

## SECTION 01 10 00

### SUMMARY

#### PART 1 GENERAL

##### 1.1 SECTION INCLUDES

- A. Contract description.
- B. Work by Owner.
- C. Owner supplied products.
- D. Contractor's use of site and premises.
- E. Owner occupancy.
- F. Specification Conventions.

##### 1.2 CONTRACT DESCRIPTION

- A. Work of the Project includes install a rain screen system on the east stair of Fire Hall #1 and related work, Duluth, MN.
- B. Perform Work of Contract under stipulated sum contract with Owner in accordance with Conditions of Contract.

##### 1.3 WORK BY OWNER

- A. Items noted NIC (Not in Contract) will be furnished and installed by Owner.

##### 1.4 CONTRACTOR'S USE OF SITE AND PREMISES

- A. Limit use of site and premises to allow:
  - 1. Owner occupancy.
  - 2. Work by Others and Work by Owner.
  - 3. Use of site and premises by the public.
- B. Emergency Building Exits During Construction: Do not block emergency exits at any time.
- C. Construction Operations: Limited to areas noted on Drawings
- D. Time Restrictions for Performing Work: 7:30 AM to 5 PM weekdays.
- E. Utility Outages and Shutdown: Provide Owner 48 hour notice of any utility outages or shutdowns.

1.5 OWNER OCCUPANCY

- A. The Owner will occupy the site and premises during [the entire period of construction for the conduct of normal operations.
- B. Cooperate with Owner to minimize conflict, and to facilitate Owner's operations.
- C. Schedule the Work to accommodate Owner occupancy.

1.6 SPECIFICATION CONVENTIONS

- A. These specifications are written in imperative mood and streamlined form. This imperative language is directed to the Contractor, unless specifically noted otherwise. The words "shall be" are included by inference where a colon (:) is used within sentences or phrases.

**PART 2 PRODUCTS**

NOT USED

**PART 3 EXECUTION**

NOT USED

**END OF SECTION**

## SECTION 01 20 00

### PRICE AND PAYMENT PROCEDURES

#### PART 1 GENERAL

##### 1.1 SECTION INCLUDES

- A. Contingency allowance.
- B. Schedule of values.
- C. Applications for payment.
- D. Change procedures.
- E. Defect assessment.

##### 1.2 CONTINGENCY ALLOWANCES

- A. **Include in the Contract, a stipulated sum/price of \$5,000 for use upon Owner's instruction.**
- B. Contractor's costs for products, delivery, installation, labor, insurance, payroll, taxes, bonding, equipment rental, overhead and profit will be included in Change Orders authorizing expenditure of funds from this Contingency Allowance.
- C. Funds will be drawn from Contingency Allowance only by Change Order.
- D. At closeout of Contract, funds remaining in Contingency Allowance will be credited to Owner by Change Order.

##### 1.3 SCHEDULE OF VALUES

- A. Submit printed schedule on AIA Form G703 - Continuation Sheet for G702.
- B. Submit Schedule of Values in duplicate within 14 days after date of Owner-Contractor Agreement.
- C. Format: Utilize Table of Contents of this Project Manual. Identify each line item with number and title of specification Section.
- D. Include within each line item, direct proportional amount of Contractor's overhead and profit.
- E. Revise schedule to list approved Change Orders, with each Application for Payment.

#### 1.4 APPLICATIONS FOR PAYMENT

- A. Submit three copies of each application on AIA Form G702 - Application and Certificate for Payment and AIA G703 - Continuation Sheet for G702.
- B. Content and Format: Utilize Schedule of Values for listing items in Application for Payment.
- C. Submit updated construction schedule with each Application for Payment.
- D. Payment Period: Submit at intervals stipulated in the Agreement.
- E. Submit with transmittal letter as specified for Submittals in Section 01 33 00 - Submittal Procedures.
- F. Substantiating Data: Submit data justifying dollar amounts in question. Include the following with Application for Payment:
  - 1. Partial release of liens from major subcontractors and vendors.
  - 2. Affidavits attesting to off-site stored products.

#### 1.5 CHANGE PROCEDURES

- A. Submittals: Submit name of individual authorized to receive change documents, and be responsible for informing others in Contractor's employ or Subcontractors of changes to the Work.
- B. The Architect will advise of minor changes in the Work not involving adjustment to Contract Sum/Price or Contract Time by issuing supplemental instructions on AIA Form G710.
- C. The Architect may issue a Proposal Request including a detailed description of proposed change with supplementary or revised Drawings and specifications. Contractor will prepare and submit proposal within 14 days.
- D. Contractor may propose changes by submitting a request for change to Architect, describing proposed change and its full effect on the Work. Include a statement describing reason for the change, and effect on Contract Sum/Price and Contract Time with full documentation. Document requested substitutions in accordance with Section 01 60 00 - Product Requirements.
- E. Stipulated Sum/Price Change Order: Based on Proposal Request and Contractor's fixed or Contractor's request for Change Order as approved by Architect.

- F. Construction Change Directive: Architect may issue directive, on AIA Form G713 Construction Change Directive signed by Owner, instructing Contractor to proceed with change in the Work, for subsequent inclusion in a Change Order. Document will describe changes in the Work, and designate method of determining any change in Contract Sum/Price or Contract Time. Promptly execute change.
- G. Time and Material Change Order: Submit itemized account and supporting data after completion of change, within time limits indicated in Conditions of the Contract. Architect will determine change allowable in Contract Sum/Price and Contract Time as provided in Contract Documents.
- H. Maintain detailed records of work done on Time and Material basis. Provide full information required for evaluation of proposed changes, and to substantiate costs for changes in the Work.
- I. Document each quotation for change in cost or time with sufficient data to allow evaluation of quotation.
- J. Change Order Forms: AIA G701 Change Order.
- K. Execution of Change Orders: Architect will issue Change Orders for signatures of parties as provided in Conditions of the Contract.
- L. Correlation Of Contractor Submittals:
  - 1. Promptly revise Schedule of Values and Application for Payment forms to record each authorized Change Order as separate line item and adjust Contract Sum/Price.
  - 2. Promptly revise progress schedules to reflect change in Contract Time, revise sub-schedules to adjust times for other items of work affected by the change, and resubmit.
  - 3. Promptly enter changes in Project Record Documents.

## 1.6 DEFECT ASSESSMENT

- A. Replace the Work, or portions of the Work, not conforming to specified requirements.
- B. If, in the opinion of the Architect, it is not practical to remove and replace the Work, the Architect will direct appropriate remedy or adjust payment.
- C. Individual specification sections may modify these options or may identify specific formula or percentage sum/price reduction.
- D. Authority of Architect to assess defects and identify payment adjustments, is final.

- E. Non-Payment For Rejected Products: Payment will not be made for rejected products for any of the following:
1. Products wasted or disposed of in a manner that is not acceptable.
  2. Products determined as unacceptable before or after placement.
  3. Products not completely unloaded from transporting vehicle.
  4. Products placed beyond lines and levels of required Work.
  5. Products remaining on hand after completion of the Work.
  6. Loading, hauling, and disposing of rejected products.

**PART 2 PRODUCTS**

NOT USED

**PART 3 EXECUTION**

NOT USED

**END OF SECTION**

## SECTION 01 30 00

### ADMINISTRATIVE REQUIREMENTS

#### PART 1 GENERAL

##### 1.1 SECTION INCLUDES

- A. Coordination and project conditions.
- B. Preconstruction meeting.
- C. Progress meetings.
- D. Pre-installation meetings.
- E. Cutting and patching.
- F. Special procedures.

##### 1.2 COORDINATION AND PROJECT CONDITIONS

- A. Coordinate scheduling, submittals, and Work of various sections of Project Manual to ensure efficient and orderly sequence of installation of interdependent construction elements, with provisions for accommodating items installed later.
- B. Verify utility requirements and characteristics of operating equipment are compatible with building utilities. Coordinate work of various sections having interdependent responsibilities for installing, connecting to, and placing in service, operating equipment.
- C. Coordinate space requirements, supports, and installation of mechanical and electrical Work indicated diagrammatically on Drawings. Follow routing shown for pipes, ducts, and conduit, as closely as practicable; place runs parallel with lines of building. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.
- D. In finished areas, except as otherwise indicated, conceal pipes, ducts, and wiring within construction. Coordinate locations of fixtures and outlets with finish elements.
- E. Coordinate completion and clean-up of Work of separate sections in preparation for Substantial Completion [and for portions of Work designated for Owner's [partial] occupancy].
- F. After Owner occupancy of premises, coordinate access to site for correction of defective Work and Work not in accordance with Contract Documents, to minimize disruption of Owner's activities.

### 1.3 PRECONSTRUCTION MEETING

- A. Architect will schedule meeting after Notice of Award.
- B. Attendance Required: Owner, Architect, and Contractor.
- C. Agenda:
  - 1. Submission of executed bonds and insurance certificates.
  - 2. Distribution of Contract Documents.
  - 3. Submission of list of Subcontractors, list of products, schedule of values, and progress schedule.
  - 4. Designation of personnel representing parties in Contract, and Architect.
  - 5. Procedures and processing of field decisions, submittals, substitutions, applications for payments, proposal request, Change Orders, and Contract closeout procedures.
  - 6. Scheduling.
- D. Architect will record minutes and distribute copies to participants.

### 1.4 PROGRESS MEETINGS

- A. Architect will schedule and administer meetings throughout progress of the Work.
- B. Architect will make arrangements for meetings, prepare agenda with copies for participants, preside at meetings.
- C. Attendance Required: Job superintendent, major subcontractors and suppliers, Owner, and Architect.
- D. Agenda:
  - 1. Review minutes of previous meetings.
  - 2. Review of Work progress.
  - 3. Field observations, problems, and decisions.
  - 4. Identification of problems impeding planned progress.
  - 5. Review of submittals schedule and status of submittals.
  - 6. Review of off-site fabrication and delivery schedules.
  - 7. Maintenance of progress schedule.
  - 8. Corrective measures to regain projected schedules.
  - 9. Planned progress during succeeding work period.
  - 10. Coordination of projected progress.
  - 11. Maintenance of quality and work standards.
  - 12. Effect of proposed changes on progress schedule and coordination.
  - 13. Other business relating to Work.
- E. Architect will record minutes and distribute copies to participants.

## 1.5 PRE-INSTALLATION MEETINGS

- A. When required in individual specification sections, convene pre-installation meetings at Project site prior to commencing work of specific section.
- B. Require attendance of parties directly affecting, or affected by, Work of specific section.
- C. Notify Architect four days in advance of meeting date.
- D. Prepare agenda and preside at meeting:
  - 1. Review conditions of installation, preparation and installation procedures.
  - 2. Review coordination with related work.
- E. Record minutes and distribute copies within two days after meeting to participants, with copies to Architect, and Owner, and those affected by decisions made.

## PART 2 PRODUCTS

NOT USED

## PART 3 EXECUTION

### 3.1 CUTTING AND PATCHING

- A. Employ skilled and experienced installer to perform cutting and patching.
- B. Submit written request in advance of cutting or altering elements affecting:
  - 1. Structural integrity of element.
  - 2. Integrity of weather-exposed or moisture-resistant elements.
  - 3. Efficiency, maintenance, or safety of element.
  - 4. Visual qualities of sight exposed elements.
  - 5. Work of Owner or separate contractor.
- C. Execute cutting, fitting, and patching [including excavation and fill,] to complete Work, and to:
  - 1. Fit the several parts together, to integrate with other Work.
  - 2. Uncover Work to install or correct ill-timed Work.
  - 3. Remove and replace defective and non-conforming Work.
  - 4. Remove samples of installed Work for testing.
  - 5. Provide openings in elements of Work for penetrations of mechanical and electrical Work.
- D. Execute work by methods to avoid damage to other Work, and to provide proper surfaces to receive patching and finishing.

- E. Cut masonry and concrete materials using masonry saw or core drill.
- F. Restore Work with new products in accordance with requirements of Contract Documents.
- G. Fit Work tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.
- H. Maintain integrity of wall, ceiling, or floor construction; completely seal voids.
- I. At penetrations of fire rated walls, partitions, ceiling, or floor construction, completely seal voids with fire rated material in accordance with Section 07 84 00, to full thickness of penetrated element.
- J. Refinish surfaces to match adjacent finishes. For continuous surfaces, refinish to nearest intersection; for assembly, refinish entire unit.
- K. Identify hazardous substances or conditions exposed during the Work to Architect for decision or remedy.

### 3.2 SPECIAL PROCEDURES

- A. Materials: As specified in product sections; match existing with new products for patching and extending work.
- B. Employ skilled and experienced installer to perform alteration work.
- C. Cut, move, or remove items as necessary for access to alterations and renovation Work. Replace and restore at completion.
- D. Remove unsuitable material not marked for salvage, including rotted wood, corroded metals, and deteriorated masonry and concrete. Replace materials as specified for finished Work.
- E. Remove debris and abandoned items from area and from concealed spaces.
- F. Prepare surface and remove surface finishes to permit installation of new work and finishes.
- G. Close openings in exterior surfaces to protect existing work from weather and extremes of temperature and humidity.
- H. Remove, cut, and patch Work in manner to minimize damage and to permit restoring products and finishes to original condition.
- I. Refinish existing visible surfaces to remain in renovated rooms and spaces, to specified condition for each material, with neat transition to adjacent finishes.

- J. Where new Work abuts or aligns with existing, provide smooth and even transition. Patch Work to match existing adjacent Work in texture and appearance.
- K. When finished surfaces are cut so that smooth transition with new Work is not possible, terminate existing surface along straight line at natural line of division and submit recommendation to Architect for review.
- L. Where change of plane of 1/4 inch or more occurs, submit recommendation for providing smooth transition; to Architect for review.
- M. Trim existing doors to clear new floor finish. Refinish trim to specified condition.
- N. Patch or replace portions of existing surfaces which are damaged, lifted, discolored, or showing other imperfections.
- O. Finish surfaces as specified in individual product sections.

**END OF SECTION**

**SECTION 01 33 00**  
**SUBMITTAL PROCEDURES**

**PART 1 GENERAL**

**1.1 SECTION INCLUDES**

- A. Submittal procedures.
- B. Construction progress schedules.
- C. Proposed products list.
- D. Product data.
- E. Shop drawings.
- F. Samples.
- G. Design data.
- H. Test reports.
- I. Certificates.
- J. Manufacturer's instructions.
- K. Manufacturer's field reports.

**1.2 SUBMITTAL PROCEDURES**

- A. Transmit each submittal with Architect accepted form.
- B. Identify Project, Contractor, subcontractor and supplier; pertinent drawing and detail number, and specification section number, appropriate to submittal.
- C. Apply Contractor's stamp, signed or initialed certifying that review, approval, verification of products required, field dimensions, adjacent construction Work, and coordination of information is in accordance with requirements of the Work and Contract Documents.
- D. Schedule submittals to expedite Project, and deliver to Architect at business address. Coordinate submission of related items.
- E. For each submittal for review, allow 15 days excluding delivery time to and from Contractor.

- F. Identify variations from Contract Documents and product or system limitations which may be detrimental to successful performance of completed Work.
- G. Allow space on submittals for Contractor and Architect review stamps.
- H. When revised for resubmission, identify changes made since previous submission.
- I. Distribute copies of reviewed submittals as appropriate. Instruct parties to promptly report inability to comply with requirements.
- J. Submittals not requested will not be recognized or processed.

### 1.3 CONSTRUCTION PROGRESS SCHEDULES

- A. Submit preliminary outline Schedules within 15 days after date established in Notice to Proceed for coordination with Owner's requirements. After review, submit detailed schedules within 15 days modified to accommodate revisions recommended by Architect.
- B. Submit revised Progress Schedules with each Application for Payment.
- C. Distribute copies of reviewed schedules to Project site file, subcontractors, suppliers, and other concerned parties.
- D. Instruct recipients to promptly report, in writing, problems anticipated by projections indicated in schedules.
- E. Submit computer generated horizontal bar chart with separate line for each section of Work, identifying first work day of each week.
- F. Show complete sequence of construction by activity, identifying Work of separate stages and other logically grouped activities. Indicate early and late start, early and late finish, float dates, and duration.
- G. Indicate estimated percentage of completion for each item of Work at each submission.
- H. Revisions To Schedules:
  - 1. Indicate progress of each activity to date of submittal, and projected completion date of each activity.
  - 2. Identify activities modified since previous submittal, major changes in scope, and other identifiable changes.
  - 3. Prepare narrative report to define problem areas, anticipated delays, and impact on Schedule. Report corrective action taken, or proposed, and its effect.

#### 1.4 PROPOSED PRODUCTS LIST

- A. Within 15 days after date of Notice to Proceed, submit list of major products proposed for use, with name of manufacturer, trade name, and model number of each product.
- B. For products specified only by reference standards, give manufacturer, trade name, model or catalog designation, and reference standards.

#### 1.5 PRODUCT DATA

- A. Product Data: Submit to Architect for review for limited purpose of checking for conformance with information given and design concept expressed in Contract Documents.
- B. Submit number of copies Contractor requires, plus one copy Architect will retain.
- C. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information specific to this Project.
- D. Indicate product utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.
- E. After review, produce copies and distribute in accordance with SUBMITTAL PROCEDURES article and for record documents described in Section 01 70 00 - Execution and Closeout Requirements.

#### 1.6 SHOP DRAWINGS

- A. Shop Drawings: Submit to Architect for review for limited purpose of checking for conformance with information given and design concept expressed in Contract Documents.
- B. Indicate special utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.
- C. When required by individual specification sections, provide shop drawings signed and sealed by professional engineer responsible for designing components shown on shop drawings.
  - 1. Include signed and sealed calculations to support design.
  - 2. Submit drawings and calculations in form suitable for submission to and approval by authorities having jurisdiction.
  - 3. Make revisions and provide additional information when required by authorities having jurisdiction.
- D. Submit in form of one opaque reproduction.

- E. After review, produce copies and distribute in accordance with SUBMITTAL PROCEDURES article and for record documents described in Section 01 70 00 - Execution and Closeout Requirements.

#### 1.7 SAMPLES

- A. Samples: Submit to Architect for review for limited purpose of checking for conformance with information given and design concept expressed in Contract Documents.
- B. Samples For Selection as Specified in Product Sections:
  - 1. Submit to Architect for aesthetic, color, or finish selection.
  - 2. Submit samples of finishes from full range of manufacturers' standard colors, textures, and patterns for Architect selection.
- C. Submit samples to illustrate functional and aesthetic characteristics of Products, with integral parts and attachment devices. Coordinate sample submittals for interfacing work.
- D. Include identification on each sample, with full Project information.
- E. Submit number of samples specified in individual specification sections; Architect will retain one sample.
- F. Reviewed samples which may be used in the Work are indicated in individual specification sections.
- G. Samples will not be used for testing purposes unless specifically stated in specification section.
- H. After review, produce duplicates and distribute in accordance with SUBMITTAL PROCEDURES article and for record documents purposes described in Section 01 70 00 - Execution and Closeout Requirements.

#### 1.8 DESIGN DATA

- A. Submit for Architect's knowledge as contract administrator or for Owner.
- B. Submit for information for limited purpose of assessing conformance with information given and design concept expressed in Contract Documents.

#### 1.9 TEST REPORTS

- A. Submit for Architect's knowledge as contract administrator or for Owner.
- B. Submit test reports for information for limited purpose of assessing conformance with information given and design concept expressed in Contract Documents.

#### 1.10 CERTIFICATES

- A. When specified in individual specification sections, submit certification by manufacturer, installation/application subcontractor, or Contractor to Architect, in quantities specified for Product Data.
- B. Indicate material or product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.
- C. Certificates may be recent or previous test results on material or Product, but must be acceptable to Architect.

#### 1.11 MANUFACTURER'S INSTRUCTIONS

- A. When specified in individual specification sections, submit printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing, to Architect for delivery to Owner in quantities specified for Product Data.
- B. Indicate special procedures, perimeter conditions requiring special attention, and special environmental criteria required for application or installation.

#### 1.12 MANUFACTURER'S FIELD REPORTS

- A. Submit reports for Architect's benefit as contract administrator or for Owner.
- B. Submit report within 5 days of observation to Architect for information.
- C. Submit for information for limited purpose of assessing conformance with information given and design concept expressed in Contract Documents.

### **PART 2 PRODUCTS**

NOT USED

### **PART 3 EXECUTION**

NOT USED

**END OF SECTION**

**SECTION 01 40 00**  
**QUALITY REQUIREMENTS**

**PART 1 GENERAL**

1.1 SECTION INCLUDES

- A. Quality control and control of installation.
- B. Tolerances.
- C. References.
- D. Labeling.
- E. Mock-up requirements.
- F. Testing and inspection services.
- G. Manufacturers' field services.
- H. Examination.
- I. Preparation.

1.2 QUALITY CONTROL AND CONTROL OF INSTALLATION

- A. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce Work of specified quality.
- B. Comply with manufacturers' instructions, including each step in sequence.
- C. When manufacturers' instructions conflict with Contract Documents, request clarification from Architect before proceeding.
- D. Comply with specified standards as minimum quality for the Work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
- E. Perform Work by persons qualified to produce required and specified quality.
- F. Verify field measurements are as indicated on Shop Drawings or as instructed by manufacturer.
- G. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, or disfigurement.

### 1.3 TOLERANCES

- A. Monitor fabrication and installation tolerance control of products to produce acceptable Work. Do not permit tolerances to accumulate.
- B. Comply with manufacturers' tolerances. When manufacturers' tolerances conflict with Contract Documents, request clarification from Architect before proceeding.
- C. Adjust products to appropriate dimensions; position before securing products in place.

### 1.4 REFERENCES

- A. For products or workmanship specified by association, trade, or other consensus standards, comply with requirements of standard, except when more rigid requirements are specified or are required by applicable codes.
- B. Conform to reference standard by date of issue current on [date of Contract Documents,] [date for receiving bids,] [date of Owner-Contractor Agreement when there are no Bids,] except where specific date is established by code.
- C. Obtain copies of standards where required by product specification sections.
- D. When specified reference standards conflict with Contract Documents, request clarification from Architect before proceeding.
- E. Neither contractual relationships, duties, nor responsibilities of parties in Contract nor those of Architect shall be altered from Contract Documents by mention or inference otherwise in reference documents.

