

Project Manual

# Atlantic County Voting Machine Warehouse Alteration

Northfield, NJ 08225

**Construction Documents Submission**

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## SECTION 011000

### SUMMARY

#### PART 1 GENERAL

##### 1.1 SUMMARY

- A. Section Includes:
  - 1. Contract description.
  - 2. Work by Owner.
  - 3. Contractor's use of site.
  - 4. Work sequence.
  - 5. Owner occupancy.
  - 6. Specifications conventions.

##### 1.2 CONTRACT DESCRIPTION

- A. Project work includes the alteration of the existing Voting Machine Warehouse in Northfield, NJ. The work includes, but not limited to the construction of (2) offices, 2 overhead coil doors, fire suppression system as indicated on the construction drawings
- B. Project Delivery Method:

##### 1.3 WORK BY OWNER

- A. Items noted NIC (Not in Contract) will be furnished and installed by Owner.
- B. Coordinate work of work by Owner to ensure efficient construction operations.

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

- A. Limit use of site and existing facilities to areas shown on Drawings and designated by Owner.
- B. Plan construction operations to accommodate:
  - 1. Owner occupancy.
  - 2. Emergency egress.
  - 3. Work by Owner.
  - 4. First responder and public access to public right-of-way, site, and existing facilities.
- C. Prohibit smokeless tobacco, smoking, and vaping within buildings and within 25 feet of building exterior.

- D. Prohibit controlled substances on site.

#### 1.5 WORK SEQUENCE

- A. Construct Work in multiple Work Packages to permit fast track construction.
  - 1. Coordinate with Owner and Architect to identify scope and schedule for each Work Package.

#### 1.6 OWNER OCCUPANCY

- A. Owner will vacate construction area before construction starts.
- B. Owner will occupy site, existing building, and areas adjacent to construction area to conduct normal operations throughout construction.
  - 1. Minimize conflict with Owner operations.
  - 2. Schedule Work to accommodate Owner occupancy.
  - 3. Occupancy Interruptions: Give Owner minimum 72 hour notice. Obtain Owner written permission.

#### 1.7 SPECIFICATION CONVENTIONS

- A. Specifications are written in imperative mood and streamlined form.
  - 1. Imperative sentences are Contractor requirements.
  - 2. Colons mean “shall be” in streamlined form sentences and phrases.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

**END OF SECTION**

## **SECTION 012000**

### **PRICE AND PAYMENT PROCEDURES**

#### **PART 1 GENERAL**

##### **1.1 SUMMARY**

- A. Section Includes
  - 1. Alternates.
  - 2. Substitution procedures.
  - 3. Contract modification procedures.
  - 4. Schedule of values
  - 5. Progress payment procedures.

##### **1.2 ACTION SUBMITTALS**

- A. Schedule of Values.
- B. Applications for Payment.
  - 1. Updated construction schedule.
  - 2. Waivers.
  - 3. Substantiating data.
  - 4. Progress executive summary.
  - 5. Time and material documentation.
- C. Change Order Proposals.
- D. Change Order Proposal Request Response:
  - 1. Contractor estimate.

##### **1.3 INFORMATIONAL SUBMITTALS**

- A. Transportation damage claims.
- B. Name of individual authorized to receive change orders.

##### **1.4 ALTERNATES**

- A. Alternates will be accepted or rejected at Owner's option. Owner-Contractor Agreement identifies accepted alternates.
- B. Coordinate related and surrounding Work to accommodate accepted alternates.

C. Schedule of Alternates:

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1. Alternate No. 1: Corridor, Vestibule, and Existing Stair
  - a. Base Bid: Remove existing flooring and wall covering. Prepare surfaces and install new finishes. Retain existing ceiling and lighting. Paint ceiling black.
  - b. Alternate Bid: Remove existing flooring, wall covering, ceilings and associated fixtures. Prepare surfaces and install new finishes, ceilings, and lighting.

## 1.5 SUBSTITUTION PROCEDURES

- A. Submitting substitution request represents that Contractor:
  1. Has investigated and determined proposed product meets or exceeds specified requirements and quality.
  2. Will provide specified warranty for proposed product.
  3. Will coordinate installation and adjust Work to accommodate proposed product at no additional cost to Owner.
  4. Waives claims for additional costs and time extensions discovered after proposed product acceptance.
- B. Substitution requests will not be considered:
  1. When indicated or implied on submittals, without separate written request.
  2. When acceptance will require Contract Document revisions.
  3. Without meaningful Contract Sum or Contract time net reduction.
  4. When request source is not Contractor.
- C. Conditions for Consideration:
  1. Substitutions will be considered when:
    - a. Specified product is unavailable.
    - b. Specified product is not acceptable to authorities having jurisdiction.
    - c. Use of specified product would delay progress of the Work.
    - d. Contractor can provide significant cost or time savings.
  2. Substitutions for Contractor Convenience: Will be considered for each subcontract when submitted within 30 days of subcontract award.
- D. Substitution Submittal Procedure:
  1. Complete separate substitution request using Architect accepted form for each proposed substitution.
  2. Indicate Contract Sum and Contract time net reduction, if proposed substitution is accepted.
  3. Substantiate substitution requests with data confirming that proposed substitution complies with Contract Documents.
    - a. Compare specified product requirements side-by-side with proposed substitution.
    - b. Submit Shop Drawings, Product Data, Samples, and certified test results attesting to the proposed product equivalence.
  4. Architect will notify Contractor of substitution request acceptance or rejection.
  5. Architect will consider one substitution request for each product. When request is rejected, provide specified product.
- E. Architect will prepare Change Order or Construction Change Directive for accepted substitution requests.



## 1.6 CONTRACT MODIFICATION PROCEDURES

- A. Receive and distribute change documents informing others affected by changes to the Work.
- B. Architect will issue supplemental instructions for minor changes in Work without adjustment to Contract Sum and Contract Time. Execute supplemental instructions when received.
  - 1. Architect's Supplemental Instruction Form: AIA Form G710.
- C. Change Proposal Requests: The Architect may issue Proposal Requests for Owner directed changes. Prepare and submit response within 10 days. Proposal requests may include:
  - 1. Detailed description of proposed change.
  - 2. Drawings and specifications.
  - 3. Change in Contract Time for executing change.
  - 4. Required overtime work.
  - 5. Time period proposed price is considered valid.
- D. Change Order Proposals: Contractor may propose changes to Architect. Prepare proposal request including:
  - 1. Rationale for proposed change.
  - 2. Detailed description of proposed change and effect on Work.
  - 3. Substitution documentation.
  - 4. Effect on Contract Sum and Contract Time.
  - 5. Effect on work by separate contracts.
- E. Stipulated Sum Change Order Basis:
  - 1. Architect's Proposal Request and Contractor's fixed or maximum price estimate.
  - 2. Contractor's request for Change Order as approved by Architect and Owner.
- F. Unit Price Change Order Basis:
  - 1. Unit Prices: Execute Work under Construction Change Directive.
  - 2. Contract Sum or Contract Time changes will be computed per Time and Material Change Orders.
- G. Construction Change Directive: Architect may issue directive, signed by Owner, describing changes in Work and designating method of determining Contract Sum and Contract Time changes. Execute change directive Work when received while Change Order is processed.
  - 1. Construction Change Directive Form: AIA Form G713.
- H. Time and Material Change Order: Submit itemized account and supporting data for each change. Architect will determine allowable Contract Sum and Contract Time changes.
  - 1. Provide information required for change evaluation.
  - 2. Maintain detailed labor and material work records.
  - 3. Substantiate costs for changes.
- I. Change Order Execution: Architect will issue Change Orders for Owner and Contractor signatures.
  - 1. Change Order Form: AIA G701.
- J. Contractor Coordination:
  - 1. Record each executed Change Order as separate line item on Schedule of Values and Application for Payment forms. Adjust total Contract Sum.

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2. Revise progress schedules to reflect changes in each executed Change Order.
3. Record changes in Project Record Documents.

### 1.7 SCHEDULE OF VALUES

- A. Submit completed schedule of values.
  1. Schedule of Values Form: AIA Form G703.
- B. Submit Schedule of Values within 15 days after Notice to Proceed or Owner-Contractor Agreement, whichever occurs first.
- C. Format: Use Project Manual Table of Contents. Identify line items by specification Section number and title.
- D. Include Contractor's overhead and profit and separate line items for:
  1. Site mobilization.
  2. Site demobilization.
  3. Bonds and insurance.
- E. Revise Schedule of Values showing each approved Change Order.

### 1.8 PROGRESS PAYMENT PROCEDURES

- A. Submit completed applications for payment with updated construction schedule and substantiating data.
  1. Payment Application Form: AIA Forms G702 and G703.
- B. Content and Format: Schedule of Values.
- C. Substantiating Data:
  1. Partial release of liens from major subcontractors and vendors.
  2. Affidavits attesting to off-site stored and insured products.
- D. Substantiating Data:
  1. Partial release of liens from major subcontractors and vendors.
  2. Affidavits attesting to off-site stored products.
  3. Certified payroll reports for contractor and subcontractors.
  4. HUD Contractors Section 3 Employment and Training Compliance Report.
  5. HUD Section 3 Man hour Report.
  6. HUD Contracting Compliance Report.
- E. Executive Summary: Highlight progress since previous Application for Payment.
  1. Include summary bar chart construction schedule, construction photographs, and other pertinent information for distribution to Board of Trustees.
  2. Coordinate summary content with Owner.

### 1.9 FINAL PAYMENT PROCEDURES

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- A. Submit final application for payment with substantiating data.

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1. Payment Application Form: AIA Forms G702 and G703.
- B. Content and Format: Schedule of Values.
- C. Substantiating Data:
  1. Final certified contractor and subcontractor payroll reports.
  2. Final utility meter readings, fuel levels and other data for utilities when Substantial Completion occurred.
  3. Final statement accounting for all changes to the Contract Sum
  4. Certified completion of punch list.
  5. Proof of payment of taxes, fees, and other obligations.
  6. Insurance certificates.
  7. Contractor's Affidavit of Payment: AIA Form G706.
  8. Contractor's Affidavit of Release of Liens: AIA Form G706A.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

**END OF SECTION**

## **SECTION 013100**

### **PROJECT MANAGEMENT AND COORDINATION**

#### **PART 1 GENERAL**

##### **1.1 SUMMARY**

- A. Section Includes
  - 1. Project coordination.
  - 2. Coordination and Project Conditions
  - 3. Preconstruction meeting.
  - 4. Site mobilization meeting.
  - 5. Progress meetings.
  - 6. Preinstallation meetings.
  - 7. Requests for Interpretation or Information (RFIs).
  - 8. Project web site.

##### **1.2 INFORMATIONAL SUBMITTALS**

- A. Coordination documents.
  - 1. Initial completed documents.
  - 2. Revisions, when completed.

##### **1.3 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.
  - 1. Include provisions to accommodate 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 fire protection, plumbing, 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, 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.

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- F. After Owner occupancy of premises, coordinate access to site for correction of defective Work to minimize disruption of Owner's activities.

#### 1.4 COORDINATION DOCUMENTS

- A. Prepare coordination drawings to organize installation of kitchen, mechanical, plumbing, fire protection, and electrical equipment and systems for using space efficiently, sequencing installation, and identifying potential conflicts and interferences.
- B. Show systems for each area on one drawing. Indicate systems showing actual sizes, locations, and elevations.
- C. Show clearances between systems and where systems cross structural framing.
- D. Identify electrical power characteristics and control wiring required for equipment.
- E. Revise drawings to eliminate conflicts preventing completion of Work.
- F. Require each installer with work shown on coordination drawings to sign drawings indicating acceptance of coordinated work locations.
- G. Maintain documents for the duration of the Work. Record changes during progress of Work.
- H. Reproduce and distribute coordination documents to affected parties.

#### 1.5 PRECONSTRUCTION MEETING

- A. Owner will schedule meeting after notice of award.
- B. Required Attendees: Owner, Architect, and Contractor.
- C. Agenda:
  - 1. Execution of Owner-Contractor Agreement.
  - 2. Submission of executed bonds and insurance certificates.
  - 3. Distribution of Contract Documents.
  - 4. Submission of list of Subcontractors, list of products, schedule of values, and progress schedule.
  - 5. Designation of personnel representing parties in Contract, Architect, and consultants.
  - 6. Procedures and processing of field decisions, submittals, substitutions, applications for payments, proposal requests, requests for information, Change Orders, and Contract closeout procedures.
  - 7. Scheduling.
  - 8. Scheduling activities of geotechnical engineer and code required special inspections.
- D. Record minutes and electronically distribute PDF copies and upload to project website within two days after meeting to participants and others affected by decisions made in meeting.

#### 1.6 SITE MOBILIZATION MEETING

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- A. Architect will schedule meeting at Project site before Contractor occupancy.
- B. Required Attendees: Owner, Architect, consultants, Contractor, Contractor's superintendent, and major subcontractors.
- C. Agenda:
  - 1. Use of premises by Owner and Contractor.
  - 2. Owner's requirements.
  - 3. Construction facilities and controls provided by Owner.
  - 4. Temporary utilities provided by Owner.
  - 5. Survey and Project layout.
  - 6. Security and housekeeping procedures.
  - 7. Schedules.
  - 8. Application for payment procedures.
  - 9. Testing procedures.
  - 10. Record documents maintenance procedures.
  - 11. Equipment start-up requirements.
  - 12. Inspection and acceptance of equipment put into service during construction period.
- D. Record minutes and electronically distribute PDF copies and upload to project website within two days after meeting to participants and others affected by decisions made in meeting.

1.7 PROGRESS MEETINGS

- A. Schedule and administer meetings throughout progress of the Work at minimum weekly intervals.
- B. Make arrangements for meetings, prepare agenda with copies for participants, preside at meetings, and record minutes.
- C. Required Attendees: Job superintendent, major subcontractors and suppliers, Owner and Architect as appropriate to agenda topics for each meeting.
- D. Agenda:
  - 1. Previous meeting minutes review.
  - 2. Work progress review.
  - 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. Record minutes and electronically distribute PDF copies and upload to project website within two days after meeting to participants and others affected by decisions made in meeting.

## 1.8 PREINSTALLATION MEETINGS

- A. When required in individual Specification sections, convene preinstallation meetings before starting work of specific section.
  - 1. Meeting Location: Project site, as directed by Owner, or as specified in individual Specification sections.
- B. Require attendance of parties directly affecting or affected by Work of the Specification section.
- C. Notify Architect four business days in advance of meeting date.
- D. Prepare agenda and preside at meeting.
- E. Agenda Items:
  - 1. Delivery, storage, preparation, and installation procedures.
  - 2. Installation sequencing.
  - 3. Review of approved submittals.
  - 4. Review of manufacturers' written recommendations and instructions.
  - 5. Coordination with related work.
  - 6. Compatibility of materials with previously installed work.
  - 7. Requirements for field samples or mockups.
  - 8. Protection for surrounding work.
  - 9. Installation tolerances and their impact on preceding and subsequent work.
  - 10. Testing and inspections.
  - 11. Protection after installation.
  - 12. Warranty requirements.
  - 13. Other items required in individual Specification sections.
- F. Record minutes and electronically distribute PDF copies and upload to project website within two days after meeting to participants and others affected by decisions made in meeting.

## 1.9 REQUESTS FOR INTERPRETATION OR INFORMATION (RFI)

- A. RFIs will be accepted and processed by Architect regarding Architect's Contract Documents, only.
  - 1. Make requests regarding preliminary drawings or specifications by normal correspondences, not by RFI. Architect's responses to such requests do not constitute Contract requirements for Work.
  - 2. Architect will only respond to Contractor submitted RFIs.
- B. Acceptable RFI Purposes:
  - 1. Errors, inconsistencies, or omissions are discovered in Contract Documents.
  - 2. Contract Documents or existing conditions do not comply with applicable codes or regulations.
  - 3. Existing conditions are not as described in Contract Documents or other available project documents.
  - 4. RFIs for other purposes are not permitted.



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- C. RFI submission constitutes representation that Contractor made good faith, careful study and comparison of Contract Documents, field conditions, other Project information, Contractor prepared coordination drawings, and prior project correspondence or documentation before submitting RFI.
- D. Submit RFIs electronically and on project web site using AIA Document G716 or Architect accepted form.
  - 1. Attach sketches, diagrams, product data sheets, and other supplementary information relevant to the RFI.
- E. Architect Action: Allow five business days for response. RFIs received by Architect after 2:00 PM will be considered as received on following business day.
  - 1. Architect may request additional information or clarification, in which case Architect's time for response will date from time of receipt of requested additional information or clarification from Contractor.
- F. When Contractor believes Architect's response requires change in Contract Time or Contract Sum, or when Contractor disagrees with Architect's response, notify Architect in writing within five business days of receipt of response.
- G. RFI Log: Maintain tabular log of RFIs and submit copies at Progress Meetings. Include:
  - 1. Project name.
  - 2. Contractor name.
  - 3. RFI number.
  - 4. RFI subject.
  - 5. Submission date and time.
  - 6. Response date.

#### 1.10 PROJECT WEB SITE

- A. Project Web Site: Use Architect's project web site for project communication and documentation.
  - 1. Types of Communication and Documentation on Project Web Site:
    - a. Submittals and submittal logs.
    - b. Schedules.
    - c. Meeting minutes.
    - d. RFI forms and logs.
    - e. Project correspondence.
    - f. Project directories.
    - g. Photographic documentation.
    - h. Payment applications.

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- i. Project closeout documents.
- j. Contract modification forms and logs.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

**END OF SECTION**

## SECTION 013200

### CONSTRUCTION PROGRESS DOCUMENTATION

#### PART 1 GENERAL

##### 1.1 SUMMARY

- A. Section Includes
  - 1. Construction progress schedule.

##### 1.2 INFORMATIONAL SUBMITTALS

- A. Construction progress schedule.

##### 1.3 BAR CHART PROGRESS SCHEDULE

- A. Prepare progress schedule as a horizontal bar chart with separate bar for each major portion of Work or operation.
- B. Show complete sequence of construction by activity, with dates for beginning and completion of each construction element.
  - 1. Identify activities by Specification section number.
  - 2. Provide subschedules for each Work Package.
- C. Show accumulated completion percentage of each item, and total percentage of Work completed as of the first day of each month.
- D. Submittals:
  - 1. Submit initial progress schedule within 15 days after Owner-Contractor Agreement and Notice to Proceed, whichever occurs first.
    - a. After review by Owner and Architect, resubmit schedule within 10 days.
  - 2. Submit revised schedule with each application for payment.
  - 3. Distribute reviewed schedules to Project site file, subcontractors, suppliers, and other affected parties.
    - a. Instruct recipients to promptly report, in writing, anticipated problems due to schedules.
  - 4. Upload reviewed schedules to project website. Notify affected parties.
    - a. Instruct recipients to promptly report, in writing, anticipated problems due to schedules.
  - 5. Indicate estimated percent completion for each item of Work at each submission.
  - 6. Provide separate schedule of submittal dates for shop drawings, product data, and samples, including Owner furnished products.
    - a. Indicate dates reviewed submittals are required from Architect.
    - b. Indicate dates for finish selections.

