

2.3 PAPER TOWEL DISPENSERS

- A. Manufacturer & Model: Bobrick B-2974, or approved.
- B. Type: Equipped to automatically-dispense C-fold and Multi-fold Towels.
- C. Material: Stainless Steel
- D. Mounting: Surface
- E. Extent of Work: Provide where located on Drawings as follows:
 - 1. 1 in Kitchen
 - 2. 1 adjacent to each Hand Washing Sink in Shop

2.4 COMBINATION PAPER TOWEL DISPENSERS & WASTE DISPOSALS

- A. Manufacturer & Model:
 - 1. At Gang Restrooms: Bobrick 43949, or approved.
 - 2. At Single Restrooms: Bobrick 3699, or approved.
- B. Type: Equip to dispense C-fold and Multi-fold Towels.
- C. Material: Stainless Steel
- D. Extent of Work: Provide 1 in each Rest Room.

PART 2 - PRODUCTS

2.5 WASTE DISPOSALS

- A. Manufacturer & Model: Bobrick B-43644, or approved.
- B. Lining: Removable Plastic Bag
- C. Material: Stainless Steel
- D. Mounting: Semi-recessed
- E. Extent of Work: See Drawings

2.6 LIQUID SOAP DISPENSERS

- A. Manufacturer & Model: Bradley Verge 6-3500, or approved.
- B. Mounting: Through Basin Rim
- C. Extent of Work: Provide 1 at each Lavatory Sink.

2.7 TOILET SEAT COVER DISPENSERS

- A. Manufacturer & Model: Bobrick B-4221, or approved.
- B. Type: Flat Sheet
- C. Material: Stainless Steel
- D. Mounting: Surface
- E. Extent of Work: Provide 1 adjacent to each Toilet.

2.8 SANITARY NAPKIN DISPOSALS

- A. Manufacturer & Model: Bobrick B-270, or approved.
- B. Door Type: Hinged Top Cover and bottom Trap Door
- C. Material: Stainless Steel
- D. Mounting: Surface
- E. Extent of Work: Provide 1 adjacent to each Women's & Unisex Toilet.

2.9 HOOKS

- A. Manufacturer & Model: Bobrick B-6727, or approved.
- B. Type: Double Hook
- C. Material: Stainless Steel
- D. Mounting Height above Floor, unless otherwise shown on Drawings: 54 inches
- E. Extent of Work: Provide 2 in each Unisex Restroom where shown on Drawings.

PART 2 - PRODUCTS

2.10 GRAB BARS

- A. Manufacturer & Model: B-6806, or approved.
- B. Material: Satin-finish Stainless Steel
- C. Wall Clearance: 1-1/2 inches
- D. At each Unisex Toilet & at each Toilet intended for Disabled Users:
 - 1. Quantity: 3 Bars per Toilet
 - 2. Horizontal Bars Mounting Height above Floor: 33 inches
 - 3. Length:
 - a. At Toilet Side:
 - 1. Horizontal Bar: 42 inches (**Space 12 inches away from Rear Wall**)
 - 2. Vertical Bar: 18 inches (*Extend vertically from front-end of Horizontal Bar*)
 - b. At Toilet Rear: 36 inches (*Extend 12 inches beyond Toilet centerline toward nearest side wall and extend 24 inches beyond Toilet centerline toward open side of Toilet.*)

2.11 SHOWER CURTAIN RODS

- A. Manufacturer & Model: Bobrick B-6047, or approved.
- B. Material: Stainless Steel
- C. Length: Fit Opening
- D. Required Accessories:
 - 1. Rod Mounting Flanges
 - 2. Snap Hooks with Nylon Rollers spaced at 6 inch centers.
- E. Extent of Work: Provide 1 at each Shower.

2.12 SHOWER CURTAINS

- A. Manufacturer & Model: Bobrick 204-2, or approved.
- B. Material: Opaque matte-white Vinyl
- C. Size: Fit Opening
- D. Extent of Work: Provide 1 at each Shower.

2.13 FASTENERS

- A. Non-corrosive type recommended by Accessory Manufacturer.

PART 2 - PRODUCTS

2.14 BLOCKING & BACKING

- A. Provide all necessary.
- B. Accessories are located on Drawings for Contractor's convenience.
- C. Verify location, type, and quantity with Owner prior to proceeding with Work.

2.15 FABRICATION

- A. Fabricate Units with welded Corners, one-piece seamless exposed Flanges, and with no open Miters.

PART 3 - EXECUTION

3.1 EXISTING CONDITIONS

- A. Do not proceed until Blocking and Surfaces to receive Accessories are smooth, clean, dry, square, sound, accurately sized and located, painted, and otherwise properly prepared.
- B. Prior to starting Work, notify General Contractor about defects requiring correction.
- C. Do not start Work until conditions are satisfactory.

3.2 PROTECTING WORK OF OTHER SECTIONS

- A. Protect against damage and discoloration caused by Work of this Section.

3.3 INSTALLATION

- A. If Mounting Locations are not specified herein, or shown on Drawings, locate where directed by Architect.
- B. Follow Manufacturer's installation instructions.
- C. Mount plumb, level, true, and secure.

3.4 ADJUSTMENTS

- A. Adjust Moving Parts to operate satisfactorily at time of Project Substantial Completion and during Warranty Period.

PART 3 - EXECUTION

3.5 WASTE MANAGEMENT

- A. Collect Scrap and Packaging, and place where directed for recycling.

3.6 PRODUCT CLEANING & REPAIRING

- A. Including Work of other Trades, clean, repair and touch-up, or replace when directed, Products which have been soiled, discolored, or damaged by Work of this Section.
- B. Remove Debris from Project Site upon Work completion, or sooner if directed.

END OF SECTION

PART 1 - GENERAL

1.1 CONTRACT CONDITIONS

- A. Work of this Section is bound by the Contract Conditions and Division 1, bound herewith, in addition to this Specification and accompanying Drawings.