### 1.5 LABELING

- A. Attach label from agency approved by authority having jurisdiction for products, assemblies, and systems required to be labeled by applicable code.
- B. Label Information: Include manufacturer's or fabricator's identification, approved agency identification, and the following information, as applicable, on each label.
  - 1. Model number.
  - 2. Serial number.
  - 3. Performance characteristics.

### 1.6 MOCK-UP REQUIREMENTS

- A. Tests will be performed under provisions identified in this section and identified in respective product specification sections.

- B. Assemble and erect specified items with specified attachment and anchorage devices, flashings, seals, and finishes.
- C. Accepted mock-ups shall be comparison standard for remaining Work.
- D. Where mock-up has been accepted by Architect and is specified in product specification sections to be removed; remove mock-up and clear area when directed to do so by Architect.

#### 1.7 TESTING AND INSPECTION SERVICES

- A. Owner will employ and pay for specified services of an independent firm to perform testing and inspection.
- B. The independent firm will perform tests, inspections and other services specified in individual specification sections and as required by Authority having jurisdiction.
  - 1. Laboratory: Authorized to operate at Project location.
  - 2. Laboratory Staff: Maintain full time registered Engineer on staff to review services.
  - 3. Testing Equipment: Calibrated at reasonable intervals with devices of accuracy traceable to National Bureau of Standards or accepted values of natural physical constants.
- C. Testing, inspections and source quality control may occur on or off project site. Perform off-site testing as required by Architect or Owner.
- D. Reports will be submitted by independent firm to Architect, Contractor, and authority having jurisdiction, in duplicate, indicating observations and results of tests and indicating compliance or non-compliance with Contract Documents.
  - 1. Submit final report indicating correction of Work previously reported as non-compliant.
- E. Cooperate with independent firm; furnish samples of materials, design mix, equipment, tools, storage, safe access, and assistance by incidental labor as requested.
  - 1. Notify Architect and independent firm 24 hours prior to expected time for operations requiring services.
  - 2. Make arrangements with independent firm and pay for additional samples and tests required for Contractor's use.
- F. Testing and employment of testing agency or laboratory shall not relieve Contractor of obligation to perform Work in accordance with requirements of Contract Documents.
- G. Re-testing or re-inspection required because of non-conformance to specified requirements shall be performed by same independent firm on instructions by Architect. Payment for re-testing or re-inspection will be charged to Contractor by deducting testing charges from Contract Sum/Price.

- H. Agency Responsibilities:
  - 1. Test samples of mixes submitted by Contractor.
  - 2. Provide qualified personnel at site. Cooperate with Architect and Contractor in performance of services.
  - 3. Perform specified sampling and testing of products in accordance with specified standards.
  - 4. Ascertain compliance of materials and mixes with requirements of Contract Documents.
  - 5. Promptly notify Architect and Contractor of observed irregularities or non-conformance of Work or products.
  - 6. Perform additional tests required by Architect.
  - 7. Attend preconstruction meetings and progress meetings.
  
- I. Agency Reports: After each test, promptly submit two copies of report to Architect, Contractor, and authority having jurisdiction. When requested by Architect, provide interpretation of test results. Include the following:
  - 1. Date issued.
  - 2. Project title and number.
  - 3. Name of inspector.
  - 4. Date and time of sampling or inspection.
  - 5. Identification of product and specifications section.
  - 6. Location in Project.
  - 7. Type of inspection or test.
  - 8. Date of test.
  - 9. Results of tests.
  - 10. Conformance with Contract Documents.
  
- J. Limits On Testing Authority:
  - 1. Agency or laboratory may not release, revoke, alter, or enlarge on requirements of Contract Documents.
  - 2. Agency or laboratory may not approve or accept any portion of the Work.
  - 3. Agency or laboratory may not assume duties of Contractor.
  - 4. Agency or laboratory has no authority to stop the Work.

## 1.8 MANUFACTURERS' FIELD SERVICES

- A. When specified in individual specification sections, require material or product suppliers or manufacturers to provide qualified staff personnel to observe site conditions, conditions of surfaces and installation, quality of workmanship, and start-up of equipment as applicable, and to initiate instructions when necessary.
  
- B. Submit qualifications of observer to Architect 30 days in advance of required observations. Observer subject to approval of Architect.
  
- C. Report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturers' written instructions.

- D. Refer to Section 01 33 00 - Submittal Procedures, MANUFACTURERS' FIELD REPORTS article.

## **PART 2 PRODUCTS**

NOT USED

## **PART 3 EXECUTION**

### **3.1 EXAMINATION**

- A. Verify existing site conditions and substrate surfaces are acceptable for subsequent Work. Beginning new Work means acceptance of existing conditions.
- B. Verify existing substrate is capable of structural support or attachment of new Work being applied or attached.
- C. Examine and verify specific conditions described in individual specification sections.
- D. Verify utility services are available, of correct characteristics, and in correct locations.

### **3.2 PREPARATION**

- A. Clean substrate surfaces prior to applying next material or substance.
- B. Seal cracks or openings of substrate prior to applying next material or substance.
- C. Apply manufacturer required or recommended substrate primer, sealer, or conditioner prior to applying new material or substance in contact or bond.

**END OF SECTION**

## SECTION 01 50 00

### TEMPORARY FACILITIES AND CONTROLS

#### PART 1 GENERAL

##### 1.1 SECTION INCLUDES

- A. Temporary Utilities:
  - 1. Temporary electricity.
  - 2. Temporary lighting for construction purposes.
  - 3. Temporary heating.
  - 4. Temporary ventilation.
  - 5. Telephone service.
  - 6. Temporary water service.
  - 7. Temporary sanitary facilities.
- B. Construction Facilities:
  - 1. Field offices and sheds.
  - 2. Parking.
  - 3. Progress cleaning and waste removal.
  - 4. Fire prevention facilities.
- C. Temporary Controls:
  - 1. Barriers.
  - 2. Security.
  - 3. Dust control.
  - 4. Noise control.
  - 5. Pest control.
- D. Removal of utilities, facilities, and controls.

##### 1.2 TEMPORARY ELECTRICITY

- A. Utilize Owner's existing power service.
- B. Provide flexible power cords as required for portable construction tools and equipment.
- C. Permanent convenience receptacles may be utilized during construction.

##### 1.3 TEMPORARY LIGHTING FOR CONSTRUCTION PURPOSES

- A. Provide and maintain incandescent lighting for construction operations [to achieve minimum lighting level of 2 watt/sq ft.
- B. Permanent building lighting may be utilized during construction.

#### 1.4 TEMPORARY HEATING

- A. Existing facilities may be used.
- B. Maintain minimum ambient temperature of 50 degrees F in areas where construction is in progress, unless indicated otherwise in product sections.

#### 1.5 TEMPORARY VENTILATION

- A. Ventilate enclosed areas to achieve curing of materials, to dissipate humidity, and to prevent accumulation of dust, fumes, vapors, or gases.

#### 1.6 TELEPHONE SERVICE

- A. Contractor's on-site personnel shall be available by cellular phone.

#### 1.7 TEMPORARY WATER SERVICE

- A. Connect to existing water source.

#### 1.8 TEMPORARY SANITARY FACILITIES

- A. Existing facilities may be used during construction operations. Maintain in clean and sanitary condition.

#### 1.9 FIELD OFFICES AND SHEDS

- A. Office: Not required.
- B. Storage Areas And Sheds: Provide storage trailers as required for storage of materials and equipment.

#### 1.10 PARKING

- A. Arrange for surface parking areas to accommodate construction personnel.
- B. When site space is not adequate, provide additional off-site parking.

#### 1.11 PROGRESS CLEANING AND WASTE REMOVAL

- A. Maintain areas free of waste materials, debris, and rubbish. Maintain site in clean and orderly condition.
- B. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces, prior to enclosing spaces.
- C. Broom and vacuum clean interior areas prior to start of surface finishing, and continue cleaning to eliminate dust.

- D. Collect and remove waste materials, debris, and rubbish from site weekly and dispose off-site.

#### 1.12 FIRE PREVENTION FACILITIES

- A. Prohibit smoking with buildings under construction. Designate area on site where smoking is permitted. Provide approved ashtrays in designated smoking areas.
- B. Establish fire watch for cutting and welding and other hazardous operations capable of starting fires. Maintain fire watch before, during, and after hazardous operations until threat of fire does not exist.
- C. Portable Fire Extinguishers: NFPA 10; 10 pound capacity, 4A-60B: C UL rating.
  - 1. Provide one fire extinguisher at each stair on each floor of buildings under construction [and demolition].
  - 2. Provide minimum one fire extinguisher in every construction trailer and storage shed.
  - 3. Provide minimum one fire extinguisher on roof during roofing operations using heat producing equipment.

#### 1.13 BARRIERS

- A. Provide barriers to prevent unauthorized entry to construction areas to allow for Owner's use of site, and to protect existing facilities and adjacent properties from damage from construction operations [and demolition].

#### 1.14 SECURITY

- A. Security Program:
  - 1. Protect existing premises and Owner's operations from theft, vandalism, and unauthorized entry.
  - 2. Initiate program in coordination with Owner's existing security system at project mobilization.

#### 1.15 DUST CONTROL

- A. Execute Work by methods to minimize raising dust from construction operations.
- B. Provide positive means to prevent air-borne dust from dispersing into atmosphere.

#### 1.16 NOISE CONTROL

- A. Provide methods, means, and facilities to minimize noise produced by construction operations.

**1.17 PEST CONTROL**

- A. Provide methods, means, and facilities to prevent pests and insects from entering facility.

**PART 2 PRODUCTS**

NOT USED

**PART 3 EXECUTION**

NOT USED

**END OF SECTION**

**SECTION 01 60 00**  
**PRODUCT REQUIREMENTS**

**PART 1 GENERAL**

**1.1 SECTION INCLUDES**

- A. Products.
- B. Product delivery requirements.
- C. Product storage and handling requirements.
- D. Product options.
- E. Product substitution procedures.
- F. Equipment electrical characteristics and components.

**1.2 PRODUCTS**

- A. Furnish products of qualified manufacturers suitable for intended use. Furnish products of each type by single manufacturer unless specified otherwise.
- B. Do not use materials and equipment removed from existing premises, except as specifically permitted by Contract Documents.
- C. Furnish interchangeable components from same manufacturer for components being replaced.

**1.3 PRODUCT DELIVERY REQUIREMENTS**

- A. Transport and handle products in accordance with manufacturer's instructions.
- B. Promptly inspect shipments to ensure products comply with requirements, quantities are correct, and products are undamaged.
- C. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage.

**1.4 PRODUCT STORAGE AND HANDLING REQUIREMENTS**

- A. Store and protect products in accordance with manufacturers' instructions.
- B. Store with seals and labels intact and legible.

- C. Store sensitive products in weather tight, climate controlled, enclosures in an environment favorable to product.
- D. For exterior storage of fabricated products, place on sloped supports above ground.
- E. Provide [bonded] off-site storage and protection when site does not permit on-site storage or protection.
- F. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to prevent condensation and degradation of products.
- G. Store loose granular materials on solid flat surfaces in well-drained area. Prevent mixing with foreign matter.
- H. Provide equipment and personnel to store products by methods to prevent soiling, disfigurement, or damage.
- I. Arrange storage of products to permit access for inspection. Periodically inspect to verify products are undamaged and are maintained in acceptable condition.

#### 1.5 PRODUCT OPTIONS

- A. Products Specified by Reference Standards or by Description Only: Any product meeting those standards or description.
- B. Products Specified by Naming One or More Manufacturers: Products of one of manufacturers named and meeting specifications, no options or substitutions allowed.
- C. Products Specified by Naming One or More Manufacturers with Provision for Substitutions: Submit request for substitution for any manufacturer not named in accordance with the following article.

#### 1.6 PRODUCT SUBSTITUTION PROCEDURES

- A. Instructions to Bidders specify time restrictions for submitting requests for Substitutions during bidding period to requirements specified in this section.
- B. Substitutions may be considered when a product becomes unavailable through no fault of Contractor.
- C. Document each request with complete data substantiating compliance of proposed Substitution with Contract Documents.

- D. A request constitutes a representation that Bidder:
1. Has investigated proposed product and determined that it meets or exceeds quality level of specified product.
  2. Will provide same warranty for Substitution as for specified product.
  3. Will coordinate installation and make changes to other Work which may be required for the Work to be complete with no additional cost to Owner.
  4. Waives claims for additional costs or time extension which may subsequently become apparent.
  5. Will reimburse Owner and Architect for review or redesign services associated with re-approval by authorities having jurisdiction.
- E. Substitutions will not be considered when they are indicated or implied on Shop Drawing or Product Data submittals, without separate written request, or when acceptance will require revision to Contract Documents.
- F. Substitution Submittal Procedure:
1. Submit request for Substitution for consideration. Limit each request to one proposed Substitution.
  2. Submit Shop Drawings, Product Data, and certified test results attesting to proposed product equivalence. Burden of proof is on Proposer.
  3. Architect will notify Contractor in writing of decision to accept or reject request.
  4. Use CSI Form 01-5C - Substitution Request attached to this Section.

## **PART 2 PRODUCTS**

### **2.1 EQUIPMENT ELECTRICAL CHARACTERISTICS AND COMPONENTS**

- A. Wiring Terminations: Furnish terminal lugs to match branch circuit conductor quantities, sizes, and materials indicated. Include lugs for terminal box.
- B. Cord and Plug: Furnish minimum 6 foot cord and plug including grounding connector for connection to electric wiring system. Cord of longer length is specified in individual specification sections.

## **PART 3 EXECUTION**

NOT USED

**END OF SECTION**

## SECTION 01 70 00

### EXECUTION AND CLOSEOUT REQUIREMENTS

#### PART 1 GENERAL

##### 1.1 SECTION INCLUDES

- A. Closeout procedures.
- B. Final cleaning.
- C. Protecting installed construction.
- D. Project record documents.
- E. Manual for materials and finishes.
- F. Spare parts and maintenance products.
- G. Product warranties and product bonds.

##### 1.2 CLOSEOUT PROCEDURES

- A. Submit written certification that Contract Documents have been reviewed, Work has been inspected, and that Work is complete in accordance with Contract Documents and ready for Architect's review.
- B. Provide submittals to Architect required by authorities having jurisdiction.
- C. Submit final Application for Payment identifying total adjusted Contract Sum, previous payments, and sum remaining due.
- D. Owner will occupy portions of building as specified in Section 01 10 00 - Summary.

##### 1.3 FINAL CLEANING

- A. Execute final cleaning prior to final project assessment.
- B. Clean equipment and fixtures to sanitary condition with cleaning materials appropriate to surface and material being cleaned.
- C. Replace filters of operating equipment.
- D. Clean site; sweep paved areas, rake clean landscaped surfaces.
- E. Remove waste and surplus materials, rubbish, and construction facilities from site.

#### 1.4 PROTECTING INSTALLED CONSTRUCTION

- A. Protect installed Work and provide special protection where specified in individual specification sections.
- B. Provide temporary and removable protection for installed products. Control activity in immediate work area to prevent damage.
- C. Protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects, by protecting with durable sheet materials.

#### 1.5 PROJECT RECORD DOCUMENTS

- A. Maintain on site one set of the following record documents; record actual revisions to the Work:
  - 1. Drawings.
  - 2. Specifications.
  - 3. Addenda.
  - 4. Change Orders and other modifications to the Contract.
  - 5. Reviewed Shop Drawings, Product Data, and Samples.
  - 6. Manufacturer's instruction for assembly, installation, and adjusting.
- B. Ensure entries are complete and accurate, enabling future reference by Owner.
- C. Store record documents separate from documents used for construction.
- D. Record information concurrent with construction progress, not less than weekly.
- E. Specifications: Legibly mark and record in red ink at each product section description of actual products installed, including the following:
  - 1. Manufacturer's name and product model and number.
  - 2. Product substitutions or alternates utilized.
  - 3. Changes made by Addenda and modifications.
- F. Record Drawings and Shop Drawings: Legibly mark each item in red ink to record actual construction including:
  - 1. Measured depths of foundations in relation to finish [first] [main] floor datum.
  - 2. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
  - 3. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the Work.
  - 4. Field changes of dimension and detail.
  - 5. Details not on original Contract drawings.
  - 6. Provided 2 sets of DVD's with color scanned images of the full sized record Drawings.

- G. Submit documents to Architect with claim for final Application for Payment.

#### 1.6 MANUAL FOR MATERIALS AND FINISHES

- A. Submit two copies of preliminary draft or proposed formats and outlines of contents before start of Work. Architect will review draft and return one copy with comments.
- B. Submit one copy of completed volumes 15 days prior to final inspection. Draft copy be reviewed and returned after final inspection, with Architect comments. Revise content of document sets as required prior to final submission.
- C. Submit two sets of revised final volumes in final form within 10 days after final inspection.
- D. Building Products, Applied Materials, and Finishes: Include product data, with catalog number, size, composition, and color and texture designations. Include information for re-ordering custom manufactured products.
- E. Instructions for Care and Maintenance: Include manufacturer's recommendations for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.
- F. Moisture Protection and Weather Exposed Products: Include product data listing applicable reference standards, chemical composition, and details of installation. Include recommendations for inspections, maintenance, and repair.
- G. Additional Requirements: As specified in individual product specification sections.
- H. Include listing in Table of Contents for design data, with tabbed fly sheet and space for insertion of data.

#### 1.7 SPARE PARTS AND MAINTENANCE PRODUCTS

- A. Furnish spare parts, maintenance, and extra products in quantities specified in individual specification sections.
- B. Deliver to Project site and place in location as directed by Owner; obtain receipt prior to final payment.

#### 1.8 PRODUCT WARRANTIES AND PRODUCT BONDS

- A. Obtain warranties and bonds executed in duplicate by responsible subcontractors, suppliers, and manufacturers, within ten days after completion of applicable item of work.

- B. Execute and assemble transferable warranty documents and bonds from subcontractors, suppliers, and manufacturers.
- C. Verify documents are in proper form, contain full information, and are notarized.
- D. Co-execute submittals when required.
- E. Include Table of Contents and assemble in three D side ring binder with durable plastic cover.
- F. Submit prior to final Application for Payment.
- G. Time Of Submittals:
  - 1. For equipment or component parts of equipment put into service during construction with Owner's permission, submit documents within ten days after acceptance.
  - 2. Make other submittals within ten days after Date of Substantial Completion, prior to final Application for Payment.
  - 3. For items of Work for which acceptance is delayed beyond Date of Substantial Completion, submit within ten days after acceptance, listing date of acceptance as beginning of warranty or bond period.

**PART 2 PRODUCTS**

NOT USED

**PART 3 EXECUTION**

NOT USED

**END OF SECTION**

## SECTION 02 41 19

### SELECTIVE STRUCTURE DEMOLITION

#### PART 1 GENERAL

##### 1.1 SUMMARY

- A. Section Includes:
  - 1. Demolishing designated construction.
  - 2. Cutting and alterations for completion of the Work.
  - 3. Removing designated items for reuse and Owner's retention.
  - 4. Protecting items designated to remain.
  - 5. Removing demolished materials.

##### 1.2 QUALITY ASSURANCE

- A. Conform to applicable code for demolition work, dust control, products requiring electrical disconnection and re-connection.
- B. Conform to applicable code for procedures when hazardous or contaminated materials are discovered.
- C. Obtain required permits from authorities having jurisdiction.

##### 1.3 SCHEDULING

- A. Section 01 30 00 - Administrative Requirements: Requirements for scheduling.
- B. Schedule Work to coincide with new construction.
- C. Cooperate with Owner in scheduling noisy operations and waste removal that may impact Owners operation in adjoining spaces.

##### 1.4 PROJECT CONDITIONS

- A. Conduct demolition to minimize interference with adjacent [and occupied] building areas.
- B. Cease operations immediately if structure appears to be in danger and notify Architect. Do not resume operations until directed.

#### PART 2 PRODUCTS

NOT USED

#### PART 3 EXECUTION

##### 3.1 PREPARATION

- A. Do not close or obstruct building egress path.

### 3.2 SALVAGE REQUIREMENTS

- A. Coordinate with Owner to identify building components and equipment required to be removed and delivered to Owner.
- B. Tag components and equipment Owner designates for salvage.
- C. Protect designated salvage items from demolition operations until items can be removed.
- D. Carefully remove building components and equipment indicated to be salvaged.
- E. Disassemble as required to permit removal from building.
- F. Package small and loose parts to avoid loss.
- G. Deliver salvaged items to Owner. Obtain signed receipt from Owner.

### 3.3 DEMOLITION

- A. Conduct demolition to minimize interference with adjacent and occupied building areas.
- B. Maintain protected egress from and access to adjacent existing buildings at all times.
- C. Cease operations immediately when structure appears to be in danger and notify Architect.
- D. Demolish in orderly and careful manner. Protect existing improvements, and supporting structural members.
- E. Carefully remove building components indicated to be reused.
  - 1. Disassemble components as required to permit removal.
  - 2. Package small and loose parts to avoid loss.
  - 3. Mark components and packaged parts to permit reinstallation.
  - 4. Store components, protected from construction operations, until reinstalled.
- F. Remove demolished materials from site except where specifically noted otherwise. Do not burn or bury materials on site.
- G. Remove materials as Work progresses. Upon completion of Work, leave areas in clean condition.
- H. Remove temporary Work.

**END OF SECTION**

## SECTION 03 01 00

### MAINTENANCE OF CONCRETE

#### PART 1 GENERAL

##### 1.1 SUMMARY

- A. Section Includes:
1. Concrete reinforcement repair.
  2. Concrete surface repair.
  3. Concrete crack repair.