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- c. Indicate delivery dates for Owner furnished products.
- E. Revisions: Provide narrative report to define problem areas, anticipated delays, and impact on Schedule.
  - 1. Indicate activity progress and projected completion dates.
  - 2. Identify activities modified since previous submittal.
  - 3. Report actual and proposed corrective actions.
  - 4. Report revisions' impact on other contractors.
- F. Milestones: Include milestones specified in Contract Documents and the following:
  - 1. Building enclosure.
  - 2. HVAC startup.
- G. Recovery Plan: When Work is 14 days minimum behind published schedule, submit recovery schedule.
  - 1. Include plan for work periods, staff size, and date when recovery is complete.
- H. Distribute copies of current schedule to Architect, Owner, and other affected entities.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

**END OF SECTION**

## SECTION 013300

### SUBMITTAL PROCEDURES

#### PART 1 GENERAL

##### 1.1 SUMMARY

- A. Section Includes:
  - 1. Submittals schedule.
  - 2. Submittal procedures.
  - 3. Submittal processing.
  - 4. Proposed products list.
  - 5. Action submittals.
  - 6. Informational submittals.

##### 1.2 SUBMITTALS SCHEDULE

- A. Submit list of submittals with expected submittal dates. Coordinate with dates for start of related construction shown in the construction progress schedule.
- B. Transmit submittals schedule electronically to Architect not later than date of first application for payment.
  - 1. No submittals will be reviewed until the initial submittals schedule is received.
  - 2. Revise submittals schedule as directed by Architect.
  - 3. Revise submittals schedule to be current with construction progress schedule revisions.
- C. Submittals Schedule: Provide following information in tabular format with separate line items for each required type of submittal.
  - 1. Specification section number and title.
  - 2. Name of subcontractor.
  - 3. Description of Work covered by submittals.
  - 4. Submittal type: action or informational.
  - 5. Scheduled date for first submittal.
  - 6. Scheduled date for Architect's final release or approval.

##### 1.3 SUBMITTAL PROCEDURES

- A. Transmit submittals with Architect accepted form.
- B. Sequentially number transmittal forms. Number revised submittals with original number and sequential alpha numeric suffix.

Example	11.A.072100.R02 where:
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11 =	Sequential submittal number
A =	Alpha descriptor identifying each major element within single submittal
072100 =	Specification section number
R02 =	Sequential resubmission number

- C. Assemble submittals to show:
  - 1. Project, Contractor, Subcontractor, and supplier identification.
  - 2. Pertinent drawing and detail number, and specification section number.
  - 3. Space for Contractor and Architect review stamps on first page.
  - 4. Variations from Contract Documents highlighted.
  - 5. Product and system limitations potentially detrimental to Work highlighted.
  - 6. Changes since previous submission.
- D. Apply stamp and sign or initial certifying that review, approval, verification of required products, field dimensions, adjacent Work, and information coordination is per Work and Contract Documents.
- E. Schedule submittals to expedite Project. Coordinate submission of related items for simultaneous submittal.
  - 1. Submit action submittals and informational submittals for each Specification Section under separate transmittal.
- F. Submit one native, editable PDF electronic file for each required submittal to Owner.
  - 1. Page Size: 8-1/2 x 11 inches minimum; 30 x 42 inches maximum.
  - 2. Submit PDF sample identification with image of each physical sample.
  - 3. Bookmark PDF drawing files showing sheet numbers and titles.
  - 4. Bookmark PDF product files showing product names and data types
  - 5. Annotated PDF electronic file will be returned to Contractor.
- G. Distribute reviewed submittals to affected parties.
  - 1. Instruct parties to promptly report inability to comply with requirements.

#### 1.4 SUBMITTAL PROCESSING

- A. Allow 15 days for each initial submittal and resubmittal review.
  - 1. Allow sufficient submittal, resubmittal and review time to avoid delaying Work.
  - 2. When intermediate submittal is necessary, process as for initial submittal.
- B. Architect will promptly notify Contractor when:
  - 1. Submittal processing must be delayed for coordination with other submittals.
  - 2. Additional information is required to process submittal.
- C. Contract Time extension is not permitted from failing to make submittals sufficiently in advance of Work to permit processing.

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- A. Submit initial proposed products list within 15 days after Notice to Proceed.
  - 1. After review by Owner and Architect, resubmit list within 10 days.
- B. Submit revised list with each Application for Payment until all required products are identified.
- C. Indicate major products from each specification section, with name of manufacturer, trade name, and model number.
  - 1. Identify proposed products that are specified proprietary products.
- D. When proposed products are one of the specified proprietary products identified by manufacturer, and model number, additional submittals for that product are not required except as follows:
  - 1. Shop drawings are required for products specially fabricated to size or configuration to comply with project conditions.
  - 2. Samples are required for products where color, texture, finish, pattern and other selections are required.
- E. For products specified only by reference standards, give manufacturer, trade name, model or catalog designation, and reference standards.

#### 1.6 ACTION SUBMITTALS

- A. Submit action submittals for Architect's review and approval for conformance with Contract Documents.
  - 1. Provide additional information or clarification upon Architect request.
  - 2. Action submittals will be returned with Architect's stamp indicating submittal status.
  - 3. Maintain one set of Architect approved submittals at Project site for Architect's reference.
- B. Product Data:
  - 1. Clearly mark data files indicating applicable products, models, options, and other data.
  - 2. Supplement manufacturer standard data with Project specific information.
  - 3. When requested or specified, submit color charts or sample kits for initial color selections.
    - a. Include full range of manufacturer standard colors, textures, and patterns.
    - b. Include custom colors and other product characteristics where specified.
  - 4. Indicate product utility and electrical characteristics.
    - a. Show utility connection types, sizes and locations.
    - b. Show maintenance and service access locations.
  - 5. Do not include Safety Data Sheets (SDS) in submittals.
    - a. When requested by Owner, submit SDS directly to Owner.
- C. Shop Drawings:
  - 1. Show product specific Project construction, including sizes, configurations, and details.
  - 2. Show product connections and anchorages to adjacent systems and building structure.
    - a. Indicate location and magnitude of loads transferred to building structural systems.
  - 3. Show terminations and interface with adjacent systems and materials.
  - 4. Indicate product utility and electrical characteristics.
    - a. Show utility connection types, sizes and locations.
    - b. Show maintenance and service access locations and required clearances.

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5. Identify required tolerances for successful installation.
6. Identify required and actual field measurements necessary for fabrication.

D. Samples:

1. Submit three samples, unless a greater number is specified in individual Specification sections.
  - a. Attach printed PDF submittal transmittal and sample image to each sample.
2. Show Project specific aesthetic, color, and finish selections.
3. Show functional and aesthetic characteristics of the product, with integral parts and attachment devices.
4. Submit samples for interfacing work at same time where aesthetic selection coordination is required.
5. One sample will be retained by Architect. Remaining samples will be returned.
6. Maintain one approved sample at Project site for Architect's reference.

## 1.7 INFORMATIONAL SUBMITTALS

- A. Submit informational submittals for Architect's knowledge and for limited purpose of assessing conformance with Contract Documents.
  1. Provide additional information or clarification upon Architect request.
  2. Informational submittals will not be returned unless rejected for not complying with requirements.
  3. Maintain one set of submittals at Project site for Architect's reference.
- B. Certificates: Prepared by manufacturer or independent third party attesting to product compliance with Contract Documents.
  1. Submit supporting reference data, affidavits, and certifications.
  2. Certificates may be recent or previous test results acceptable to Architect.
- C. Delegated Design Submittals:
  1. Shop drawings and calculations, signed and sealed by licensed professional responsible for designing Work shown on approved shop drawings.
    - a. Submit in quantity and form suitable for submission to and approval by authority having jurisdiction.
    - b. Revise submittal and provide additional information when required by authority having jurisdiction.
  2. Submit certificate of professional liability insurance from licensed professional responsible for design.
- D. Test and Evaluation Reports: Manufacturer or Independent testing agency reports attesting to product compliance with Contract Documents.
- E. Source Quality Control Submittals: Shop test and inspection reports attesting to product compliance with Contract Documents.
- F. Field Quality Control Submittals: Field test and inspection reports attesting to product compliance with Contract Documents.
- G. Manufacturer Reports: Field instruction and inspection reports recording outcome of site observation.



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1. Submit report within five days of site observation.
- H. Special Procedure Submittals: Describe perimeter conditions requiring special attention, and special environmental criteria required for application or installation.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

**END OF SECTION**

## SECTION 014000

### QUALITY REQUIREMENTS

#### PART 1 GENERAL

##### 1.1 SUMMARY

- A. Section Includes
  - 1. Quality Assurance
  - 2. Quality control and control of installation.
  - 3. Delegated design services.
  - 4. Tolerances.
  - 5. References.
  - 6. Labeling.
  - 7. Mockups.
  - 8. Field samples.
  - 9. Testing and inspecting services.
  - 10. Manufacturer field services.
  - 11. Test reports and certifications.

##### 1.2 REFERENCES

- A. Definitions:
  - 1. Experienced: An entity or individual who successfully completed a minimum of five previous projects similar in nature, size, and extent to this Project, with a five year record of successful performance, and familiar with special requirements of product, assembly, project, and authorities having jurisdiction.

##### 1.3 QUALITY ASSURANCE

- A. Qualifications:
  - 1. Manufacturers: Experienced firms with sufficient production capacity to produce units required.
  - 2. Fabricators and Finish Applicators: Experienced firms with sufficient production capacity to produce units required.
  - 3. Installers: Experienced firms or individuals with sufficient manpower to produce work required.
  - 4. Testing Agencies: Experienced firms with sufficient capacity and necessary equipment to perform tests required, complying with one of the following programs.
    - a. A nationally recognized testing laboratory per 29 CFR 1910.7.
    - b. Accredited agency per NIST's National Voluntary Laboratory Accreditation Program.
  - 5. Licensed Professionals: Experienced individuals, licensed or otherwise legally qualified to practice in the jurisdiction where the Project is located.

#### 1.4 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 specified reference standards as minimum quality for the Work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
- C. Measure in-place and existing construction as needed for fabrication and execution. No changes to Contract Sum or Contract Time will be allowed for differences between Drawing dimensions and field measurements where no measurements were performed.

#### 1.5 DELEGATED DESIGN SERVICES

- A. Where delegated design is specified, comply with specified performance and design criteria.
  - 1. When criteria are not sufficient, submit RFI for needed criteria.

#### 1.6 TOLERANCES

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

#### 1.7 REFERENCE STANDARDS

- A. Abbreviations and Acronyms: Names of trade associations, standards generating organizations, governing authorities, and other entities are frequently referred to in Contract Documents by acronyms and abbreviations. Request explanation of unknown terms from Architect.
- B. 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.
- C. Follow reference standards by date of issue current on date of Contract Documents, except where specific edition date is required by code.
- D. Where specified reference standards conflict with Contract Documents, request clarification from Architect before proceeding.
- E. Provisions within cited reference standards changing Owner, Architect, and Contractor duties and responsibilities from contractual requirements are void.

## 1.8 LABELING

- A. Attach labels from agencies approved by authority having jurisdiction for products, assemblies, and systems required to be labeled by applicable code.
- B. Label Information: Include approved agency identification on each label. Install products with labels visible. Include:
  - 1. Manufacturer name.
  - 2. Model number.
  - 3. Serial number.
  - 4. Performance characteristics.

## 1.9 MOCKUPS

- A. Definition:
  - 1. Mockups are constructed to demonstrate materials and workmanship for review by Architect and Owner.
- B. Construct mockups at Project site in locations acceptable to Architect unless laboratory mockups are specified.
- C. Construct mockups in compliance with applicable Specification sections.
  - 1. Design and construct foundations, supports, framing, and bracing for freestanding mockups.
- D. Photograph construction to record concealed conditions. Make photographs available to Architect and Owner when requested.
- E. Mockups are subject to testing specified for constituent products.
- F. Approved mockups establish work results standard.
- G. Protect mockups against damage until removal is authorized.
- H. Mockups may remain as part of the Work only when so designated in individual Specification sections.

## 1.10 FIELD SAMPLES

- A. Definition:
  - 1. Field Samples are assemblies constructed to demonstrate materials and workmanship for review by Architect and Owner.
    - a. Construct field samples in final locations in sizes described in technical Specifications sections.
- B. Construct field samples in compliance with applicable Specification sections.
- C. Approved field samples establish work results standard.

- D. Protect field samples against damage until Substantial Completion.

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- E. Approved, undamaged field samples may remain as part of the Work unless designated in individual Specification sections.

#### 1.11 TESTING AND INSPECTION SERVICES

- A. Except where specified as Owner responsibility, employ and pay for specified services of an independent firm to perform testing and inspections.
  - 1. Owner testing and inspecting agencies will be identified to Contractor.
  - 2. Copies of reports prepared by Owner testing and inspecting agencies will be sent to Contractor.
- B. Include dates for agency testing and inspecting in Progress Schedule and provide minimum 10 days prior notice to agencies.
  - 1. Provide access to the Work as requested by testing and inspecting agencies.
  - 2. Provide samples of materials, design mixes, equipment, tools, storage for samples, and assistance by incidental labor requested by agency.
- C. Testing and employment of testing and inspecting agencies shall not relieve Contractor of obligation to perform Work in accordance with requirements of Contract Documents.
- D. Retest and reinspect defective Work when required by Architect. Cost for retests and re-inspections will be charged to Contractor.
- E. Limits on testing and inspecting agencies:
  - 1. Agency does not have authority to release, revoke, alter, or enlarge on requirements of Contract Documents.
  - 2. Agency does not have authority to approve or accept any portion of Work.
  - 3. Agency may not assume duties of Contractor.
  - 4. Agency does not have authority to stop Work.

#### 1.12 MANUFACTURER FIELD SERVICES

- A. When specified in individual specification sections, require material or product suppliers or manufacturers to provide qualified staff personnel to observe and provide instructions when necessary for acceptable:
  - 1. Installation conditions.
  - 2. Workmanship quality.
  - 3. Equipment start-up.
  - 4. Equipment test, adjust, and balance.
- B. Submit qualifications of observer to Architect 14 days, minimum, in advance of required observations.
- C. Report observations and site decisions or instructions that are supplemental or contrary to contract documents or manufacturers' written instructions.
- D. Submit written inspection reports per Section 013300.

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### 1.13 TEST REPORTS AND CERTIFICATIONS

- A. When specified in individual specification Sections, require material or Product suppliers or manufacturers to provide test reports and manufacturer certifications.
- B. Indicate that material or Product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.
- C. Submittals may be recent or previous test results on material or Product, as acceptable to Architect.
- D. Submit reports and certifications per Section 013300.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

**END OF SECTION**

## SECTION 017000

### EXECUTION AND CLOSEOUT REQUIREMENTS

#### PART 1 GENERAL

##### 1.1 SUMMARY

- A. Section Includes
  - 1. Execution Requirements
  - 2. Field Engineering
  - 3. Cutting and Patching
  - 4. Closeout procedures.
  - 5. Progress cleaning.
  - 6. Starting of systems.
  - 7. Demonstration and instruction.
  - 8. Testing, adjusting, and balancing.
  - 9. Protecting installed construction.
  - 10. Project record documents.
  - 11. Operation and maintenance data.
  - 12. Manual for materials and finishes.
  - 13. Manual for equipment and systems.
  - 14. Spare parts and maintenance products.
  - 15. Product warranties and product bonds.
  - 16. Maintenance service.
  - 17. Final cleaning

##### 1.2 EXECUTION REQUIREMENTS

- A. Examination:
  - 1. Verify existing conditions are acceptable before starting subsequent work.
  - 2. Verify existing substrates can receive and support subsequent work.
  - 3. Examine and verify specific conditions described in individual specification sections.
  - 4. Where possible, take field measurements before confirming product orders and beginning fabrication.
  - 5. Verify utility services are available, correctly located, and correct characteristics.
- B. Preparation:
  - 1. Clean substrate surfaces before applying next material or substance.
  - 2. Seal substrate cracks and openings before applying next material or substance.
  - 3. Apply manufacturer required or recommended substrate primer, sealer, or conditioner before applying next material or substance.
- C. General Installation Requirements:
  - 1. Follow manufacturer instructions and recommendations, applicable reference standards, and other requirements in individual specification sections.



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2. Make vertical elements plumb and horizontal elements level.
3. Install equipment and fittings plumb and level, neatly aligned with adjacent vertical and horizontal lines
4. Make consistent textures on surfaces, with seamless transitions.
5. Make neat transitions between different surfaces, maintaining textures and appearances.

### 1.3 FIELD ENGINEERING

- A. Licensed Professionals: Land Surveyor.
- B. Locate survey control and reference points. Promptly notify Architect and Owner of discrepancies discovered.
- C. Protect survey control points before starting site work; preserve permanent reference points during construction.
- D. Control Datum for Survey: Established by Owner-provided survey.
- E. Verify set-backs and easements; confirm drawing dimensions and elevations.
- F. Provide field engineering services. Establish elevations, lines, and levels, utilizing recognized engineering survey practices.
- G. Submit copy of site drawing signed by Land Surveyor certifying elevations and locations of the Work conform with Contract Documents.
- H. Maintain complete and accurate log of control and survey work as Work progresses.
- I. On completion of foundation walls and major site improvements, prepare certified survey illustrating dimensions, locations, angles, and elevations of construction.
- J. Promptly report to Architect loss or destruction of reference point or relocation required.
- K. Replace dislocated survey control points based on original survey control. Do not make changes without notice to Architect.

### 1.4 CUTTING AND PATCHING

- A. Whenever possible, execute the work by methods that avoid cutting or patching.
- B. Perform whatever cutting and patching is necessary to:
  1. Complete the Work.
  2. Fit products together to integrate with other work.
  3. Provide openings for penetration of mechanical, electrical, and other services.
  4. Match work that has been cut to adjacent work.
  5. Repair areas adjacent to cuts to required condition.
  6. Repair new work damaged by subsequent work.
  7. Remove samples of installed work for testing when requested.
  8. Remove and replace defective and non-conforming work.

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- C. Before cutting, examine existing conditions, including elements subject to damage or movement during cutting and patching.
- D. Execute work by methods that avoid damage to other work and that will provide appropriate surfaces to receive patching and finishing. In existing work, minimize damage and restore to original condition.
- E. Employ experienced installers to perform cutting for weather exposed and moisture resistant elements, and sight exposed surfaces.
- F. Cut rigid materials using masonry saw or core drill. Obtain Architect approval for pneumatic tools use.
- G. Restore work with new products in accordance with requirements of Contract Documents.
- H. Fit work air tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.
- I. At penetrations of fire rated walls, partitions, ceiling, or floor construction, completely seal voids with fire rated material per Section 078400 - Firestopping. Label sealed penetration per applicable code.
- J. Patching:
  - 1. Finish patched surfaces to match finish color, texture, and appearance that existed before patching.
    - a. Continuous Surfaces: Refinish to nearest intersection or natural break.
    - b. Assemblies: Refinish entire unit.
  - 2. Repair patched surfaces that are damaged, lifted, discolored, or showing other imperfections due to patching work. If defects are due to condition of substrate, repair substrate before repairing finish.

## 1.5 PROGRESS CLEANING

- 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, and other closed or remote spaces before enclosing spaces.
- C. Broom and vacuum clean interior areas before start of surface finishing, and continue cleaning to eliminate dust.
- D. Collect and remove waste materials, debris, and trash/rubbish from site periodically and dispose off-site; do not burn or bury.