1.2 RELATED WORK SPECIFIED IN OTHER SECTIONS

- A. Roof Accessories: Section 07-72-00
- B. Door Hardware: Section 08-71-00
- C. Field Painting: Section 09-90-00
- D. Visual Display Boards: Section 10-10-00
- E. Toilet Compartments: Section 10-16-00
- F. Wall & Corner Guards: Section 10-26-00
- G. Signs: Section 10-44-00
- H. Lockers: & Locker Room Benches: Section 10-50-00
- I. Operable Partitions: Section 10-65-00
- J. Toilet Accessories: Section 10-80-00
- K. Appliances: Section 11-45-20
- L. Equipment: Division 11
- M. Window Blinds: Section 12-51-00

1.3 ALTERNATES

- A. Refer to Section 01-20-00 for possible effect upon Work of this Section.

1.4 COORDINATION

- A. Coordinate with other Trades affecting or affected by Work of this Section.

1.5 SHOP DRAWINGS

- A. Show layout, dimensions, details of construction, methods of joining to other Work, required clearances, finishes, accessories, and other pertinent items.
- B. In accordance with Section 01-33-00, submit for the following:
 - 1. Fire Extinguisher Cabinets
 - 2. Bicycle Racks
 - 3. Projection Screens
 - 4. Phone Booths
- C. Manufacturer's standard Printed Literature may be substituted provided required information is included.

PART 1 - GENERAL

1.6 PRODUCT DELIVERY, STORAGE, & HANDLING

- A. Protect against damage and discoloration.
- B. Deliver in Manufacturer's original, unopened, protective wrapping with original, legible label intact.

1.7 INSTALLER'S QUALIFICATIONS

- A. Employed by or acceptable to Manufacturer of Specialty being installed.

PART 2 - PRODUCTS

2.1 FIRE EXTINGUISHER CABINETS

- A. Manufacturer: J.L. Industries, Larsen's, Modern Metal Products, Potter-Roemer, or approved.
- B. Model: Similar to J.L. Industries Clear Vu
- C. Minimum ASTM E-814 Fire-resistive Construction: 1 hour
- D. Size: Accommodate Fire Extinguishers specified below
- E. Mounting: Semi-recessed and flat trimmed
- F. Door & Frame Material: Stainless Steel
- G. Door Glazing: Clear Acrylic Plastic convex Bubble
- H. Cylinder Lock: Not Required
- I. Cabinet Interior: Black enamel
- J. Extinguisher Support: Manufacturer's standard Brackets to receive Fire Extinguishers specified below
- K. Extent of Work: Provide where shown on Drawings.

2.2 FIRE EXTINGUISHERS

- A. Manufacturer: Contractor's choice.
- B. Type: OSHA-approved and UL-rated for type A, B, & C fires
- C. Color: Red
- D. Size: 5 lb. 10 lb.
- E. Fill and service Extinguishers prior to Project Substantial Completion. Attach Certificate of Service, including date, to each Extinguisher.
- F. Extent of Work: Provide Extinguishers within each Extinguisher Cabinet specified above.

PART 2 - PRODUCTS

2.3 COVER SLEEVES FOR PIPE BOLLARDS

- A. Manufacturer & Type: Ideal Shield, (866) 825-8659, Innoplast (800) 526-9287, or approved.
- B. Material: Polyethylene
- C. Minimum Wall Thickness: 1/4 inch
- D. Color: Yellow
- E. Size: Fit Pipe Bollard specified in Section 05-50-00.
- F. Mounting: Bolt-in
- G. Extent of Work: Cover each Pipe Bollard specified in Section 05-50-00.

2.4 SPLASH BLOCKS

- A. Material: Precast Concrete
- B. Approximate Size: 12x24 inches
- C. Finish: Manufacturer's Standard
- D. Extent of Work: Provide 1 beneath each Sheetmetal Downspout discharging Rainwater onto Roof.

2.5 TELEPHONE BOOTHS

- A. Manufacturer: Nordic Silence, or approved.
- B. Brand:
 - 1. Type 1: INTO Pod Phone
 - 2. Type 2: INTO Pod 1
- C. Required Accessory: Wheel Chair Ramp
- D. Color: Selected by Architect after Contract award from Manufacturer's standard choices
- E. Extent of Work: Provide where shown on Drawings.

2.6 PRINTER-STORAGE ROOM WIRE SHELVING

- A. Manufacturer: Schulte (800) 669-3225, or approved.
- B. Brand: Adjustable Lifetime Ventilated Shelving System with Hanging Rods
- C. Type: Heavy duty
- D. Overall Height: 6 ft.
- E. Shelves Quantity: 4 (equally spaced)
- F. Minimum Load Capacity: 75 lbs. per lin. ft.
- G. Material: 0.0915 inch diameter Steel Wire spaced 1/2 inches o.c.
- H. Finish: Electrostatic-applied and oven-cured 5-mil thick Nickel-finish
- I. Required Accessories: Support Brackets, Attaching Devices, Fasteners, and any others required for complete and structurally sound installation.
- J. Layout: See Drawings

PART 2 - PRODUCTS

2.7 DROP-DOWN TV LIFT

- A. Manufacturer: Progressive Automations, or approved.
- B. Model: TY-05-30
- C. Controls: Wired

2.8 PROJECTION SCREENS

- A. Manufacturer: Draper, Da-Lite, or approved.
- B. Model: Similar to Draper Acumen V
- C. Width: 10 ft.
- D. Mounting: Suspended below Ceiling
- E. Operation: Motorized
- F. Extent of Work: Provide in Multi Purpose Rooms and elsewhere shown on Drawings.

2.9 BICYCLE RACKS

- A. Manufacturer: Huntco, or approved.
- B. Style: Tilikum
- C. Shape: Rectangular
- D. Securing Method: Bolted to Substrate
- E. Material: Stainless Steel
- F. Extent of Work: Provide where shown on Drawings.