##### 1.2 REFERENCES

- A. ASTM International:
1. ASTM A82/A82M - Standard Specification for Steel Wire, Plain, for Concrete Reinforcement.
  2. ASTM A615/A615M - Standard Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement.
  3. ASTM C882 - Standard Test Method for Bond Strength of Epoxy-Resin Systems Used With Concrete By Slant Shear.
  4. ASTM D638 - Standard Test Method for Tensile Properties of Plastics.
  5. ASTM D695 - Standard Test Method for Compressive Properties of Rigid Plastics.
  6. ASTM D790 - Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials.
- B. American Welding Society:
1. AWS D1.4 - Structural Welding Code - Reinforcing Steel.

##### 1.3 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Submittal procedures.
- B. Product Data: Submit product standards, physical and chemical characteristics, technical specifications, limitations, maintenance instructions, and general recommendations regarding each material.
- C. Samples: Submit color samples for patches exposed to view in finished construction and required to match existing.
- D. Manufacturer's Instructions: Submit mixing instructions.
- E. Manufacturer's Certificate: Certify Products meet or exceed specified requirements.

##### 1.4 CLOSEOUT SUBMITTALS

- A. Section 01 70 00 - Execution and Closeout Requirements: Closeout procedures.

- B. Project Record Documents: Accurately record actual locations of structural reinforcement repairs, and type of repair.
  - C. Operation and Maintenance Data: Procedures for submittals.
- 1.5 QUALITY ASSURANCE
- A. Perform welding work in accordance with AWS D1.4.
- 1.6 QUALIFICATIONS
- A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years documented experience.
  - B. Design reinforcement splices under direct supervision of Professional Engineer experienced in design of this Work and licensed at Project location.
  - C. Applicator: Company specializing in concrete repair with minimum three years documented experience.
- 1.7 MOCK-UP
- A. Section 01 40 00 - Quality Requirements: Requirements for mockup.
  - B. Construct mockup panel illustrating patching method, color and texture of repair surface.
  - C. Prepare one mockup of each type of injection and patching procedure.
  - D. Locate where directed by Architect.
  - E. Incorporate accepted mockup as part of Work.
- 1.8 DELIVERY, STORAGE, AND HANDLING
- A. Section 01 60 00 - Product Requirements: Product storage and handling requirements.
  - B. Comply with instructions for storage, shelf life limitations, and handling.

## **PART 2 PRODUCTS**

### **2.1 EPOXY MORTAR MATERIALS**

- A. Manufacturers:
  - 1. The Euclid Chemical Company.
  - 2. L & M Construction Chemicals Inc.
  - 3. Sika Corporation.
  - 4. Substitutions: Section 01 60 00 - Product Requirements.
- B. Epoxy Mortar: Three-part epoxy binding resin and aggregate mortar mixture.

- C. Epoxy Binding Resin: Two-part epoxy resin containing 100 percent solids, meeting the following minimum characteristics:

Characteristic	Test Method	Results
Bond Strength	ASTM C882	2,700 psi
Tensile Strength	ASTM D638	6,600 psi
Elongation	ASTM D638	2 percent at 7 days 70 degrees F
Flexural Strength	ASTM D790	8,000 psi
Compressive Strength	ASTM D695	6,500 psi

- D. Aggregate: Type recommended by mortar manufacturer.

## 2.2 REINFORCEMENT MATERIALS

- A. Reinforcing Steel: ASTM A615/A615M, 60 ksi yield grade, deformed billet bars, uncoated finish.
- B. Stirrup Steel: ASTM A82/A82M.

## 2.3 MIXING EPOXY MORTAR

- A. Mix epoxy mortars to consistency for purpose intended.
- B. Mix components in clean equipment or containers. Conform to pot life and workability limits.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.
- B. Verify surfaces are ready to receive work.
- C. Beginning of installation means acceptance of substrate.

### 3.2 PREPARATION

- A. Clean concrete surfaces of dirt, laitance, corrosion, or other contamination; wire brush using water; rinse surface and allow to dry.
- B. Flush out cracks and voids with muriatic acid to remove laitance and dirt. Chemically neutralize by rinsing with water. For areas patched with epoxy mortar, remove broken and soft concrete 1/4 inch deep. Remove corrosion from steel. Clean surfaces mechanically; wash with acid; rinse with water.
- C. Sandblast clean exposed reinforcement steel surfaces. Mechanically cut away damaged portions of bar.

### 3.3 REPAIR WORK

- A. Repair reinforcement by welding new bar reinforcement to existing reinforcement. Strength of welded reinforcement to exceed original stress values.
- B. Repair exposed structural, shrinkage, and settlement cracks of concrete by epoxy application method.
- C. Repair spalling.

### 3.4 APPLICATION - EPOXY MORTAR

- A. Trowel apply mortar mix. Tamp into place filling voids at spalled areas.
- B. For patching honeycomb, trowel mortar onto surface, work mortar into honeycomb to bring surface flush with surrounding area. Finish trowel surface to match surrounding area.
- C. Cover exposed steel reinforcement with epoxy mortar, feather edges to flush surface.

### 3.5 FIELD QUALITY CONTROL

- A. Section 01 40 00 - Quality Requirements: Testing, inspection and analysis requirements.
- B. Test concrete for calcium chloride content during execution of the Work.

**END OF SECTION**

**SECTION 04 01 00**  
**MAINTENANCE OF MASONRY**

**PART 1 GENERAL**

**1.1 SECTION INCLUDES**

- A. Chemical cleaning of surfaces.
- B. Repointing mortar joints.
- C. Repair of damaged masonry.

**1.2 REFERENCES**

- A. ACI 530 - Building Code Requirements for Masonry Structures.
- B. ACI 530.1 - Specifications For Masonry Structures.
- C. IMIAC - International Masonry Industry All-Weather Council:  
Recommended Practices and Guide Specification for Cold Weather  
Masonry Construction.
- D. IMIAC - International Masonry Industry All-Weather Council:  
Recommended Practices and Guide Specification for Hot Weather  
Masonry Construction.

**1.3 SUBMITTALS**

- A. Submit under provisions of Section 01 33 00.
- B. Product Data: Provide data on cleaning solutions.

**1.4 QUALITY ASSURANCE**

- A. Perform Work in accordance with ACI 530 and ACI 530.1.
- B. Maintain one copy each document on site.
- C. Restorer: Company specializing in masonry restoration with minimum  
three years documented experience.

**1.5 MOCKUP**

- A. Provide mockup of restored masonry under provisions of Section  
01 40 00.
- B. Restore and repoint a masonry wall sized 8 feet long by 6 feet high,  
which includes mortar and accessories.

- C. Locate where directed.
  - D. Acceptable panel and method of procedure will become the standard for work of this section.
- 1.6 PRE-INSTALLATION CONFERENCE
- A. Convene one week prior to commencing work of this section, under provisions of Section 01 30 00.
  - B. Require attendance of parties directly affecting work of this section.
  - C. Review conditions of installation, installation procedures, and coordination with related work.
- 1.7 DELIVERY, STORAGE, AND HANDLING
- A. Deliver, store, protect, and handle products to site under provisions of Section 01 60 00.
  - B. Store restoration cleaner materials in manufacturer's packaging.
- 1.8 PROTECTION
- A. Protect elements surrounding the work of this section from damage or disfiguration.
  - B. Immediately remove stains, efflorescence, or other excess resulting from the work of this section.
  - C. Protection of roof: Contractor will not be allowed to use swing staging and/or be allowed access to the roof for any reason.
- 1.9 ENVIRONMENTAL REQUIREMENTS
- A. Cold Weather Requirements: IMIAC - Recommended Practices and Guide Specification for Cold Weather Masonry Construction.
  - B. Hot Weather Requirements: IMIAC - Recommended Practices and Guide Specifications for Hot Weather Masonry Construction.
- 1.10 SEQUENCING
- A. Sequence work under the provisions of Section 01 10 00.
  - B. Perform repointing after cleaning masonry surfaces.
- 1.11 SCHEDULING
- A. Schedule work under the provisions of Section 01 30 00.

## **PART 2 PRODUCTS**

### **2.1 MANUFACTURERS**

- A. Refer to articles below.
- B. Substitutions: Under provisions of Section 01 60 00.

### **2.2 MATERIALS**

- A. Cleaning Agent – Rebuilt Masonry: Masonry cleaner shall be Sure Klean® 600 as manufactured by ProSoCo, Inc.
- B. Masking Agent: Sure Klean® Acid Stop masking agent as manufactured by ProSoCo, Inc.

### **2.3 MORTAR MATERIALS**

- A. SPEC MIX Tuckpoint Mortar.
  - 1. Manufacturer: SPEC MIX, Inc., 2025 Centre Pointe Blvd., Suite 150, Mendota Heights, MN 55120, (888) SPEC-MIX, (651) 688-8966, Fax: (888) FAX-SPEC, E-mail: [info@specmix.com](mailto:info@specmix.com), [www.specmix.com](http://www.specmix.com).

### **2.4 MASONRY MATERIALS**

- A. Stone and Brick: Stone and brick used for masonry repair shall match the existing structure.

## **PART 3 EXECUTION**

### **3.1 EXAMINATION**

- A. Verify that surfaces to be restored are ready for work of this section.

### **3.2 OCCUPANCY**

- A. The premises will be occupied during performance of the work.
- B. Contractor shall arrange with building custodian for means of access to premises and necessary utilities, space for storage of materials and equipment, etc.
- C. Contractor shall provide, at all times, covered access to the building for the public, employees, and service vehicles. All activities shall be in compliance with local and government regulations and codes.

### 3.3 PREPARATION

- A. Routing of joints and replacement of damaged masonry units shall have been completed, with the exception of final pointing, prior to beginning cleaning operations.
- B. Non-masonry (glass, aluminum, etc.) surfaces shall be thoroughly tested for damages by the cleaning material. Where tests indicate need, thoroughly mask or otherwise "block off" from direct contact with cleaning solutions. Sure Klean® Acid Stop masking agent shall be applied to all aluminum trim and all glass in accordance with the manufacturers instructions.

### 3.4 REBUILDING

- A. Cut out damaged and deteriorated masonry with care in a manner to prevent damage to any adjacent remaining materials.
- B. Cut away loose or unsound adjoining masonry to provide firm and solid bearing for new work.
- C. Build in new masonry units.
- D. Ensure that anchors and flashings are correctly located and built in.
- E. Install built in masonry work to match and align with existing, with joints and coursing true and level, faces plumb and in line. Build in all openings, accessories and fittings.

### 3.5 REPOINTING

- A. Cut out ALL mortar in joints to minimum 3/4 inch depth.
- B. Do not damage masonry units.
- C. When cutting is complete, remove dust and loose material with water jet.
- D. The mortar for repointing, having been pre-hydrated and brought to working consistency, shall be tuck into the joints in approximately one-quarter (1/4) inch layers and tightly compressed. When each layer is "thumbprint" hard, another one-quarter (1/4) inch layer shall be tuck into the joint.
  - 1. Care shall be exercised to fully fill the joints to the proper depth, and finally to tool them at the appropriate time to avoid tool burn and/or slicking.
  - 2. On hot, dry days, tuck-pointing operations shall be done on the shady side of the building, or suitable shading devices shall be erected to keep the fresh work in the shade.

3. Tuck-pointing shall be accomplished carefully by experienced craftsmen. The work area (surface of the walls) shall be kept clean during the tuck-pointing operation in order to avoid necessitating additional clean-down.

### 3.6 CLEANING FOLLOWING TUCKPOINTING

#### A. Application

1. Before applying, read "Protect" and "Precautionary Measures" sections in the Manufacturer's Product Data Sheet for 600 Detergent. Dilute 600 Detergent concentrate with 6-10 parts water. Refer to Product Data Sheet for recommended dilution for intended use.
  - a. Exterior Application
    - 1) Test thoroughly before general cleaning.
    - 2) Thoroughly prewet a large area with fresh water.
    - 3) Using a densely-packed, soft-fibered masonry washing brush, or low-pressure spray (50 psi maximum), apply the diluted solution freely.
    - 4) Let diluted cleaning solution stay on the wall for 3 to 5 minutes. Do not let cleaner dry into the masonry. This may leave residue or stains.
    - 5) Reapply diluted cleaning solution and scrape off heavy buildup of excess mortar using a wooden scraper or piece of brick. Take care not to harm the masonry surface.
    - 6) Rinse off all cleaning compounds, free sand, loose material and debris with clean water. Thorough rinsing is extremely important to remove residues from the porous masonry. High-pressure rinsing equipment providing at least 400 psi with 4 to 6 gallons per minute, will prove most effective.
    - 7) Reapply as needed following steps 2-6.

### 3.7 FINAL CLEANING

- A. Contractor shall be responsible for removal and disposal of necessary masking materials following completion of cleaning operation.
- B. All residual washed from building surface shall be swept or flushed from surrounding sidewalk and service areas, leaving premises clean and neat.

**END OF SECTION**

**SECTION 04 22 00**  
**CONCRETE UNIT MASONRY**

**PART 1 GENERAL**

1.1 SECTION INCLUDES

- A. Concrete masonry units.

1.2 REFERENCES

- A. ACI 530 - Building Code Requirements for Masonry Structures.
- B. ACI 530.1 - Specifications For Masonry Structures.
- C. ASTM C90 - Load-Bearing Concrete Masonry Units.
- D. ASTM C129 - Non-Load Bearing Concrete Masonry Units.
- E. IMIAC - International Masonry Industry All-Weather Council:  
Recommended Practices and Guide Specification for Cold Weather  
Masonry Construction.
- F. UL - Fire Resistance Directory.

1.3 SUBMITTALS

- A. Submit under provisions of Section 01 33 00.
- B. Product Data: Provide data for pre-faced and ground faced masonry units.
- C. Samples: Submit samples of masonry units to illustrate color, texture and extremes of color range.
- D. Manufacturer's Certificate: Certify that Products meet or exceed specified requirements.

1.4 QUALITY ASSURANCE

- A. Perform Work in accordance with ACI 530 and ACI 530.1.

1.5 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing the Products specified in this section with minimum three years documented experience.

1.6 REGULATORY REQUIREMENTS

- A. Conform to applicable code for fire rated masonry construction.

1.7 MOCKUP

- A. Provide mockup of masonry under provisions of Section 01 40 00.
- B. Construct a masonry wall into a panel sized 8 feet long by 6 feet high, which includes mortar and accessories.
- C. Locate where directed.
- D. Mockup may remain as part of the Work.

1.8 PRE-INSTALLATION CONFERENCE

- A. Convene one week prior to commencing work of this section, under provisions of Section 01 30 00.

1.9 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, protect and handle products to site under provisions of Section 01 60 00.
- B. Store concrete masonry off ground to prevent contamination by mud, dust or materials likely to cause staining or other defects.
- C. Cover materials when necessary to protect from elements.
- D. Protect reinforcement from elements.

1.10 JOB CONDITIONS

- A. Protection or Work:
  - 1. Wallcovering:
    - a. During erection, cover top of wall with strong waterproof membrane at end of each day or shutdown.
    - b. Cover partially completed walls when work is not in progress.
    - c. Extend cover minimum of 24 inch down both sides.
    - d. Hold cover securely in place.
  - 2. Load application:
    - a. Do not apply uniform floor or roof loading for at least 12 hours after building masonry columns or walls.
    - b. Do not apply concentrated loads for at least 3 days after building masonry columns or walls.

- B. Staining:
  - 1. Prevent grout or mortar from staining the face of masonry to be left exposed or painted:
    - a. Remove immediately grout or mortar in contact with face of such masonry.
    - b. Protect all sills, ledges and projections from droppings of mortar, protect door jambs and corners from damage during construction.

#### 1.11 ENVIRONMENTAL REQUIREMENTS

- A. Cold Weather Requirements: IMIAC - Recommended Practices and Guide Specification for Cold Weather Masonry Construction.
- B. Hot Weather Requirements: IMIAC - Recommended Practices and Guide Specifications for Hot Weather Masonry Construction.

#### 1.12 COORDINATION

- A. Coordinate work under provisions of Section 01 30 00.

### PART 2 PRODUCTS

#### 2.1 CONCRETE MASONRY UNITS

- A. Hollow Load Bearing Block Units (CMU): ASTM C90, Type I - Moisture Controlled; normal weight.
- B. Hollow Non-Load Bearing Block Units (CMU): ASTM C129, Type I - Moisture Controlled; normal weight.
- C. Size and Shape: Nominal modular size of 8" x 16" x depth as indicated on the Drawings. Provide special units for 90 degree corners, bond beams, lintels and bullnosed corners.

#### 2.2 MORTAR AND GROUT

- A. Mortar: As specified in Section 04 01 00 – Maintenance of Masonry.

### PART 3 EXECUTION

#### 3.1 EXAMINATION

- A. Verify that field conditions are acceptable and are ready to receive work.
- B. Verify items provided by other sections of work are properly sized and located.

- C. Verify that built-in items are in proper location, and ready for roughing into masonry work.

### 3.2 PREPARATION

- A. Direct and coordinate placement of metal anchors supplied to other Sections.
- B. Provide temporary bracing during installation of masonry work. Maintain in place until building structure provides permanent bracing.

### 3.3 CONSTRUCTION WORKMANSHIP

- A. All masonry units shall be stored on the jobsite so that they are protected from rain, stored off the ground and kept clean from contamination.
- B. Masonry units shall be sound, dry, and clean from all foreign matter when placed in the wall.
- C. All masonry shall be laid true, level, plumb, and in accordance with the plans.
- D. Construction supports shall not be attached to the wall except where specifically permitted by the Architect.
- E. When placing masonry units that are to be left exposed, any noted variation of color and/or texture greater in range than normal shall be brought to the attention of the masonry contractor or masonry foreman. The placing of these units shall not continue until the units are approved for use by the manufacturer's representative.
- F. Extreme care shall be taken to prevent visible grout or mortar stains.

### 3.4 MIXING OF MORTAR

- A. Preblended Mortar shall be mixed in a mechanical batch mixer with the minimum amount of water to produce a workable consistency.
- B. Retempering mortar shall be required to maintain plasticity and workability. Retempering on mortar boards shall be done by adding water within a basin formed within the mortar. Rework the mortar into the water. No mortar shall be used beyond two and one half (2 1/2) hours from the time it was originally mixed.

### 3.5 JOINTS

- A. Mortar Joints:
  - 1. Vertical head joints shall be shoved tightly so that the mortar bonds well to both units. The width of the mortar joints shall be from the face of the block to at least the depth of the face shell. Horizontal bed joints shall be full.

2. All mortar joints shall be clean, straight, and uniform in thickness.
3. All mortar joints, unless otherwise specified, shall be concave and double struck to produce a dense, slightly concave surface well bonded to the surface of the masonry unit.

### 3.6 WALL CLEANING AND PROTECTION

- A. The masonry contractor shall take great care during construction to minimize any mortar or grout stains on the wall. Any stains that occur shall be removed immediately.
- B. After the wall is completed it shall not be saturated with water. During low humidity, the wall may be dampened with a fog spray during the curing period of the mortar.
- C. The tops of all unsheltered walls and partially completed walls shall be covered when work is not in progress.
- D. At the conclusion of the masonry work, the masonry contractor shall clean all masonry, remove all scaffolding and equipment used during construction, remove all debris, refuse, and surplus masonry material from the site.

### 3.7 TOLERANCES

- A. Maximum Variation from Plane of Wall: 1/4 inch in 10 ft and 1/2 inch in 20 ft or more.
- B. Maximum Variation from Plumb: 1/4 inch per story non-cumulative; 1/2 inch in two stories or more.
- C. Maximum Variation from Level Coursing: 1/8 inch in 3 ft and 1/4 inch in 10 ft; 1/2 inch in 30 ft.
- D. Maximum Variation of Joint Thickness: 1/8 inch in 3 ft.
- E. Maximum Variation from Cross Sectional Thickness of Walls: 1/4 inch .

**END OF SECTION**

## SECTION 05 40 00

### COLD-FORMED METAL FRAMING

#### PART 1 GENERAL

##### 1.1 SUMMARY

- A. Section includes formed steel studs.

##### 1.2 REFERENCES

- A. American Iron and Steel Institute:
1. AISI General - Standard for Cold-Formed Steel Framing - General Provisions.
  2. AISI NAS - North American Specification for Design of Cold-Formed Steel Structural Members.
  3. AISI PM - Standard for Cold-Formed Steel Framing - Prescriptive Method for One and Two Family Dwellings.
- B. ASTM International:
1. ASTM A1003/A1003M - Standard Specification for Steel Sheet, Carbon, Metallic- and Nonmetallic-Coated for Cold-Formed Framing Members.
  2. ASTM C955 - Standard Specification for Load-Bearing (Transverse and Axial) Steel Studs, Runners (Tracks), and Bracing or Bridging for Screw Application of Gypsum Panel Products and Metal Plaster Bases.
- C. American Welding Society:
1. AWS D1.1 - Structural Welding Code - Steel.
  2. AWS D1.3 - Structural Welding Code - Sheet Steel.
- D. Green Seal:
1. GC-03 - Anti-Corrosive Paints.
- E. National Association of Architectural Metal Manufacturers:
1. NAAMM ML/SFA 540 - Lightweight Steel Framing Systems Manual.
- F. SSPC: The Society for Protective Coatings:
1. SSPC Paint 15 - Steel Joist Shop Paint.
  2. SSPC Paint 20 - Zinc-Rich Primers (Type I - Inorganic and Type II - Organic).
- G. Steel Stud Manufacturers Association:
1. SSMA - Product Technical Information.

### 1.3 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Submittal requirements.
- B. Shop Drawings:
  - 1. Indicate component details, framed openings, bearing, anchorage, loading, welds, type and location of fasteners, and accessories or items required of related Work.
  - 2. Indicate stud, floor joist, ceiling joist, roof joist, roof rafter, roof and truss layout.
  - 3. Describe method for securing studs to tracks and for bolted and /or welded framing connections.
  - 4. Submit calculations for loadings and stresses of specially fabricated framing, and roof trusses under Professional engineer's seal.
- C. Product Data: Submit data on standard framing members; describe materials and finish, product criteria, and limitations.
- D. Manufacturer's Installation Instructions: Submit special procedures, perimeter conditions requiring special attention.
- E. Mill Certifications: Submit mill certifications for steel delivered to site. Certify steel bare metal thickness in 0.001 inch, yield strength, tensile strength, total elongation in 2 inch or 8 inch gauge length, chemical analysis, and galvanized coating thickness.