## 1.6 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 review.

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1. If Architect performs reinspection due to failure of Work to comply with claims of status of completion made by Contractor, Owner will compensate Architect for such additional services and will deduct the amount of such compensation from final payment to Contractor.
- 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. Closeout Submittals:
  1. Evidence of compliance with requirements of governing authorities.
  2. Certificate of Occupancy.
  3. Project Record Documents.
  4. Operation and Maintenance Data.
  5. Warranties.
  6. Keys and keying schedule.
  7. Spare parts and maintenance materials.
  8. Evidence of payment of Subcontractors and suppliers.
  9. Final lien waiver.
  10. Certificate of insurance for products and completed operations.
  11. Consent of Surety to final payment.

#### 1.7 SYSTEMS STARTUP

- A. Coordinate schedule for start-up of various equipment and systems.
- B. Notify Architect and Owner seven days before starting each system.
- C. Verify that each piece of equipment or system has been checked for proper lubrication, drive rotation, belt tension, control sequence, and for conditions that may cause damage.
- D. Verify that tests, meter readings, and specified electrical characteristics agree with those required by equipment or system manufacturer.
- E. Verify that wiring and support components for equipment are complete and tested.
- F. Execute start-up under supervision of applicable manufacturer representative and Contractors personnel per manufacturer instructions.
- G. Where specified in individual specification Sections, require manufacturer to provide authorized representative to be present at site to inspect, check, and approve equipment or system installation before startup, and to supervise placing equipment or system in operation.

#### 1.8 DEMONSTRATION AND INSTRUCTION

- A. Demonstrate operation and maintenance of products to Owner's personnel 15 days before inspection for Substantial Completion.

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- B. Demonstrate Project equipment and instruct by qualified instructor or manufacturer representative who is knowledgeable about the Project.
- C. For equipment or systems requiring seasonal operation, perform demonstration for other season within six months.
- D. Utilize operation and maintenance manuals as basis for instruction. Review contents of manual with Owner's personnel in detail to explain all aspects of operation and maintenance.
- E. Demonstrate startup, operation, control, adjustment, trouble-shooting, servicing, maintenance, shutdown, and emergency procedures for each item of equipment.
- F. Prepare and insert additional data in operations and maintenance manuals when need for additional information becomes apparent during instruction.
- G. Required instruction time for each item of equipment and system is specified in individual sections.

1.9 TESTING, ADJUSTING, AND BALANCING

- A. Owner will employ and pay for services of independent firm to perform testing, adjusting, and balancing.
- B. Reports will be submitted by independent firm to Architect, Owner, and Contractor indicating observations and results of tests and indicating compliance or non-compliance with requirements of Contract Documents.

1.10 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 activities in immediate work areas to prevent damage.
- C. Provide protective coverings at walls, projections, jambs, sills, and soffits of openings.
- D. Protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects with durable sheet materials or panels.
- E. Prohibit traffic or storage upon waterproofed or roofed surfaces. When traffic or activity is necessary, obtain recommendations for protection from waterproofing or roofing material manufacturer.
- F. Prohibit traffic on landscaped areas.

1.11 PROJECT RECORD DOCUMENTS

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- A. Maintain on site one set of the following record documents for recording revisions to the Work and locations of concealed work:
  - 1. Drawings.
  - 2. Specifications.
  - 3. Addenda.
  - 4. Change Orders and other Contract modifications.
  - 5. Reviewed Product Data, Shop Drawings, and Samples.
  - 6. Manufacturer instructions 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, but not less than weekly.
- E. Specifications: Legibly mark and record at each product section description of actual products installed, including the following data:
  - 1. Manufacturer names and models and numbers for installed products.
  - 2. Product substitutions or alternates utilized.
  - 3. Changes made by Addenda and modifications.
- F. Record Drawings and Shop Drawings: Legibly mark each item to record actual construction including following data.
  - 1. Measured depths of foundations in relation to finish ground 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.
- G. Submit documents to Architect with final application for payment.

#### 1.12 OPERATION AND MAINTENANCE DATA

- A. Electronic File Manuals: Submit manuals as composite electronic PDF file for each manual type.
  - 1. Arrange files by system and subsystem with bookmarks and bookmarks for individual document files.
  - 2. Include drawing files appropriate to content.
- B. Table of Contents:
  - 1. Part 1: Directory listing names, addresses, and telephone numbers of Architect and its consultants, Owner's consultants, Contractor, subcontractors, and major equipment suppliers.
  - 2. Part 2: Operation and maintenance instructions arranged by system and subdivided by Specification section. For each category, identify names, addresses, and telephone numbers of subcontractors and suppliers. Include the following information:
    - a. Significant design criteria.
    - b. List of equipment.

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- c. Parts list for each component.
  - d. Operating instructions.
  - e. Maintenance instructions for equipment and systems.
  - f. Maintenance instructions for finishes, including recommended cleaning methods and materials, and special precautions identifying detrimental agents.
3. Part 3: Project documents and certificates, including the following:
- a. Record shop drawings and product data.
  - b. Test and balance reports.
  - c. Certificates.
  - d. Warranty copy.
  - e. Bond copy.

### 1.13 MANUAL FOR MATERIALS AND FINISHES

- A. Submit electronic PDF files of proposed format and outline of contents before start of Work. Architect will review draft and return annotated PDF file with comments.
  1. Include listing in Table of Contents for design data with space for insertion of data.
- B. For equipment, or component parts of equipment put into service during construction and operated by Owner, submit documents within ten days after acceptance.
- C. Submit electronic PDF files of completed manuals 15 days before final inspection. Draft copy will be reviewed and returned with Architect comments after final inspection. Revise content of document sets as required by review comments before final submission.
- D. Submit electronic PDF files in final form within 10 days after final inspection.
- E. Building Products, Applied Materials, and Finishes: Include record product data, with catalog number, size, composition, and color and texture designations. Include information for re-ordering custom manufactured products.
- F. Instructions for Care and Maintenance: Include manufacturer recommendations for cleaning products and methods, precautions against detrimental cleaning products and methods, and recommended schedule for cleaning and maintenance.
- G. 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.
- H. Additional Requirements: Specified in individual specification sections.

### 1.14 MANUAL FOR EQUIPMENT AND SYSTEMS

- A. Submit electronic PDF files of preliminary draft or proposed formats and outlines of contents before start of Work. Architect will review draft and return annotated PDF file with comments.
- B. For equipment, or component parts of equipment put into service during construction and operated by Owner, submit documents within ten days after acceptance.

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- C. Submit electronic PDF files of completed manuals 15 days before final inspection. Draft copy will be reviewed and returned with Architect comments after final inspection. Revise content of document sets as required by review comments before final submission.
- D. Submit electronic PDF files in final form within 10 days after final inspection.
- E. Each Item of Equipment and Each System:
  - 1. Include description of unit or system, and component parts.
  - 2. Identify function, normal operating characteristics, and limiting conditions.
  - 3. Include performance curves, with engineering data and tests, and complete nomenclature and model number of replaceable parts.
- F. Panelboard Circuit Directories: Provide printed electrical service characteristics, controls, and communications.
- G. Include color coded wiring diagrams as installed.
- H. Operating Procedures:
  - 1. Include start-up, break-in, and routine normal operating instructions and sequences.
  - 2. Include regulation, control, stopping, shut-down, and emergency instructions.
  - 3. Include seasonal and special operating instructions.
- I. Maintenance Requirements: Include routine procedures and guide for preventative maintenance and troubleshooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.
- J. Include servicing and lubrication schedule, and list of lubricants required.
- K. Include manufacturer printed operation and maintenance instructions.
- L. Include sequence of operation by controls manufacturer.
- M. Include original manufacturer parts list, illustrations, assembly drawings, and diagrams required for maintenance.
- N. Include control diagrams by controls manufacturer as installed.
- O. Include Contractor coordination drawings, with color coded piping diagrams as installed.
- P. Include charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.
- Q. Include list of original manufacturer spare parts, current prices, and recommended quantities to be maintained in storage.
- R. Additional Requirements: As specified in individual product specification sections.
- S. Include listing in Table of Contents for design data with space for insertion of data.

1.15 SPARE PARTS AND MAINTENANCE PRODUCTS

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- A. Supply 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 before final payment.

1.16 PRODUCT WARRANTIES AND PRODUCT BONDS

- A. Obtain warranties from responsible subcontractors, suppliers, and manufacturers within 10 days after completion of applicable item of work.
- B. Include copies of standard manufacturer warranties that do not require execution.
- C. Execute and assemble transferable warranty documents from subcontractors, suppliers, and manufacturers.
- D. Verify documents are in proper form, contain full information, and, where signed, are notarized.
- E. Assemble product warranties in loose-leaf notebook with table of contents.
  - 1. Scan warranties and submit as composite PDF file with table of contents and bookmarks for Specification sections.
  - 2. Arrange warranties by Specification section.
- F. Submit warranties before 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 10 days after acceptance.
  - 2. Make other submittals within 10 days after Date of Substantial Completion and before final Application for Payment.
  - 3. For items of Work for which acceptance is delayed beyond Date of Substantial Completion, submit within 10 days after acceptance, listing date of acceptance as beginning of warranty period.

1.17 MAINTENANCE SERVICE

- A. Provide maintenance service of work indicated in Specification sections for specified periods, during warranty period, and during correction of work period.
- B. Examine system components at frequency recommended by manufacturer for reliable operation. Clean, adjust, and lubricate as needed.
- C. Include systematic examination, adjustment, and lubrication of components. Repair or replace parts whenever required. Use parts produced by manufacturer of original component.
- D. Do not assign or transfer maintenance service to agent or Subcontractor without prior written consent of Owner.



#### 1.18 FINAL CLEANING

- A. Perform final cleaning before inspection for Substantial Completion.
- B. Clean interior and exterior glass, surfaces exposed to view; remove temporary labels, stains and foreign substances, polish transparent and glossy surfaces, vacuum carpeted and soft surfaces, damp mop hard surface flooring.
- C. Clean equipment and fixtures to sanitary condition with cleaning materials appropriate to surface and material being cleaned.
- D. Replace filters of operating equipment.
- E. Clean debris from roofs and drainage systems.
- F. Clean site; sweep paved areas, rake clean landscaped surfaces.
- G. Remove waste and surplus materials, rubbish, and construction facilities from site.

#### PART 2 PRODUCTS

##### 2.1 PATCHING MATERIALS

- A. New Materials: Specified in product sections; match existing products and work for patching and extending work.
- B. Existing Products: Determine type and quality by inspection and testing. Refer to existing as work results standard.

#### PART 3 EXECUTION - NOT USED

**END OF SECTION**

SECTION 042000

UNIT MASONRY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Interior concrete masonry units.
2. Mortar and grout.
3. Steel reinforcing bars.
4. Masonry-joint reinforcement.
5. Miscellaneous masonry accessories.

B. Products Installed but not Furnished under This Section:

1. Steel lintels in unit masonry.

1.3 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.

B. Shop Drawings: For the following:

1. Masonry Units: Show sizes, profiles, coursing, and locations of special shapes.
2. Reinforcing Steel: Detail bending, lap lengths, and placement of unit masonry reinforcing bars. Comply with ACI 315. Show elevations of reinforced walls.

C. Samples for Initial Selection:

1. Colored mortar.

- D. Samples for Verification: For each type and color of the following:
1. Pigmented and colored-aggregate mortar. Make Samples using same sand and mortar ingredients to be used on Project.
  2. Accessories embedded in masonry.

#### 1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For testing agency.
- B. Material Certificates: For each type and size of the following:
1. Masonry units.
    - a. Include data on material properties.
    - b. For masonry units, include data and calculations establishing average net-area compressive strength of units.
  2. Cementitious materials. Include name of manufacturer, brand name, and type.
  3. Mortar admixtures.
  4. Preblended, dry mortar mixes. Include description of type and proportions of ingredients.
  5. Grout mixes. Include description of type and proportions of ingredients.
  6. Reinforcing bars.
  7. Joint reinforcement.
  8. Anchors, ties, and metal accessories.
- C. Mix Designs: For each type of mortar and grout. Include description of type and proportions of ingredients.
1. Include test reports for mortar mixes required to comply with property specification. Test according to ASTM C 109/C 109M for compressive strength, ASTM C 1506 for water retention, and ASTM C 91/C 91M for air content.
  2. Include test reports, according to ASTM C 1019, for grout mixes required to comply with compressive strength requirement.
- D. Statement of Compressive Strength of Masonry: For each combination of masonry unit type and mortar type, provide statement of average net-area compressive strength of masonry units, mortar type, and resulting net-area compressive strength of masonry determined according to TMS 602/ACI 530.1/ASCE 6.
- E. Cold-Weather and Hot-Weather Procedures: Detailed description of methods, materials, and equipment to be used to comply with requirements.

#### 1.6 QUALITY ASSURANCE

- A. Testing Agency Qualifications: Qualified according to ASTM C 1093 for testing indicated.

## 1.7 DELIVERY, STORAGE, AND HANDLING

- A. Store masonry units on elevated platforms in a dry location. If units are not stored in an enclosed location, cover tops and sides of stacks with waterproof sheeting, securely tied. If units become wet, do not install until they are dry.
- B. Store cementitious materials on elevated platforms, under cover, and in a dry location. Do not use cementitious materials that have become damp.
- C. Store aggregates where grading and other required characteristics can be maintained and contamination avoided.
- D. Deliver preblended, dry mortar mix in moisture-resistant containers. Store preblended, dry mortar mix in delivery containers on elevated platforms in a dry location or in covered weatherproof dispensing silos.
- E. Store masonry accessories, including metal items, to prevent corrosion and accumulation of dirt and oil.

## 1.8 FIELD CONDITIONS

- A. Protection of Masonry: During construction, cover tops of walls, projections, and sills with waterproof sheeting at end of each day's work. Cover partially completed masonry when construction is not in progress.
  - 1. Extend cover a minimum of 24 inches down both sides of walls, and hold cover securely in place.
- B. Do not apply uniform floor or roof loads for at least 12 hours and concentrated loads for at least three days after building masonry walls or columns.
- C. Stain Prevention: Prevent grout, mortar, and soil from staining the face of masonry to be left exposed or painted. Immediately remove grout, mortar, and soil that come in contact with such masonry.
  - 1. Protect base of walls from rain-splashed mud and from mortar splatter by spreading coverings on ground and over wall surface.
  - 2. Protect sills, ledges, and projections from mortar droppings.
  - 3. Protect surfaces of window and door frames, as well as similar products with painted and integral finishes, from mortar droppings.
  - 4. Turn scaffold boards near the wall on edge at the end of each day to prevent rain from splashing mortar and dirt onto completed masonry.
- D. Cold-Weather Requirements: Do not use frozen materials or materials mixed or coated with ice or frost. Do not build on frozen substrates. Remove and replace unit masonry damaged by frost or by freezing conditions. Comply with cold-weather construction requirements contained in TMS 602/ACI 530.1/ASCE 6.

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1. Cold-Weather Cleaning: Use liquid cleaning methods only when air temperature is 40 deg F and higher and will remain so until masonry has dried, but not less than seven days after completing cleaning.
- E. Hot-Weather Requirements: Comply with hot-weather construction requirements contained in TMS 602/ACI 530.1/ASCE 6.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURERS

- A. Source Limitations for Masonry Units: Obtain exposed masonry units of a uniform texture and color, or a uniform blend within the ranges accepted for these characteristics, from single source from single manufacturer for each product required.
- B. Source Limitations for Mortar Materials: Obtain mortar ingredients of a uniform quality, including color for exposed masonry, from single manufacturer for each cementitious component and from single source or producer for each aggregate.

### 2.2 UNIT MASONRY, GENERAL

- A. Masonry Standard: Comply with TMS 602/ACI 530.1/ASCE 6, except as modified by requirements in the Contract Documents.
- B. Defective Units: Referenced masonry unit standards may allow a certain percentage of units to contain chips, cracks, or other defects exceeding limits stated. Do not use units where such defects are exposed in the completed Work and will be within 20 feet vertically and horizontally of a walking surface.
- C. Fire-Resistance Ratings: Comply with requirements for fire-resistance-rated assembly designs indicated.
  1. Where fire-resistance-rated construction is indicated, units shall be listed and labeled by a qualified testing agency acceptable to authorities having jurisdiction.

### 2.3 CONCRETE MASONRY UNITS

- A. Shapes: Provide shapes indicated and as follows, with exposed surfaces matching exposed faces of adjacent units unless otherwise indicated.
  1. Provide special shapes for lintels, corners, jambs, sashes, movement joints, headers, bonding, and other special conditions.
  2. Provide square-edged or bullnose units for outside corners unless otherwise indicated.
- B. CMUs: ASTM C 90.

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1. Unit Compressive Strength: Provide units with minimum average net-area compressive strength of 2800 psi, unless indicated otherwise.
2. Density Classification: Normal weight unless otherwise indicated.
3. Size (Width): Manufactured to dimensions 3/8 inch less than nominal dimensions.

2.4 CONCRETE AND MASONRY LINTELS

- A. Concrete Lintels: Precast or formed-in-place concrete lintels complying with requirements in Section 033000 "Cast-in-Place Concrete," and with reinforcing bars indicated.
- B. Masonry Lintels: Prefabricated or built-in-place masonry lintels made from bond beam CMUs matching adjacent CMUs in color, texture, and density classification, with reinforcing bars placed as indicated and filled with coarse grout. Cure precast lintels before handling and installing. Temporarily support built-in-place lintels until cured.

2.5 MORTAR AND GROUT MATERIALS

- A. Portland Cement: ASTM C 150, Type I or II, except Type III may be used for cold-weather construction. Provide natural color or white cement as required to produce mortar color indicated.
- B. Hydrated Lime: ASTM C 207, Type S.
- C. Masonry Cement: ASTM C 91.
  1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
    - a. Essroc, Italcementi Group.
    - b. Holcim (US) Inc.
    - c. Lafarge North America Inc.
    - d. Lehigh Cement Company.
- D. Mortar Pigments: Natural and synthetic iron oxides and chromium oxides, compounded for use in mortar mixes and complying with ASTM C 979. Use only pigments with a record of satisfactory performance in masonry mortar.
  1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
    - a. Hydroment; Classic Bone H158. Basis of Design.
    - b. Davis Colors; True Tone Mortar Colors.
    - c. Lanxess Corporation; Bayferrox Iron Oxide Pigments.
    - d. Solomon Colors, Inc.; SGS Mortar Colors.
- E. Aggregate for Mortar: ASTM C 144.

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1. For joints less than 1/4 inch thick, use aggregate graded with 100 percent passing the No. 16 sieve.
  2. Colored-Mortar Aggregates: Natural sand or crushed stone of color necessary to produce required mortar color.
- F. Aggregate for Grout: ASTM C 404.
- G. Cold-Weather Admixture: Nonchloride, noncorrosive, accelerating admixture complying with ASTM C 494/C 494M, Type C, and recommended by manufacturer for use in masonry mortar of composition indicated.
1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
    - a. Euclid Chemical Company (The); Accelguard 80.
    - b. Grace Construction Products, a unit of W. R. Grace & Co. - Conn.; Morset.
    - c. BASF Admixture Systems; MasterSet AC 534.
- H. Water: Potable.