2.10 SHOP PAINT

- A. Unless herein specified otherwise, factory-apply one coat Rust inhibiting Primer as specified in Section 09-90-00 to Ferrous Metal surfaces after fabrication, but before installation.
- B. Substitute complete Factory-Finish where so specified herein.

2.11 BLOCKING & BACKING

- A. Provide where necessary.
- B. Specialties are shown on Drawings for Contractor's convenience. Verify location, type, and extent of Work before installing Blocking and Backing.

PART 3 - EXECUTION

3.1 EXISTING CONDITIONS

- A. Verify that Blocking, Backing, and Surfaces to receive Specialties are properly prepared, sized, and located.
- B. Prior to starting Work notify General Contractor about defects requiring correction.
- C. Do not start Work until conditions are satisfactory.

3.2 PROTECTING WORK OF OTHER SECTIONS

- A. Protect other materials against damage and discoloration caused by Work of this Section.

3.3 INSTALLATION

- A. General:
 - 1. Follow Manufacturer's instructions and approved Shop Drawings.
 - 2. Secure Specialties plumb, level, square, and true as applicable.
- B. Fire Extinguisher Cabinets:
 - 1. Unless otherwise shown on Drawings, mount Cabinet so that Extinguisher top is 48 inches above Floor.
- C. Fire Extinguishers:
 - 1. Mount in Fire Extinguisher Cabinets.
- D. Splash Blocks:
 - 1. Locate directly under Downspout.
 - 2. Seat level and secure.
- E. Pipe Bollard Sleeves:
 - 1. Slide over Pipe Bollard, and anchor securely in place as instructed by Sleeve Manufacturer.
- F. TV Lifts, Projection Screens, & Phone Booths:
 - 1. Anchor to adjacent construction as recommended by Manufacturer.
 - 2. Make Utility connections
- G. Bicycle Racks & Wire Shelving:
 - 1. Anchor to adjacent construction as recommended by Manufacturer.

3.4 ADJUSTMENTS

- A. Adjust Moving Parts to operate satisfactorily at time of Project Substantial Completion and during Warranty Period.

3.5 WASTE MANAGEMENT

- A. Collect Scrap and Packaging, and place where directed for recycling.

PART 3 - EXECUTION

3.6 CLEANING & REPAIRING

- A. Remove Debris from Project Site upon Work completion, or sooner if directed.
- B. Including Work of other Sections, clean, repair and touch-up, or replace when directed, Products which have been soiled, discolored, or damaged by Work of this Section.
- C. Leave installation clean and defect-free.

END OF SECTION

OWNER-FURNISHED EQUIPMENT INSTALLATION**PART 1 - GENERAL****1.1 CONTRACT CONDITIONS**

- A. Work of this Section is bound by the Contract Conditions and Division 1, bound herewith, in addition to this Specification and accompanying Drawings.

1.2 EXTENT OF WORK

- A. Install Owner-furnished Equipment where Equipment is identified on Drawings as "OFCE" (*Owner-furnished Contractor-installed*).

1.3 RELATED WORK SPECIFIED IN OTHER SECTIONS

- A. Mechanical Piping, Electrical Conduit & Wiring, and connections if any, to Items specified herein: See Mechanical & Electrical Specifications

1.4 ALTERNATES

- A. Refer to Section 01-20-00 for possible effect upon Work of this Section.

1.5 COORDINATION

- A. Coordinate with other Trades affecting or affected by Work of this Section.

1.6 MANUFACTURER'S LITERATURE

- A. Prior to Equipment installation, Owner will supply for Contractor's use, detailed information showing Equipment dimensions, required clearances, methods of joining Equipment to other Work, utility locations, and other pertinent information.

1.7 INSTALLER'S QUALIFICATIONS

- A. Acceptable to Equipment Manufacturer.

1.8 PRODUCT DELIVERY

- A. Owner will deliver Products as stipulated in Section 01-11-00.

OWNER-FURNISHED EQUIPMENT INSTALLATION**PART 1 - GENERAL****1.9 PRODUCT STORAGE & HANDLING**

- A. Protect against damage and discoloration.

1.10 FIELD MEASUREMENTS

- A. Verify prior to installing Equipment.
- B. If field measurements differ slightly from Drawing dimensions, modify adjacent Construction as required for accurate fit. If measurements differ substantially, notify Architect prior to installing Equipment.

PART 2 - PRODUCTS**2.1 EQUIPMENT TO BE INSTALLED**

- A. Identified on Drawings as "OFICI" (*Owner-furnished Contractor-installed*).

2.2 ACCESSORIES

- A. Equipment will be delivered complete with necessary Accessories including Utility Connection Devices.

2.3 BLOCKING & BACKING

- A. Provide where necessary.
- B. Equipment shown on Drawings is located for Contractor's convenience. Before installing Blocking and Backing, verify Equipment type, location, and extent of Work.

PART 3 - EXECUTION**3.1 EXISTING CONDITIONS**

- A. Verify that Surfaces to receive Equipment are properly prepared.
- B. Verify that any necessary Mechanical and Electrical Utilities are accurately installed.
- C. Prior to starting Work, notify General Contractor about defects requiring correction.
- D. Do not start Work until conditions are satisfactory.

OWNER-FURNISHED EQUIPMENT INSTALLATION**PART 3 - EXECUTION****3.2 PROTECTING WORK OF OTHER SECTIONS**

- A. Protect against damage and discoloration caused by Work of this Section.

3.3 INSTALLATION

- A. Follow Manufacturer's instructions.
- B. Position plumb, level, square, straight, and true as applicable.
- C. Securely anchor to adjacent Construction.
- D. Make Utility connections.

3.4 ADJUSTMENTS

- A. Adjust any Moving Parts to operate satisfactorily at time of Project Substantial Completion and during Warranty Period.