### 1.4 QUALITY ASSURANCE

- A. Calculate structural properties of framing members in accordance with AISI NAS.
- B. Furnish framing materials in accordance with SSMA - Product Technical Information.
- C. Perform Work in accordance with the following:
  - 1. Framing: AISI General and AISI NAS.

### 1.5 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years documented experience.
  - 1. Current member of Steel Stud Manufacturers Association.
- B. Installer: Company specializing in performing Work of this section with minimum three years documented experience.
- C. Design structural elements under direct supervision of Professional Engineer experienced in design of this Work and licensed at Project location.
- D. Form, fabricate, provide, and connect components in accordance with NAAMM ML/SFA 540 - Lightweight Steel Framing Systems Manual.

## 1.6 MOCKUP

- A. Section 01 40 00 - Quality Requirements: Mockup requirements.
- B. Construct exterior framed wall including corner condition mockup.
- C. Locate where directed by Architect.
- D. Retain accepted mockup as completed Work.

## 1.7 COORDINATION

- A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.
- B. Coordinate placement of components within stud framing system.

## PART 2 PRODUCTS

### 2.1 COLD-FORMED METAL FRAMING

- A. Manufacturers:
  - 1. Clark Steel Framing Systems.
  - 2. Steel Elements.
  - 3. MarinoWare.
  - 4. Unimast Incorporated.
  - 5. Substitutions: Section 01 60 00 - Product Requirements.
- B. Cold-Formed Metal Framing: ASTM C955.

### 2.2 FRAMING COMPONENTS

- A. Steel Sheet: ASTM A1003/A1003M; Structural Grade, Type H, [metallic coated]:
  - 1. Grade: ST33H.
  - 2. Coating: G60.
- B. Studs: Steel sheet, formed to channel shape, punched web, knurled faces; 0.048 inch thick, 2 inch face and depth as indicated on Drawings.
- C. Track: Steel sheet, formed to channel shape; same width as studs, tight fit; 2 inch thick, solid web.

### 2.3 ACCESSORIES

- A. Shop Primer: SSPC Paint 15, Type 1, red oxide.
- B. Touch-Up Primer: Match shop primer.
  - 1. Interior Anti-Corrosive Paints: Maximum volatile organic compound content in accordance with GC-03.
- C. Touch-Up Primer for Galvanized Surfaces: SSPC Paint 20 Type II Organic.

## 2.4 FASTENERS

- A. Self-drilling, Self-tapping Screws, Bolts, Nuts, and Washers: Steel, hot dip galvanized.
- B. Anchorage Devices: Power actuated.
- C. Welding: In conformance with AWS D1.1 and AWS D1.3.

## 2.5 FABRICATION

- A. Fabricate assemblies of formed sections of sizes and profiles required.
- B. Fit, reinforce, and brace framing members to suit design requirements.
- C. Fit and assemble in largest practical sections for delivery to site, ready for installation.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.
- B. Verify substrate surfaces are ready to receive Work.
- C. Verify rough-in utilities are in proper location.

### 3.2 ERECTION OF STUDS

- A. Install studs in accordance with the Drawings, applicable building codes, and manufacturers instructions..

### 3.3 ERECTION TOLERANCES

- A. Section 01 40 00 - Quality Requirements: Tolerances.
- B. Maximum Variation from Indicated Position: 1/4 inch.
- C. Maximum Variation of Members from Plane: 1/8 inch.

**END OF SECTION**

## SECTION 05 50 00

### METAL FABRICATIONS

#### PART 1 GENERAL

##### 1.1 SUMMARY

- A. Section includes shop fabricated metal items.

##### 1.2 REFERENCES

- A. ASTM International:
1. ASTM A36/A36M - Standard Specification for Carbon Structural Steel.
  2. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
  3. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
  4. ASTM A307 - Standard Specification for Carbon Steel Bolts and Studs, 60 000 PSI Tensile Strength.
  5. ASTM B695 - Standard Specification for Coatings of Zinc Mechanically Deposited on Iron and Steel.
  6. ASTM F1554 - Standard Specification for Anchor Bolts, Steel, 36, 55, and 105-ksi Yield Strength.
- B. American Welding Society:
1. AWS A2.4 - Standard Symbols for Welding, Brazing, and Nondestructive Examination.
  2. AWS D1.1 - Structural Welding Code - Steel.
  3. AWS D1.6 - Structural Welding Code - Stainless Steel.
- C. Green Seal:
1. GC-03 - Anti-Corrosive Paints.
- D. National Ornamental & Miscellaneous Metals Association:
1. NOMMA Guideline 1 - Joint Finishes.
- E. SSPC: The Society for Protective Coatings:
1. SSPC - Steel Structures Painting Manual.
  2. SSPC SP 1 - Solvent Cleaning.
  3. SSPC SP 10 - Near-White Blast Cleaning.
  4. SSPC Paint 15 - Steel Joist Shop Paint.
  5. SSPC Paint 20 - Zinc-Rich Primers (Type I - Inorganic and Type II - Organic).

##### 1.3 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Submittal requirements.
- B. Shop Drawings: Indicate profiles, sizes, connection attachments, reinforcing, anchorage, size and type of fasteners, and accessories. Include erection drawings, elevations, and details where applicable.

Indicate welded connections using standard AWS A2.0 welding symbols.  
Indicate net weld lengths.

- C. Samples: Submit illustrating factory finishes.
  - D. Welders Certificates: Certify welders employed on the Work, verifying AWS qualification within previous 12 months.
- 1.4 QUALITY ASSURANCE
- A. Finish joints in accordance with NOMMA Guideline 1.
- 1.5 QUALIFICATIONS
- A. Design under direct supervision of Professional Engineer experienced in design of this Work and licensed at Project location.
- 1.6 DELIVERY, STORAGE, AND HANDLING
- A. Section 01 60 00 - Product Requirements: Product storage and handling requirements.
  - B. Accept metal fabrications on site in labeled shipments. Inspect for damage.
  - C. Protect metal fabrications from damage by exposure to weather.
- 1.7 FIELD MEASUREMENTS
- A. Verify field measurements are as indicated on shop drawings.

## **PART 2 PRODUCTS**

### **2.1 MATERIALS - STEEL**

- A. Steel Sections: ASTM A36/A36M.
- B. Steel Plate: ASTM A36/A36M.
- C. Hollow Structural Sections: ASTM A500/A500M, Grade B.
- D. Steel Pipe: ASTM A53/A53M, Grade B Schedule 40.
- E. Sheet Steel: ASTM A653/A653M, Grade 33 Structural Quality, galvanized with G60 coating class.
- F. Bolts: ASTM A325; Type 1.
  - 1. Finish: Unfinished.
- G. Nuts: ASTM A563 heavy hex type.
  - 1. Finish: Unfinished.
- H. Washers: ASTM F436; Type 1.
  - 1. Finish: Unfinished.

- I. Welding Materials: AWS D1.1; type required for materials being welded.
- J. Shop Primer: SSPC Paint 15, Type 1, red oxide.
- K. Touch-Up Primer: Match shop primer.
  - 1. Interior Anti-Corrosive Paints: Maximum volatile organic compound content in accordance with GC-03.
- L. Touch-Up Primer for Galvanized Surfaces: SSPC Paint 20 Type II Organic.
  - 1. Interior Anti-Corrosive Paints: Maximum volatile organic compound content in accordance with GC-03.

## 2.2 ANCHOR BOLTS

- A. Anchor Rods: ASTM F1554; Grade 55, weldable.
  - 1. Shape: Hooked.
  - 2. Furnish with nut and washer; unfinished.

## 2.3 FABRICATION

- A. Fit and shop assemble items in largest practical sections, for delivery to site.
- B. Fabricate items with joints tightly fitted and secured.
- C. Continuously seal joined members by continuous welds.
- D. Exposed Welded Joints: NOMMA Guideline 1 Joint Finish.
- E. Exposed Mechanical Fastenings: Flush countersunk screws or bolts; unobtrusively located; consistent with design of component, except where specifically noted otherwise.
- F. Supply components required for anchorage of fabrications. Fabricate anchors and related components of same material and finish as fabrication, except where specifically noted otherwise.

## 2.4 FACTORY APPLIED FINISHES - STEEL

- A. Prepare surfaces to be primed in accordance with SSPC SP 2.
- B. Do not prime surfaces in direct contact with concrete or where field welding is required.
- C. Prime paint items with two coats except where galvanizing is specified.
- D. Galvanizing: ASTM A123/A123M; hot dip galvanize after fabrication.
- E. Galvanizing for Fasteners, Connectors, and Anchors:
  - 1. Hot-Dipped Galvanizing: ASTM A153/A153M.
  - 2. Mechanical Galvanizing: ASTM B695; Class 50 minimum.

## 2.5 FABRICATION TOLERANCES

- A. Squareness: 1/8 inch maximum difference in diagonal measurements.
- B. Maximum Offset Between Faces: 1/16 inch.
- C. Maximum Misalignment of Adjacent Members: 1/16 inch.
- D. Maximum Bow: 1/8 inch in 48 inches.
- E. Maximum Deviation From Plane: 1/16 inch in 48 inches.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.
- B. Verify field conditions are acceptable and are ready to receive Work.

### 3.2 PREPARATION

- A. Clean and strip primed steel items to bare metal where site welding is required.
- B. Supply steel items required to be cast into concrete or embedded in masonry with setting templates to appropriate sections.

### 3.3 INSTALLATION

- A. Install items plumb and level, accurately fitted, free from distortion or defects.
- B. Make provisions for erection stresses. Install temporary bracing to maintain alignment, until permanent bracing and attachments are installed.
- C. Field weld components indicated on shop drawings.
- D. Perform field welding in accordance with AWS D1.1.
- E. Obtain approval of Architect/Engineer prior to site cutting or making adjustments not scheduled.
- F. After erection, touch up welds, abrasions, and damaged finishes with prime paint or galvanizing repair paint to match shop finishes.

### 3.4 ERECTION TOLERANCES

- A. Section 01 40 00 - Quality Requirements: Tolerances.
- B. Maximum Variation From Plumb: 1/4 inch per story or for every 12 ft in height whichever is greater, non-cumulative.

C. Maximum Offset From Alignment: 1/4 inch.

D. Maximum Out-of-Position: 1/4 inch.

3.5 FIELD QUALITY CONTROL

A. Welding: Inspect welds in accordance with AWS D1.1.

**END OF SECTION**

## SECTION 06 10 53

### MISCELLANEOUS ROUGH CARPENTRY

#### PART 1 GENERAL

##### 1.1 SUMMARY

- A. Section includes wood furring and grounds and preservative treatment of wood.

##### 1.2 REFERENCES

- A. American National Standards Institute:
  - 1. ANSI A208.1 - Mat-Formed Wood Particleboard.
- B. American Wood-Preservers' Association:
  - 1. AWPA M4 - Standard for the Care of Preservative-Treated Wood Products.
  - 2. AWPA U1 - Use Category System: User Specification for Treated Wood.
- C. ASTM International:
  - 1. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
  - 2. ASTM B695 - Standard Specification for Coatings of Zinc Mechanically Deposited on Iron and Steel
  - 3. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
  - 4. ASTM F1667 - Standard Specification for Driven Fasteners: Nails, Spikes, and Staples.
- D. Forest Stewardship Council:
  - 1. FSC Guidelines - Forest Stewardship Council Guidelines.
- E. The Redwood Inspection Service:
  - 1. RIS - Standard Specifications for Grades of California Redwood Lumber.
- F. Southern Pine Inspection Bureau:
  - 1. SPIB - Standard Grading Rules for Southern Pine Lumber.
- G. U.S. Department of Commerce National Institute of Standards and Technology:
  - 1. DOC PS 1 - Construction and Industrial Plywood.
  - 2. DOC PS 2 - Performance Standard for Wood-Based Structural-Use Panels.
  - 3. DOC PS 20 - American Softwood Lumber Standard.
- H. West Coast Lumber Inspection Bureau:
  - 1. WCLIB - Standard Grading Rules for West Coast Lumber.

- I. Western Wood Products Association:
  - 1. WWPA G-5 - Western Lumber Grading Rules.

### 1.3 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Submittal procedures.
- B. Product Data: Submit technical data on wood preservative and fire retardant treatment materials and application instructions.

### 1.4 QUALITY ASSURANCE

- A. Perform Work in accordance with the following:
  - 1. Lumber Grading Agency: Certified by DOC PS 20.
  - 2. Wood Structural Panel Grading Agency: Certified by EWA - The Engineered Wood Association.
  - 3. Lumber: DOC PS 20.
  - 4. Wood Structural Panels: DOC PS 1 or DOC PS 2.
- B. Surface Burning Characteristics:
  - 1. Fire Retardant Treated Materials: Maximum 25/450 flame spread/smoke developed index when tested in accordance with ASTM E84.
- C. Apply label from agency approved by authority having jurisdiction to identify each [preservative treated] [and] [fire retardant treated] material.

## PART 2 PRODUCTS

### 2.1 MATERIALS

- A. Lumber Grading Rules: WWPA G-5.
- B. Miscellaneous Framing: Spruce, Pine, Fir species, Construction grade, 19 percent maximum moisture content, pressure preservative treat.
- C. Plywood: APA/EWA Rated Sheathing, Grade C-D; Exposure Durability 1; unsanded.
  - 1. Interior Composite Wood Products: Contain no added urea-formaldehyde resins.

### 2.2 ACCESSORIES

- A. Fasteners and Anchors:
  - 1. Fasteners: ASTM A153/A153M, hot dipped galvanized steel for high humidity and treated wood locations, unfinished steel elsewhere.
  - 2. Nails and Staples: ASTM F1667.
  - 3. Anchors:
    - a. Toggle bolt type for anchorage to hollow masonry.
    - b. Expansion shield and lag bolt type for anchorage to solid masonry or concrete.

- c. Bolt or ballistic fastener for anchorages to steel.

## 2.3 FACTORY WOOD TREATMENT

- A. Preservative shall be CCA Type C in accordance with American Society of Testing and Materials (ASTM) Standard D-1625 and Federal Specification Tt-W-550.
  - 1. Pressure impregnation shall be in accordance with ASTM Standard D-1760 and Federal Specification TT-W-571.
  - 2. Each piece of lumber and plywood shall bear a Hoover Treated Wood Products, Inc., treating identification mark indicating retention and applicable standards.
  - 3. Lumber shall be kiln dried after treatment to a moisture content of 19% or less.
  - 4. Plywood shall be kiln dried after treatment to a moisture content of 18% or less.
  - 5. Lumber species shall be Southern Pine.
  - 6. Plywood veneers shall be all softwood species.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Section 01 30 00 - Administrative Requirements: Verification of existing conditions before starting work.
- B. Verify substrate conditions are ready to receive blocking, curbing and framing.

### 3.2 PREPARATION

- A. Coordinate placement of blocking, curbing and framing items.

### 3.3 INSTALLATION

- A. Set members level and plumb, in correct position.
- B. Place horizontal members, crown side up.
- C. Space framing and furring 16 inches oc.
- D. Secure sheathing to framing members with ends over firm bearing and staggered.

**END OF SECTION**

## SECTION 06 16 43

### GYPSUM SHEATHING

#### PART 1 GENERAL

##### 1.1 DESCRIPTION

- A. Work in this section includes, but is not limited to: wall, ceiling and soffit sheathing.

##### 1.2 REFERENCES

- A. ASTM International (ASTM):
  1. ASTM C473 Standard Test Methods for Physical Testing of Gypsum Panel Products.
  2. ASTM C518 Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus.
  3. ASTM C1002 Standard Specification for Steel Self-Piercing Tapping Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs.
  4. ASTM C1177 Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing.
  5. ASTM C1280 Standard Specification for Application of Gypsum Sheathing.
  6. ASTM E72 Standard Test Methods of Conducting Strength Tests of Panels for Building Construction.
  7. ASTM E96 Standard Test Methods for Water Vapor Transmission of Materials.

##### 1.3 SUBMITTALS

- A. Product data: Submit manufacturer's descriptive literature indicating material composition, thickness, sizes and fire resistance.

##### 1.4 QUALITY ASSURANCE

- A. Fire-resistance ratings: Where applicable, provide materials and construction that are identical to those of assemblies whose fire-resistance ratings are indicated.

##### 1.5 DELIVERY, STORAGE AND HANDLING

- A. Delivery: Deliver materials to the job site in manufacturer's original packaging, containers and bundles with manufacturer's brand name and identification intact and legible.
- B. Storage and handling: Store level and handle materials to protect against contact with damp and wet surfaces, exposure to weather, breakage and

damage to edges. Provide air circulation under covering and around stacks of materials.

## **PART 2 PRODUCTS**

### **2.1 MANUFACTURER**

- A. G-P Gypsum, a Georgia-Pacific Company:
  - 1. Glass-Mat Faced Gypsum Sheathing: DensGlass Gold.
- B. Other acceptable manufacturers offering equivalent products:
  - 1. Gold Bond® Brand EXP Extended Exposure Sheathing.
- C. Substitutions: Under the provisions of Section 01 60 00.

### **2.2 SHEATHING BOARD**

- A. Fire-Rated Glass-Mat Faced Gypsum Sheathing: ASTM C1177, Type X:
  - 1. Thickness: 5/8 inch.
  - 2. Width: 4 feet.
  - 3. Length: 8 feet.
  - 4. Weight: 2500 pounds per M square feet.
  - 5. Edges: Square.
  - 6. Surfacing: Coated glass mat on face, back, and long edges.
  - 7. Racking Strength (Ultimate, not design value) (ASTM E72): Not less than 654 pounds per square foot, dry.
  - 8. Flexural Strength, Parallel (ASTM C1177): 100 lbf, parallel.
  - 9. Humidified Deflection (ASTM C1177): Not more than 1/8 inch.
  - 10. Permeance (ASTM E96): Not more than 12 perms.
  - 11. R-Value (ASTM C518): 0.67.
  - 12. Acceptable Products:
    - a. 5/8 inch DensGlass Gold Fireguard, G-P Gypsum.

### **2.3 ACCESSORIES**

- A. Joint tape: 2" wide 10 x 10 glass mesh tape.
- B. Joint compound: ToughRock setting-type joint compound.
- C. Nails, wood framing: Hot dip, 11-gauge galvanized nails with 7/16" head, 1 1/2" min. length.
- D. Screws, metal framing:
  - 1. Bugle head, self-tapping, rust-resistant, fine thread for heavy-steel gauge.
  - 2. Bugle head, rust-resistant sharp point, fine thread for light-gauge metal framing or furring.
- E. Screws, metal or wood framing:
  - 1. Rust-resistant, bugle head, coarse thread, sharp point for wood; or wafer head, rust-resistant screws, drill or sharp point.

2. Hot dip 11-gauge, galvanized 7/16" head nail or equivalent to wood framing.
- F. Sealants, caulk and tape:
1. Dow Corning 795 or equivalent; Pecora 895 or equivalent.
  2. Pecora AC-20 acrylic latex sealant; GE Silicone Silpruf Sealant; Tremco Dymonic or equivalent
  3. 2" wide 10 x 10 fiberglass mesh

### **PART 3 EXECUTION**

#### **3.1 PREPARATION**

- A. Examine subframing; verify that surface of framing and furring members to receive sheathing does not vary more than 1/4" from the placement of faces of adjacent members.

#### **3.2 SHEATHING**

- A. Provide DensGlass Gold Exterior Sheathing where indicated on drawings. Install sheathing in accordance with manufacturer's instructions and applicable instructions in GA-253 and ASTM C 1280.
- B. Install DensGlass Gold Exterior Sheathing with gold side out.
- C. Use maximum lengths possible to minimize number of joints.
- D. Metal framing: Attach DensGlass Gold Exterior Sheathing to metal framing with screws spaced 8" o. c. at perimeter where there are framing supports; and 8" o. c. along intermediate framing in field.
- E. Drive fasteners to bear tight against and flush with surface of sheathing. Do not countersink.
- F. Locate fasteners minimum 3/8" from edges and ends of sheathing panels.
- G. Weather-resistant barrier: Entire exterior face of gypsum sheathing shall be covered with a "peel and stick" self adhesive type membrane or liquid applied membranes.

**END OF SECTION**

**SECTION 07 21 00**  
**BUILDING INSULATION**

**PART 1 GENERAL**

1.1 SECTION INCLUDES

- A. Building Insulation for Thermal and Acoustical Applications.

1.2 REFERENCES

- A. ASTM C 177 - Standard Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Guarded-Hot-Plate Apparatus.
- B. ASTM C 518 - Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus.
- C. ASTM C 553 - Standard Specification for Mineral Fiber Blanket Thermal Insulation for Commercial and Industrial Applications.
- D. ASTM C 612 - Standard Specification for Mineral Fiber Block and Board Thermal Insulation.
- E. ASTM C 665 - Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing.
- F. ASTM C 1104 – Standard Test Method for Determining the Water Vapor Sorption of Unfaced Mineral Fiber Insulation.
- G. ASTM C 1338 – Standard Test Method for Determining Fungi Resistance of Insulation Materials and Facings.
- H. ASTM E 84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
- I. ASTM E 96 – Standard Test Methods for Water Vapor Transmission of Materials.
- J. ASTM E 119 - Standard Test Methods for Fire Tests of Building Construction and Materials.
- K. ASTM E 136 - Standard Test Method for Behavior of Materials in a Vertical Tube Furnace at 750 Degrees C.
- L. ASTM E 96- Test Method for Water Vapor Transmission of Material.
- M. Federal Specification HH-I-521F: Insulation Blankets, Thermal (Mineral Fiber, For Ambient Temperatures).

- N. Federal Specification HH-I-558B: Insulation, Blocks, Blankets, Felts, Sleeving (Pipe and Tube Covering), and Pipe fitting Covering, Thermal (Mineral Fiber, Industrial Type)
- O. National Fire Protection Association (NFPA) Life Safety Code
- P. Underwriters Laboratories (UL) - UL 2079 Standard test method for fire resistance of Building Joint Systems.