## 2.6 REINFORCEMENT

- A. Uncoated Steel Reinforcing Bars: ASTM A 615/A 615M or ASTM A 996/A 996M, Grade 60.
- B. Reinforcing Bar Positioners: Wire units designed to fit into mortar bed joints spanning masonry unit cells and to hold reinforcing bars in center of cells. Units are formed from 0.148-inch (3.77-mm) steel wire, hot-dip galvanized after fabrication. Provide units designed for number of bars indicated.
1. Basis-of-Design Product: Subject to compliance with requirements, provide Hohmann & Barnard, Inc. by MiTek; #RB or #RB-Twin Rebar Positioner. or a comparable product by one of the following:
    - a. Heckmann Building Products, Inc.
    - b. Lock Rite.
    - c. Wire-Bond.

- C. Masonry Joint Reinforcement, General: ASTM A 951/A 951M.
  - 1. Walls: Hot-dip galvanized, carbon steel.
  - 2. Wire Size for Side Rods: 0.187-inch diameter.
  - 3. Wire Size for Cross Rods: 0.187-inch diameter.
  - 4. Wire Size for Veneer Ties: 0.187-inch diameter.
  - 5. Spacing of Cross Rods, Tabs, and Cross Ties: Not more than 16 inches o.c.
  - 6. Provide in lengths of not less than 10 feet, with prefabricated corner and tee units.
  
- D. Masonry Joint Reinforcement for Single-Wythe Masonry: Ladder type with single pair of side rods.
  - 1. Basis-of-Design Product: Subject to compliance with requirements, provide Hohmann & Barnard, Inc. by MiTek; #220 Ladder Eye or a comparable product by one of the following:
    - a. Wire-Bond.

## 2.7 MISCELLANEOUS MASONRY ACCESSORIES

- A. Compressible Filler: Premolded filler strips complying with ASTM D 1056, Grade 2A1; compressible up to 35 percent; of width and thickness indicated; formulated from neoprene.
- B. Preformed Control-Joint Gaskets: Made from styrene-butadiene-rubber compound, complying with ASTM D 2000, Designation M2AA-805 or PVC, complying with ASTM D 2287, Type PVC-65406 and designed to fit standard sash block and to maintain lateral stability in masonry wall; size and configuration as indicated.
- C. Bond-Breaker Strips: Asphalt-saturated, organic roofing felt complying with ASTM D 226, Type I (No. 15 asphalt felt).

## 2.8 MASONRY CLEANERS

- A. Proprietary Acidic Cleaner: Manufacturer's standard-strength cleaner designed for removing mortar/grout stains, efflorescence, and other new construction stains from new masonry without discoloring or damaging masonry surfaces. Use product expressly approved for intended use by cleaner manufacturer and manufacturer of masonry units being cleaned.
  - 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
    - a. Diedrich Technologies, Inc.
    - b. EaCo Chem, Inc.
    - c. ProSoCo, Inc.



## 2.9 MORTAR AND GROUT MIXES

- A. General: Do not use admixtures, including pigments, air-entraining agents, accelerators, retarders, water-repellent agents, antifreeze compounds, or other admixtures unless otherwise indicated.
1. Do not use calcium chloride in mortar or grout.
  2. Use portland cement-lime, masonry cement or mortar cement mortar unless otherwise indicated.
  3. Add cold-weather admixture (if used) at same rate for all mortar that will be exposed to view, regardless of weather conditions, to ensure that mortar color is consistent.
- B. Preblended, Dry Mortar Mix: Furnish dry mortar ingredients in form of a preblended mix. Measure quantities by weight to ensure accurate proportions, and thoroughly blend ingredients before delivering to Project site.
- C. Mortar for Unit Masonry: Comply with ASTM C 270, Proportion Specification. Provide the following types of mortar for applications stated unless another type is indicated or needed to provide required compressive strength of masonry.
1. For interior non-load-bearing partitions, Type O may be used instead of Type N.
- D. Grout for Unit Masonry: Comply with ASTM C 476.
1. Use grout of type indicated or, if not otherwise indicated, of type (fine or coarse) that will comply with Table 1.15.1 in ACI 530.1/ASCE 6/TMS 602 for dimensions of grout spaces and pour height.
  2. Provide grout with a slump of 8 to 11 inches as measured according to ASTM C 143/C 143M.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
1. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.
  2. Verify that foundations are within tolerances specified.
  3. Verify that reinforcing dowels are properly placed.
  4. Verify that substrates are free of substances that impair mortar bond.
- B. Before installation, examine rough-in and built-in construction for piping systems to verify actual locations of piping connections.

- C. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.2 INSTALLATION, GENERAL

- A. Thickness: Build masonry construction to full thickness shown. Build single-wythe walls to actual widths of masonry units, using units of widths indicated.
- B. Build chases and recesses to accommodate items specified in this and other Sections.
- C. Leave openings for equipment to be installed before completing masonry. After installing equipment, complete masonry to match construction immediately adjacent to opening.
- D. Use full-size units without cutting if possible. If cutting is required to provide a continuous pattern or to fit adjoining construction, cut units with motor-driven saws; provide clean, sharp, unchipped edges. Allow units to dry before laying unless wetting of units is specified. Install cut units with cut surfaces and, where possible, cut edges concealed.
- E. Select and arrange units for exposed unit masonry to produce a uniform blend of colors and textures. Mix units from several pallets or cubes as they are placed.

### 3.3 TOLERANCES

#### A. Dimensions and Locations of Elements:

1. For dimensions in cross section or elevation, do not vary by more than plus 1/2 inch or minus 1/4 inch.
2. For location of elements in plan, do not vary from that indicated by more than plus or minus 1/2 inch.
3. For location of elements in elevation, do not vary from that indicated by more than plus or minus 1/4 inch in a story height or 1/2 inch total.

#### B. Lines and Levels:

1. For bed joints and top surfaces of bearing walls, do not vary from level by more than 1/4 inch in 10 feet, or 1/2-inch maximum.
2. For conspicuous horizontal lines, such as lintels, sills, parapets, and reveals, do not vary from level by more than 1/8 inch in 10 feet, 1/4 inch in 20 feet, or 1/2-inch maximum.
3. For vertical lines and surfaces, do not vary from plumb by more than 1/4 inch in 10 feet, 3/8 inch in 20 feet, or 1/2-inch maximum.
4. For conspicuous vertical lines, such as external corners, door jambs, reveals, and expansion and control joints, do not vary from plumb by more than 1/8 inch in 10 feet, 1/4 inch in 20 feet, or 1/2-inch maximum.
5. For lines and surfaces, do not vary from straight by more than 1/4 inch in 10 feet, 3/8 inch in 20 feet, or 1/2-inch maximum.
6. For vertical alignment of exposed head joints, do not vary from plumb by more than 1/4 inch in 10 feet or 1/2-inch maximum.

C. Joints:

1. For bed joints, do not vary from thickness indicated by more than plus or minus 1/8 inch, with a maximum thickness limited to 1/2 inch.
2. For exposed bed joints, do not vary from bed-joint thickness of adjacent courses by more than 1/8 inch.
3. For head and collar joints, do not vary from thickness indicated by more than plus 3/8 inch or minus 1/4 inch.
4. For exposed head joints, do not vary from thickness indicated by more than plus or minus 1/8 inch. Do not vary from adjacent bed-joint and head-joint thicknesses by more than 1/8 inch.
5. For exposed bed joints and head joints of stacked bond, do not vary from a straight line by more than 1/16 inch from one masonry unit to the next.

3.4 LAYING MASONRY WALLS

- A. Lay out walls in advance for accurate spacing of surface bond patterns with uniform joint thicknesses and for accurate location of openings, movement-type joints, returns, and offsets. Avoid using less-than-half-size units, particularly at corners, jambs, and, where possible, at other locations.
- B. Bond Pattern for Exposed Masonry: Unless otherwise indicated, lay exposed masonry in running bond unless the bond pattern is indicated on Drawings; do not use units with less-than-nominal 4-inch horizontal face dimensions at corners or jambs.
- C. Stopping and Resuming Work: Stop work by stepping back units in each course from those in course below; do not tooth. When resuming work, clean masonry surfaces that are to receive mortar, remove loose masonry units and mortar, and wet brick if required before laying fresh masonry.
- D. Built-in Work: As construction progresses, build in items specified in this and other Sections. Fill in solidly with masonry around built-in items.
- E. Fill space between steel frames and masonry solidly with mortar unless otherwise indicated.
- F. Where built-in items are to be embedded in cores of hollow masonry units, place a layer of metal lath, wire mesh, or plastic mesh in the joint below, and rod mortar or grout into core.
- G. Fill cores in hollow CMUs with grout 24 inches under bearing plates, beams, lintels, posts, and similar items unless otherwise indicated.
- H. Build nonload-bearing interior partitions full height of story to underside of solid floor or roof structure above unless otherwise indicated.
  1. Install compressible filler in joint between top of partition and underside of structure above.

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2. Fasten partition top anchors to structure above and build into top of partition. Grout cells of CMUs solidly around plastic tubes of anchors and push tubes down into grout to provide 1/2-inch clearance between end of anchor rod and end of tube. Space anchors 48 inches o.c. unless otherwise indicated.
3. Wedge nonload-bearing partitions against structure above with small pieces of tile, slate, or metal. Fill joint with mortar after dead-load deflection of structure above approaches final position.
4. At fire-rated partitions, treat joint between top of partition and underside of structure above to comply with Section 078443 "Joint Firestopping."

### 3.5 MORTAR BEDDING AND JOINTING

- A. Lay CMUs as follows:
  1. Bed face shells in mortar and make head joints of depth equal to bed joints.
  2. Bed webs in mortar in all courses of piers, columns, and pilasters.
  3. Bed webs in mortar in grouted masonry, including starting course on footings.
  4. Fully bed entire units, including areas under cells, at starting course on footings where cells are not grouted.
  5. Fully bed units and fill cells with mortar at anchors and ties as needed to fully embed anchors and ties in mortar.
- B. Lay solid masonry units with completely filled bed and head joints; butter ends with sufficient mortar to fill head joints and shove into place. Do not deeply furrow bed joints or slush head joints.
- C. Tool exposed joints slightly concave when thumbprint hard, using a jointer larger than joint thickness unless otherwise indicated.
- D. Cut joints flush for masonry walls to receive plaster or other direct-applied finishes (other than paint) unless otherwise indicated.

### 3.6 MASONRY-JOINT REINFORCEMENT

- A. General: Install entire length of longitudinal side rods in mortar with a minimum cover of 5/8 inch on exterior side of walls, 1/2 inch elsewhere. Lap reinforcement a minimum of 6 inches.
  1. Space reinforcement not more than 16 inches o.c.
  2. Provide reinforcement not more than 8 inches above and below wall openings and extending 12 inches beyond openings in addition to continuous reinforcement.
- B. Interrupt joint reinforcement at control and expansion joints unless otherwise indicated.
- C. Provide continuity at wall intersections by using prefabricated T-shaped units.
- D. Provide continuity at corners by using prefabricated L-shaped units.

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- E. Cut and bend reinforcing units as directed by manufacturer for continuity at corners, returns, offsets, column fireproofing, pipe enclosures, and other special conditions.

### 3.7 ANCHORING MASONRY TO STRUCTURAL STEEL AND CONCRETE

- A. Anchor masonry to structural steel and concrete, where masonry abuts or faces structural steel or concrete, to comply with the following:
  - 1. Provide an open space not less than 1/2 inch wide between masonry and structural steel or concrete unless otherwise indicated. Keep open space free of mortar and other rigid materials.
  - 2. Anchor masonry with anchors embedded in masonry joints and attached to structure.
  - 3. Space anchors as indicated, but not more than 24 inches o.c. vertically and 36 inches o.c. horizontally.

### 3.8 CONTROL AND EXPANSION JOINTS

- A. General: Install control- and expansion-joint materials in unit masonry as masonry progresses. Do not allow materials to span control and expansion joints without provision to allow for in-plane wall or partition movement.
- B. Form control joints in concrete masonry using one of the following methods:
  - 1. Fit bond-breaker strips into hollow contour in ends of CMUs on one side of control joint. Fill resultant core with grout, and rake out joints in exposed faces for application of sealant.
  - 2. Install preformed control-joint gaskets designed to fit standard sash block.
  - 3. Install interlocking units designed for control joints. Install bond-breaker strips at joint. Keep head joints free and clear of mortar, or rake out joint for application of sealant.
  - 4. Install temporary foam-plastic filler in head joints, and remove filler when unit masonry is complete for application of sealant.

### 3.9 LINTELS

- A. Install steel lintels where indicated.
- B. Provide concrete or masonry lintels where shown and where openings of more than 12 inches for brick-size units and 24 inches for block-size units are shown without structural steel or other supporting lintels.
- C. Provide minimum bearing of 8 inches at each jamb unless otherwise indicated.

### 3.10 REPAIRING, POINTING, AND CLEANING

- A. Remove and replace masonry units that are loose, chipped, broken, stained, or otherwise damaged or that do not match adjoining units. Install new units to match adjoining units; install in fresh mortar, pointed to eliminate evidence of replacement.
- B. Pointing: During the tooling of joints, enlarge voids and holes, except weep holes, and completely fill with mortar. Point up joints, including corners, openings, and adjacent construction, to provide a neat, uniform appearance. Prepare joints for sealant application, where indicated.
- C. In-Progress Cleaning: Clean unit masonry as work progresses by dry brushing to remove mortar fins and smears before tooling joints.
- D. Final Cleaning: After mortar is thoroughly set and cured, clean exposed masonry as follows:
  - 1. Remove large mortar particles by hand with wooden paddles and nonmetallic scrape hoes or chisels.
  - 2. Test cleaning methods on sample wall panel; leave one-half of panel uncleaned for comparison purposes. Obtain Architect's approval of sample cleaning before proceeding with cleaning of masonry.
  - 3. Protect adjacent stone and nonmasonry surfaces from contact with cleaner by covering them with liquid strippable masking agent or polyethylene film and waterproof masking tape.
  - 4. Wet wall surfaces with water before applying cleaners; remove cleaners promptly by rinsing surfaces thoroughly with clear water.
  - 5. Clean masonry with a proprietary acidic cleaner applied according to manufacturer's written instructions.

### 3.11 MASONRY WASTE DISPOSAL

- A. Salvageable Materials: Unless otherwise indicated, excess masonry materials are Contractor's property. At completion of unit masonry work, remove from Project site.
- B. Excess Masonry Waste: Remove excess clean masonry waste that cannot be used as fill, as described above or recycled, and other masonry waste, and legally dispose of off Owner's property.

END OF SECTION

## SECTION 055000

### METAL FABRICATIONS

#### PART 1 - GENERAL

##### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

##### 1.2 SUMMARY

- A. Section Includes:

- 1. Steel framing and supports for overhead doors.
- 2. Steel tube reinforcement for low partitions.
- 3. Steel framing and supports for mechanical and electrical equipment.
- 4. Steel framing and supports for applications where framing and supports are not specified in other Sections.

- B. Products furnished, but not installed, under this Section include the following:

- 1. Loose steel lintels.
- 2. Anchor bolts, steel pipe sleeves, slotted-channel inserts, and wedge-type inserts indicated to be cast into concrete or built into unit masonry.
- 3. Steel weld plates and angles for casting into concrete for applications where they are not specified in other Sections.

##### 1.3 COORDINATION

- A. Coordinate selection of shop primers with topcoats to be applied over them. Comply with paint and coating manufacturers' written instructions to ensure that shop primers and topcoats are compatible with one another.
- B. Coordinate installation of metal fabrications that are anchored to or that receive other work. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

##### 1.4 ACTION SUBMITTALS

- A. Product Data: For the following:

1. Fasteners.
  2. Shop primers.
  3. Shrinkage-resisting grout.
- B. Shop Drawings: Show fabrication and installation details. Include plans, elevations, sections, and details of metal fabrications and their connections. Show anchorage and accessory items. Provide Shop Drawings for the following:
1. Steel framing and supports if required for repair measures of existing overhead doors.
  2. Steel tube reinforcement for low partitions.
  3. Steel framing and supports for mechanical and electrical equipment.
  4. Steel framing and supports for applications where framing and supports are not specified in other Sections.
  5. Loose steel lintels.

#### 1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For professional engineer's experience with providing delegated-design engineering services of the kind indicated, including documentation that engineer is licensed in the jurisdiction in which Project is located.
- B. Welding certificates.
- C. Paint Compatibility Certificates: From manufacturers of topcoats applied over shop primers, certifying that shop primers are compatible with topcoats.
- D. Research Reports: For post-installed anchors.

#### 1.6 QUALITY ASSURANCE

- A. Welding Qualifications: Qualify procedures and personnel in accordance with the following:
  1. AWS D1.1/D1.1M, "Structural Welding Code - Steel."

#### 1.7 FIELD CONDITIONS

- A. Field Measurements: Verify actual locations of walls, floor slabs, decks, and other construction contiguous with metal fabrications by field measurements before fabrication.



## PART 2 - PRODUCTS

### 2.1 PERFORMANCE REQUIREMENTS

- A. changes acting on exterior metal fabrications by preventing buckling, opening of joints, overstressing of components, failure of connections, and other detrimental effects.
  - 1. Temperature Change: 120 deg F, ambient; 180 deg F, material surfaces.

### 2.2 METALS

- A. Metal Surfaces, General: Provide materials with smooth, flat surfaces unless otherwise indicated. For metal fabrications exposed to view in the completed Work, provide materials without seam marks, roller marks, rolled trade names, or blemishes.
- B. Steel Plates, Shapes, and Bars: ASTM A36/A36M.
- C. Steel Tubing: ASTM A500/A500M, cold-formed steel tubing.
- D. Steel Pipe: ASTM A53/A53M, Standard Weight (Schedule 40) unless otherwise indicated.

### 2.3 FASTENERS

- A. General: Unless otherwise indicated, provide Type 316 stainless steel fasteners for exterior use and zinc-plated fasteners with coating complying with ASTM B633 or ASTM F1941/F1941M, Class Fe/Zn 5, at exterior walls. Select fasteners for type, grade, and class required.
- B. Steel Bolts and Nuts: Regular hexagon-head bolts, ASTM A307, Grade A; with hex nuts, ASTM A563; and, where indicated, flat washers.
- C. Stainless Steel Bolts and Nuts: Regular hexagon-head annealed stainless steel bolts, ASTM F593; with hex nuts, ASTM F594; and, where indicated, flat washers; Alloy Group 2.
- D. Anchor Bolts: ASTM F1554, Grade 36, of dimensions indicated; with nuts, ASTM A563; and, where indicated, flat washers.
  - 1. Hot-dip galvanize or provide mechanically deposited, zinc coating where item being fastened is indicated to be galvanized.
- E. Anchors, General: Capable of sustaining, without failure, a load equal to six times the load imposed when installed in unit masonry and four times the load imposed when installed in concrete, as determined by testing in accordance with ASTM E488/E488M, conducted by a qualified independent testing agency.
- F. Cast-in-Place Anchors in Concrete: Either threaded or wedge type unless otherwise indicated; galvanized ferrous castings, either ASTM A47/A47M malleable iron or ASTM A27/A27M cast

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steel. Provide bolts, washers, and shims as needed, all hot-dip galvanized per ASTM F2329/F2329M.

- G. Post-Installed Anchors: Torque-controlled expansion anchors or chemical anchors.
  - 1. Material: Alloy Group 2 stainless steel bolts, ASTM F593, and nuts, ASTM F594.