3.5 WASTE MANAGEMENT

- A. Collect Metal Strapping & Packaging Waste, and place where directed for recycling.

3.6 PRODUCT CLEANING & REPAIRING

- A. Including Work of other Trades, clean, repair and touch-up, or replace when directed, Products which have been soiled, discolored, or damaged by work of this Section.
- B. Remove Debris from Project Site upon work completion or sooner, if directed.

END OF SECTION

PART 1 - GENERAL

1.1 CONTRACT CONDITIONS

- A. Work of this Section is bound by the Contract Conditions and Division 1, bound herewith, in addition to this Specification and accompanying Drawings.

1.2 RELATED WORK SPECIFIED IN OTHER SECTIONS

- A. Plumbing Piping for Appliances: See Plumbing Specifications
- B. Electrical Conduit & Wiring for Appliances: See Electrical Specifications

1.3 ALTERNATES

- A. Refer to Section 01-20-00 for possible effect upon Work of this Section.

1.4 COORDINATION

- A. Coordinate with other Trades affecting or affected by Work of this Section.

1.5 MANUFACTURER'S LITERATURE

- A. Submit in accordance with Section 01-33-00.
- B. Show dimensions, required clearances, methods of joining to other Work, Utility locations, and other pertinent information.
- C. Manufacturer's Printed Data may be submitted provided required information is included.

1.6 CERTIFICATE OF COMPLIANCE

- A. Furnish Certificate from Manufacturer stating that Appliances, where so required, meet or exceed EPA Energy Star Standards. In lieu of submitting Certificate, Manufacturer may affix Certifying Label on each Unit.

1.7 OPERATING & MAINTENANCE DATA

- A. In accordance with Section 01-83-00, submit to General Contractor for inclusion in Owner's Maintenance Manual.

APPLIANCES**PART 1 - GENERAL****1.8 REGULATORY AGENCY REQUIREMENTS**

- A. Appliances must be approved by Underwriters Laboratories, or approved.

1.9 PRODUCT DELIVERY, STORAGE, & HANDLING

- A. Protect against damage and discoloration.

1.10 FIELD MEASUREMENTS

- A. Verify prior to ordering Appliances.
- B. If field measurements differ slightly from Drawing dimensions modify adjacent Construction as required for accurate fit. If measurements differ substantially, notify Architect prior to ordering Appliances.

1.11 WARRANTY

- A. Work specified herein subject to warranty terms specified in Contract Conditions.

PART 2 - PRODUCTS**2.1 REFRIGERATOR**

- A. Manufacturer: Sub Zero, or approved.
- B. Model: BI 485/S/TH
- C. Type: Frost Free
- D. Energy Efficiency: Meet or exceed EPA Energy Star standards
- E. Face Material: Stainless Steel
- F. Extent of Work: Provide where shown on Drawings.

2.2 MICROWAVE OVEN

- A. Manufacturer: Panasonic, or approved.
- B. Model: SN766S
- C. Energy Efficiency: Meet or exceed EPA Energy Star standards
- D. Type: Built-in
- E. Face Material: Stainless Steel
- F. Extent of Work: Provide where shown on Drawings.

APPLIANCES**PART 2 - PRODUCTS****2.3 GARBAGE DISPOSAL**

- A. Manufacturer: InSinkErator, or approved.
- B. Model: Evolution Essential XTR
- C. Extent of Work: Provide at Kitchen Sink Drain.

2.4 DISHWASHER

- A. Manufacturer: GE, or approved.
- B. Model: GDT225 SSLSS
- C. Energy Efficiency: Meet or exceed EPA Energy Star standards
- D. Type: Built-in and ADA-compliant
- E. Face Material: Stainless Steel
- F. Extent of Work: Provide where shown on Drawings.

2.5 HOT & COLD WATER DISPENSER

- A. Manufacturer: InSinkErator, or approved.
- B. Model: Involve Wave
- C. Extent of Work: Provide at Kitchen Sink Drain.

2.6 REQUIRED ACCESSORIES

- A. Provide Appliances complete with all necessary Accessories including, but not limited to, the following:
 - 1. Anchor Bolts
 - 2. Utility Connection Devices

2.7 BLOCKING & BACKING

- A. Provide where necessary.
- B. Appliances are located on Drawings for Contractor's convenience. Before installing Blocking and Backing, verify exact Appliance location.

(Cont.)

APPLIANCES**PART 3 - EXECUTION****3.1 EXISTING CONDITIONS**

- A. Verify that Surfaces to receive Appliances are properly located, sized, and prepared.
- B. Verify that Utilities are accurately installed.
- C. Prior to starting Work, notify General Contractor about defects requiring correction.
- D. Do not start Work until conditions are satisfactory.

3.2 PROTECTING WORK OF OTHER SECTIONS

- A. Protect against damage and discoloration caused by Work of this Section.

3.3 INSTALLATION

- A. Follow Manufacturer's instructions.
- B. Secure Appliances plumb, level, square, straight, and true as applicable.
- C. Make all Utility connections.

3.4 ADJUSTMENTS

- A. Adjust Moving Parts to operate satisfactorily at time of Project Substantial Completion and during Warranty Period.

3.5 WASTE MANAGEMENT

- A. Collect Metal Strapping & Packaging Waste, and place where directed for recycling.

3.6 PRODUCT CLEANING & REPAIRING

- A. Including Work of other Trades, clean, repair and touch-up, or replace when directed, Products which have been soiled, discolored, or damaged by Work of this Section.
- B. Remove Debris from Project Site upon Work completion, or sooner if directed.

END OF SECTION

PART 1 - GENERAL

1.1 CONTRACT CONDITIONS

- A. Work of this Section is bound by the Contract Conditions and Division 1, bound herewith, in addition to this Specification and accompanying Drawings.