### 1.3 SUBMITTALS

- A. Submit under provisions of Section 01 30 00.
- B. Product Data: Manufacturer's data sheets on each product to be used, including:
  - 1. Preparation instructions and recommendations.
  - 2. Storage and handling requirements and recommendations.
  - 3. Installation methods.
- C. Performance Data:
  - 1. Submit appropriate research reports or evaluation data for products listed in this section.
  - 2. Prior to project closeout, Contractor shall certify that all products installed pursuant to this section do not contain Asbestos or Polychlorinated Biphenyls (PCB).
- D. Shop Drawings: Submit manufacturers shop drawings describing the type and location of each product specified.
- E. Verification Samples: For each finish product specified, two samples, minimum size 6 inches (150 mm) square, representing actual product, color, and patterns.

### 1.4 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Single manufacturer with a minimum of ten years experience manufacturing or marketing products in this section shall provide all products listed.
- B. Installer Qualifications:
  - 1. Products listed in this section shall be installed by a single organization with at least two (2) years experience successfully installing insulation on projects of similar type and scope as specified in this section.
  - 2. If the installation of the curtain wall is the responsibility of a different installer, coordinate specified installations prior to commencement of work to ensure the complete system meets the specified ratings.
  - 3. Certification per FM 4991, Underwriters Laboratories, Intertek (OPL) Laboratories, or by the Firestop Contractors International Association (FCIA).

- C. Fire- Test-Response Characteristics: Provide insulation and related materials with the fire-test-response characteristics indicated, as determined by testing identical products per test method indicated below by Underwriters Laboratories (UL), Intertek (OPL) or another testing and inspecting agency acceptable to authorities having jurisdiction.
  - 1. Identify materials appropriate markings of applicable testing and inspecting agency.
  - 2. Combustion Characteristics: Rated as non combustible as defined by NFPA standard 220 when tested in accordance with ASTM E 136.
- D. Manufacturer's identification tags or marks are not acceptable on surfaces where products are considered to be finish material.
  - 1. Evidence of patching after removal of tags or marks is not acceptable.

#### 1.5 DELIVERY, STORAGE, AND HANDLING

- A. Delivery: Deliver materials to the job site in original packages, containers, or bundles bearing the brand name and manufacturer's identification.
- B. Storage: Store materials in dry locations with adequate ventilation, free from water, and in such a manner to permit easy access for inspection and handling.
- C. Handling: Handle materials to avoid damage. When installing or otherwise handling these insulation products, wear a NIOSH approved dust mask or respirator, gloves and long sleeved, loose fitting clothing closed at the neck and wrists. Wear safety glasses when installing.

#### 1.6 PROJECT CONDITIONS

- A. Protect adjacent work of other trades from damage. Clean substrates of substances harmful to insulation or vapor retarders, including removal of projections which might puncture vapor retarders. In cold weather, during installation of smoke sealant material, temperatures within the building shall be maintained above 55°F. Provide adequate ventilation to carry-off excess moisture.

#### 1.7 WARRANTY

- A. At project closeout, provide to the owner or owners representative an executed copy of the manufacturer's warranty document outlining the terms, conditions, and exclusions of their Standard Limited Warranty against Manufacturing Defect.

## **PART 2 PRODUCTS**

### **2.1 MANUFACTURERS**

- A. Acceptable Manufacturer: Thermafiber, Inc., which is located at: 3711 Mill St. ; Wabash, IN 46992; Toll Free Tel: 888-834-2371; Tel: 260-563-2111; Fax: 260-563-8979; Email: [request info](mailto:request info); Web: [www.thermafiber.com](http://www.thermafiber.com)
- B. Requests for substitutions will be considered in accordance with provisions of Section 01 60 00.
- C. Rain Screen / Cavity Wall Continuous Insulation
  - 1. Description: Non-combustible, semi-rigid mineral wool insulation board that is water repellent and resists temperatures above 2,000° F, meets ASTM C 612, IVA.
  - 2. Thickness: As noted on contract drawings.
  - 3. Type: Thermafiber RainBarrier 45 Insulation
    - a. R-value of 4.2 per inch.
    - b. Facing: Unfaced.
    - c. Density: 4.5 pcf.
    - d. Surface Burning Characteristics: Unfaced- Flame Spread 0 and Smoke Developed 0
    - e. Moisture Resistance: Absorbs less than 0.03% by volume, ASTM C 1104
    - f. Non-corrosive, ASTM C 665.
  - 4. Hardware: RainBarrier Insulation Retaining Clip for securing RainBarrier continuous insulation to exterior substrate. This clip is recommended by manufacturer as it is compatible with multiple types of masonry and façade tie systems it is compatible with multiple types of masonry and façade tie systems.

## **PART 3 EXECUTION**

### **3.1 EXAMINATION**

- A. Do not begin installation until substrates have been properly prepared.
- B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

### **3.2 PREPARATION**

- A. Clean surfaces thoroughly prior to installation.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

### **3.3 INSTALLATION**

- A. Install insulation in accordance with the Drawings and manufacturers installation instructions..

3.4 PROTECTION

- A. Protect installed products until completion and project closeout.
- B. Touch-up, repair or replace damaged products before Substantial Completion.

3.5 CLEAN-UP

- A. Prior to project closeout, remove all related rubbish, excess material, scaffolding, tools and equipment from the site. Dispose of waste material in a manner approved by applicable jurisdictions.

**END OF SECTION**

## SECTION 07 27 26

### FLUID-APPLIED AIR/MOISTURE BARRIER

#### PART 1 GENERAL

##### 1.1 SUMMARY

- A. The work of this section includes, but is not limited to, the following:
  - 1. Materials and installation methods for fluid applied air and vapor barrier membrane system located in the non-accessible part of the wall.
  - 2. Materials and installation methods to bridge and seal air leakage pathways in roof and foundation junctions, window and door openings, control and expansion joints, masonry ties, piping and other penetrations through the wall assembly.

##### 1.2 PERFORMANCE REQUIREMENTS

- A. Provide an air and vapor barrier system to perform as a continuous barrier to air infiltration/exfiltration and water vapor transmission and to act as a liquid water drainage plane flashed to discharge any incidental condensation or water penetration.

##### 1.3 REFERENCES

- A. The following standards and publications are applicable to the extent referenced in the text. The most recent version of these standards is implied unless otherwise stated.
- B. American Society for Testing and Materials (ASTM)
  - 1. C 836 Standard Specification for High Solids, Cold Liquid-Applied Elastomeric Waterproofing Membrane for Use with Separate Wearing Course
  - 2. D 412 Standard Test Methods for Rubber Properties in Tension
  - 3. D 903 Standard Test Method for Peel or Stripping Strength of Adhesive Bonds
  - 4. D 1644 Test Methods for Non-volatile Content of Varnishes
  - 5. D 1970 Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection
  - 6. D 4541 Standard Test Method for Pull-Off Strength of Coatings Using Portable Adhesion Testers
  - 7. D 3767 Standard Practice for Rubber - Measurements of Dimensions
  - 8. E 96 Test Methods for Water Vapor Transmission of Materials
  - 9. E 283 Standard Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen
  - 10. E 2178 Standard Test Method for Air Permeance of Building Materials
  - 11. E2357 Standard Test Method for Determining Air Leakage of Air Barrier Assemblies

#### 1.4 SUBMITTALS

- A. Product Data: Submit manufacturer's product data, installation instructions, use limitations and substrate preparation recommendations.
- B. Shop drawings showing locations and extent of air and vapor barrier system including details for terminations flashings, penetrations, window and door openings and treatment of substrate joints and cracks.
- C. Written documentation demonstrating installers qualifications under the "Quality Assurance" article including reference projects of a similar scope.
- D. Samples: Submit representative samples of the following for approval:
  - 1. Fluid applied air barrier membrane
  - 2. Transition Membrane
  - 3. Through Wall Flashing
- E. Warranty: Submit a sample warranty identifying the terms and conditions stated below.

#### 1.5 QUALITY ASSURANCE

- A. Manufacturer: Air and vapor barrier systems shall be manufactured and marketed by a firm with a minimum of 20 years experience in the production and sales of waterproofing and air barrier products. Manufacturers proposed for use, but not named in these specifications shall submit evidence of ability to meet all requirements specified, and include a list of projects of similar design and complexity completed within the past five years.
- B. Installer: The installer shall demonstrate qualifications to perform the work of this Section by submitting the following:
  - 1. List of at least three (3) projects contracted within the past five (5) years of similar scope and complexity to this project carried out by the firm and site supervisor.
  - 2. Installer must show evidence of adequate equipment and trained field personnel to successfully complete the project in a timely manner.
- C. Materials: Fluid applied air and vapor barrier material shall be two part synthetic rubber based systems free of solvents, isocyanates and bitumen. For each type of material required for the work of this section, provide primary materials that are the products of one manufacturer.
- D. Pre-Installation Conference: A pre-installation conference shall be held prior to commencement of field operations to establish procedures to maintain optimum working conditions and to coordinate this work with related and adjacent work. Agenda for meeting shall include but not be limited to the following:
  - 1. Review of submittals.
  - 2. Review of surface preparation, minimum curing period and installation procedures.
  - 3. Review of special details and flashings.

4. Sequence of construction, responsibilities and schedule for subsequent operations.
5. Review of mock-up requirements.
6. Review of inspection, testing, protection and repair procedures.

E. Mock-up:

1. Prior to installation of the air and vapor barrier system a field-constructed mock-up shall be provided to verify details and tie-ins and to demonstrate the required quality of materials and installation.
2. Construct a typical exterior wall section, 8 feet long and 8 feet wide, incorporating back-up wall, cladding, window and doorframe and sill, insulation, flashing and any other critical junction (roof, foundation, etc).
3. Allow 24 hours for inspection and testing of mock-up before proceeding with air and vapor barrier work.
4. Mock-up may remain as part of the work.

F. Inspection and Testing: Cooperate and coordinate with the Owner's inspection and testing agency. Do not cover any installed air and vapor barrier membrane until it has been inspected, tested and approved.

## 1.6 DELIVERY, STORAGE AND HANDLING

- A. Deliver materials and products in labeled packages. Store and handle in strict compliance with manufacturer's instructions, recommendations and material safety data sheets. Protect from damage from sunlight, weather, excessive temperatures and construction operations. Remove damaged material from the site and dispose of in accordance with applicable regulations.
- B. Do not double-stack pallets of fluid applied membrane components on the job site. Provide cover on top and all sides, allowing for adequate ventilation.
- C. Protect fluid-applied membrane components from freezing and extreme heat.
- D. Sequence deliveries to avoid delays, but minimize on-site storage.

## 1.7 PROJECT CONDITIONS

- A. Perform work only when existing and forecasted weather conditions are within the limits established by the manufacturer of the materials used. Proceed with installation only when the substrate construction and preparation work is complete and in condition to receive the air and vapor barrier membrane.

## 1.8 WARRANTY

- A. Submit manufacturer's warranty that air and vapor barrier and accessories are free of defects at time of delivery and are manufactured

to meet manufacturer's published physical properties and material specifications.

## PART 2 PRODUCTS

### 2.1 GENERAL

- A. For each type of material required for the work of this section, provide primary materials that are the products of one manufacturer.

### 2.2 FLUID APPLIED MEMBRANES

- A. Description: a two part, self-curing, synthetic rubber based material free of solvents, isocyanates and bitumen

- B. Performance Requirements:

Property	Test Method	Typical Value
Color		Green
Cured Film Thickness	ASTM D 3767 Method A	1.5 mm (0.060 in.) nominal
Solids Content	ASTM D 1644	100%
Air Permeance at 75Pa (0.3 in. water) Differential Pressure	ASTM E 2178	<0.001 L/(s.m <sup>2</sup> ) (<0.0002 cfm/ft <sup>2</sup> )
Assembly Air Permeance at 75Pa (0.3 in. water) Differential Pressure	ASTM E 2357	<0.004 L/s*m <sup>2</sup> (<0.0008 cfm/ft <sup>2</sup> )
Water Vapor Permeance	ASTM E 96, Method BW	Less than 4.6 ng/Pa.s.m <sup>2</sup> (0.08 Perms)
Pull Adhesion to Concrete Block (CMU)	ASTM D 4541-02	0.24 N/mm <sup>2</sup> (35 psi)
Pull Adhesion to Glass Faced Wall Board	ASTM D 4541-02	0.12 N/mm <sup>2</sup> (18 psi)
Peel Adhesion to Concrete	ASTM D 903 Modified <sup>1</sup>	880 N/m (5 lb./in.)
Elongation	ASTM D 412	500% minimum
Pliability, 180° Bend over 25 mm (1 in.) Mandrel at -30°C (-23°F)	ASTM D 1970	Unaffected
Low Temperature Flexibility and Crack Bridging 3.2mm (1/8in.) crack cycling at -26°C (-15°F)	ASTM C836	Pass
Extensibility over 6.4mm (1/4in.) crack after heat aging	ASTM C836	Pass

Footnote:

1. The membrane is applied to concrete and allowed to cure. Peel adhesion of the membrane is measured at a rate of 50 mm (2 in.) per minute with a peel angle of 90° at room temperature.

- C. Acceptable Materials:

1. Perm-A-Barrier® Liquid from Grace Construction Products, 62 Whittemore Avenue, Cambridge, MA.
2. Tremco ExoAir 120 from Tremco Inc., 3735 Green Road, Beachwood, OH 44122.

## 2.3 TRANSITION MEMBRANE

- A. Description: 0.9 mm (36 mils) of self-adhesive rubberized asphalt integrally bonded to 0.1 mm (4 mil) of cross-laminated, high-density polyethylene film to provide a min. 0.1 mm (40 mil) thick membrane. Membrane shall be interleaved with disposable silicone-coated release paper until installed.
- B. Performance Requirements:
1. Water Vapor Transmission: ASTM E 96, Method B: 2.9 ng/m<sup>2</sup>sPa (0.05 perms) max.
  2. Air Permeance at 75Pa (0.3 in. water) pressure difference: 0.0006 L/(s.m<sup>2</sup>) (0.00012 cfm/ft<sup>2</sup>) max.
  3. Puncture Resistance: ASTM E 154: 178 N (40 lbs.) min.
  4. Lap Adhesion at -4°C (25°F), ASTM D 1876: 880 N/m (5.0 lbs./in.) of width min.
  5. Low Temperature Flexibility, ASTM D 1970: Unaffected to -43°C (-45°F).
  6. Tensile Strength, ASTM D 412, Die C Modified: min. 2.7 MPa (400 psi)
  7. Elongation, Ultimate Failure of Rubberized Asphalt, ASTM D 412 Die C: min. 200%
- C. Acceptable Materials: Perm-A-Barrier Detail Membrane manufactured by Grace Construction Products.

## 2.4 FLEXIBLE MEMBRANE WALL FLASHING

- A. Description: 0.8 mm (32 mils) of self-adhesive rubberized asphalt integrally bonded to 0.2 mm (8 mil) of cross-laminated, high-density polyethylene film to provide a min. 1.0 mm (40 mil) thick membrane. Membrane shall be interleaved with disposable silicone-coated release paper until installed.
- B. Performance Requirements:
1. Water Vapor Transmission, ASTM E 96, Method B: 2.9 ng/m<sup>2</sup>sPa (0.05 perms) max.
  2. Water Absorption, ASTM D 570: max. 0.1% by weight
  3. Puncture Resistance, ASTM E 154: 356 N (80 lbs.) min. Tear Resistance
    - a. Initiation ASTM D 1004: min. 58 N (13.0 lbs.) M.D.
    - b. Propagation ASTM D 1938: min. 40 N (9.0 lbs.) M.D.
  4. Lap Adhesion at -4°C (25°F), ASTM D 1876: 880 N/m (5.0 lbs./in.) of width
  5. Low Temperature Flexibility, ASTM D 1970: Unaffected to -43°C (-45°F)
  6. Tensile Strength, ASTM D 412, Die C Modified: min. 5.5 MPa (800 psi)
  7. Elongation, Ultimate Failure of Rubberized Asphalt, ASTM D412, Die C: min. 200%
- C. Acceptable Materials: Perm-A-Barrier Wall Flashing manufactured by Grace Construction Products.

## 2.5 AIR & VAPOR BARRIER ACCESSORIES

- A. Description: Water-based primer which imparts an aggressive, high tack finish on the treated substrate
1. Flash Point: No flash to boiling point
  2. Solvent Type: Water
  3. VOC Content: Not to exceed 10 g/l
  4. Application Temperature: -4°C (25°F) and above
  5. Freezing point (as packaged): -7°C (21°F)
  6. Product: Perm-A-Barrier WB Primer manufactured by Grace Construction Products.
- B. Description: Two part, elastomeric, trowel grade material designed for use with self-adhered membranes and tapes. 10 g/l max. VOC Content.
1. Product: Bituthene® Liquid Membrane manufactured by Grace Construction Products.
- C. Optional Primers:
1. Description: High tack water based primer. 10 g/l max. VOC content.
    - a. Product: Perm-A-Barrier Liquid Part B manufactured by Grace Construction Products.
  2. Description: High tack low VOC solvent based primer. <200 g/l max. VOC content.
    - a. Product: Bituthene Primer B2 LVC manufactured by Grace Construction Products.
  3. Description: High tack solvent based primer. 440 g/l max. VOC content.
    - a. Product: Bituthene Primer B2 manufactured by Grace Construction Products.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. The installer shall examine conditions of substrates and other conditions under which this work is to be performed and notify the contractor, in writing, of circumstances detrimental to the proper completion of the work. Do not proceed with work until unsatisfactory conditions are corrected.

### 3.2 PREPARATION

- A. Refer to manufacturer's literature for requirements for preparation of substrates. Surfaces shall be sound and free of voids, spalled areas, loose aggregate and sharp protrusions. Remove contaminants such as grease, oil and wax from exposed surfaces. Remove dust, dirt, loose stone and debris. Use repair materials and methods that are acceptable to manufacturer of the fluid-applied waterproofing.

- B. Masonry Substrates: Apply air and vapor barrier over concrete block and brick with smooth flush mortar joints. Fill all voids and holes, particularly in the mortar joints, with a lean mortar mix, non-shrinking grout or parge coat.
- C. Related Materials: Treat construction joints and install flashing as recommended by manufacturer.

### 3.3 INSTALLATION

- A. Refer to manufacturer's literature for recommendations on installation
- B. Application of Fluid Applied Membrane
  1. Spray or trowel apply a continuous uniform film at min. 60 mils (1.5 mm or .060 in.) dry film thickness using multiple, overlapping passes.
  2. When spraying use a cross-hatching technique (alternating horizontal and vertical passes) to ensure even thickness and coverage.
  3. When spraying use high pressure, multi-component, airless spray equipment approved by material manufacturer.
  4. Carry membrane into any openings a minimum of 50mm (2 in.).
  5. Seal all brick-ties and other penetrations as work progresses.
- C. Application of Transition Membrane
  1. After allowing the Fluid Applied Membrane to cure to tack-free, apply transition membrane with a minimum overlap of 75mm (3 in.) onto each surface at all beams, columns and joints as indicated in detail drawings.
  2. Tie in to window and door frames, spandrel panels, roof and floor intersections and changes in substrate.
  3. Use pre-cut, easily handled lengths for each location.
  4. Remove silicone-coated release paper and position membrane flashing carefully before placing it against the surface.
  5. When properly positioned, place against surface by pressing firmly into place by hand roller.
  6. Overlap adjacent pieces 50 mm (2 in.) and roll all seams with a hand roller.
  7. Seal top edge of flashing with termination mastic.
  8. When transition flashing is pre-installed prior to application of Fluid Applied Membrane, apply transition flashing as above. Spray or trowel a continuous uniform film of Fluid Membrane at min. 60 mils (1.5 mm or .060 in.) dry film thickness using multiple, overlapping passes, with a minimum overlap of 75 mm (3 in.) onto transition flashing. For sill condition, spray or trowel Fluid Membrane onto pre-installed sill flashing and onto horizontal section of sill.
- D. Application of Flexible Membrane Wall Flashing
  1. Precut pieces of flashing to easily handled lengths for each location.
  2. Remove silicone-coated release paper and position flashing carefully before placing it against the surface.

3. When properly positioned, place against surface by pressing firmly into place by hand roller. Fully adhere flashing to substrate to prevent water from migrating under flashing.
4. Overlap adjacent pieces 50 mm (2 in.) and roll all seams with a hand roller.
5. Trim bottom edge 13 mm (1/2 in.) back from exposed face of the wall. Flashing shall not be permanently exposed to sunlight.
6. At heads, sills and all flashing terminations, turn up ends a minimum of 50 mm (2 in.) and make careful folds to form an end dam, with the seams sealed.
7. Seal top edge of flashing with termination mastic.
8. Do not allow the rubberized asphalt surface of the flashing membrane to come in contact with poly-sulfide sealants, creosote, uncured coal tar products or EPDM.

#### 3.4 PROTECTION AND CLEANING

- A. Remove any masking materials after installation. Clean any stains on materials that would be exposed in the completed work using procedures as recommended by manufacturer.
- B. Perm-A-Barrier Liquid is not suitable for permanent exposure and should be protected from the effects of sunlight.
- C. Schedule work to ensure that the Perm-A-Barrier Liquid system is covered as soon as possible after installation. Protect Perm-A-Barrier Liquid system from damage during subsequent operations. If the Perm-A-Barrier Liquid system cannot be covered within 60 days after installation, apply temporary UV protection such as dark plastic sheet or tarpaulins.

**END OF SECTION**

**SECTION 07 41 00**  
**METAL WALL PANELS**

**PART 1 GENERAL**

**1.1 WORK INCLUDED**

- A. This Section shall include the furnishing and installation of metal wall panels as indicated. Also include metal channels, trim, closure gaskets, and all fasteners as required and insulation.

**1.2 SUBMITTALS**

- A. Samples of sheet metal and other colored materials to be furnished under this Section shall be submitted for selection of color by the Architect.
- B. Manufacturer's Instructions for installation of the metal siding shall be submitted and also maintained at the job site during the work.