#### 2.4 MISCELLANEOUS MATERIALS

- A. Shop Primers: Provide primers that comply with Section 099113 "Exterior Painting" and Section 099123 "Interior Painting."
- B. Epoxy Zinc-Rich Primer: Complying with MPI#20 and compatible with topcoat.
- C. Shop Primer for Galvanized Steel: Primer formulated for exterior use over zinc-coated metal and compatible with finish paint systems indicated.
- D. Galvanizing Repair Paint: High-zinc-dust-content paint complying with SSPC-Paint 20 and compatible with paints specified to be used over it.
- E. Shrinkage-Resistant Grout: Factory-packaged, nonmetallic, nonstaining, noncorrosive, nongaseous grout complying with ASTM C1107/C1107M. Provide grout specifically recommended by manufacturer for interior and exterior applications.

#### 2.5 FABRICATION, GENERAL

- A. Shop Assembly: Preassemble items in the shop to greatest extent possible. Disassemble units only as necessary for shipping and handling limitations. Use connections that maintain structural value of joined pieces. Clearly mark units for reassembly and coordinated installation.
- B. Cut, drill, and punch metals cleanly and accurately. Remove burrs and ease edges to a radius of approximately 1/32 inch unless otherwise indicated. Remove sharp or rough areas on exposed surfaces.
- C. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing work.
- D. Form exposed work with accurate angles and surfaces and straight edges.
- E. Weld corners and seams continuously to comply with the following:
  - 1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
  - 2. Obtain fusion without undercut or overlap.
  - 3. Remove welding flux immediately.

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4. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.
- F. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners or welds where possible. Where exposed fasteners are required, use Phillips flat-head (countersunk) fasteners unless otherwise indicated. Locate joints where least conspicuous.
- G. Fabricate seams and other connections that are exposed to weather in a manner to exclude water. Provide weep holes where water may accumulate.
- H. Cut, reinforce, drill, and tap metal fabrications as indicated to receive finish hardware, screws, and similar items.
- I. Provide for anchorage of type indicated; coordinate with supporting structure. Space anchoring devices to secure metal fabrications rigidly in place and to support indicated loads.
- J. Where units are indicated to be cast into concrete or built into masonry, equip with integrally welded steel strap anchors, 1/8 by 1-1/2 inches, with a minimum 6-inch embedment and 2-inch hook, not less than 8 inches from ends and corners of units and 24 inches o.c., unless otherwise indicated.

## 2.6 MISCELLANEOUS FRAMING AND SUPPORTS

- A. General: Provide steel framing and supports not specified in other Sections as needed to complete the Work.
- B. Galvanize miscellaneous framing and supports where indicated.

## 2.7 LOOSE STEEL LINTELS

- A. Fabricate loose steel lintels from steel angles and shapes of size indicated for openings and recesses in masonry walls and partitions at locations indicated. Fabricate in single lengths for each opening unless otherwise indicated. Weld adjoining members together to form a single unit where indicated.
- B. Size loose lintels to provide bearing length at each side of openings equal to 1/12 of clear span, but not less than 8 inches unless otherwise indicated.
- C. Galvanize loose steel lintels located in exterior walls.

## 2.8 GENERAL FINISH REQUIREMENTS

- A. Finish metal fabrications after assembly.

- B. Finish exposed surfaces to remove tool and die marks and stretch lines, and to blend into surrounding surface.

## 2.9 STEEL AND IRON FINISHES

- A. Galvanizing: Hot-dip galvanize items as indicated to comply with ASTM A153/A153M for steel and iron hardware and with ASTM A123/A123M for other steel and iron products.
  - 1. Do not quench or apply post galvanizing treatments that might interfere with paint adhesion.
- B. Preparation for Shop Priming Galvanized Items: After galvanizing, thoroughly clean galvanized surfaces of grease, dirt, oil, flux, and other foreign matter, and treat with metallic phosphate process.
- C. Shop prime iron and steel items not indicated to be galvanized unless they are to be embedded in concrete, sprayed-on fireproofing, or masonry, or unless otherwise indicated.
  - 1. Shop prime with primers specified in Section 099113 "Exterior Painting" and primers specified in Section 099123 "Interior Painting" unless zinc-rich primer is indicated.
- D. Preparation for Shop Priming: Prepare surfaces to comply with requirements indicated below:
  - 1. Exterior Items: SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning."
  - 2. Items Indicated to Receive Zinc-Rich Primer: SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning."
  - 3. Other Steel Items: SSPC-SP 3, "Power Tool Cleaning."
  - 4. Galvanized-Steel Items: SSPC-SP 16, "Brush-off Blast Cleaning of Coated and Uncoated Galvanized Steel, Stainless Steels, and Non-Ferrous Metals."
- E. Shop Priming: Apply shop primer to comply with SSPC-PA 1, "Paint Application Specification No. 1: Shop, Field, and Maintenance Painting of Steel," for shop painting.
  - 1. Stripe paint corners, crevices, bolts, welds, and sharp edges.

## PART 3 - EXECUTION

### 3.1 INSTALLATION, GENERAL

- A. Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required for installing metal fabrications. Set metal fabrications accurately in location, alignment, and elevation; with edges and surfaces level, plumb, true, and free of rack; and measured from established lines and levels.

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- B. Fit exposed connections accurately together to form hairline joints. Weld connections that are not to be left as exposed joints but cannot be shop welded because of shipping size limitations. Do not weld, cut, or abrade surfaces of exterior units that have been hot-dip galvanized after fabrication and are for bolted or screwed field connections.
- C. Field Welding: Comply with the following requirements:
  - 1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
  - 2. Obtain fusion without undercut or overlap.
  - 3. Remove welding flux immediately.
  - 4. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.
- D. Fastening to In-Place Construction: Provide anchorage devices and fasteners where metal fabrications are required to be fastened to in-place construction. Provide threaded fasteners for use with concrete and masonry inserts, toggle bolts, through bolts, lag screws, wood screws, and other connectors.
- E. Provide temporary bracing or anchors in formwork for items that are to be built into concrete, masonry, or similar construction.

### 3.2 INSTALLATION OF MISCELLANEOUS FRAMING AND SUPPORTS

- A. General: Install framing and supports to comply with requirements of items being supported, including manufacturers' written instructions and requirements indicated on Shop Drawings.
- B. Anchor supports if required for repair measures of existing overhead doors for securely to, and rigidly brace from, building structure.

### 3.3 REPAIRS

- A. Touchup Painting:
  - 1. Cleaning and touchup painting of field welds, bolted connections, and abraded areas of shop paint are specified in Division 09 painting sections.
- B. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing to comply with ASTM A780/A780M.

END OF SECTION

SECTION 061000

ROUGH CARPENTRY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
  - 1. Framing with dimension lumber.
  - 2. Wood blocking and nailers.
  - 3. Plywood backing panels.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of process and factory-fabricated product. Indicate component materials and dimensions and include construction and application details.
  - 1. Include data for wood-preservative treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements. Indicate type of preservative used and net amount of preservative retained.
  - 2. For products receiving a waterborne treatment, include statement that moisture content of treated materials was reduced to levels specified before shipment to Project site.
- B. Fastener Patterns: Full-size templates for fasteners in exposed framing.

1.4 INFORMATIONAL SUBMITTALS

- A. Material Certificates: For dimension lumber specified to comply with minimum allowable unit stresses. Indicate species and grade selected for each use and design values approved by the ALSC Board of Review.
- B. Evaluation Reports: For the following, from ICC-ES:
  - 1. Wood-preservative-treated wood.
  - 2. Power-driven fasteners.
  - 3. Post-installed anchors.

4. Metal framing anchors.

## 1.5 QUALITY ASSURANCE

- A. Testing Agency Qualifications: For testing agency providing classification marking for fire-retardant treated material, an inspection agency acceptable to authorities having jurisdiction that periodically performs inspections to verify that the material bearing the classification marking is representative of the material tested.

## 1.6 DELIVERY, STORAGE, AND HANDLING

- A. Stack wood products flat with spacers beneath and between each bundle to provide air circulation. Protect wood products from weather by covering with waterproof sheeting, securely anchored. Provide for air circulation around stacks and under coverings.

## PART 2 - PRODUCTS

### 2.1 WOOD PRODUCTS, GENERAL

- A. Lumber: DOC PS 20 and applicable rules of grading agencies indicated. If no grading agency is indicated, comply with the applicable rules of any rules-writing agency certified by the ALSC Board of Review. Grade lumber by an agency certified by the ALSC Board of Review to inspect and grade lumber under the rules indicated.
  1. Factory mark each piece of lumber with grade stamp of grading agency.
  2. Dress lumber, S4S, unless otherwise indicated.

### 2.2 WOOD-PRESERVATIVE-TREATED LUMBER

- A. Preservative Treatment by Pressure Process: AWWA U1; Use Category UC2 for interior construction not in contact with ground, Use Category UC3b for exterior construction not in contact with ground, and Use Category UC4a for items in contact with ground.
  1. Preservative Chemicals: Acceptable to authorities having jurisdiction and containing no arsenic or chromium. Do not use inorganic boron (SBX) for sill plates.
- B. Kiln-dry lumber after treatment to a maximum moisture content of 19 percent. Do not use material that is warped or that does not comply with requirements for untreated material.
- C. Mark lumber with treatment quality mark of an inspection agency approved by the ALSC Board of Review.
  1. For exposed lumber indicated to receive a stained or natural finish, mark end or back of each piece.

- D. Application: Treat all rough carpentry unless otherwise indicated.

### 2.3 DIMENSION LUMBER FRAMING

- A. Load and Non-Load-Bearing Partitions: Match existing grade and species.

### 2.4 MISCELLANEOUS LUMBER

- A. General: Provide miscellaneous lumber indicated and lumber for support or attachment of other construction, including the following:

1. Blocking.
2. Nailers.
3. Rooftop equipment bases and support curbs.
4. Cants.
5. Furring.
6. Grounds.

- B. Dimension Lumber Items: Matching existing species and grades.

- C. Concealed Boards: 19 percent maximum moisture content matching existing species and grades.

- D. For blocking not used for attachment of other construction, Utility, Stud, or No. 3 grade lumber of any species may be used provided that it is cut and selected to eliminate defects that will interfere with its attachment and purpose.

- E. For blocking and nailers used for attachment of other construction, select and cut lumber to eliminate knots and other defects that will interfere with attachment of other work.

- F. For furring strips for installing plywood or hardboard paneling, select boards with no knots capable of producing bent-over nails and damage to paneling.

### 2.5 PLYWOOD BACKING PANELS

- A. Equipment Backing Panels: Plywood, DOC PS 1, Exposure 1, C-D Plugged, in thickness indicated or, if not indicated, not less than 1/2-inch nominal thickness.

### 2.6 FASTENERS

- A. General: Fasteners shall be of size and type indicated and shall comply with requirements specified in this article for material and manufacture.



1. Where rough carpentry is exposed to weather, in ground contact, pressure-preservative treated, or in area of high relative humidity, provide fasteners with hot-dip zinc coating complying with ASTM A153/A153M or of Type 304 stainless steel.
- B. Nails, Brads, and Staples: ASTM F1667.
- C. Power-Driven Fasteners: Fastener systems with an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC70.
- D. Post-Installed Anchors: Fastener systems with an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC01 or ICC-ES AC193 as appropriate for the substrate.
  1. Material: Carbon-steel components, zinc plated to comply with ASTM B633, Class Fe/Zn 5.

## 2.7 METAL FRAMING ANCHORS

- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
  1. Cleveland Steel Specialty Co.
  2. KC Metals Products, Inc.
  3. Phoenix Metal Products, Inc.
  4. Simpson Strong-Tie Co., Inc.
  5. USP Structural Connectors.
- B. Allowable design loads, as published by manufacturer, shall meet or exceed those of products of manufacturers listed. Manufacturer's published values shall be determined from empirical data or by rational engineering analysis and demonstrated by comprehensive testing performed by a qualified independent testing agency. Framing anchors shall be punched for fasteners adequate to withstand same loads as framing anchors.
- C. Galvanized-Steel Sheet: Hot-dip, zinc-coated steel sheet complying with ASTM A653/A653M, G60 coating designation.
  1. Use for interior locations unless otherwise indicated.
- D. Hot-Dip, Heavy-Galvanized Steel Sheet: ASTM A653/A653M; structural steel (SS), high-strength low-alloy steel Type A (HSLAS Type A), or high-strength low-alloy steel Type B (HSLAS Type B); G185 coating designation; and not less than 0.036 inch thick.
  1. Use for wood-preservative-treated lumber and where indicated.
- E. Stainless Steel Sheet: ASTM A240/A240M or ASTM A666, Type 304.
  1. Use for exterior locations and where indicated.

- F. Anchor type to match existing from repair operations.

## 2.8 MISCELLANEOUS MATERIALS

- A. Sill-Sealer Gaskets: Closed-cell neoprene foam, 1/4 inch thick, selected from manufacturer's standard widths to suit width of sill members indicated.
- B. Adhesives for Gluing to Concrete or Masonry: Formulation complying with ASTM D3498 that is approved for use indicated by adhesive manufacturer.
- C. Water-Repellent Preservative: NWWDA-tested and -accepted formulation containing 3-iodo-2-propynyl butyl carbamate, combined with an insecticide containing chloropyrifos as its active ingredient.

## PART 3 - EXECUTION

### 3.1 INSTALLATION, GENERAL

- A. Framing Standard: Comply with AF&PA's WCD 1, "Details for Conventional Wood Frame Construction," unless otherwise indicated.
- B. Set rough carpentry to required levels and lines, with members plumb, true to line, cut, and fitted. Fit rough carpentry accurately to other construction. Locate nailers, blocking and similar supports to comply with requirements for attaching other construction.
- C. Install plywood backing panels by fastening to studs; coordinate locations with utilities requiring backing panels.
- D. Install metal framing anchors to comply with manufacturer's written instructions. Install fasteners through each fastener hole.
- E. Install sill sealer gasket to form continuous seal between sill plates and foundation walls.
- F. Do not splice structural members between supports unless otherwise indicated.
- G. Provide blocking and framing as indicated and as required to support facing materials, fixtures, specialty items, and trim.
  - 1. Provide metal clips for fastening gypsum board or lath at corners and intersections where framing or blocking does not provide a surface for fastening edges of panels. Space clips not more than 16 inches o.c.
- H. Provide fire blocking in furred spaces, stud spaces, and other concealed cavities as indicated and as follows:

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1. Fire block furred spaces of walls, at each floor level, at ceiling, and at not more than 96 inches o.c. with solid wood blocking or noncombustible materials accurately fitted to close furred spaces.
  2. Fire block concealed spaces of wood-framed walls and partitions at each floor level, at ceiling line of top story, and at not more than 96 inches o.c. Where fire blocking is not inherent in framing system used, provide closely fitted solid wood blocks of same width as framing members and 2-inch nominal thickness.
  3. Fire block concealed spaces between floor sleepers with same material as sleepers to limit concealed spaces to not more than 100 sq. ft. and to solidly fill space below partitions.
  4. Fire block concealed spaces behind combustible cornices and exterior trim at not more than 20 feet o.c.
- I. Sort and select lumber so that natural characteristics do not interfere with installation or with fastening other materials to lumber. Do not use materials with defects that interfere with function of member or pieces that are too small to use with minimum number of joints or optimum joint arrangement.
- J. Comply with AWP A M4 for applying field treatment to cut surfaces of preservative-treated lumber.
1. Use inorganic boron for items that are continuously protected from liquid water.
  2. Use copper naphthenate for items not continuously protected from liquid water.
- K. Where wood-preservative-treated lumber is installed adjacent to metal decking, install continuous flexible flashing separator between wood and metal decking.
- L. Securely attach rough carpentry work to substrate by anchoring and fastening as indicated, complying with the following:
1. Table 2304.9.1, "Fastening Schedule," in ICC's International Building Code (IBC).
  2. ICC-ES evaluation report for fastener.
- M. Use steel common nails unless otherwise indicated. Select fasteners of size that will not fully penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections between members. Install fasteners without splitting wood. Drive nails snug but do not countersink nail heads unless otherwise indicated.
- N. For exposed work, arrange fasteners in straight rows parallel with edges of members, with fasteners evenly spaced, and with adjacent rows staggered.
- 3.2 INSTALLATION OF WOOD BLOCKING AND NAILERS
- A. Install where indicated and where required for attaching other work. Form to shapes indicated and cut as required for true line and level of attached work. Coordinate locations with other work involved.

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- B. Attach items to substrates to support applied loading. Recess bolts and nuts flush with surfaces unless otherwise indicated.

### 3.3 INSTALLATION OF WALL AND PARTITION FRAMING

- A. General: Provide single bottom plate and double top plates using members of 2-inch nominal thickness whose widths equal that of studs, except single top plate may be used for non-load-bearing partitions. Fasten plates to supporting construction unless otherwise indicated.
  - 1. For exterior walls, provide 2-by-6-inch nominal- size wood studs spaced 16 inches o.c. unless otherwise indicated.
  - 2. For interior partitions and walls, provide 2-by-4-inch nominal- size wood studs spaced 16 inches o.c. unless otherwise indicated.
  - 3. Provide continuous horizontal blocking at midheight of partitions more than 96 inches high, using members of 2-inch nominal thickness and of same width as wall or partitions.
- B. Construct corners and intersections with three or more studs, except that two studs may be used for interior non-load-bearing partitions.
- C. Frame openings with multiple studs and headers. Provide nailed header members of thickness equal to width of studs. Support headers on jamb studs.
  - 1. For non-load-bearing partitions, provide double-jamb studs and headers not less than 4-inch nominal depth for openings 48 inches and less in width, 6-inch nominal depth for openings 48 to 72 inches in width, 8-inch nominal depth for openings 72 to 120 inches in width, and not less than 10-inch nominal depth for openings 10 to 12 feet in width.
  - 2. For load-bearing walls, provide double-jamb studs for openings 60 inches and less in width, and triple-jamb studs for wider openings. Provide headers of depth indicated or, if not indicated, according to Table R502.5(1) or Table R502.5(2), as applicable, in ICC's International Residential Code for One- and Two-Family Dwellings.

### 3.4 INSTALLATION OF FLOOR JOIST FRAMING

- A. General: Install floor joists with crown edge up and support ends of each member with not less than 1-1/2 inches of bearing on wood or metal, or 3 inches on masonry. Attach floor joists as follows:
  - 1. Where supported on wood members, by using metal framing anchors.
  - 2. Where framed into wood supporting members, by using wood ledgers as indicated or, if not indicated, by using metal joist hangers.
- B. Fire Cuts: At joists built into masonry, bevel cut ends 3 inches and do not embed more than 4 inches.
- C. Frame openings with headers and trimmers supported by metal joist hangers; double headers and trimmers where span of header exceeds 48 inches.

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- D. Do not notch in middle third of joists; limit notches to one-sixth depth of joist, one-third at ends. Do not bore holes larger than one-third depth of joist; do not locate closer than 2 inches from top or bottom.
- E. Provide solid blocking of 2-inch nominal thickness by depth of joist at ends of joists unless nailed to header or band.
- F. Lap members framing from opposite sides of beams, girders, or partitions not less than 4 inches or securely tie opposing members together. Provide solid blocking of 2-inch nominal thickness by depth of joist over supports.
- G. Anchor members paralleling masonry with 1/4-by-1-1/4-inch metal strap anchors spaced not more than 96 inches o.c., extending over and fastening to three joists. Embed anchors at least 4 inches into grouted masonry with ends bent at right angles and extending 4 inches beyond bend.
- H. Provide solid blocking between joists under jamb studs for openings.
- I. Under non-load-bearing partitions, provide double joists separated by solid blocking equal to depth of studs above.
  - 1. Provide triple joists separated as above, under partitions receiving ceramic tile and similar heavy finishes or fixtures.
- J. Provide bridging of type indicated below, at intervals of 96 inches o.c., between joists.
  - 1. Diagonal wood bridging formed from bevel-cut, 1-by-3-inch nominal-size lumber, double-crossed and nailed at both ends to joists.
  - 2. Steel bridging installed to comply with bridging manufacturer's written instructions.