1.2 PRODUCTS FURNISHED, BUT INSTALLED UNDER OTHER SECTIONS

- A. Anchor Bolts and necessary Setting Templates.

1.3 ALTERNATES

- A. Refer to Section 01-20-00 for possible effect upon Work of this Section.

1.4 COORDINATION

- A. Coordinate with other Trades affecting or affected by Work of this Section.

1.5 SHOP DRAWINGS

- A. Submit in accordance with Section 01-33-00.
- B. Show dimensions, required clearances, methods of joining to other Work, utility locations, and other pertinent information.

1.6 OPERATING & MAINTENANCE DATA

- A. In accordance with Section 01-83-00, submit to General Contractor for inclusion in Owner's Maintenance Manual.

1.7 INSTALLER'S QUALIFICATIONS

- A. Employed by or acceptable to Equipment Manufacturer.

1.8 PRODUCT DELIVERY, STORAGE, & HANDLING

- A. Protect against damage and discoloration.

PART 1 - GENERAL

1.9 FIELD MEASUREMENTS

- A. Verify prior to ordering Equipment.
- B. If field measurements differ slightly from Drawing dimensions, modify adjacent Construction as required for accurate fit. If measurements differ substantially, notify Architect prior to ordering Equipment.

PART 2 - PRODUCTS

2.1 PASS-THRU EQUIPMENT

- A. Manufacturer: Cleanair Products, or approved.
- B. Model: 18FHF-SST-42-60-54
- C. Material: Stainless Steel
- D. Extent of Work: See Drawings

2.2 REQUIRED ACCESSORIES

- A. Provide Equipment complete with all necessary Accessories including, but not limited to, the following:
 - 1. Anchor Bolts
 - 2. Utility Connection Devices
 - 3. Door Latches that prevent both Doors against opening at same time.

PART 3 - EXECUTION

3.1 EXISTING CONDITIONS

- A. Verify that Surfaces to receive Equipment are properly prepared.
- B. Verify that Electrical Utilities are accurately installed.
- C. Prior to starting Work, notify General Contractor about defects requiring correction.
- D. Do not start Work until conditions are satisfactory.

3.2 PROTECTING WORK OF OTHER SECTIONS

- A. Protect against damage and discoloration caused by Work of this Section.

PART 3 - EXECUTION

3.3 INSTALLATION

- A. Follow Manufacturer's instructions.
- B. Position plumb, level, square, straight, and true as applicable.
- C. Securely anchor to adjacent Construction
- D. Secure both Perimeter Frames with Joint Sealant as specified in Section 07-92-00
- E. Make all Utility connections.

3.4 ADJUSTMENTS

- A. Adjust Moving Parts to operate satisfactorily at time of Project Substantial Completion and during Warranty Period.

3.5 PRODUCT CLEANING & REPAIRING

- A. Including Work of other Trades, clean, repair and touch-up, or replace when directed, Products which have been soiled, discolored, or damaged by work of this Section.
- B. Remove Debris from Project Site upon work completion or sooner, if directed.

3.6 WASTE MANAGEMENT

- A. Collect Metal Strapping & Packaging Waste, and place where directed for recycling.

3.7 OPERATING & MAINTENANCE DEMONSTRATIONS

- A. In accordance with Section 01-83-00, Personally instruct Owner's Representative in proper operation and maintenance methods.

END OF SECTION

PART 1 - GENERAL

1.1 CONTRACT CONDITIONS

- A. Work of this Section is bound by the Contract Conditions and Division 1, bound herewith, in addition to this Specification and accompanying Drawings.

1.2 RELATED WORK SPECIFIED IN OTHER SECTIONS

- A. Electrical Conduit Wiring and connections: Electrical Specifications

1.3 ALTERNATES

- A. Refer to Section 01-20-00 for possible effect upon Work of this Section.

1.4 COORDINATION

- A. Coordinate with other Trades affecting or affected by Work of this Section.

1.5 MANUFACTURER'S LITERATURE

- A. Submit in accordance with Section 01-33-00.
- B. Show dimensions, methods of joining to other Work, utility locations, and other pertinent information.
- C. Manufacturer's Printed Data may be substituted provided required information is included.

1.6 INSTALLER'S QUALIFICATIONS

- A. Employed by or acceptable to Case Manufacturer.

1.7 PRODUCT DELIVERY, STORAGE, & HANDLING

- A. Protect against damage and discoloration.

(Cont.)

PART 2 - PRODUCTS

2.1 DISPLAY CASE

- A. Manufacturer: Specialty Store Services, or approved.
- B. Model: 929364B
- C. Material: Powder-coated Steel and Glass
- D. Extent of Work: See Drawings

PART 3 - EXECUTION

3.1 EXISTING CONDITIONS

- A. Verify that Surfaces to receive Case is properly prepared.
- B. Verify that Electrical Utilities are accurately installed.
- C. Prior to starting Work, notify General Contractor about defects requiring correction.
- D. Do not start Work until conditions are satisfactory.

3.2 PROTECTING WORK OF OTHER SECTIONS

- A. Protect against damage and discoloration caused by Work of this Section.

3.3 INSTALLATION

- A. Follow Manufacturer's instructions.
- B. Position plumb, level, square, straight, and true as applicable.
- C. Securely anchor to adjacent Construction.
- D. Make all Utility connections.

3.4 ADJUSTMENTS

- A. Adjust Moving Parts to operate satisfactorily at time of Project Substantial Completion and during Warranty Period.

3.5 PRODUCT CLEANING & REPAIRING

- A. Including Work of other Trades, clean, repair and touch-up, or replace when directed, Products which have been soiled, discolored, or damaged by work of this Section.
- B. Remove Debris from Project Site upon work completion or sooner, if directed.

PART 3 - EXECUTION

3.6 WASTE MANAGEMENT

- A. Collect Metal Strapping & Packaging Waste, and place where directed for recycling.