**1.3 REFERENCES**

- A. Sheet Metal and Air Conditioning Contractors National Association, Inc. (SMACNA)
- B. Architectural Sheet Metal Manual, Third Edition
- C. American Society for Testing and Materials (ASTM)
  - 1. A924/A924M Specifications for General Requirements for Sheet Steel, Metallic-Coated by the Hot-Dip Process

**PART 2 PRODUCTS**

**2.1 MATERIALS**

- A. Metal Wall Panels shall be 22 gauge steel, with G-90 Galvanized coating, with custom color finish to include 2 coat or Mica or Metallic with a Kynar-500 finish.
- B. Basis of design; Integrity Series Wall Panels, Panel profile S-16 as supplied by Morin, a Kingspan Group Company, 685 Middle Street, Bristol, Connecticut 06010-8416; 1-800-640-9501 ([www.morincorp.us](http://www.morincorp.us))
- C. Continuous Underlayment shall be a fluid applied moisture barrier, see section 07 27 26.

- D. Metal Hat Channels shall be formed from 16 gauge galvanized steel, sizes as shown on the drawings. Provide fasteners as recommended for use in hollow masonry back-up wall, as detailed in drawings. Fasteners are to penetrate thru glazed brick veneer and anchor to CMU backup wall.
- E. Insulation shall be 1-½" thick mineral wool, see section 07 21 00.
- F. Trim shall match the respective work in color and texture. Provide trim pieces to cover all exposed cut edges and corners, and to form sealable joint where the siding panels abut other construction. Where exposed fasteners are required with trim, these shall be painted to match the color of the trim.
- G. Mitered Corners; structurally bonded to match the angle of the corner for horizontal panels, at outside corner conditions, made from the same material as the panel, fabricated by the panel manufacturer.
- H. Accessory Materials shall include the following items and other items for a complete assembly; Closure gaskets shall be preformed to match panel configuration.
  - 1. Sealant, as required for site application under this Section, shall be silicone type and shall be GE Silpruf or Dow Corning 790, or equal. Color shall be selected from the manufacturer's standard colors for the best match practicable with the wall panels. Provide primers if recommended by the sealant manufacturer for the substrate and usage. Provide the manufacturer's application instructions with the material, and maintain at the site while the work is in progress.
  - 2. Fasteners shall be as standard and suitable for the work. Fasteners shall generally be self-drilling, self-tapping, non-corrosive, with neoprene washers. Fasteners to secure the wall panels shall be colored to match the panels.
  - 3. Profile Closures at vertical trim to include neoprene closures covered by metal profile closures of the same material and color as the panels.

## 2.2 FABRICATION

- A. Panels shall be fabricated as required by the contract drawings and as specified. Provide the metal siding in single pieces without horizontal joints within a run.
- B. Flashings shall be fabricated as shown and as required under Section 07 60 00.
- C. Copings shall be fabricated as shown and as required under Section 07 60 00.

### **PART 3 EXECUTION**

#### **3.1 INSPECTION.**

- A. Examine alignment of structural supports prior to installation and do not proceed until defects, if any, are corrected.

#### **3.2 INSTALLATION AND ERECTION**

- A. Install metal wall panels, fasteners, closure gaskets, trim and related items in conformance with approved drawings and manufacturer's instructions. Coordinate the work under this heading with the total work so that all the work comes together properly. The work shall be neat, plumb and sightly and shall show good workmanship throughout. The work shall be weathertight throughout. Caulk joints throughout where factory-applied sealant is not provided.

**END OF SECTION**

## SECTION 07 46 46

### FIBER CEMENT PANELS

#### PART 1 GENERAL

##### 1.1 SCOPE

- A. Furnish and install Nichiha Illumination Series fiber cement panels where shown on drawings or specified herein.

##### 1.2 REFERENCES

- A. ASTM C1185 Standard Test Methods for Sampling and Testing Non-Asbestos Fiber Cement Flat Sheet, Roofing and Siding, Shingles and Clapboards.
- B. ASTM E228 Standard Test Method for Linear Thermal Expansion of Solid Materials with a Vitreous Silica Dilatometer.
- C. ASTM G23 Standard Practice for Operating Light-Exposure Apparatus (Carbon-Arc Type) with and without Water for Exposure of Nonmetallic Materials, Replaced by G152 and G153.
- D. ASTM330 Standard Test Method for Structural Performance of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference.
- E. ASTM331 Standard Test Method for Water Penetration of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference.
- F. ASTM E119 Standard Test Methods for Fire Tests of Building Construction and Materials.
- G. ASTM C518 Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus.
- H. UL-723 Standard Underwriters Laboratories Inc. for Test for Surface Burning Characteristics of Building Materials.

##### 1.3 COMPLIANCE

- A. Nichiha Illumination Series fiber cement panels shall meet or exceed requirement of the following:
  - 1. ICC Evaluation Service, Inc. (ICC-ES) Evaluation Report No. ESR-1694.
  - 2. ICC-ES Legacy Report No. 5915.
  - 3. Canadian Construction Materials Centre (CCMC) Evaluation Report No. CCMC 13083-R.

4. Refer to applicable building code compliance reports for the uniform wind load.

#### 1.4 SUBMITTALS

- A. Drawings: Submit detailed drawings showing installation details.
- B. Product Data: Submit manufacturer's product description, indicating material types and thicknesses, and installation details.
- C. Samples: Submit samples of each product type proposed for use.
- D. Certificates: Submit documents certifying that products meet or exceed requirements herein.

#### 1.5 QUALITY ASSURANCE

- A. Performance requirements: Nichiha Illumination Series panels are fiber cement panel products with the following typical properties:
  1. Linear Variation with Change in Moisture Content: M.D.: -0.006 in./ft., C.D.: 0.003 in./ft.
  2. Wet Flexural Strength: Avg. 1155.51 psi.
  3. Water Tightness: No water droplets were observed on any specimen.
  4. Freeze-thaw: No damage or defects were observed.
  5. Warm Water: No evidence of cracking, delamination, swelling, or other defects were observed.
  6. Heat-Rain: No crazing, cracking, or other deleterious effects, surface or joint changes were observed in any specimen.
  7. Mean Coefficient of Linear Thermal Expansion: Avg.  $3.18 \times 10^{-6}$  in./in. F.
  8. Surface Burning: Flame Spread: 0, Smoke Developed: 5.
  9. Wind Load: Refer to ESR 1694 for specific design pressures.
  10. Water Penetration: No water leakage was observed into wall cavity.
  11. Weather Resistant: No cracking, checking, crazing, erosion, or other detrimental effects were observed.
  12. Steady-State heat flux and thermal Transmission Properties Test: the test results show that Nichiha Fiber Cement Panels to have a thermal resistance of R Value of 1.23 F.
  13. Fire Resistant: The walls successfully endured a 60-minute fire exposure without developing excessive unexposed surface temperature or allowing flaming on the unexposed side of the assembly.

#### 1.6 WARRANTY

- A. Provide manufacturer's 50-year warranty against manufactured defects in fiber cement panels.

- B. Provide manufacturer's 15-year warranty against manufactured defects in panel finish.
- C. Warranty provides for the original purchaser. See warranty for detailed information on terms, conditions and limitations.

## **PART 2 PRODUCTS**

### **2.1 MANUFACTURER**

- A. Manufacturer: Nichiha Corporation, 18-19 Nishiki 2-chome Naka-ku, Nagoya, Aichi 460-8610, Japan.
- B. US Sales Office: Nichiha USA, Inc., 6659 Peachtree Industrial Blvd., Suite AA, Norcross, GA 30092, Toll free: 1.866.424.4421, Office: 770.805.9467, Fax: 770.805.9467, [www.NICHIHA.com](http://www.NICHIHA.com).

### **2.2 MATERIALS**

- A. Nichiha fiber cement Illumination Series panels are based on autoclaved, wood fiber reinforced cement panels. Wood fiber bundles are prepared in accordance with Nichiha specifications, are mixed with Portland cement and silica, etc.
- B. The panels are nominally 1.5 feet in height and 6 feet in length; actually 455mm in height and 1,818mm in length.
- C. The panel's surface is pre-finished and machine applied.
- D. The panels are profiled along all four edges, such that both horizontal and vertical joints between the installed panels are shipped lapped.
- E. A factory-applied sealant is applied to panel edges, such that all joints will contain a factory sealant.

### **2.3 PRODUCT DESCRIPTION**

- A. Illumination Series
  1. Profile colors: Custom color.
  2. Accessories: Corners for each profile color.
  3. Dimensions: Nominal – 18" (h) x 6' (l) x 5/8" (t); Actual – 455mm (h) x 1,818mm (l) x 16mm (t).
  4. Weight: 37.9 lbs. per panel.
  5. Coverage: 9 sq. ft. per panel.
  6. Factory sealed on six [6] sides.

### **2.4 ACCESSORIES AND INSTALLATION COMPONENTS**

- A. Always use Nichiha accessories for complete and proper installation, whether or not specifically shown on installation drawings.

- B. Additional accessories for installation and designer aesthetics are available. Consult catalog or contact Nichiha USA Inc., for further details.

### **PART 3 EXECUTION**

#### **3.1 HANDLING**

- A. Panels must be stored flat and kept dry before installation. A waterproof cover over panels and accessories should be used at all times prior to installation.
- B. If panels are exposed to water or water vapor prior to installation, allow to completely dry before installing. Failure to do so may result in shrinkage at ship lap joints, and such action may void warranty.
- C. Nichiha panels **MUST** be carried on edge. Do not carry or lift panels flat. Improper handling may cause cracking or panel damage. Nichiha is not responsible for damage caused by improper handling.
- D. Direct contact between the panels and the ground should be avoided at all times. It is necessary to keep panels clean during installation process.

#### **3.2 JOB CONDITIONS**

- A. Fiber cement panels can be installed over braced wood, steel studs and sheathing including; plywood, OSB, plastic foam or fiberboard sheathing. Fiber cement panels can also be installed over Structural Insulated Panels (SIP's), Concrete Masonry Units (CMU's), and Concrete Block Structures (CBS's) with furring strips, and Pre-Engineered Metal Construction.
- B. Allowable stud spacing: See manufacturer's installation instructions for details.
- C. A weather resistive barrier is required when installing fiber cement panels. Use an approved weather resistive barrier [WRB] as defined by the 2012 IRC. Refer to local building codes. Nichiha is not responsible for water infiltration.
- D. Appropriate metal flashing should be used to prevent moisture penetration around all doors, windows, wall bottoms, material transitions and penetrations, Please refer to local building codes for best practices.

#### **3.3 SURFACE CONDITIONS**

- A. Examine site to ensure substrate conditions are within specification for proper installation.
- B. Do not begin installation until unacceptable conditions have been corrected.

### 3.4 CUTTING

- A. Always cut Nichiha Illumination Series panels outside or in a well ventilated area. Do not cut the products in an enclosed area.
- B. Always wear safety glasses and NIOSH/OSHA approved respirator, whenever cutting, drilling, sawing, sanding or abrading the products. Refer to manufacturer MSDS for more information.
- C. Use a dust-reducing circular saw with a diamond-tipped or carbide-tipped blade, for general cuttings. Recommended circular saw: Makita 7-14" Circular Saw with Dust Collector (#5057KB). Recommended blade: Tenryu Board-Pro Plus PCD Blade (#BP-18505). Shears (electric or pneumatic) or jig saw can be used for complicated cuttings, such as service openings, curves, radii and scrollwork.
- D. **Silica Dust Warning:** NICHHA products may contain some amounts of crystalline silica [a.k.a. sand, silicon dioxide], which is a naturally occurring mineral. The amount will vary from product to product. Inhalation of crystalline silica into the lungs and repeated exposure to silica can cause health disorders, such as silicosis, lung cancer, or death depending upon various factors. To be conservative, Nichiha recommends that whenever cutting, sawing, sanding, sniping or abrading the product, users observe the Safety Instructions above. For further information or questions, please consult the MSDS, your employer, or visit [www.osha.gov/SLTC/silicacrystalline/index.html](http://www.osha.gov/SLTC/silicacrystalline/index.html) and [www.cdc.gov/niosh/topics/silica](http://www.cdc.gov/niosh/topics/silica). The MSDS for Nichiha products are available at [www.nichiha.com](http://www.nichiha.com), at your local Nichiha dealer or through Nichiha directly at 1.866.424.4421. **FAILURE TO ADHERE TO WARNINGS, MSDS, AND OTHER INSTRUCTION MAY LEAD TO SERIOUS PERSONAL INJURY OR DEATH.**

### 3.5 FASTENING

- A. Corrosion resistant fasteners, such as hot-dipped galvanized nails and screws that are appropriate to local building codes and practices must be used. Stainless Steel fasteners are highly recommended in high humidity and high-moisture regions. Do not use aluminum fasteners, staples, clipped head nails or fasteners that are not rated or designed for intended use. See manufacturer's detailed instructions for appropriate fasteners for construction method used.

### 3.6 INSTALLATION

- A. General: Install products in accordance with the latest installation guidelines of the manufacturer and all applicable building codes and other laws, rules, regulations and ordinances. Review all manufacturer installation, maintenance instructions and other applicable documents before installation.

3.7 FINISHING AND MAINTENANCE

- A. Review brick, stone and block Maintenance, Repair and Cleaning Guidelines for detailed care instructions.

**END OF SECTION**

## SECTION 07 62 00

### SHEET METAL FLASHING AND TRIM

#### PART 1 GENERAL

##### 1.1 WORK INCLUDED

- A. Joint Flashings and Counterflashings.

##### 1.2 QUALITY ASSURANCE

- A. Applicator: Company specializing in sheet metal flashing work with three years minimum experience.

##### 1.3 SUBMITTALS

- A. Submit shop drawings and product data under provisions of Section 01 33 00.
- B. Describe material profile, jointing pattern, jointing details, fastening methods, and installation details.
- C. Submit manufacturer's installation instructions under provisions of Section 01 30 00.
- D. Submit samples under provisions of Section 01 33 00.

##### 1.4 STORAGE AND HANDLING

- A. Store products under provisions of Section 01 60 00.
- B. Stack preformed and prefinished material to prevent twisting, bending, or abrasion, and to provide ventilation.
- C. Prevent contact with materials during storage that may cause discoloration, staining, or damage.

##### 1.5 WARRANTY

- A. Provide twenty year warranty under provisions of Section 01 70 00.
- B. Warranty: Include coverage for degradation of metal finish.

## PART 2 PRODUCTS

### 2.1 SHEET MATERIALS

- A. Sheet Flashings and Trim: Pac-Clad, prefinished 24 gauge galvanized sheet metal; Kynar 500 finish; as manufactured by "Peterson Aluminum Corporation". All flashings and trim material shall be supplied by one manufacturer.
- B. Other acceptable manufacturers offering equivalent products:
  - 1. ColorKlad by Vincent Metals
  - 2. Una-Clad by Copper Sales, Inc.
  - 3. Duracald by N.B. Handy Company
- C. Substitutions: Under the provisions of Section 01 60 00.

### 2.2 COMPONENTS

- A. Roof flashings and miscellaneous flashing and trim: Prefinished sheet metal; Color as selected by Architect from manufacturers full range of standard colors.

### 2.3 FASTENERS

- A. Fasteners such as nails, screws, bolts, etc. shall be of same materials as flashings on which they are used unless noted otherwise. They shall be of type and size as shown on Drawings or specified herein. All fasteners exposed to the weather shall be solid stainless steel with neoprene washers under heads to ensure corrosion resistance and watertightness.
- B. Sheet Metal to Wood: No. 8 minimum size and of sufficient length to penetrate 1-1/4" into wood. Installed withdrawal resistance shall be a minimum of 150 lbs per screw.
- C. Sheet Metal to Sheet Metal: Self-tapping sheet metal screws of 1/2" length and a minimum #3 diameter.
- D. Keeper Strips to Wood: Annular thread nail with minimum 3/16" diameter head and of sufficient length to penetrate wood 1-1/4" minimum.
- E. Screws for aluminum shall be stainless steel only.
- F. Sheet Metal to Concrete or Masonry: Specially threaded anchors, brand name "Tapcon", 3/16" minimum diameter, length to penetrate masonry minimum 1-1/2". The installed withdrawal resistance to be minimum of 300 lbs per anchor.
- G. Lag Screws: 3/8" with 1-1/2" penetrating into sleeper blocking.

## 2.4 ACCESSORIES

- A. Sealant: Type specified in Section 07 92 00.

## 2.5 FABRICATION

- A. Form sections true to shape, accurate in size, square, and free from distortion or defects.
- B. Fabricate cleats and starter strips of same material as sheet, continuous width, interlockable with sheet.
- C. Form pieces in longest practical lengths.
- D. Hem exposed edges on underside 1/2 inch; miter and seam corners.
- E. Form material with cover plate seam.
- F. Fabricate corners from one piece with minimum 18 inch long legs; seam for rigidity, seal with sealant.
- G. Fabricate vertical faces with bottom edge formed outward 1/4 inch and hemmed to form drip.
- H. Form sheet metal to profiles indicated on the drawings.

## PART 3 EXECUTION

### 3.1 INSPECTION

- A. Verify roof openings, curbs, pipes, sleeves, ducts, or vents through roof are solidly set, cant strips and reglets in place, and nailing strips located.
- B. Verify membrane termination and base flashings are in place, sealed, and secure.
- C. Beginning of installation means acceptance of existing conditions.

### 3.2 PREPARATION

- A. Field measure site conditions prior to fabricating work.
- B. Install starter and edge strips, and cleats before starting installation.
- C. Install surface mounted reglets true to lines and levels. Seal top of reglets with sealant.
- D. Secure flashings in place using concealed fasteners. Use exposed fasteners only in locations approved by Architect.

- E. Seam and seal all joints.
- F. Fit flashings tight in place. Make corners square, surfaces true and straight in planes, and lines accurate to profiles.
- G. Seal metal joints watertight.

3.3 INSTALLATION

- A. Install sheet metal flashing and trim as indicated on Drawings. In addition, methods, details and standards shall comply with National Roofing Contractors Association - Roofing Manual all as approved by the Architect.

**END OF SECTION**

## SECTION 07 92 00

### JOINT SEALERS

#### PART 1 GENERAL

##### 1.1 SECTION INCLUDES

- A. Sealants and caulking.
- B. Backer rods.

##### 1.2 REFERENCES

- A. ASTM C 920 - Standard Specification for Elastomeric Joint Sealants.
- B. ASTM C 1330 - Standard Specification for Cylindrical Sealant Backing for Use with Cold Liquid Applied Sealants.

##### 1.3 SUBMITTALS

- A. Submit under provisions of Section 01 33 00.
- B. Comply with Bidding Requirements.
- C. Manufacturer's Technical Data Guides and application procedures.
- D. Submit samples illustrating colors selected.
- E. Submit laboratory tests or data validating product compliance with performance criteria specified.

##### 1.4 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company regularly engaged in manufacturing and marketing of products specified in this section.
- B. Installer Qualifications: Qualified to perform work specified by reason of experience or training provided by product manufacturer.

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

- A. Deliver products in original factory packaging bearing identification of product, manufacturer, and batch number. Provide Material Safety Data Sheets for each product.
- B. Store products in a location protected from freezing, damage, construction activity, precipitation, and direct sunlight in strict accordance with manufacturer's recommendations.

- C. Condition products to approximately 60 to 70 degrees F for use in accordance with manufacturer's recommendations.
- D. Handle all products with appropriate precautions and care as stated on Material Safety Data Sheet.

#### 1.6 PROJECT CONDITIONS

- A. Do not use products under conditions of precipitation or freezing weather. Use appropriate measures for protection and supplementary heating to ensure proper curing conditions in accordance with manufacturer's recommendations if application during inclement weather occurs.
- B. Ensure substrate is dry.
- C. Protect adjacent work from contamination due to mixing, handling, and application of flexible epoxy joint filler.

#### 1.7 WARRANTY

- A. Provide manufacturer's five year standard material warranty.
- B. water tight seal, exhibit loss of adhesion or cohesion, or do not cure.
- C. Warranty Exclusions: Failure resulting from concrete shrinkage, structural cracks or defects, faulty construction, faulty design, faulty materials (other than joint filler), misuse of structure, settlement, or accident, fire or other casualty or physical damage.

### PART 2 PRODUCTS

#### 2.1 MANUFACTURERS

- A. Acceptable Manufacturers (Sealants and Joint Fillers):
  - 1. Sonneborn(R) Building Products, ChemRex, Inc., 889 Valley Park Drive, Shakopee, MN 55379-9897; ASD. Tel: (800) CHEMREX (243-6739).
  - 2. General Electric.
  - 3. Dow Corning.
  - 4. Pecora.
  - 5. Tremco.
  - 6. United States Gypsum.
- B. Requests for substitutions will be considered in accordance with provisions of Section 01 60 00.
- C. Provide all joint sealers of the same type from a single manufacturer.

## 2.2 MATERIALS

- A. One Component, Non-Sag Polyurethane Sealant: Sonneborn(R)/ChemRex "Sonolastic(R) NP 1(tm)" with plus or minus 25 percent movement capability for vertical joints; ASTM C 920, Type M, Grade NS, Class 25; FS TT-S-00227E, Type II, Class A; Canadian Specification CAN/CGSB-19.24-M90, Classification MCG-2-40-A-N, No. 81029; USDA approved; SWRI validated; UL classified (fire resistance).

## 2.3 ACCESSORIES

- A. Low VOC Primer: Sonneborn(R)/ChemRex "Primer No. 766," solvent based.
- B. Joint Cleaner: Sonneborn(R)/ChemRex "REDUCER 990"; non-corrosive and non-staining.
- C. Soft Backer Rod: Sonneborn(R)/ChemRex "Sonofoam Soft Backer Rod"; non-gassing, reticulated closed-cell polyethylene rod designed for use with cold-applied joint sealants.
  - 1. Comply with ASTM C 1330.
  - 2. Size required for joint design.
- D. Bond Breaker: Pressure-sensitive tape recommended by sealant manufacturer to suit application.