### 3.5 INSTALLATION OF CEILING JOIST AND RAFTER FRAMING

- A. Ceiling Joists: Install with crown edge up and complying with requirements specified above for floor joists. Face nail to ends of parallel rafters.
  - 1. Where ceiling joists are at right angles to rafters, provide additional short joists parallel to rafters from wall plate to first joist; nail to ends of rafters and to top plate, and nail to first joist or anchor with framing anchors or metal straps. Provide 1-by-8-inch nominal-size or 2-by-4-inch nominal-size stringers spaced 48 inches o.c. crosswise over main ceiling joists.
- B. Rafters: Notch to fit exterior wall plates and use metal framing anchors. Double rafters to form headers and trimmers at openings in roof framing, if any, and support with metal hangers. Where rafters abut at ridge, place directly opposite each other and nail to ridge member or use metal ridge hangers.

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1. At valleys, provide double-valley rafters of size indicated or, if not indicated, of same thickness as regular rafters and 2 inches deeper. Bevel ends of jack rafters for full bearing against valley rafters.
  2. At hips, provide hip rafter of size indicated or, if not indicated, of same thickness as regular rafters and 2 inches deeper. Bevel ends of jack rafters for full bearing against hip rafter.
- C. Provide collar beams (ties) as indicated or, if not indicated, provide 1-by-6-inch nominal-size boards between every third pair of rafters, but not more than 48 inches o.c. Locate below ridge member, at third point of rafter span. Cut ends to fit roof slope and nail to rafters.
- D. Provide special framing as indicated for eaves, overhangs, dormers, and similar conditions if any.

3.6 PROTECTION

- A. Protect wood that has been treated with inorganic boron (SBX) from weather. If, despite protection, inorganic boron-treated wood becomes wet, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.
- B. Protect rough carpentry from weather. If, despite protection, rough carpentry becomes wet, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.

END OF SECTION

## SECTION 064000

### ARCHITECTURAL WOODWORK

#### PART 1 GENERAL

##### 1.1 SUMMARY

- A. Work Results:
  - 1. Metal/Plastic laminates.
  - 2. Plastic and metal laminate wood work finish at bar, restaurant, dining, restrooms.
- B. Principal Products:
  - 1. Metal laminates.
  - 2. Plastic laminates.

##### 1.2 ADMINISTRATIVE REQUIREMENTS

- A. Preinstallation Meeting Attendees and Procedures:
  - 1. Conduct meeting one week, minimum, before starting Work of this Section.

##### 1.3 ACTION SUBMITTALS

- A. Submittals - General: AWI 100.
- B. Product Data:
  - 1. Panel products.
  - 2. Adhesives.
  - 3. Finish materials.
  - 4. Fire retardant treatment.
  - 5. Initial selection color samples.
- C. Shop Drawings:
  - 1. Dimensioned plans and elevations showing architectural woodwork elements locations.
  - 2. Show materials, profiles, assembly methods, joint details, fastening methods, sizes and locations of cutouts and finishes.
  - 3. Veneered Wall Paneling: Show and dimension panel sizes, veneer leaves, and grain direction.
- D. Samples:
  - 1. Plastic and Metal Laminates: 8 by 10 inches, minimum.
  - 2. Fabricated Samples:
    - a. Laminate applied to core material with edge banding, 8 by 10 inches, minimum.

1.4 INFORMATIONAL SUBMITTALS



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- A. Woodworker Quality Certificates: AWI Quality Certification Program.
- B. Test and Evaluation Reports: Manufacturer test results showing:
  - 1. Fire-retardant-treated wood performance.

#### 1.5 DELIVERY, STORAGE, AND HANDLING

- A. Storage and Handling Requirements: AWI 200.

#### 1.6 FIELD CONDITIONS

- A. Ambient Conditions: Perform work within following limitations.
  - 1. Building enclosed and environmental systems maintaining design conditions for Owner occupancy.
- B. Existing Conditions: Verify field measurements before fabrication. Show field measurements on Shop Drawings.

### PART 2 PRODUCTS

#### 2.1 WOODWORK GENERAL REQUIREMENTS

- A. Quality Standard: Follow AWI 300 - Materials and ANSI/AWI 0620 - Installation for aesthetic grades.
- B. Woodwork Grade: Custom.

#### 2.2 LAMINATE FLUSH WALL PANELING

- A. Grade: Custom.
- B. Exposed Surfaces: High-pressure decorative laminate.
  - 1. Faces: Grade HGS.
  - 2. Grain Direction: See Drawings.
  - 3. Backs: Grade BKH.
  - 4. Edge Banding: Grade HGS HPDL and 0.12 inch PVC edge banding matching exposed laminate.
- C. Plastic Laminate:
  - 1. Manufacturers and Products: See Finish Schedule on Drawings.
- D. Metal Laminate:
  - 1. Manufacturers and Products: See Finish Schedule on Drawings.
- E. Panel Core Construction: Particleboard or MDF, fire-retardant treated.
  - 1. Thickness: 3/4 inch.

### 2.3 PERFORMANCE

- A. Surface Burning Performance: ASTM E84 Class A.
  - 1. Flame Spread Index: 25, maximum.
  - 2. Smoke Developed Index: 450, maximum.

### 2.4 MATERIALS

- A. Wood Materials, General: AWI 300 for grade specified.
- B. Panel Products:
  - 1. Hardwood Plywood, Veneer Core, and Veneers: ANSI HPVA HP-1.
  - 2. Particleboard: ANSI A208.1 Grade M-2 or better.
  - 3. Medium Density Fiberboard: ANSI A208.2, Grade 130.
- C. Interior Furring, Blocking, Shims, and Hanging Strips: Fire-retardant-treated softwood lumber.
- D. High-Pressure Decorative Laminate: NEMA LD 3.
- E. Adhesives: Recommended by facing material manufacturers.
- F. Fasteners: Type, size, and material to suit each application.

### 2.5 LUMBER AND PANEL MATERIAL TREATMENT

- A. Fire-Retardant Treatment:
  - 1. Chemically treated and pressure impregnated.
  - 2. Flame Spread: 25, maximum per ASTM E84.
  - 3. Label or otherwise identify fire retardant treated material.
  - 4. Deliver fire retardant treated materials cut to required sizes. Minimize field cutting.

### 2.6 FABRICATION

- A. Shop assemble work for delivery to site, permitting passage through building openings.
- B. When necessary to cut and fit on site, fabricate materials with ample allowance for cutting. Furnish trim for scribing and site cutting.
- C. High-Pressure Decorative Laminate-Finished Faces:
  - 1. Apply HPDL in full uninterrupted sheets consistent with manufactured sizes. Fit corners and joints hairline; conceal with concealed fasteners. Slightly bevel arises.
  - 2. Apply laminate backing sheet to reverse face of HPDL finished surfaces.
- D. Fabrication Tolerances: ANSI/AWI 0620, specified grade.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Verify adequacy of backing and support framing.
- B. Verify location and sizes of utility rough-in associated with woodwork.

### 3.2 PREPARATION

- A. Surface Preparation: ANSI/AWI 0620.
- B. Conditioning:
  - 1. Acclimate products to installation environment per AWI 200 and ANSI/AWI 0620.

### 3.3 INSTALLATION - GENERAL

- A. Follow ANSI/AWI 0620.
- B. Installation Grade: Same as item being installed.

### 3.4 INSTALLATION

- A. Install woodwork plumb and level.
- B. Scribe work abutting other components, with maximum gaps of 1/32 inch. Do not use additional overlay trim to conceal larger gaps.
- C. Install trim with adhesive and fine, finishing nails.
- D. Wall Paneling: Install with concealed z-clips mounted to panels and substrate.

### 3.5 ADJUSTING

- A. Test installed work for rigidity and ability to support loads.

### 3.6 CLEANING

- A. Cleaning: Clean exposed and semi-exposed surfaces of woodwork.
- B. Touch up shop-applied finishes. Replace damaged items that cannot be repaired.

3.7 PROTECTION

- A. Protection: Protect installed woodwork from damage due to subsequent construction operations.

**END OF SECTION**

## SECTION 072100

### THERMAL INSULATION

#### PART 1 GENERAL

##### 1.1 SUMMARY

- A. Work Results:
  - 1. Batt and rigid insulation at framed exterior walls.
- B. Principal Products:
  - 1. Building insulation.

##### 1.2 ACTION SUBMITTALS

- A. Product Data.

##### 1.3 INFORMATIONAL SUBMITTALS

- A. Test and Evaluation Reports: Manufacturer test results showing:
  - 1. Thermal performance.
  - 2. Surface burning characteristics.
  - 3. Combustibility.
  - 4. Density.

##### 1.4 DELIVERY, STORAGE, AND HANDLING

- A. Storage and Handling Requirements:
  - 1. Store insulation in dry location, protected from elements.
  - 2. Handle insulation to prevent soiling and damage.
  - 3. Foam Board Insulation:
    - a. Protect combustible insulation against ignition.

#### PART 2 PRODUCTS

##### 2.1 FOAM BOARD INSULATION

- A. Extruded Polystyrene Board: ASTM C578.
  - 1. Manufacturers and Products:
    - a. DiversiFoam Products CertiFoam 25.
    - b. DuPont STYROFOAM.

- c. GreenGuard Type IV 25 psi XPS Insulation Board.

- d. Owens Corning FOAMULAR 250.
2. Type IV, 25 psi, square edges.
3. Surface Burning Characteristics: ASTM E84:
  - a. Flame Spread Index: 25, maximum.
  - b. Smoke Developed Index: 450, maximum.

## 2.2 FIBROUS BOARD INSULATION

- A. Unfaced Mineral-Wool Board: ASTM C612, Type III.
  1. Manufacturers and Products:
    - a. Johns Manville MinWool CW4.
    - b. Rockwool ROCKBOARD 40.
    - c. Thermafiber, Inc. Thermafiber Safing.
  2. Nominal Density: 4 lb/cu. ft.
  3. Surface Burning Characteristics: ASTM E84:
    - a. Flame Spread Index: 15, maximum.
    - b. Smoke Developed Index: 0, maximum.
  4. Combustion: Passes ASTM E136.
  5. Fiber Color: Architect selected.

## 2.3 BLANKET INSULATION

- A. Unfaced Glass-Fiber Blankets: ASTM C665, Type I.
  1. Manufacturers and Products:
    - a. CertainTeed Corporation Fiber Glass Building Insulation.
    - b. Johns Manville Unfaced Fiber Glass Batts.
    - c. Knauf Insulation EcoBatt Insulation.
    - d. Owens Corning EcoTouch Pink.
  2. Surface Burning Characteristics: ASTM E84:
    - a. Flame Spread Index: 25, maximum.
    - b. Smoke Developed Index: 50, maximum.
  3. Combustion: Passes ASTM E136.
- B. Faced Glass-Fiber Blankets: ASTM C665, vapor-retarding.
  1. Manufacturers and Products:
    - a. CertainTeed Corporation CertaPRO.
    - b. Johns Manville Faced Batts.
    - c. Knauf Insulation EcoBatt Insulation.
    - d. Owens Corning EcoTouch Pink.
    - e. Or approved equal.
  2. Facing: One side,.
  3. Surface Burning Characteristics: ASTM E84:
    - a. Flame Spread Index: 25, maximum.

## 2.4 INSULATION FASTENERS

- A. Spindle-Type Adhered Anchors: Galvanized steel plate with galvanized or copper-coated steel spindle.

1. Manufacturers and Products:
    - a. AGM Industries.
    - b. Gemco.
    - c. Gripnail
    - d. Midwest Fasteners.
  2. Spindle Length: Suited to insulation depth.
- B. Insulation-Retaining Washers: Galvanized steel self-locking washers.
1. Washer Size: Recommended by anchor manufacturer.
- C. Insulation Standoffs: Galvanized steel spacer fit over spindle providing 1 inch space between insulation and substrate.
- D. Anchor Adhesive: Type recommended by anchor manufacturer for substrate.

### PART 3 EXECUTION

#### 3.1 PREPARATION

- A. Clean substrates and remove projections and appurtenances that may damage insulation or inhibit adhesion.

#### 3.2 INSTALLATION - GENERAL

- A. Extend insulation to cover entire area shown to be insulated.
- B. Insulate tightly around obstructions and penetrations.
- C. Foam Board Insulation: Protect from extended sunlight exposure beyond manufacturer's stated limits.

#### 3.3 INSTALLATION OF WALL CONTINUOUS INSULATION

- A. Foam Board Insulation: Adhere insulation boards firmly against substrate. Butt units tightly.

#### 3.4 INSTALLATION OF FRAMED WALL INSULATION

- A. Blanket Insulation: Fill cavities between framing members with insulation. Snugly fit insulation.
1. Recessed Lighting Fixtures: Maintain 3-inch clearance between insulation and fixtures not rated for insulation contact.
  2. Eave Ventilation: Install eave ventilation troughs between roof framing members at vented eaves.
  3. Metal-Framed Wall Cavities over 96 Inches High:
    - a. Faced Blankets: Tape flanges to stud faces.
    - b. Unfaced Blankets: Apply insulation fasteners to stud faces before installing



insulation.

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4. Wood-Framed Construction: ASTM C1320.
  - a. Rafter and Joist Installation: Support insulation 24 inches on center, maximum and within 12 inches of each blanket end.
  - b. Faced Blankets: Overlap and staple facing flanges to framing members. Tape joints and holes in facing.

### 3.5 PROTECTION

- A. Protect insulation from damage due to weather, ultraviolet radiation, physical abuse, and other causes. Provide temporary coverings or enclosures until permanent construction is completed.

**END OF SECTION**

## SECTION 081113 - HOLLOW METAL DOORS AND FRAMES

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. Section Includes:
  - 1. Standard and custom hollow metal doors and frames.
- B. Codes and References: Comply with the version year adopted by the Authority Having Jurisdiction.
  - 1. ANSI/SDI A250.8 - Recommended Specifications for Standard Steel Doors and Frames.
  - 2. ANSI/SDI A250.4 - Test Procedure and Acceptance Criteria for Physical Endurance for Steel Doors, Frames, Frames Anchors and Hardware Reinforcing.
  - 3. ANSI/SDI A250.6 - Recommended Practice for Hardware Reinforcing on Standard Steel Doors and Frames.
  - 4. ANSI/SDI A250.10 - Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames.
  - 5. ANSI/SDI A250.11 - Recommended Erection Instructions for Steel Frames.
  - 6. ASTM A653 - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
  - 7. ANSI/BHMA A156.115 - Hardware Preparation in Steel Doors and Frames.
  - 8. ANSI/SDI 122 - Installation and Troubleshooting Guide for Standard Steel Doors and Frames.
  - 9. ANSI/NFPA 80 - Standard for Fire Doors and Fire Windows; National Fire Protection Association.
  - 10. ANSI/NFPA 105: Standard for the Installation of Smoke Door Assemblies.
  - 11. NFPA 252 - Standard Methods of Fire Tests of Door Assemblies; National Fire Protection Association.
  - 12. UL 10C - Positive Pressure Fire Tests of Door Assemblies.
  - 13. UL 1784 - Standard for Air Leakage Tests of Door Assemblies.

#### 1.2 SUBMITTALS

- A. Product Data: For each type of product indicated. Include construction details, material descriptions, core descriptions, hardware reinforcements, profiles, anchors, fire-resistance rating, and finishes.
- B. Door hardware supplier is to furnish templates, template reference number and/or physical hardware to the steel door and frame supplier in order to prepare the doors and frames to receive the finish hardware items.
- C. Shop Drawings: Include the following:
  - 1. Elevations of each door design.
  - 2. Details of doors, including vertical and horizontal edge details and metal thicknesses.
  - 3. Frame details for each frame type, including dimensioned profiles and metal thicknesses.
  - 4. Locations of reinforcement and preparations for hardware.
  - 5. Details of anchorages, joints, field splices, and connections.
  - 6. Details of accessories.
  - 7. Details of moldings, removable stops, and glazing.

8. Details of conduit and preparations for power, signal, and control systems.
- D. Samples for Verification:
  1. Samples are only required by request of the architect and for manufacturers that are not current members of the Steel Door Institute.

### 1.3 QUALITY ASSURANCE

- A. Source Limitations: Obtain hollow metal doors and frames through one source from a single manufacturer wherever possible.
- B. Quality Standard: In addition to requirements specified, furnish SDI-Certified manufacturer products that comply with ANSI/SDI A250.8, latest edition, "Recommended Specifications for Standard Steel Doors and Frames".
- C. Fire-Rated Door Assemblies: Assemblies complying with NFPA 80 that are listed and labeled by a qualified testing agency, for fire-protection ratings indicated, based on testing at positive pressure according to UL10C (neutral pressure at 40" above sill) or UL 10C.
  1. Oversize Fire-Rated Door Assemblies Construction: For units exceeding sizes of tested assemblies, attach construction label certifying doors are built to standard construction requirements for tested and labeled fire rated door assemblies except for size.
  2. Temperature-Rise Limit: Where indicated and at vertical exit enclosures (stairwell openings) and exit passageways, provide doors that have a maximum transmitted temperature end point of not more than 450 deg F (250 deg C) above ambient after 30 minutes of standard fire-test exposure.
  3. Smoke Control Door Assemblies: Comply with NFPA 105.
    - a. Smoke "S" Label: Doors to bear "S" label, and include smoke and draft control gasketing applied to frame and on meeting stiles of pair doors.
- D. Fire-Rated, Borrowed-Light Frame Assemblies: Assemblies complying with NFPA 80 that are listed and labeled, by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire-protection ratings indicated, based on testing according to NFPA 257. Provide labeled glazing material.
- E. Pre-Submittal Conference: Conduct conference in compliance with requirements in Division 01 Section "Project Meetings" with attendance by representatives of Supplier, Installer, and Contractor to review proper methods and procedures for installing hollow metal doors and frames and to verify installation of electrical knockout boxes and conduit at frames with electrified or access control hardware.

### 1.4 DELIVERY, STORAGE, AND HANDLING

- A. Deliver hollow metal work palletized, wrapped, or crated to provide protection during transit and Project site storage. Do not use non-vented plastic.
- B. Deliver welded frames with two removable spreader bars across bottom of frames, tack welded to jambs and mullions.
- C. Store hollow metal work under cover at Project site. Place in stacks of five units maximum in a vertical position with heads up, spaced by blocking, on minimum 4-inch high wood blocking. Do not store in a manner that traps excess humidity.
  1. Provide minimum 1/4-inch space between each stacked door to permit air circulation. Door and frames to be stacked in a vertical upright position.

### 1.5 PROJECT CONDITIONS

- A. Field Measurements: Verify actual dimensions of openings by field measurements before

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Northfield, NJ 08225

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fabrication.

## 1.6 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace doors that fail in materials or workmanship within specified warranty period.
- B. Warranty includes installation and finishing that may be required due to repair or replacement of defective doors.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide steel doors and frames from a SDI Certified manufacturer:
  - 1. CECO Door Products (C).
  - 2. Curries Company (CU).
  - 3. Pioneer Industries (PI).
  - 4. Steelcraft (S).