END OF SECTION

PART 1 - GENERAL

1.1 CONTRACT CONDITIONS

- A. Work of this Section is bound by the Contract Conditions and Division 1, bound herewith, in addition to this Specification and accompanying Drawings.

1.2 EXTENT OF WORK

- A. Provide Shades over interior face of all Exterior Windows & Glazed Doors, except at Building Entries.

1.3 RELATED WORK SPECIFIED IN OTHER SECTIONS

- A. Shower Curtains: Section 10-80-00

1.4 ALTERNATES

- A. Refer to Section 01-20-00 for possible effect upon Work of this Section.

1.5 COORDINATION

- A. Coordinate with other Trades affecting or affected by Work of this Section.

1.6 INSTALLER'S QUALIFICATIONS

- A. To be eligible to perform Work specified herein Installer must have successfully completed at least 2 similar projects, and be employed by or acceptable to Manufacturer.

1.7 PRODUCT DELIVERY, STORAGE, & HANDLING

- A. Protect against damage and discoloration.
- B. Deliver in Manufacturer's original, unopened, undamaged Packages with legible Labels intact.
- C. Identify Manufacturer, brand name, finish, color, and installation location on each Package.

(Cont.)

PART 1 - GENERAL

1.8 FIELD MEASUREMENTS

- A. Verify prior to fabrication.
- B. If field measurements differ slightly from Drawing dimensions modify Work as required for accurate fit. If measurements differ substantially, notify Architect prior to fabrication.

PART 2 - PRODUCTS

2.1 ROLLER SHADES

- A. Manufacturer: MechoShade, (800) 437-6360, or approved.
- B. Operation: Manually-operated Chain
- C. Fabric: Non-PVC EcoVeil Shade Cloth
- D. Openness Factor: 3%
- E. Color: Selected by Architect after Contract award from Manufacturer's standard choices

2.2 FABRICATION

- A. General:
 - 1. Fabricate each Shade as complete Unit produced by one Manufacturer, including all necessary Hardware, Mounting Devices, Accessory Items, and Fasteners.
 - 2. Fabricate Units to completely fill Opening from Jamb to Jamb and Head to Sill.
 - 3. Align any intermediate Unit Ends with any adjacent Vertical Window Mullions.
 - 4. Locate Controls for easy operation. Notify Architect before fabrication if indicated locations can be improved.
 - 5. Locate Bottom Bar 1/4 inch clear of Window Sill.
 - 6. At any Openings requiring continuous multiple Shade Units with separate Rollers, abut adjacent Roller Joints and align Joints at center of Window Mullions.

(Cont.)

PART 3 - EXECUTION

3.1 EXISTING CONDITIONS

- A. Verify that Work Surfaces are accurately located and secure.
- B. Prior to starting Work, notify General Contractor about defects requiring correction.
- C. Do not start Work until conditions are satisfactory.

3.2 PROTECTING WORK OF OTHER SECTIONS

- A. Protect against damage and discoloration caused by Work of this Section.

3.3 INSTALLATION

- A. Follow Manufacturer's instructions.
- B. Do necessary cutting, tapping, and drilling.
- C. Provide necessary clearance to permit unencumbered Sash Hardware and Door Hardware operation.
- D. Protect Metal Parts in contact with Dissimilar Materials against galvanic corrosion.
- E. Securely attach Units plumb, square, and true with Brackets, Clips, and Fasteners.

3.4 ADJUSTMENTS

- A. Adjust Units to provide correct clearances.
- B. Adjust Moving Parts to operate satisfactorily at time of Project Substantial Completion and during Warranty Period.

3.5 WASTE MANAGEMENT

- A. Collect Packaging Waste, and place where directed for recycling.

3.6 PRODUCT CLEANING & REPAIRING

- A. Including Work of other Trades, clean, repair and touch-up, or replace when directed, Products which have been soiled, discolored, or damaged by Work of this Section.
- B. Remove Debris from Project Site upon Work completion, or sooner if directed.

END OF SECTION

PART 1 - GENERAL

1.1 CONTRACT CONDITIONS

- A. Work of this Section is bound by the Contract Conditions and Division 1, bound herewith, in addition to this Specification and accompanying Drawings.

1.2 WORK INCLUDED

- A. In accordance with governing laws, regulations, codes, Design Loads listed in Structural Notes on Drawings, and requirements specified in Section 01-11-50; design, engineer, fabricate, and erect Metal Building as specified herein and as shown on Drawings.

1.3 PRODUCTS FURNISHED, BUT INSTALLED UNDER OTHER SECTIONS

- A. Anchor Bolts: Section 03-10-00

1.4 RELATED WORK SPECIFIED IN OTHER SECTIONS

- A. Concrete: Division 3
- B. Structural Steel: Section 05-10-00
- C. Steel Wall Framing: Section 05-40-00
- D. Steel Wall & Roof Panels: Section 07-41-00
- E. Sheetmetal Flashing & Trim: Section 07-62-00
- F. Caulking & Sealing: Section 07-92-00
- G. Hollow Steel Doors & Frames: Section 08-11-00
- H. Sectional Overhead Doors: Section 08-36-00
- I. Aluminum Entrance System: Section 08-40-00
- J. Translucent Sandwich Wall Panels: Section 08-64-00
- K. Interior Finishes: Division 9
- L. Mechanical & Electrical Work: See Mechanical & Electrical Specifications

1.5 ALTERNATES

- A. Refer to Section 01-20-00 for possible effect upon Work of this Section.

1.6 REFERENCED SPECIFICATIONS

- A. Comply with applicable portions of Specification for Design, Fabrication, & Erection of Structural Steel Buildings, published by American Institute of Steel Construction (AISC); One East Wacker; S-3100; Chicago, IL 60611-4185; (312) 670-2400.