## 2.4 COLOR

- A. Sealant Colors: Selected by architect from the manufacturer's master color system.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Inspect all areas involved in work to establish extent of work, access, and need for protection of surrounding construction.
- B. Protect all surroundings from flexible epoxy joint filler including, but not limited to, floors, equipment, line striping, walkways, and drives.
- C. Conduct preapplication inspection of site verification with an authorized manufacturer's representative.

### 3.2 PREPARATION

- A. Remove loose materials and foreign matter which impair adhesion of joint filler.

- B. Clean joints and saw cuts by grinding, sandblasting, or wire brushing to expose a sound surface free of contamination and laitance.
- C. Ensure structurally sound surfaces, dry, clean, free of dirt, moisture, loose particles, oil, grease, asphalt, tar, paint, wax, rust, waterproofing, curing and parting compounds, membrane materials, and other foreign matter.
- D. Where the possibility of joint filler staining of adjacent areas or materials exists, mask joints prior to application.
  - 1. Do not remove masking tape before joints have been tooled and initial cure of joint filler has taken place.
  - 2. Work stained due to failure of proper masking precautions will not be accepted.

### 3.3 INSTALLATION

- A. Back-Up Material:
  - 1. Install appropriate size backer rod, larger than joint where necessary according to manufacturer's recommendations.
  - 2. Install polyethylene joint filler in joints wider than 1/4 inch (6 mm) to back-up material per manufacturer's recommendations.
  - 3. Do not install epoxy joint filler over backer rod.
- B. Bond Breaker: Install bond-breaker strip in joint to be sealed on top of back-up material to prevent adhesion of sealant to back-up material; install per manufacturer's recommendations.
- C. Sealant:
  - 1. Prepare sealants that require mixing; follow manufacturer's recommended procedures, mixing thoroughly.
  - 2. Mix only as much material as can be applied within manufacturer's recommended application time period.
  - 3. Apply materials in accordance with manufacturer's recommendations; take care to produce beads of proper width and depth, tool as recommended by manufacturer, and immediately remove surplus sealant.
  - 4. Apply materials only within manufacturer's specified application life period. Discard sealant after application life is expired or if prescribed application period has elapsed.

### 3.4 CLEANING

- A. Remove uncured sealant and joint filler with Reducer 990, xylene, toluene, or MEK. Remove cured sealant and joint filler by razor, scraping, or mechanically.
- B. Remove all debris related to application of sealants from job site in accordance with all applicable regulations for hazardous waste disposal.

### 3.5 SCHEDULE OF JOINT SEALERS

- A. General-Purpose Interior and Exterior Applications:
  - 1. Sealant:
    - a. One component polyurethane.
  - 2. Applications:
    - a. Joints and recesses between adjacent constructions and frames, sills, and subsills of windows, doors, curtainwall, storefront, and louvers.
    - b. Coping joints and wash joints in precast concrete, cast stone, or natural stone.
    - c. Masonry joints beneath shelf angles.
    - d. Around penetrations in exterior walls.
    - e. Under door thresholds and at bottom of door frames.
    - f. Where necessary to prevent infiltration of water or air into or through exterior building envelope.

**END OF SECTION**

## SECTION 08 11 10

### STANDARD STEEL DOORS AND FRAMES

#### PART 1 GENERAL

##### 1.1 SCOPE

- A. Specifications apply to steel doors, steel door frames, door hardware and steel frame components such as sidelites, borrowed lites, transom frames and architectural stick assemblies as shown on Drawings and schedules.

##### 1.2 REFERENCES

- A. ASTM E152 - Method of Fire Tests of Door Assemblies.
- B. DHI - Installation Guide for Doors and Hardware.
- C. NFPA 80 - Fire Doors and Windows.
- D. NFPA 252 - Fire Tests for Door Assemblies.
- E. SDI-100 - Standard Steel Doors and Frames.
- F. SDI-105 - Recommended Erection Instructions for Steel Frames.
- G. UL 10B - Fire Tests of Door Assemblies.
- H. ANSI A151.1 - Endurance Test.
- I. ANSI 115 - Hardware Preparation.

##### 1.3 QUALITY ASSURANCE

- A. Conform to requirements of SDI-100, ANSI A151.1, and other specifications herein named. Test reports shall be submitted upon request.
- B. Acoustical qualities: Doors shall have a minimum sound transmission classification of 29 as tested under ASTM E-90-61T.
- C. Insulation properties: Doors shall have a U factor honeycomb core .41 (R factor of 2.4), styrene .12 (R factor 7.8).
- D. Underwriters' Laboratories and Warnock Hersey, labeled fire doors and frames:
  - 1. All labeled fire doors and frames shall be of a type which has been investigated and tested in accordance with UL-10(b), ASTM E-152, NFPA 252, and ANSI A2.2.

2. Underwriters' Laboratories labeled doors and frames shall be manufactured under the UL factory inspection program and in strict compliance to UL procedures, and shall provide a degree of fire protection, heat transmission and panic loading capability indicated by the opening class.
3. Warnock Hersey labeled doors and frames shall be manufactured to meet the specific requirements of that labeling agency's current procedure for the tested hourly rating designated and shall be subject to inspection by representatives of the labeling agency.
4. A physical label or approved marking shall be affixed to the fire door or fire door frame at an authorized facility as evidence of compliance with procedures of the labeling agency.

#### 1.4 REGULATORY REQUIREMENTS

- A. Doors and frames shall conform to applicable codes for fire ratings. All interior vertical stairwell doors shall carry a minimum 450°F temperature rise rating in addition to the required fire rating.

#### 1.5 SUBMITTALS

- A. Submit shop drawings and product data under provisions of Section 01330.
- B. Indicate frame configuration, anchor types and spacings, location of cutouts for hardware, reinforcement, and finish.
- C. Indicate door elevations, internal reinforcement, closure method, and cutouts for glazing.
- D. Submit manufacturer's installation instructions under provisions of Section 01330.

#### 1.6 DELIVERY, STORAGE AND PROTECTION

- A. Storage of Doors
  1. Doors shall be stored in an upright position under cover. Place the units on at least 4" wood sills on floors in a manner that will prevent rust and damage. Do not use non-vented plastic or canvas shelters which create a humidity chamber and promote rusting. If the corrugated wrapper on the door becomes wet, or moisture appears, remove the wrapper immediately. Provide a 1/4" space between the doors to promote air circulation.
- B. Storage of Frames
  1. Frames shall be stored under cover on 4" wood sills on floors in a manner that will prevent rust and damage. Do not use non-vented plastic or canvas shelters, which create a humidity chamber and promote rusting. Assembled frames shall be stored in a vertical position, five unit's maximum in a stack. Provide a 1/4" space between frames to promote air circulation.

## PART 2 PRODUCTS

### 2.1 DOOR MANUFACTURERS

- A. Hollow Metal Doors - Steelcraft.
- B. Other acceptable manufacturers offering equivalent products:
  - 1. Ceco
  - 2. Amweld
  - 3. Pioneer
  - 4. Curries
- C. Substitutions: Under provisions of Section 01 60 00.

### 2.2 MATERIALS

- A. Doors, frames and frame components shall be manufactured from hot-dipped galvanized steel having an A60 zinc coating conforming to ASTM specification A924. Galvanized steel shall be treated to insure proper paint adhesion. All component parts used in galvanized doors and/or frames shall meet the galvanize specification.

### 2.3 DOORS

- A. Exterior doors shall be Series LF16.
- B. Construction of Doors
  - 1. Doors shall be full-flush seamless construction, fabricated from hot-dipped galvanized steel.
  - 2. Exterior Doors: Doors shall be reinforced, stiffened, sound deadened and insulated with polystyrene insulation core completely filling the inside of the doors and laminated to inside faces of both panels using contact adhesive applied to both panels and polystyrene core.
  - 3. Door shall have continuous vertical mechanical interlocking joints at lock and hinge edges with edge seam filled and ground smooth. The internal portion of the seam shall be sealed with epoxy. An intermittent fastening along the seam is not permitted.
  - 4. Doors shall have beveled 1/8" in 2" hinge and lock edges.
  - 5. Top and bottom steel reinforcement channels shall be 14-gage and spot welded to both panels.
  - 6. Hinge reinforcements shall be 7 gage. Lock reinforcements shall be 16-gage and closer reinforcement 14-gage box minimum 20" long. Hinge and lock reinforcements shall be projection welded to the edge of the door. Galvanized doors shall have galvanized hardware reinforcements. Adequate reinforcements shall be provided for other hardware as required.

7. Glass trim for doors with cutouts shall be 24 gage steel conforming to ASTM A 924 hot dipped galvanized steel with a zinc coating of 0.06 ounces per square foot. The trim shall be installed into the door as a four sided welded assembly. The trim shall fit into a formed area of the door face, shall not extend beyond the door face and shall interlock into the recessed area. The corners of the assembly shall be mitered, and shall be reinforced and welded. The trim shall be the same on both sides of the door. Exposed fasteners shall not be permitted. Label and non-label doors shall use the same trim.
8. All exterior swing-out doors shall have the tops closed to eliminate moisture penetration. Door tops shall no have holes or openings. Top caps are permitted.

## 2.4 FRAMES

- A. Exterior frames shall be F14-4.
- B. Construction of Frames
  1. Flush frames shall be formed from 16 or 14-gage galvanized steel as specified above.
  2. Frames shall have 2" faces.
  3. Frames shall be set-up and arc-welded. Miter corners shall have reinforcements with four integral tabs for secure and easy interlocking jambs to head.
  4. 14-gage frames shall be supplied with factory installed inserted type rubber bumpers, (3) per strike jamb and (2) per head, for pair of doors. Stick on bumpers shall not be permitted. 12-gage frames shall be supplied with loose pressure sensitive bumpers for field application.
  5. Frames shall have 7-gage steel hinge reinforcements. Strike reinforcements shall be 16-gage and prepared for an ANSI-A115.1-2 strike.
  6. Metal plaster guards shall be provided for all mortised cutouts.
  7. All hinge and strike reinforcements shall be projection welded to the door frame.
  8. Reinforcements for surface closer shall be 14-gage steel. Adequate reinforcements shall be provided for other hardware when required.
  9. Galvanized frames shall have galvanized hardware reinforcements.
  10. Frames shall be furnished with a minimum of six wall anchors and two adjustable base anchors of manufacturer's standard design.

## 2.5 PROTECTIVE COATINGS

- A. The inside of all frames to be fully grouted shall be coated with a fibered asphalt coating. Coating shall be field applied by the contractor to a minimum 1/16" thickness.

## 2.6 FABRICATION

- A. Frames shall be supplied:
  - 1. Set up with faces arc-welded and ground smooth. Miters of frames shall be back welded. Weld shall penetrate the outside face. Faces shall be dressed smooth. Filler materials are not permitted.

## 2.7 FINISH

- A. All doors, frames and frame components shall be cleaned, phosphatized and finished as standard with one coat of baked-on rust inhibiting prime paint in accordance with the ANSI A224.1 "Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames".

## PART 3 EXECUTION

### 3.1 INSTALLATION

- A. Doors and frames shall be installed in accordance with "Door and Hardware Institute" publication, "Installation Guide for Doors and Hardware" and/or Steelcraft installation instructions.
- B. Label doors and frames shall be installed per NFPA-80.

**END OF SECTION**

## **SECTION 08 71 00**

### **DOOR HARDWARE**

#### **PART 1 GENERAL**

##### **1.1 SECTION INCLUDES**

- A. Provide all Finish Hardware as shown on the Drawing or as specified herein unless specified excluded and called for in other Sections.
- B. All items of Finish Hardware shall be guaranteed for one year, except closers shall be guaranteed for five years.
- C. Conform to building code and life safety code requirement If more restrictive than those specified herein, including UBC 7-2(1997) for positive pressure. Notify Architect of differences prior to starting work. Conform to Underwriters Laboratories (U.L.) requirements for fire rated openings, including UL10-C for positive pressure.

##### **1.2 REFERENCES**

- A. ANSI A117.1 - Specifications for Making Buildings and Facilities Accessible to and Usable by Physically Handicapped People.
- B. NFPA 80 - Fire Doors and Windows.
- C. AWI - Architectural Woodwork Institute - Quality Standards.
- D. NFPA 101 - Code for Safety to Life from Fire in Buildings and Structures.
- E. NFPA 252 - Fire Tests of Door Assemblies.

##### **1.3 SUBMITTALS**

- A. Submit under provisions of Section 01 33 00.
- B. Shop Drawings: Indicate locations and mounting heights of each type of hardware, electrical characteristics and connection requirements.
- C. Submit manufacturer's parts lists, and templates.
- D. Samples: Submit sample illustrating style, color, and finish of hardware items.
- E. Samples: Will be incorporated into the Work.
- F. Manufacturer's Installation Instructions: Indicate special procedures, and perimeter conditions requiring special attention.

#### 1.4 PROJECT RECORD DOCUMENTS

- A. Submit under provisions of Section 01 70 00.
- B. Record actual locations of installed cylinders and their master key code.

#### 1.5 OPERATION AND MAINTENANCE DATA

- A. Submit under provisions of Section 01 70 00.
- B. Maintenance Data: Include data on operating hardware, lubrication requirements, and inspection procedures related to preventative maintenance.

#### 1.6 QUALITY ASSURANCE

- A. Perform work in accordance with the following requirements:
  - 1. ANSI A117.1.
  - 2. NFPA 101.
  - 3. NFPA 80.
  - 4. NFPA 252.

#### 1.7 QUALIFICATIONS

- A. Hardware Supplier: Company specializing in supplying commercial door hardware with documented experience.
- B. Hardware Supplier Personnel: Employ a qualified person to assist in the work of this section.

#### 1.8 REGULATORY REQUIREMENTS

- A. Conform to applicable code for requirements applicable to fire rated doors and frames.
- B. Products Requiring Electrical Connection: Listed and classified by testing firm acceptable to the authority having jurisdiction as suitable for the purpose specified and indicated.

#### 1.9 PRE-INSTALLATION CONFERENCE

- A. Convene one week prior to commencing work of this section, under provisions of Section 01 30 00.

#### 1.10 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, protect and handle products to site under provisions of Section 01 60 00.
- B. Package hardware items individually; label and identify each package with door opening code to match hardware schedule.

- C. Deliver keys to Owner by security shipment direct from hardware supplier.

#### 1.11 COORDINATION

- A. Coordinate work under provisions of Section 01 30 00.
- B. Coordinate the work with other directly affected sections involving manufacture or fabrication of internal reinforcement for door hardware.

#### 1.12 WARRANTY

- A. Provide one year warranty under provisions of Section 01 70 00.

#### 1.13 MAINTENANCE MATERIALS

- A. Provide maintenance materials under provisions of 01 70 00.
- B. Provide special wrenches and tools applicable to each different or special hardware component.
- C. Provide maintenance tools and accessories supplied by hardware component manufacturer.

#### 1.14 EXTRA MATERIALS

- A. Furnish under provisions of Section 01 70 00.
- B. Provide ten extra key lock cylinders for each master keyed group.

### **PART 2 PRODUCTS**

#### 2.1 ACCEPTABLE MANUFACTURERS

- A. The following are acceptable manufacturers for the item of hardware indicated. The first manufacturer listed is the manufacturer used in the hardware schedule at the end of this section unless indicated otherwise.
  1. Hinges: Hager, Stanley Lawrance, & McKinney.
  2. Push/Pulls and Armor Plate: Hiawatha, Hager, Rockwood & Tremco.
  3. Cylinder: Best 7-pin with interchangeable core. (No substitution).
  4. Mortise Lockset/Latchset: Corbin-Russwin, Schlage, Sargent, and Yale.
  5. Exit Devices: Von Duprin (No substitution).
  6. Closers: LCN (No substitution).
  7. Overhead Holders: Glynn Johnson.
  8. Manual and Automatic Flush Bolts & Coordinators: Ives, Glynn Johnson & Trimco
  9. Gasketing: Reese, Pemko, Hager, & Stanley.
  10. Stops: Ives, Glynn Johnson & Hager.
  11. Sweeps: Reese & Pemko.
  12. Thresholds: Reese & Pemko.

13. Weather-Stripping: Reese & Pemko.
14. Magnetic Holders: Rixon & Von Duprin
15. Substitutions: Under provisions of Section 01 60 00.

## 2.2 KEYING

- A. All lock cylinders shall be Masterkeyed or Grand Masterkeyed as directed by the Owner and Architect.
- B. Hardware supplier shall prepare keying schedule and meet with owner and Architect to review and obtain approval. Supply six (6) Master keys per set.
- C. Keying must be done by lock manufacturer or supplier, Manufacturer or supplier is to keep complete and proper records and identification of master keys and their serial numbers.
- D. Furnish two (2) change keys per lock.
- E. All keys shall be properly marked immediately upon receipt and turned over to the Owner at completion of project

## 2.3 ELECTRICAL CHARACTERISTICS AND COMPONENTS

- A. Electrical Characteristics: 24 volts, single phase, 60 Hz.

## 2.4 KEY CABINET

- A. Cabinet Construction: Sheet steel construction, piano hinged door with lock master keyed to building system.
- B. Cabinet Size: Size for project keys plus 10 percent growth.
- C. Horizontal metal strips for key hook labeling with clear plastic strip cover over labels.
- D. Finish: Baked enamel finish, color as selected.

## 2.5 FINISHES

- A. Finishes: As follows:
  1. Butts, Exterior: US32D
  2. Interior: US26D
  3. Locksets: US26D/US32D
  4. Door Closers: ALUM
  5. Exit Devices: US26D/US32D
  6. Push Bars, Push Plates, Pulls: US32D
  7. Kickplates: US32D
  8. Stops and Holders: US26D
  9. Misc., Hardware: US26D

## 2.6 BUTTS

- A. The following is a table of butt types in manufacturer's catalogue numbers that are considered acceptable. No substitutions will be allowed:

	<u>Hager</u>	<u>Stanley</u>	<u>McKinney</u>	<u>Lawrence</u>
Type 1	BB1199	BB199	T4B3386	BB5151A
Type 2	BB1191	BB191	TB2314	BB4101A
Type 3	BB1168	B168	T4B3786	BB5151
Type 4	BB1279	BB179	TB2714	BB4101
Type 5	1279	179	2714	4181

- B. Butt types shall be furnished as follows, except as otherwise noted:
1. Exterior Outswing Doors: Type 1 x NRP
  2. Exterior Inswing Doors: Type 3
  3. Interior Doors with Closers: Type 4
  4. Interior Doors without Closers: Type 5
- C. Butt quantities and sizes shall be as follows, except as otherwise noted. All butts shall be 4-1/2 x 4-1/2 for 1-3/4" doors and 3-1/2x3-1/2 for 1-3/8" doors.
1. Two (2) butts for doors 60" in height and under.
  2. Three (3) butts for doors 61" thru 90" in height.
  3. Four (4) butts for doors 91" thru 120" in height or over 3'-8" wide.
  4. Four (4) butts for dutch doors.
- D. Provide proper width of butts to clear trim and allow full 180 degree swing.

## 2.7 LOCKSETS AND LATCHSETS

- A. Unless otherwise indicated in hardware groups, all locks, latches, trim, and deadlocks shall be the products of one manufacturer.
- B. Knurled knobs shall be installed on Janitor Room, Mechanical Room, Stair Towers, Equipment Room, etc., per Handicap Code restrictions where applicable.
- C. Unless otherwise indicated in hardware groups, all locks, latches, trim, deadlocks shall be the products of one manufacturer.
1. All locks shall be: SCHLAGE L SERIES
  2. Design to be: 06A LEVER
- D. Provide wrought boxes and strikes with proper length to protect trim, provide open back strikes where required. Lock functions shall be as listed in hardware groups.
- E. The following is a table of devices and design which are considered equal and acceptable.
1. YALE 8800 SERIES AU DESIGN

2.8 EXIT DEVICES

- A. All exit devices shall be UL listed for safety requirements as well as listed for labeled doors.
- B. The following is a table of devices and designs that are considered acceptable.

<u>Non-rated</u>	<u>Von Duprin</u>
Series	99
Design	03
<u>Fire Rated</u>	
Series	99
Design	03

2.9 DOOR CLOSERS

- A. All closers shall be of rack and pinion construction with separate adjusting valves for latching speed, closing speed and backcheck. All closers to be surface applied and have non-ferrous covers.
- B. All closers to be mounted on room side wherever possible, where wall conditions permit, all doors shall swing 180 degrees.
- C. It shall be the hardware suppliers responsibility to furnish door closers sized to comply with manufacturer's recommendations for door sizes. Furnish thru bolts for all label wood doors.
- D. The following is a table of closers which are considered acceptable:

	<u>LCN</u>	<u>NORTON</u>
Exterior	4111-H-CUSH	CLP7500T
Interior	4011/4111	7500BF

- E. Furnish appropriate drop plates and spacers for use with aluminum doors and frames.

2.10 DOOR TRIM

- A. Unless otherwise specified, all push plates shall be equal to Hiawatha.
- B. Unless otherwise specified, all push plates shall be equal to Hiawatha 200F and pull plates shall be equal to Hiawatha 200F x 535B.
- C. All push/pull bars shall be equal to Hiawatha 1081 LBP x 535B.
- D. All kickplates shall be equal to Hiawatha 10" high and 2" less than door width for single doors, 1 1/2" less than door width for pairs of doors. Armor plates shall be 40" high, mop plates 6" high, width same as kickplates.

- E. Items equal in quality and design by, Brookline, Cipco, Quality, Hager, Burns will be acceptable.

#### 2.11 DOOR STOPS AND HOLDERS

- A. Unless otherwise indicated, all door stops shall be equal to Glynn Johnson GJWB50W OR GJWB60W.
- B. Where wall bumpers are not applicable, provide overhead door stays equal to Glynn Johnson GJ450 series, unless otherwise specified.
- C. Provide overhead holders and shock absorber equal to Glynn Johnson GJ900M for all exterior doors call for, unless otherwise specified.