### 2.2 MATERIALS

- A. Metallic-Coated Steel Sheet: ASTM A 653/A 653M, Commercial Steel (CS), Type B; with minimum G60 (Z180) or A60 (ZF180) metallic coating.
- B. Frame Anchors: ASTM A 653/A 653M, Commercial Steel (CS), Commercial Steel (CS), Type B; with minimum G60 (Z180) or A60 (ZF180) metallic coating.

### 2.3 HOLLOW METAL DOORS

- A. General: Provide 1-3/4 inch doors of design indicated, not less than thickness indicated; fabricated with smooth surfaces, without visible joints or seams on exposed faces unless otherwise indicated. Comply with ANSI/SDI A250.8 and ANSI/NAAMM HMMA 867.
- B. Exterior Doors: Face sheets fabricated of commercial quality hot-dipped zinc coated steel that complies with ASTM A 653/A 653M, Coating Designation A60. Provide doors complying with requirements indicated below by referencing ANSI/SDI A250.8 for level and model and ANSI/SDI A250.4 for physical performance level:
  - 1. Design: Flush panel.
  - 2. Core Construction: Manufacturer's standard vertical steel-stiffener core. Minimum 22 gauge steel-stiffeners at 6 inches on-center construction attached by spot welds spaced not more than 5" on centers. Spaces between stiffeners filled with fiberglass insulation (minimum density 0.8#/cubic ft.).
  - 3. Level/Model: Level 3 and Physical Performance Level A (Extra Heavy Duty), Minimum 16 gauge (0.053-inch - 1.3-mm) thick steel, Model 2.
  - 4. Vertical Edges: Vertical edges to have the face sheets joined by a continuous weld extending the full height of the door. Welds are to be ground, filled and dressed smooth. Beveled Lock Edge, 1/8 inch in 2 inches (3 mm in 50 mm).
  - 5. Top and Bottom Edges: Reinforce tops and bottoms of doors with a continuous steel channel not less than 16 gauge, extending the full width of the door and welded to the face sheet. Doors with an inverted top channel to include a steel closure channel, screw attached, with the web of the channel flush with the face sheets of the door. Plastic or composite channel fillers are not acceptable.
  - 6. Hinge Reinforcement: Minimum 7 gauge (3/16") plate 1-1/4" x 9" or minimum 14 gauge

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continuous channel with pierced holes, drilled and tapped.

7. Hardware Reinforcements: Fabricate according to ANSI/SDI A250.6 with reinforcing plates from same material as door face sheets.
- C. Interior Doors: Face sheets fabricated of commercial quality hot-dipped zinc coated steel that complies with ASTM A 653/A 653M, Coating Designation A60. Provide doors complying with requirements indicated below by referencing ANSI/SDI A250.8 for level and model and ANSI/SDI A250.4 for physical performance level:
  1. Design: Flush panel.
  2. Core Construction: Manufacturer's standard kraft-paper honeycomb, or one-piece polystyrene core, securely bonded to both faces.
    - a. Fire Door Core: As required to provide fire-protection and temperature-rise ratings indicated.
  3. Level/Model: Level 2 and Physical Performance Level B (Heavy Duty), Minimum 18 gauge (0.042-inch - 1.0-mm) thick steel, Model 2.
  4. Vertical Edges: Vertical edges to have the face sheets spot welded and filled full height with an epoxy filler. Welds are to be ground, filled and dressed smooth. Beveled Lock Edge, 1/8 inch in 2 inches (3 mm in 50 mm).
  5. Top and Bottom Edges: Reinforce tops and bottoms of doors with a continuous steel channel not less than 16 gauge, extending the full width of the door and welded to the face sheet.
  6. Hinge Reinforcement: Minimum 7 gauge (3/16") plate 1-1/4" x 9" or minimum 14 gauge continuous channel with pierced holes, drilled and tapped.
  7. Hardware Reinforcements: Fabricate according to ANSI/SDI A250.6 with reinforcing plates from same material as door face sheets.
- D. Manufacturers Basis of Design:
  1. Curries Company (CU) - Polystyrene Core - 707 Series.
  2. Curries Company (CU) - Steel-Stiffened - 747 Series.

#### 2.4 HOLLOW METAL FRAMES

- A. General: Comply with ANSI/SDI A250.8 and with details indicated for type and profile.
- B. Exterior Frames: Fabricated of hot-dipped zinc coated steel that complies with ASTM A 653/A 653M, Coating Designation A60.
  1. Fabricate frames with mitered or coped corners. Profile as indicated on drawings.
  2. Frames: Minimum 14 gauge (0.067-inch -1.7-mm) thick steel sheet.
  3. Manufacturers Basis of Design:
    - a. Curries Company (CU) – M Series.
- C. Interior Frames: Fabricated of hot-dipped zinc coated steel that complies with ASTM A 653/A 653M, Coating Designation A60.
  1. Fabricate frames with mitered or coped corners. Profile as indicated on drawings.
  2. Frames: Minimum 16 gauge (0.053-inch -1.3-mm) thick steel sheet.
  3. Manufacturers Basis of Design:
    - a. Curries Company (CU) - CM Series.
    - b. Curries Company (CU) - M Series.
- D. Fire rated frames: Fabricate frames in accordance with NFPA 80, listed and labeled by a qualified testing agency, for fire-protection ratings indicated.
- E. Hardware Reinforcement: Fabricate according to ANSI/SDI A250.6 Table 4 with reinforcement plates from same material as frames.



## 2.5 FRAME ANCHORS

- A. Jamb Anchors:
  - 1. Masonry Type: Adjustable strap-and-stirrup or T-shaped anchors to suit frame size, formed from A60 metallic coated material, not less than 0.042 inch thick, with corrugated or perforated straps not less than 2 inches wide by 10 inches long; or wire anchors not less than 0.177 inch thick.
  - 2. Stud Wall Type: Designed to engage stud and not less than 0.042 inch thick.
- B. Floor Anchors: Floor anchors to be provided at each jamb, formed from A60 metallic coated material, not less than 0.042 inches thick.
- C. Mortar Guards: Formed from same material as frames, not less than 0.016 inches thick.

## 2.6 ACCESSORIES

- A. Mullions and Transom Bars: Join to adjacent members by welding or rigid mechanical anchors.
- B. Grout Guards: Formed from same material as frames, not less than 0.016 inches thick.

## 2.7 FABRICATION

- A. Fabricate hollow metal work to be rigid and free of defects, warp, or buckle. Accurately form metal to required sizes and profiles, with minimum radius for thickness of metal. Where practical, fit and assemble units in manufacturer's plant. When shipping limitations so dictate, frames for large openings are to be fabricated in sections for splicing or splining in the field by others.
- B. Tolerances: Fabricate hollow metal work to tolerances indicated in ANSI/SDIA250.8.
- C. Hollow Metal Doors:
  - 1. Exterior Doors: Provide optional weep-hole openings in bottom of exterior doors to permit moisture to escape where specified.
  - 2. Continuous Hinge Reinforcement: Provide welded continuous 12 gauge strap for continuous hinges specified in hardware sets in Division 08 Section "Door Hardware".
- D. Hollow Metal Frames:
  - 1. Shipping Limitations: Where frames are fabricated in sections due to shipping or handling limitations, provide alignment plates or angles at each joint, fabricated of same thickness metal as frames.
  - 2. Welded Frames: Weld flush face joints continuously; grind, fill, dress, and make smooth, flush, and invisible.
    - a. Welded frames are to be provided with two steel spreaders temporarily attached to the bottom of both jambs to serve as a brace during shipping and handling. Spreader bars are for bracing only and are not to be used to size the frame opening.
  - 3. High Frequency Hinge Reinforcement: Provide high frequency hinge reinforcements at door openings 48-inches and wider with mortise butt type hinges at top hinge locations.
  - 4. Continuous Hinge Reinforcement: Provide welded continuous 12 gauge straps for continuous hinges specified in hardware sets in Division 08 Section "Door Hardware".
  - 5. Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners unless otherwise indicated for removable stops, provide security screws at exterior locations.
  - 6. Mortar Guards: Provide guard boxes at back of hardware mortises in frames at all hinges and strike preps regardless of grouting requirements.
  - 7. Floor Anchors: Weld anchors to bottom of jambs and mullions with at least four spot welds per anchor.
  - 8. Jamb Anchors: Provide number and spacing of anchors as follows:

- a. Masonry Type: Locate anchors not more than 18 inches from top and bottom of frame. Space anchors not more than 32 inches o.c. and as follows:
  - 1) Two anchors per jamb up to 60 inches high.
  - 2) Three anchors per jamb from 60 to 90 inches high.
  - 3) Four anchors per jamb from 90 to 120 inches high.
  - 4) Four anchors per jamb plus 1 additional anchor per jamb for each 24 inches or fraction thereof above 120 inches high.
- b. Stud Wall Type: Locate anchors not more than 18 inches from top and bottom of frame. Space anchors not more than 32 inches o.c. and as follows:
  - 1) Three anchors per jamb up to 60 inches high.
  - 2) Four anchors per jamb from 60 to 90 inches high.
  - 3) Five anchors per jamb from 90 to 96 inches high.
  - 4) Five anchors per jamb plus 1 additional anchor per jamb for each 24 inches or fraction thereof above 96 inches high.
  - 5) Two anchors per head for frames above 42 inches wide and mounted in metal stud partitions.
9. Door Silencers: Except on weatherstripped or gasketed doors, drill stops to receive door silencers. Silencers to be supplied by frame manufacturer regardless if specified in Division 08 Section "Door Hardware".
10. Bituminous Coating: Where frames are fully grouted with an approved Portland Cement based grout or mortar, coat inside of frame throat with a water based bituminous or asphaltic emulsion coating to a minimum thickness of 3 mils DFT, tested in accordance with UL 10C and applied to the frame under a 3rd party independent follow-up service procedure.
- E. Hardware Preparation: Factory prepare hollow metal work to receive template mortised hardware; include cutouts, reinforcement, mortising, drilling, and tapping according to the Door Hardware Schedule and templates furnished as specified in Division 08 Section "Door Hardware."
  1. Locate hardware as indicated, or if not indicated, according to ANSI/SDI A250.8.
  2. Reinforce doors and frames to receive non-template, mortised and surface mounted door hardware.
  3. Comply with applicable requirements in ANSI/SDI A250.6 and ANSI/DHI A115 Series specifications for preparation of hollow metal work for hardware.
  4. Coordinate locations of conduit and wiring boxes for electrical connections with Division 26 Sections.

## 2.8 STEEL FINISHES

- A. Prime Finishes: Doors and frames to be cleaned, and chemically treated to insure maximum finish paint adhesion. Surfaces of the door and frame exposed to view to receive a factory applied coat of rust inhibiting shop primer.
  1. Shop Primer: Manufacturer's standard, fast-curing, lead and chromate free primer complying with ANSI/SDI A250.10 acceptance criteria; recommended by primer manufacturer for substrate; and compatible with substrate and field-applied coatings.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. General Contractor to verify the accuracy of dimensions given to the steel door and frame manufacturer for existing openings or existing frames (strike height, hinge spacing, hinge back set, etc.).
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.2 PREPARATION

- A. Remove welded in shipping spreaders installed at factory. Restore exposed finish by grinding, filling, and dressing, as required to make repaired area smooth, flush, and invisible on exposed faces.
- B. Prior to installation, adjust and securely brace welded hollow metal frames for square, level, twist, and plumb condition.
- C. Tolerances shall comply with SDI-117 "Manufacturing Tolerances Standard Steel Doors and Frames."
- D. Drill and tap doors and frames to receive non-template, mortised, and surface-mounted door hardware.

### 3.3 INSTALLATION

- A. General: Install hollow metal work plumb, rigid, properly aligned, and securely fastened in place; comply with Drawings and manufacturer's written instructions.
- B. Hollow Metal Frames: Install hollow metal frames of size and profile indicated. Comply with ANSI/SDI A250.11 and NFPA 80 at fire rated openings.
  - 1. Set frames accurately in position, plumbed, leveled, aligned, and braced securely until permanent anchors are set. After wall construction is complete and frames properly set and secured, remove temporary braces, leaving surfaces smooth and undamaged. Shim as necessary to comply with installation tolerances.
  - 2. Floor Anchors: Provide floor anchors for each jamb and mullion that extends to floor, and secure with post-installed expansion anchors.
  - 3. Masonry Walls: Coordinate installation of frames to allow for solidly filling space between frames and masonry with mortar.
  - 4. Grout Requirements: Do not grout head of frames unless reinforcing has been installed in head of frame. Do not grout vertical or horizontal closed mullion members.
- C. Hollow Metal Doors: Fit hollow metal doors accurately in frames, within clearances specified below. Shim as necessary.
  - 1. Non-Fire-Rated Standard Steel Doors:
    - a. Jambs and Head: 1/8 inch plus or minus 1/16 inch.
    - b. Between Edges of Pairs of Doors: 1/8 inch plus or minus 1/16 inch.
    - c. Between Bottom of Door and Top of Threshold: Maximum 3/8 inch.
    - d. Between Bottom of Door and Top of Finish Floor (No Threshold): Maximum 3/4 inch.
  - 2. Fire-Rated Doors: Install doors with clearances according to NFPA 80.
- D. Field Glazing: Comply with installation requirements in Division 08 Section "Glazing" and with hollow metal manufacturer's written instructions.

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3.4 ADJUSTING AND CLEANING

- A. Final Adjustments: Check and readjust operating hardware items immediately before final inspection. Leave work in complete and proper operating condition. Remove and replace defective work, including hollow metal work that is warped, bowed, or otherwise unacceptable.
- B. Remove grout and other bonding material from hollow metal work immediately after installation.
- C. Prime-Coat and Painted Finish Touchup: Immediately after erection, sand smooth rusted or damaged areas of prime coat, or painted finishes, and apply touchup of compatible air drying, rust-inhibitive primer, zinc rich primer (exterior and galvanized openings) or finish paint.

END OF SECTION 081113

**The Genuine. The Original.**



SECTION 08331

ROLLING FIRE DOORS

FIREKING® MODEL 630

Display hidden notes to specifier. (Don't know how? [Click Here](#))

**\*\* NOTE TO SPECIFIER \*\*** Overhead Door Corporation; Rolling fire door products.

This section is based on the products of Overhead Door Corporation, which is located at:

2501 S. State Hwy. 121, Suite 200

Lewisville, TX 75067

Toll Free: (800) 929-3667

Phone: (469) 549-7100

Fax: (972) -906-1499

Web Site: [www.overheaddoor.com](http://www.overheaddoor.com)

E-mail: [info@overheaddoor.com](mailto:info@overheaddoor.com)

Overhead Door Corporation pioneered the upward-acting door industry, inventing the first upward-acting door in 1921 and the first electric door opener in 1926. Today, we continue to be the industry leader through the strength of our product innovation, superior craftsmanship and outstanding customer support, underscoring a legacy of quality, expertise and integrity. That's why design and construction professionals specify Overhead Door Corporation products more often than any other brand.

This specification includes rolling fire doors. Overhead Door Corporation offers a wide array of rolling steel doors to meet the most demanding fire safety standards, unusual opening sizes and aesthetic requirements. Designed to close automatically in the event of a fire or alarmed event, our fire-rated doors are available for service door and counter applications in commercial, industrial, institutional and retail uses.

## PART 1 GENERAL

### 1.1 SECTION INCLUDES

**\*\* NOTE TO SPECIFIER \*\*** Delete items below not required for project.

- A. Rolling fire service doors.

### 1.2 RELATED SECTIONS

**\*\* NOTE TO SPECIFIER \*\*** Delete any sections below not relevant to this project; add others as required.

- A. Section 05500 - Metal Fabrications: Support framing and framed opening.
- B. Section 06200 - Finish Carpentry: Wood jamb and head trim.
- C. Section 08710 - Door Hardware: Product Requirements for cylinder core and keys.

- D. Section 09900 - Painting: Field applied finish.
- E. Section 16130 - Raceway and Boxes: Conduit from electric circuit to door operator.
- F. Section 16150 - Wiring Connections: Power to disconnect.

### 1.3 REFERENCES

**\*\* NOTE TO SPECIFIER \*\* Delete references from the list below that are not actually required by the text of the edited section.**

- A. ASTM A 653 - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
- B. ASTM A 666 - Standard Specification for Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar.
- C. ASTM A 924 - Standard Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process.
- D. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum).
- E. NEMA MG 1 - Motors and Generators.
- F. NFPA-80 – Standard for Fire Doors and Fire Windows.

### 1.4 DESIGN / PERFORMANCE REQUIREMENTS

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

### 1.5 SUBMITTALS

- A. Submit under provisions of Section 01300.
- B. Product Data: Manufacturer's data sheets on each product to be used, including:
  - 1. Preparation instructions and recommendations.
  - 2. Storage and handling requirements and recommendations.
  - 3. Details of construction and fabrication.
  - 4. Installation methods.
- C. Shop Drawings: Include detailed plans and elevations, details of framing members, anchoring methods, clearances, hardware, and accessories.

**\*\* NOTE TO SPECIFIER \*\* Delete selection samples if colors have already been selected.**

- D. Selection Samples: For each finish product specified, two complete sets of color chips representing manufacturer's full range of available colors and patterns.
- E. Verification Samples: For each finish product specified, two samples, minimum size 6 inches (150 mm) long, representing actual product, color, and patterns.
- F. Manufacturer's Certificates: Certify products meet or exceed specified requirements.
- G. Operation and Maintenance Data: Submit lubrication requirements and frequency, and periodic adjustments required.

## 1.6 QUALITY ASSURANCE

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

## 1.7 DELIVERY, STORAGE, AND HANDLING

- A. Store products in manufacturer's unopened packaging until ready for installation.
- B. Protect materials from exposure to moisture. Do not deliver until after wet work is complete and dry.
- C. Store materials in a dry, warm, ventilated weathertight location.

## 1.8 PROJECT CONDITIONS

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

## 1.9 COORDINATION

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

## 1.10 WARRANTY

- ✓ A. Manufacturer's Warranty: Provide manufacturer's two year limited warranty.

**\*\* NOTE TO SPECIFIER \*\* Include the following warranty paragraph for 630, 631, 634 and 635 Models rolling fire service doors and RSX fire door operator or RHX FireKing commercial door operators provided together as a System. Delete if not applicable.**

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

**\*\* NOTE TO SPECIFIER \*\* Include the one of the following Optional PowderGuard Finish warranty paragraph if included for the Door(s) specified. Delete if not applicable.**

- C. PowderGuard Finish
  1. PowderGuard Premium Applied to curtain, guides, bottom bar, headplates: Manufacturer's limited Premium Finish warranty for 2 years.
  2. PowderGuard Zinc Base Coat applied to guides, bottom bar, headplates plus PowderGuard Premium applied to curtain and top coat for guides, bottom bar, headplates: Manufacturer's limited Zinc Finish warranty for 4 years.
  3. PowderGuard Textured: Applied to curtain, guides, bottom bar, headplates: Manufacturer's limited Textured Finish warranty for 3 years.
  4. PowderGuard Zinc Base Coat applied to guides, bottom bar, headplates plus PowderGuard Textured applied to curtain and top coat for guides, bottom bar, headplates: Manufacturer's limited Zinc Finish warranty for 4 years.