PART 1 - GENERAL

1.7 SYSTEM DESCRIPTION

- A. Primary Framing: Clear-span Rigid Frame System
- B. Secondary Framing: Purlins, Girts, and Bracing necessary for complete and structurally sound installation.
- C. Exterior Wall & Roof Panels: Factory-formed and Factory-finished Metal Panels with necessary Subgirt Framing, Anchors, Flashings, and Trim.
- D. Explosion-resistant Connections: Provide at Roof to Exterior Wall connections.

1.8 DESIGN REQUIREMENTS

- A. Comply with the following:
 - 1. Minimum Positive Live Loads: See Structural Notes on Drawings
 - 2. Minimum Seismic, Snow, & Wind Loads: Comply with Building Code
 - 3. Maximum Wall & Roof Deflection: 1/180 of fully loaded Span
 - 4. Minimum Thermal Expansion: Resistant to stress from 100°F temperature shift without buckling, Joint Seal failure, or excessive Fastener stress.

1.9 COORDINATION

- A. Coordinate with other Trades affecting or affected by Work of this Section.

1.10 SHOP DRAWINGS

- A. Submit in accordance with Section 01-33-00.
- B. Indicate the following:
 - 1. Dimensioned Building Plan, Cross Sections, and Wall Elevations.
 - 2. Materials, Finishes, Construction details, Bracing, Connections, Anchorage, and any other pertinent information.

1.11 CERTIFICATE OF COMPLIANCE

- A. Submit written affidavit, bearing seal and signature of Structural Engineer licensed to practice in Oregon, that Work of this Section complies with Drawings, Specifications, and governing Codes and Regulations.

(Cont.)

PART 1 - GENERAL

1.12 PERSONNEL QUALIFICATIONS

- A. System Design Engineer: Structural Engineer licensed to practice in Oregon
- B. Fabricator: 5 years minimum experience performing Work of type specified herein.
- C. Erector: 5 years minimum experience performing Work of type specified herein, and approved by System Fabricator

1.13 PRE-ERECTION CONFERENCE

- A. Prior to Building erection, and in accordance with Section 01-31-50, arrange Meeting to clarify any questions about Specifications or erection requirements.
- B. Representatives of the following shall attend:
 - 1. General Contractor
 - 2. Factory-engineered Building Fabricator
 - 3. Factory-engineered Building Erector
 - 4. Wall & Roof Panel Subcontractor
 - 5. Mechanical & Electrical Subcontractors
 - 6. Any other involved Subcontractors

1.14 PRODUCT DELIVERY, STORAGE, & HANDLING

- A. Protect against damage, distortion, and discoloration.
- B. Handle Components with non-marring Slings. Do not bend.
- C. Store Panels above ground and with one end elevated for drainage. If Panels become wet, immediately separate, wipe dry with clean cloth, and continue to separate until dry.

PART 2 - PRODUCTS

2.1 MANUFACTURER

- A. American, Butler, Metallic, Nucore, Pascoe, Varco-Pruden, or approved,

2.2 STRUCTURAL FRAME

- A. Comply with Referenced Specifications

PART 2 - PRODUCTS

2.3 STEEL WALL FRAMING

A. See Section 05-40-00

2.4 WALL & ROOF PANELS

A. See Section 07-41-00

2.5 SHEETMETAL GUTTERS, DOWNSPOUTS, & FLASHING:

A. See Section 07-62-00

2.6 THERMAL INSULATION

A. See Section 07-20-00

2.7 HOLLOW STEEL DOOR FRAMES

A. See Section 08-11-00

2.8 SECTIONAL OVERHEAD DOORS

A. See Section 08-36-00 & 08-36-50

2.9 ALUMINUM ENTRANCE DOORS & WINDOWS

A. See Section 08-40-00

2.10 TRANSLUCENT SANDWICH WALL PANELS

A. See Section 08-64-00

2.11 FABRICATION

A. Comply with Referenced Specifications.

PART 3 - EXECUTION

3.1 EXISTING CONDITIONS

- A. Do not proceed until Structure and Surfaces to receive Building Components are accurately sized and located, true, smooth, clean, and otherwise properly prepared in accordance with approved Shop Drawings.
- B. Prior to starting Work, notify General Contractor about defects requiring correction.
- C. Do not start Work until conditions are satisfactory.

3.2 PROTECTING WORK OF OTHER SECTIONS

- A. Protect against damage and discoloration caused by Work of this Section.

3.3 SURFACE PREPARATION

- A. Protect contacting Dissimilar Materials against Galvanic Corrosion with Asphaltic Compound, 7-1/2 mil minimum dry thickness, applied to each contacting face.

3.4 ERECTION GENERAL

- A. Accurately position and secure Components level, plump, true to line, without distortion, and in accordance with Referenced Specifications, Manufacturer's Instructions, and approved Shop Drawings.
- B. Make installation weatherproof and watertight.

3.5 FRAME ERECTION

- A. See Section 05-10-00
- B. Provide Framing to support Cranes, Mechanical, or other Equipment; secure to Structural Frame.
- C. Provide Framing around Openings in Wall and Roof Panels; secure to Structural Frame.
- D. Allowable Erection Tolerance: Comply with Referenced Specifications.

3.6 WALL & ROOF PANEL INSTALLATION

- A. See Section 07-41-00

3.7 SHEETMETAL GUTTER, DOWNSPOUT, & FLASHING INSTALLATION

- A. See Section 07-62-00

PART 3 - EXECUTION

3.8 THERMAL INSULATION INSTALLATION

- A. See Section 07-20-00

3.9 HOLLOW STEEL DOOR FRAME INSTALLATION

- A. See Section 08-11-00

3.10 SECTIONAL OVERHEAD DOORS

- A. See Section 08-36-00 & 08-36-50

3.11 ALUMINUM ENTRANCE DOOR & WINDOW INSTALLATION

- A. See Section 08-40-00

3.12 TOUCH UP

- A. Wire brush, clean, and paint Welds, Scarred Areas, and Rust Spots.
- B. Touch-up damaged Paint Surfaces with same Paint used in Shop. Apply in accordance with Paint Manufacturer's directions.