#### 2.12 FLUSH BOLTS

- A. Unless otherwise indicated, Inactive doors of pairs shall have two flush bolts, equal to H. B. Ives FB358, FB458UL. The bottom bolt shall be provided with a dustproof stike, equal to H. B. Ives \_DP2.
- B. Where indicated, furnish constant latching flush bolts H. B. Ives FB61P on Wood Doors H. B. Ives FB51P on Hollow Metal doors.
- C. Where indicated, furnish Coordinators equal to H. B. Ives COR\_complete with proper filler bar H. B. Ives FL, also furnish mounting brackets for any stop mounted hardware equal to H. B. Ives MB1 OR MB2, Provide carry open bars where applicable equal to H. B. Ives CB1.

#### 2.13 WEATHERSTRIPPING, THRESHOLDS, SWEEPS AND SMOKESTRIPPING

- A. Unless otherwise indicated, thresholds shall be equal to Reese S204A Weatherstripping shall be equal to Reese 769C apply to head and jambs where indicated in hardware groups.
- B. Sweeps shall be equal to Reese 323C, apply to door bottoms where indicated in hardware.
- C. Smokestripping shall be equal to Reese F798B, apply to head and jambs where indicated in hardware groups.

#### 2.14 SCHEDULE

- A. Refer to schedule at the end of this section for hardware to be provide for each door listed on 08 06 00 - Door Schedule.

### **PART 3 EXECUTION**

#### 3.1 EXAMINATION

- A. Verify site conditions under provisions of Section 01 30 00.

- B. Verify that doors and frames are ready to receive work and dimensions are as indicated on shop drawings.
- C. Verify that electric power is available to power operated devices and of the correct characteristics.

### 3.2 INSTALLATION

- A. Install hardware in accordance with manufacturer's instructions.
- B. Use templates provided by hardware item manufacturer.
- C. Carefully install hardware, using skilled finish carpenters.
- D. Fit before painters finish is applied, remove and reinstall after finish is complete.
- E. Install hardware so that all operating parts operate smoothly, close tightly, and do not rattle.
- F. Carefully install hardware as listed in the installation instructions furnished with each finish hardware item, adhere to manufacturer's instructions for mounting.
- G. Set metal thresholds in full bed of specified caulking compound, forming tight seal between threshold and surface to which set. Securely anchor thresholds using countersunk non-ferrous screws to match color of threshold.
- H. Provide all anchorage, fasteners, etc. as required for the complete installation of all hardware.
- I. Furnish thru-bolts for all butts (surface type only), closers, exit devices, push bars, and other hardware subject to severe usage or as required by UL
- J. Mounting heights for hardware from finished floor to center line of hardware item:
  - 1. Locksets: ANSI 117.1.
  - 2. Push/Pulls: ANSI 117.1.
  - 3. Dead Locks: ANSI 117.1.
  - 4. Exit Devices: ANSI 117.1.

### 3.3 FIELD QUALITY CONTROL

- A. Field inspection and testing will be performed under provisions of Section 01 40 00.
- B. Factory representative to inspect installation and certify that hardware and installation has been furnished and installed in accordance with manufacturer's instructions and as specified.

### 3.4 ADJUSTING

- A. Adjust work under provisions of Section 01 70 00.
- B. Adjust hardware for smooth operation.

### 3.5 PROTECTION OF FINISHED WORK

- A. Protect finished Work under provisions of Section 01 50 00.
- B. Do not permit adjacent work to damage hardware or finish.

### 3.6 SCHEDULE

- A. The following schedule of hardware will be considered a guide only. It will be the hardware supplier's responsibility to advise the Architect before bidding if a conflict exists.
- B. Refer to floor plans and/or door schedule for hardware group required at each opening. Ignore hardware groups not used on floor plans or door schedule. If conflict exists between The hardware preamble and schedule of hardware groups, the hardware listed in hardware group shall be furnished.
- C. GROUP 1; DOORS 132, 236, 239:
  - 1. 3 EA. HAGER BB1199 4.5 X 4.5 NRP US32D HINGE
  - 2. 1 EA SCHALGE ND80BD RHODES 626 STOREROOM LOCK (ND70BD IF CLASSROOM)
  - 3. 1 EA BEST LOCK CYLINDER BY CITY OF DULUTH
  - 4. 1 EA LCN 4040P H CUSH ALUM CLOSER WITH STOP/HOLD OPEN ARM
  - 5. 1 EA S425A X 36" THRESHOLD
  - 6. 1 EA REESE 769C X 3070 WEATHERSTRIPPING
  - 7. 1 EA REESE 323C X 36" SWEEP
  - 8. 1 EA REESE R210A X 40 DRIP CAP
- D. GROUP 2; DOOR 23:
  - 1. 3 EA HAGER BB1199 4.5 X 4.5 NRP US32D HINGE
  - 2. 1 EA VON DUPRIN 99NL 26D RIM EXIT DEVICE
  - 3. 1 EA BEST LOCK RIM CYLINDER BY CITY OF DULUTH
  - 4. 1 EA LCN 4040XP H CUSH ALUM CLOSER WITH STOP/HOLD OPEN ARM
  - 5. 1 EA S425A X 36" THRESHOLD
  - 6. 1 EA REESE 769C X 3070 WEATHERSTRIPPING
  - 7. 1 EA REESE 323C X 36" SWEEP
  - 8. 1 EA REESE R210A X 40 DRIP CAP
- E. GROUP 3; INTERIOR TO STAIRWELL DOORS (FIRE RATED):
  - 1. 3 EA HAGER BB1279 4.5 X 4.5 US26D HINGE
  - 2. 1 EA SCHLAGE ND10S RHODES 626 PASSAGE LEVER

3. 1 EA LCN 4040SE ALUM SENTRONIC HOLD OPEN\* CLOSER  
(\*PROVIDE POWER TO HEAD OF DOOR FRAME AND TIE  
INTO THE FIRE ALARM SYSTEM)
4. 1 EA GJ904S X US32D SURFACE OVERHEAD STOP
5. 1 EA REESE 797B X 17' SMOKE GASKET

**END OF SECTION**

## SECTION 08 81 00

### GLASS

#### PART 1 GENERAL

##### 1.1 WORK INCLUDED

- A. Glass and glazing.

##### 1.2 REFERENCES

- A. FGMA -Glazing Manual.
- B. ASTM C 1036: Standard Specification for Flat Glass.
- C. ASTM C 1048: Standard Specifications for Heat-Treated Flat Glass - Kind HS, Kind HT Coated and Uncoated Glass

##### 1.3 QUALITY ASSURANCE

- A. Conform to Flat Glass Marketing Association (FGMA) Glazing Manual for glazing installation methods.

##### 1.4 SUBMITTALS

- A. Submit product data under provisions of Section 01 33 00.
- B. Provide structural, physical and environmental characteristics, size limitations, special handling or installation requirements.
- C. Provide data on glazing sealant. Identify colors available.
- D. Submit sealed glass unit manufacturer's certificate under provisions of Section 01 40 00 indicating units meet or exceed specified requirements.

##### 1.5 DELIVERY, STORAGE, AND PROTECTION

- A. Deliver products to site under provisions of Section 01 60 00.
- B. Store and protect products under provisions of Section 01 60 00.

##### 1.6 WARRANTY

- A. Provide ten year manufacturer's warranty under provisions of Section 01 70 00.

## **PART 2 PRODUCTS**

### **2.1 ACCEPTABLE GLASS MANUFACTURERS**

- A. Viracon, 800 Park Drive, Owatonna, MN 55060.
- B. Other acceptable manufacturers offering equivalent products:
  - 1. Old Castle Glass
- C. Substitutions: Under provisions of Section 01 60 00.

### **2.2 MATERIALS**

- A. Type E - Tempered Glass:
  - 1. 1/4 inch clear tempered glass meeting ASTM C 1048 Kind FT Type I Class 1; as manufactured by Viracon.

### **2.3 ACCEPTABLE GLAZING ACCESSORIES MANUFACTURERS**

- A. Tremco.
- B. Substitutions: Under provisions of Section 01 60 00.

### **2.4 GLAZING ACCESSORIES**

- A. Setting Blocks: Neoprene; 70-90 Shore A durometer hardness; 4 inch long x 3/8 inch wide x 1/4 high.
- B. Spacer Shims: Neoprene; 50 Shore A durometer hardness; 3 inch long x 1/4 inch wide x 1/4 inch thick; self adhesive one face.
- C. Glazing Tape: Pre-shimmed Tremco 440 tape.
- D. Sealant: Tremco Dymeric.
- E. Glazing Clips: Manufacturer's standard type.

## **PART 3 EXECUTION**

### **3.1 INSPECTION**

- A. Verify surfaces of glazing channels or recesses are clean, free of obstructions, and ready for work of this Section.
- B. Beginning of installation means acceptance of substrate.

### **3.2 PREPARATION**

- A. Clean contact surfaces with solvent and wipe dry.
- B. Seal porous glazing channels or recesses.

- C. Prime surfaces scheduled to receive sealant.

### 3.3 EXTERIOR COMBINATION METHOD (TAPE AND SEALANT)

- A. Cut glazing tape to length and set against permanent stops, 3/16 inch below sightline. Seal corners by butting tape and dabbing with sealant.
- B. Apply heel bed of sealant along exterior void ensuring full contact with pane.
- C. Place setting blocks at 1/4 points.
- D. Rest glass on setting blocks and push against tape and heel bead of sealant with sufficient pressure to attain full contact at perimeter of pane.
- E. Place glazing tape on glass with tape 1/4 inch below sightline. Install removable stops, spacer strips inserted between glass, and applied stops at 24 inch intervals, 1/4 inch below sightline.
- F. Apply cap bead of sealant along exterior void, to uniform line, flush with sightline. Tool or wipe sealant surface with solvent for smooth appearance.

### 3.4 CLEANING

- A. After installation, mark pane with an "X" by using plastic tape or removable paste.
- B. Remove glazing materials from finish surfaces.
- C. Remove labels after work is completed.

**END OF SECTION**

## **PART 1 GENERAL**

### **1.1 SUMMARY**

- A. This section includes surface preparation and field painting of the following:
  - 1. Exposed exterior items and surfaces.
  - 2. Exposed interior items and surfaces.
  - 3. Surface preparation, priming, and finish coats specified in this Section are in addition to shop priming and surface treatment specified in other Sections. Revise paragraph below to suit the Project.

### **1.2 DEFINITIONS**

- A. General: Standard coating terms.
  - 1. Flat refers to a sheen finish with a gloss range lower than 5 when measured with a 60-degree meter.
  - 2. Eggshell refers to a low-sheen finish with a gloss range between 5 and 10 when measured with a 60-degree meter.
  - 3. Satin refers to a low-sheen finish with a gloss range between 10 and 20 when measured with a 60-degree meter.
  - 4. Semi-Gloss refers to a medium-sheen finish with a gloss range between 35 and 70 when measured with a 60-degree meter.
  - 5. Full gloss refers to a high-sheen finish with a gloss range higher than 70 when measured with a 60-degree meter.

### **1.3 SUBMITTALS**

- A. Product Data: For each paint system specified. Include block fillers and primers.
  - 1. Material List: Provide an inclusive list of required coating materials. Indicate each material and cross-reference specific coating, finish system, and application. Identify each material by manufacturer's catalog number and coating material proposed for use.
  - 2. Manufacturer's Information: Provide manufacturer's technical information, including label analysis and instructions for handling, storing and applying each coating material proposed for use.
  - 3. Certification by the manufacturer that products supplied comply with local regulations controlling use of volatile organic compounds (VOC's).
- B. Samples for Initial Selection: Manufacturer's color charts showing the full range of colors available for each type of finish-coat material indicated.
  - 1. After color selection, the Architect will furnish color chips for surfaces to be coated.

- C. Product Data Sheets and MSDS for each product to be used as required by the U.S.G.B.C. as proof that each product meets the requirements of either Green Seal's GS-11 or GC-03 documents. This is a requirement in order to receive the possible one point for Credit 4.2 for Low-Emitting Materials in the Indoor Environmental Quality section of the Leadership in Energy and Environmental Design initiative of the U.S. Green Building Council.

#### 1.4 QUALITY ASSURANCE

- A. Applicator Qualifications: Engage an experienced applicator that has completed painting system applications similar in material and extent to that indicated for this Project with a record of successful in-service performance.
- B. Source Limitations: Obtain block fillers, primers and undercoat materials for each coating system from the same manufacturer as the finish coats.

#### 1.5 DELIVERY, STORAGE AND HANDLING

- A. Deliver materials to the Project Site in manufacturer's original, unopened packages and containers bearing manufacturer's name and label, and the following information:
  - 1. Product name or title of material.
  - 2. Product description (generic classification or binder type).
  - 3. Manufacturer's stock number and date of manufacture.
  - 4. Contents by volume, for pigment and vehicle constituents.
  - 5. Thinning instructions.
  - 6. Application instructions.
  - 7. Color name and number.
  - 8. VOC content.
- B. Store materials not in use in tightly covered containers in a well-ventilated area at a minimum ambient temperature of 45 degrees F (7 degrees C). Maintain containers used in storage in a clean condition, free of foreign materials and residue.
  - 1. Protect from freezing. Keep storage area neat and orderly. Remove oily rags and waste daily. Take necessary measures to ensure that workers and work areas are protected from fire and health hazards resulting from handling, mixing and application.

#### 1.6 PROJECT CONDITIONS

- A. Apply water-based paints only when the temperature of surfaces to be painted and surrounding air temperatures are between 50 and 90 degrees F (10 and 32 degrees C).
- B. Apply solvent-thinned paints only when the temperature of surfaces to be painted and surrounding air temperatures are between 45 and 95 degrees F (7.2 and 35 degrees C).

- C. Do not apply paint in snow, rain, fog, or mist, or when the relative humidity exceeds 85 percent, or at temperatures less than 5 degrees F (3 degrees C) above the dew point, or to damp or wet surfaces.
  - 1. Painting may continue during inclement weather if surfaces and areas to be painted are enclosed and heated within temperature limits specified by manufacturer during application and drying periods.

## **PART 2 PRODUCTS**

### **2.1 MANUFACTURERS**

- A. Products: Subject to compliance with requirements, provide one of the products in the paint schedules.
- B. Manufacturers Names: The following manufacturer is referred to in the paint schedule by use if shortened versions of the name, which is shown below.
  - 1. Basis of Design: Pittsburgh® Paints, PPG Industries, Inc.
  - 2. Substitutions: Under the provisions of Section 01 60 00.

### **2.2 PAINT MATERIALS, GENERAL**

- A. Material Compatibility: Provide block fillers, primers, undercoaters, and finish-coat materials that are compatible with one another and the substrates indicated under conditions of service and application, as demonstrated by manufacturer based on testing and field experience.
- B. Material Quality: Provide manufacturer's best-quality "professional" paint material of the various coating types specified. Paint-material containers not displaying manufacturer's product identification will not be acceptable.
  - 1. Proprietary Names: Use of manufacturer's proprietary product names to designate colors or materials is not intended to imply that products named are required to be used to the exclusion of equivalent products of other manufacturers. Furnish manufacturer's material data and certificates of performance for proposed substitutions.
- C. Colors: Provide color matches indicated by reference to manufacturer's color designations.

### **2.3 EXTERIOR PRIMERS**

- A. Exterior Ferrous-Metal Primer: Factory-formulated rust-inhibitive metal primer for exterior application.
  - 1. Pittsburgh® Paints; 90-712 Series Pitt-Tech Int/Ext Industrial DTM Primer/Finish Enamel (123 g/L VOC corrosion protection product): Applied at a dry film thickness of not less than 2.0 mils.

## 2.4 INTERIOR PRIMERS

- A. Interior Concrete and Masonry Primer: Factory-formulated alkali-resistant acrylic-latex interior primer for interior application.
  - 1. Pittsburgh® Paints; 9-900 Pure Performance® Interior Latex Primer Sealer (0 g/L VOC). Applied at a dry film thickness of not less than 1.4 mils.
- B. Interior Ferrous-Metal Primer: Factory-formulated quick-drying rust-inhibitive alkyd-based metal primer.
  - 1. Pittsburgh® Paints; 90-712 Series Pitt-Tech Int/Ext Industrial DTM Primer/Finish Enamel (123 g/L VOC corrosion protection product): Applied at a dry film thickness of not less than 2.0 mils.

## 2.5 EXTERIOR FINISH COATS

- A. Exterior Full-Gloss Acrylic Enamel for Ferrous and Other Metals: Factory-formulated full-gloss waterborne acrylic-latex enamel for exterior application.
  - 1. Pittsburgh® Paints; 90-374 Series Pitt-Tech® One Pack Interior/Exterior High Performance Waterborne High Gloss DTM Industrial Enamels (192 g/L VOC corrosion protection product): Applied at a dry film thickness of not less than 2.0 mils.

## 2.6 INTERIOR FINISH COATS

- A. Interior Full-Gloss Acrylic Enamel: Factory-formulated full-gloss acrylic-latex interior enamel.
  - 1. Pittsburgh® Paints; 6-8534 SpeedHide® Interior Latex 100 Percent Acrylic Gloss Enamels (90 g/L VOC): Applied at a dry film thickness of not less than 1.2 mils.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Verify that site environmental conditions are appropriate for application of coatings specified
- B. Immediately prior to coating application, ensure that surfaces to receive coatings are dry.
- C. Ensure that moisture-retaining substrates to receive coatings have moisture content within tolerances allowed by coating manufacturer, using moisture measurement techniques recommended by coating manufacturer.
- D. Immediately prior to coating application, examine surfaces to receive coatings for surface imperfections and for contaminants which could impair performance or appearance of coatings, including but not limited to, loose primer, rust, scale, oil grease, mildew, algae, or fungus, stains or marks, cracks, indentations, or abrasions.

- E. Correct the above conditions and any other conditions which could impair performance or appearance of coatings in accordance with specified surface preparation procedures before proceeding with coating application.

### 3.2 PREPARATION

- A. Do not start work until surfaces to be finished are in proper condition to produce finished surfaces of uniform, satisfactory appearance.
- B. Stains and Marks: Remove completely, if possible, using materials and methods recommended by coating manufacturer; seal with shellac or other coating acceptable to paint manufacturer stains and marks that might bleed through paint finishes which cannot be completely removed.
- C. Remove or protect hardware, electrical plates, mechanical grilles and louvers, lighting fixture trim, and other items not indicated to receive coatings which are adjacent to surfaces to receive coatings.
- D. Remove mildew from impervious surfaces by scrubbing with solution of trisodium phosphate and bleach. Rinse with clean water and allow substrate to thoroughly dry.
- E. For specific substrate preparation, see individual specifications.

### 3.3 APPLICATION

- A. Apply paint products in accordance with manufacturer's printed instructions. Do not apply coatings to surfaces that are not dry.
- B. Apply each coat to uniform thickness and finish in accordance with manufacturer's instructions, with each coat slightly darker than preceding coat. Allow each coat to dry thoroughly before applying next coat.
- C. Remove dust and other foreign materials from substrate immediately prior to applying each coat.

### 3.4 EXTERIOR PAINT SCHEDULE

- A. Ferrous Metal: Provide the following finish systems over exterior ferrous metal. Primer is not required on shop-primed items.
  - 1. Full-Gloss Acrylic-Enamel Finish:
    - a. Primer: Pittsburgh® Paints; 90-712 Series Pitt-Tech Int/Ext Industrial DTM Primer/Finish Enamel (123 g/L VOC compliant as anti-corrosive product); 2.0 to 3.0 Dry Mills.
    - b. Intermediate: Pittsburgh® Paints; 90-374 Series Pitt-Tech® Int/Ext High Gloss DTM Industrial Enamels (192 g/L VOC compliant as anti-corrosive product); 2.0 to 3.0 Dry Mills.
    - c. Finish Coat: Pittsburgh® Paints; 90-374 Series Pitt-Tech® Int/Ext High Gloss DTM Industrial Enamels (192 g/L VOC compliant as anti-corrosive product); 2.0 to 3.0 Dry Mills.

### 3.5 INTERIOR PAINT SCHEDULE

- A. Concrete Masonry Unit: Provide the following finish systems over interior concrete masonry:
1. Satin Acrylic Enamel Finish:
    - a. Primer: Pittsburgh® Paints; 6-7 SpeedHide® Int/Ext Masonry Block Filler Latex (14.00 g/L VOC); 5.1 to 14.7 Dry Mils.
    - b. Intermediate: Pittsburgh® Paints; 6-3511 Series SpeedHide® Interior Satin Acrylic Latex (46 g/L VOC); 1.3 to 1.5 Dry Mils.
    - c. Finish Coat: Pittsburgh® Paints; 6-3511 Series SpeedHide® Interior Satin Acrylic Latex (46 g/L VOC); 1.3 to 1.5 Dry Mils.
- B. Ferrous Metal: Provide the following finish systems over ferrous metal:
1. Satin Acrylic Enamel Finish:
    - a. Primer: Pittsburgh® Paints; 90-712 Series Pitt-Tech Int/Ext Industrial DTM Primer/Finish Enamel (123 g/L VOC compliant as anti-corrosive product); 2.0 to 3.0 Dry Mils.
    - b. Intermediate: Pittsburgh® Paints; 6-3511 Series SpeedHide® Interior Satin Acrylic Latex (46 g/L VOC); 1.3 to 1.5 Dry Mils.
    - c. Finish Coat: Pittsburgh® Paints; 6-3511 Series SpeedHide® Interior Satin Acrylic Latex (46 g/L VOC); 1.3 to 1.5 Dry Mils.
- C. All-Service Jacket over Insulation: Provide the following finish system on cotton or canvas insulation covering:
1. Flat Acrylic Finish:
    - a. First Coat: Pittsburgh® Paints; 6-70 Series SpeedHide® Interior Wall Flat Latex (24 g/L VOC); 1.1 to 1.3 Dry Mils.
    - b. Finish Coat: Pittsburgh® Paints; 6-70 Series SpeedHide® Interior Wall Flat Latex (24 g/L VOC); 1.1 to 1.3 Dry Mils.

**END OF SECTION**