3.13 WASTE MANAGEMENT

- A. Collect Shipping Pallets, Metal Strapping, & Packaging Waste; and place where directed for recycling.

3.14 PRODUCT CLEANING & REPAIRING

- A. At completion of each day's work and at Work completion, sweep Panels, Gutters, and Flashings clean. Do not allow Fasteners, Cuttings, Fillings, or Scraps to accumulate on Finish Surfaces.
- B. Including Work of other Trades, clean, repair and touch-up, or replace when directed, Products which have been soiled, discolored, or damaged by Work of this Section.
- C. Remove Debris from Project Site upon Work completion, or sooner if directed.

END OF SECTION

PART 1 - GENERAL

1.1 CONTRACT CONDITIONS

- A. Work of this Section is bound by the Contract Conditions and Division 1, bound herewith, in addition to this Specification and accompanying Drawings.

1.2 PRODUCTS FURNISHED, BUT INSTALLED UNDER OTHER SECTIONS

- A. Anchor Bolts and necessary Setting Templates.

1.3 RELATED WORK SPECIFIED IN OTHER SECTIONS

- A. Electrical Conduit & Wiring and connections to Items specified herein: See Electrical Specifications

1.4 ALTERNATES

- A. Refer to Section 01-20-00 for possible effect upon Work of this Section.

1.5 COORDINATION

- A. Coordinate with other Trades affecting or affected by Work of this Section.

1.6 SHOP DRAWINGS

- A. Submit in accordance with Section 01-33-00.
- B. Show dimensions, required clearances, methods of joining to other Work, utility locations, and other pertinent information.

1.7 OPERATING & MAINTENANCE DATA

- A. In accordance with Section 01-83-00, submit to General Contractor for inclusion in Owner's Maintenance Manual.

1.8 INSTALLER'S QUALIFICATIONS

- A. Employed by or acceptable to Equipment Manufacturer.

PART 1 - GENERAL

1.9 REGULATORY AGENCY REQUIREMENTS

- A. Building Code requirements govern, if more rigid than those specified herein. Notify Architect of differences prior to fabrication.
- B. Conform to requirements of Agencies:
 - 1. Underwriters Laboratories
 - 2. Occupational Safety & Health Act

1.10 PRODUCT DELIVERY, STORAGE, & HANDLING

- A. Protect against damage and discoloration.

1.11 FIELD MEASUREMENTS

- A. Verify prior to ordering Equipment.
- B. If field measurements differ slightly from Drawing dimensions, modify adjacent Construction as required for accurate fit. If measurements differ substantially, notify Architect prior to ordering Equipment.

PART 2 - PRODUCTS

2.1 SHOP CRANE

- A. Manufacturer: US Crane & Hoist, or approved.
- B. Class: C
- C. Type: Wire Rope, True Vertical Lift, Overhead Bridge Crane
- D. Minimum Lifting Capacity: 10 tons
- E. Material: Steel
- F. Factory Finish:
 - 1. Material: Manufacturer's standard baked-on Enamel
 - 2. Color: Selected by Architect after Contract award from Manufacturer's standard choices.

(Cont.)

CRANES**PART 2 - PRODUCTS****2.2 MEASURING ROOM CRANE**

- A. Manufacturer: US Crane & Hoist, or approved.
- B. Class: C:
- C. Type: True Vertical Lift, Under-slung Monorail
- D. Minimum Lifting Capacity: 5 tons
- E. Material: Steel
- F. Factory Finish:
 - 1. Material: Manufacturer's standard baked-on Enamel
 - 2. Color: Selected by Architect after Contract award from Manufacturer's standard choices.

2.3 REQUIRED ACCESSORIES

- A. Provide Equipment complete with all necessary Accessories including, but not limited to the following:
 - 1. Anchor Bolts
 - 2. Motor Starters (Verify required Power Characteristics)
 - 3. Start/Stop Controls
 - 4. Overload Protection Devices
 - 5. Utility Connection Devices

2.4 BLOCKING & BACKING

- A. Provide where necessary.
- B. Equipment shown on Drawings is located for Contractor's convenience. Before installing Blocking and Backing, verify Equipment type, location, and extent of Work.

PART 3 - EXECUTION**3.1 EXISTING CONDITIONS**

- A. Verify that Structure and Surfaces to receive Equipment are properly prepared.
- B. Verify that Electrical Utilities are accurately installed.
- C. Prior to starting Work, notify General Contractor about defects requiring correction.
- D. Do not start Work until conditions are satisfactory.

PART 3 - EXECUTION

3.2 PROTECTING WORK OF OTHER SECTIONS

- A. Protect against damage and discoloration caused by Work of this Section.

3.3 INSTALLATION

- A. Follow Manufacturer's instructions.
- B. Position plumb, level, square, straight, and true as applicable.
- C. Securely anchor to adjacent Construction.
- D. Make all Utility connections.

3.4 ADJUSTMENTS

- A. Adjust Moving Parts to operate satisfactorily at time of Project Substantial Completion and during Warranty Period.

3.5 PRODUCT CLEANING & REPAIRING

- A. Including Work of other Trades, clean, repair and touch-up, or replace when directed, Products which have been soiled, discolored, or damaged by work of this Section.
- B. Remove Debris from Project Site upon work completion or sooner, if directed.

3.6 WASTE MANAGEMENT

- A. Collect Metal Strapping & Packaging Waste, and place where directed for recycling.

3.7 OPERATING & MAINTENANCE DEMONSTRATIONS

- A. In accordance with Section 01-83-00, personally instruct Owner's Representative in proper operation and maintenance methods.

3.8 READJUSTING

- A. 30 Days prior to Warranty expiration, inspect and where necessary, readjust Equipment to operate smoothly, easily, and properly.

END OF SECTION