## PART 2 PRODUCTS

### 2.1 MANUFACTURERS

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

**\*\* NOTE TO SPECIFIER \*\* Delete one of the following two paragraphs; coordinate with requirements of Division 1 section on product options and substitutions.**

- B. Substitutions: Not permitted.
- C. Requests for substitutions will be considered in accordance with provisions of Section 01600.

**\*\* NOTE TO SPECIFIER \*\* Models 630, 631 and 634 fire service comply with NFPA 80 for masonry and non-masonry installation. Customized doors are available for conveyor installations. Contact Overhead Door Corporation for additional information.**

### 2.2 ROLLING FIRE SERVICE DOORS

- A. Rolling Fire Service Doors: FireKing Model 630 Fire Doors.  
1. Label: Provide fire doors certified with the following listing.

**\*\* NOTE TO SPECIFIER \*\* Select one or more of the following paragraphs to suit the projects requirements for the door size(s) required and delete the ones not required. Note that UL Labels are standard and FM labels are optional.**

- a. Rolling fire doors up to 152 sf (14.12 sm) and not exceeding 13 feet 6 inches (4.11 m) in width or height shall receive the UL or ULC 3-Hour Class A Label for installation on masonry or steel jamb walls, face mounted or between jambs. Door may be welded to the face of steel jambs.
- b. Rolling fire doors up to 144 sf (13.7 sm) and not exceeding 12 feet (3.7 m) in height or width shall receive the FM 3-Hour Class A Label for installation on masonry or concrete walls or steel jamb walls, face mounted or between jambs.
- c. Rolling fire doors up to 130 sf (12.1 sm) and not exceeding 11 feet (3.4 m) in height or 12 ft (3.7m) in width shall receive the FM 3-Hour Class A Label for installation on masonry or non-masonry fire walls with steel tubes set against fire walls.
- d. Rolling fire doors up to 152 sf (14.12 sm) and 13 feet 6 inches (4.11 m) in width or height shall receive the UL or ULC 1-1/2-Hour Class B Label for installation on non-masonry walls, face mounted or between jambs.
- e. Rolling fire doors up to 117 sf (13.4 sm) and not exceeding 11 feet (3.4 m) in height or width shall receive the FM 1-1/2-Hour Class B Label when installed on 2-hour fire-rated gypsum dry walls.

**\*\* NOTE TO SPECIFIER \*\* Select the following paragraphs for UL Label and delete if not applicable.**

- f. Rolling fire doors over 152 sf (14.12 sm) shall receive the UL Oversize Fire Door Label with masonry or steel wall construction. Face of wall mount: 41'2" max width, 25'4" max height, max area of 683 sf. Between jambs mount: 24'0" max width, 24'0" max height, 576 sf max area.

**\*\* NOTE TO SPECIFIER \*\* Select the following paragraphs for optional FM Label and delete if not applicable.**



- g. Rolling fire doors over 144 sf (13.4 sm) and not exceeding 18 ft (5.49 m) in height or width shall receive the FM Oversize Fire Door Label with masonry or steel construction. Doors over 18 ft (5.49 m) must be reviewed and certified by FM.

**\*\* NOTE TO SPECIFIER \*\*** Select the following paragraph as required for smoke protection and delete if not required.

- h. Provide UL labeled smoke protection where indicated. Comply with UL label for "Leakage Rated Assembly" or "S" label.
  - 1) Comply with NFPA 105 air leakage requirements.
  - 2) Pass UL test procedure 1784.

- 2. Curtain: Interlocking roll-formed slats as specified following. Endlocks shall be attached to each end of alternate slats to prevent lateral movement.

**\*\* NOTE TO SPECIFIER \*\*** Select one of the following paragraphs for the door size and profile required and delete the ones not required.

- a. Curved profile type C-187 for doors thru 14 feet (4.27 m) wide by 12 feet (3.65 m) high, fabricated of:

**\*\* NOTE TO SPECIFIER \*\*** Select one of the following paragraphs and delete the ones not required.

- 1) 22 gauge galvanized steel.
- 2) 20 gauge galvanized steel.
- 3) 18 gauge galvanized steel.
- 4) 22 gauge stainless steel.
- 5) 20 gauge stainless steel.

- b. Curved profile type C-187 for doors over 14 feet (4.27 m) thru 20 feet (6.10 m) wide, fabricated of:

**\*\* NOTE TO SPECIFIER \*\*** Select one of the following paragraphs and delete the ones not required.

- 1) 20 gauge galvanized steel.
- 2) 18 gauge galvanized steel.
- 3) 20 gauge stainless steel.

- c. Curved profile type C-275 for doors thru 14 feet (4.27 m) wide by 12 feet (3.65 m) high, fabricated of:

**\*\* NOTE TO SPECIFIER \*\*** Select one of the following paragraphs and delete the ones not required.

- 1) 22 gauge galvanized steel.
- 2) 20 gauge galvanized steel.
- 3) 18 gauge galvanized steel.
- 4) 22 gauge stainless steel.
- 5) 20 gauge stainless steel.

- d. Curved profile type C-275 for doors over 14 feet (4.27 m) thru 20 feet (6.10 m) wide, fabricated of:

**\*\* NOTE TO SPECIFIER \*\*** Select one of the following paragraphs and delete the ones not required.

- 1) 20 gauge galvanized steel.
- 2) 18 gauge galvanized steel.
- 3) 20 gauge stainless steel.
- 4) 18 gauge stainless steel.

- e. Curved profile type C-275 for doors over 20 feet (6.10 m) thru 24 feet (7.31 m) wide, fabricated of:

**\*\* NOTE TO SPECIFIER \*\*** Select one of the following paragraphs and delete the one not required.

- 1) 18 gauge galvanized steel.
- 2) 16 gauge galvanized steel.
- 3) 18 gauge stainless steel.

- f. Flat profile type F-265 for doors thru 14 feet (4.27 m) wide by 12 feet (3.65 m) high, fabricated of:

**\*\* NOTE TO SPECIFIER \*\*** Select one of the following paragraphs and delete the ones not required.

- 1) 22 gauge galvanized steel.
  - 2) 20 gauge galvanized steel.
  - 3) 22 gauge stainless steel.
  - 4) 20 gauge stainless steel.
- g. Flat profile type F-265 for doors over 14 feet (4.27 m) thru 20 feet (6.10 m) wide, fabricated of:

**\*\* NOTE TO SPECIFIER \*\*** Select one of the following paragraphs and delete the ones not required.

- 1) 20 gauge galvanized steel.
  - 2) 18 gauge galvanized steel.
  - 3) 20 gauge stainless steel.
  - 4) 18 gauge stainless steel.
- h. Flat profile type F-265 for doors over 20 feet (6.10 m) thru 24 feet (7.31 m) wide, fabricated of:

**\*\* NOTE TO SPECIFIER \*\*** Select one of the following paragraphs and delete the one not required.

- 1) 18 gauge galvanized steel.
- 2) 18 gauge stainless steel.

**\*\* NOTE TO SPECIFIER \*\*** Select the following paragraph if glazing is required and delete if not required. Available on 4 hour, 3 hour, and 90 minute labeled doors with flat slat profile only.

3. Glazing: Fire-rated vision panels, four glazing panels 3 inch by 5/8 inch (76 by 16 mm) with FireLite glazing.
4. Finish:

**\*\* NOTE TO SPECIFIER \*\*** Select the following paragraphs for the slat and hood materials required and delete the ones not required.

- a. Galvanized Steel: Slats and hood galvanized steel to ASTM A 653 finished with a rust-inhibitive roll coating process, including bonderizing, a 0.2 mils thick baked prime paint, and a 0.6 mils thick baked top coat.

**\*\* NOTE TO SPECIFIER \*\*** Select one of the following two paragraphs for Polyester top coat or Powder top coat and delete the one not required. Polyester top coat is standard.

- 1) Polyester Top Coat.
  - (a) Gray polyester.
  - (b) Tan polyester.
  - (c) White polyester.
  - (d) Brown polyester.
- 2) Powder coat: PowderGuard

**\*\* NOTE TO SPECIFIER \*\*** PowderGuard Premium polyester powder coat available in 197 colors; custom color match options available. PowderGuard Textured Finish available in 11 color options. See PowderGuard Finish brochure for color selection

- (a) PowderGuard Premium powder coat color as selected by the Architect.
  - (b) PowderGuard Textured powder coat, color as selected by the Architect.
- b. Non-galvanized exposed ferrous surfaces shall be black powder coated.
- c. Stainless Steel: Slats shall be stainless steel finished as follows.

**\*\* NOTE TO SPECIFIER \*\*** Select one of the following two paragraphs and delete the one not required.

- 1) Finish: 2B mill finish.
- 2) Finish: No. 4 satin finish.

**\*\* NOTE TO SPECIFIER \*\*** Select one of the following bottom bar paragraphs and delete the ones not required. Stainless steel bottom bars are required for conveyor applications.

5. Bottom Bar:

- a. Two black powder coated structural steel angles 1-1/2 inch by 1-1/2 inch by 1/8 inch (38 mm by 38 mm by 3 mm) minimum.
- b. Two galvanized steel angles with 1-1/2 inch by 1-1/2 inch by 1/8 inch (38 mm by 38 mm by 3 mm) minimum.
- c. Two stainless steel angles 1-1/2 inch by 1-1/2 inch by 1/8 inch (38 mm by 38 mm by 3 mm) minimum.

6. Guides: Three structural steel angles

**\*\* NOTE TO SPECIFIER \*\*** Select one of the following fastening paragraphs to meet projects installation requirements and delete the one not required.

- a. Fastening Guides to Masonry Fire Walls: UL listed for fire in accordance with manufacturer's listing.
- b. Fastening Guides to Masonry Fire Walls: UL listed for fire and smoke in accordance with manufacturer's listing.
- c. Fastening Guides to Non-Masonry Fire Walls: Comply with the manufacturer's listing.

7. Brackets:

- a. Hot rolled steel to support counterbalance, curtain and hood

8. Finish; Bottom Bar, Guides, and Brackets:

**\*\* NOTE TO SPECIFIER \*\*** Select one of the following finish paragraphs and delete those not required. Black powder coat is standard. PowderGuard Premium coat available in 197 colors; custom color match options available. PowderGuard Textured Finish available in 11 color options. See PowderGuard Finish brochure for color selections.

- a. Finish: Black powdercoat finish
- b. Finish: PowderGuard Premium powder coat color as selected by the Architect.
- c. Finish: PowderGuard Zinc base coat, gray with PowderGuard Premium powder coat color as selected by the Architect.
- d. Finish: PowderGuard Textured powder color as selected by the Architect.
- e. Finish: PowderGuard Zinc base coat, gray with PowderGuard Textured powder color as selected by the Architect.

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

10. Hood:

**\*\* NOTE TO SPECIFIER \*\*** Select one of the following two paragraphs and delete the one not required. Add the last paragraph for optional FM labeled hoods only.

- a. Fabricate of 24 gauge galvanized primed steel minimum for wall openings thru 19 feet (5.79 m) wide.
- b. Fabricate of 22 gauge galvanized primed steel for wall openings over 19 feet (5.79 m) wide.
- c. Hood equipped with thermally controlled, internal, galvanized steel flame baffle as required for FM listing.

**\*\* NOTE TO SPECIFIER \*\*** Select one of the following two paragraphs and delete the one not required.

- d. Provide one intermediate support bracket for wall openings over 13 feet 6 inches (4.11 m) wide
- e. Provide two support brackets for wall openings over 19 feet (5.79 m) wide.

**\*\* NOTE TO SPECIFIER \*\*** Select one of the following Operation paragraphs for manual operation or electric motor operation and delete the one not required.

11. Manual Operation:

**\*\* NOTE TO SPECIFIER \*\*** Select one of the following manual operation paragraphs and delete the ones not required.

- a. Manual push.
- b. Crank operation.

- c. Floor resettable chain hoist
- 12. Electric Motor Operation: Provide electric operator as listed in the door UL file, for size as recommended by manufacturer to move door in either direction.
  - a. Floor Resettable Electric Motor Operation.
  - b. Sensing-Edge Protection:

**\*\* NOTE TO SPECIFIER \*\*** Select one of the following paragraphs and delete the one not required.

- 1) Pneumatic sensing edge.
- 2) Electric sensing edge.
- 3) Monitored electric sensing edge for momentary contact controls.

c. Operator Controls:

**\*\* NOTE TO SPECIFIER \*\*** Select one of the following operation paragraphs and delete the one not required.

- 1) Push-button operated control stations with open, close, and stop buttons.
- 2) Key operation with NEMA 1 interior, NEMA 4 exterior, surface and flush mounted open, close, and stop controls.

d. Special Operation:

**\*\* NOTE TO SPECIFIER \*\*** Select one of the following operation paragraphs and delete the one not required.

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

**\*\* NOTE TO SPECIFIER \*\*** Select one of the following paragraphs for Automatic Closure Standard Fire Door, Automatic Closure Fire Sentinel Release Device or manual locking operation and delete the ones not required.

- 13. Automatic Closure Standard Fire Door: UL approved release mechanism equipped with a 165 degree fusible link.

- a. Doors will be equipped with chain hoist release mechanism, requiring only one sash chain to be routed to the operated side (sash chain not required to be routed to adjusting wheel side.)
  - 1) Release mechanism includes planetary gear differential system.
  - 2) Door will close by a thermally actuated link rated @165 degrees F, or by an optional listed releasing device, or by manually activating the release handle.
  - 3) All counterbalance spring tension shall be maintained when the release mechanism is activated.
  - 4) After closing by manual activation of the release handle, the door shall be able to be reset by one person from one side of the door (re-engaging the release handle). No tools are required to reset the release mechanism.
- b. Doors will be equipped with floor resettable electric motor operation system, requiring only one sash chain to be routed to the operated side (sash chain not required to be routed to adjusting wheel side.)
  - 1) Release mechanism includes planetary gear differential system.
  - 2) Door will close by a thermally actuated link rated @165 degrees F, or by an optional listed releasing device, or by manually activating the release handle.
  - 3) All counterbalance spring tension shall be maintained when the release mechanism is activated.

- 4) After closing by alarm activation with power on the electric motor, the door shall be able to be reset by resetting the alarm system without additional tools required.

**\*\* NOTE TO SPECIFIER \*\*** Select the following optional accessory paragraph for Fire Sentinel model if required and delete if not required. Available for use with either motor or non-motor fire doors to allow interface with auxiliary fire protection devices to control the doors' closure.

**c.** Fire Sentinel time-delay release mechanism provides an added measure of safety to control the doors' closure.

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

**\*\* NOTE TO SPECIFIER \*\*** Select one of the following optional paragraphs and delete the ones not required.

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

16. Wall Mounting Condition:

**\*\* NOTE TO SPECIFIER \*\*** Select one of the following two paragraphs and delete the one not required.

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

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Verify opening sizes, tolerances and conditions are acceptable.
- B. Examine conditions of substrates, supports, and other conditions under which this work is to be performed.
- C. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

### 3.2 PREPARATION

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

### 3.3 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Install rolling counter fire doors in compliance with requirements of NFPA 80. Test fire-release system and reset components after testing.
- C. Use anchorage devices to securely fasten assembly to wall construction and building framing without distortion or stress.

*Tied into Fire Alarm system*

- D. Securely and rigidly brace components suspended from structure. Secure guides to structural members only.
- E. Fit and align assembly including hardware; level and plumb, to provide smooth operation.

**\*\* NOTE TO SPECIFIER \*\* Select the following paragraph for electric operation of counter doors and delete if not required.**

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

**\*\* NOTE TO SPECIFIER \*\* Select the following paragraph for Fire Sentinel Devices used with doors. Delete if not applicable.**

- G. Install and test Fire Sentinel release device(s) in accordance with the manufacturer's instructions and in compliance with applicable regulations and codes of the local authority having jurisdiction.
- H. Coordinate installation of sealants and backing materials at frame perimeter as specified in Section 07900.
- I. Install perimeter trim and closures.

#### 3.4 ADJUSTING

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

**\*\* NOTE TO SPECIFIER \*\* Select the following paragraph for Fire Sentinel Devices used with doors. Delete if not applicable.**

- B. Release device(s) shall be tested and witnessed for proper operation with the door manufacturer recommendations
- C. Adjust hardware and operating assemblies for smooth and noiseless operation.

#### 3.5 FIELD QUALITY CONTROL

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

#### 3.6 CLEANING

- A. Clean curtain and components using non-abrasive materials and methods recommended by manufacturer.
- B. Remove labels and visible markings.
- C. Touch-up, repair or replace damaged products before Substantial Completion.

#### 3.7 PROTECTION

- A. Protect installed products until completion of project.

END OF SECTION

**The Genuine. The Original.**



SECTION 08330

ROLLING SERVICE DOORS

STORMTITE™ MODEL 620

Display hidden notes to specifier by using "Tools"/"Options"/"View"/"Hidden Text".

**\*\* NOTE TO SPECIFIER \*\*** Overhead Door Corporation; rolling service door products.

This section is based on the products of Overhead Door Corporation, which is located at:  
2501 S. State Hwy. 121  
Suite 200  
Lewisville, TX 75067  
Toll Free: (800) 275-3290  
Phone: (469) 549-7100  
Fax: (972) -906-1499  
Web Site: [www.overheaddoor.com](http://www.overheaddoor.com)  
E-mail: [info@overheaddoor.com](mailto:info@overheaddoor.com)

Overhead Door Corporation pioneered the upward-acting door industry, inventing the first upward-acting door in 1921 and the first electric door opener in 1926. Today, we continue to be the industry leader through the strength of our product innovation, superior craftsmanship and outstanding customer support, underscoring a legacy of quality, expertise and integrity. That's why design and construction professionals specify Overhead Door Corporation products more often than any other brand.

The section includes Overhead Door Corporation's rolling service door product line ensures that your project specifications will be met with ease and style. Ideal for situations where sideroom and headroom are at a premium, our upward-coiling service doors fit openings up to 1500 SF and are available with the industry's widest array of slat profiles, curtain materials and colors, offering a virtually endless array of options to satisfy both aesthetic considerations and working requirements.

This specification also includes RapidSlat® advanced performance rolling service doors that are an extension of the rolling steel product line and provides customers with speed and product longevity. It includes the same general construction as Overhead Door's rolling steel line with enhancements to provide increased speed, security and durability. These innovations include: Maximum performance and functionality with minimum maintenance requirements; Five-year limited warranty on door system.

## PART 1 GENERAL

### 1.1 SECTION INCLUDES

**\*\* NOTE TO SPECIFIER \*\*** Delete items below not required for project.

- A. Rolling service doors.

## 1.2 RELATED SECTIONS

**\*\* NOTE TO SPECIFIER \*\*** Delete any sections below not relevant to this project; add others as required.

- A. Section 05500 - Metal Fabrications: Support framing and framed opening.
- B. Section 06200 - Finish Carpentry: Wood jamb and head trim.
- C. Section 08333 - Security Grilles.
- D. Section 08710 - Door Hardware: Product Requirements for cylinder core and keys.
- E. Section 09900 - Painting: Field applied finish.
- F. Section 16130 - Raceway and Boxes: Conduit from electric circuit to door operator and from door operator to control station.
- G. Section 16150 - Wiring Connections: Power to disconnect.

## 1.3 REFERENCES

**\*\* NOTE TO SPECIFIER \*\*** Delete references from the list below that are not actually required by the text of the edited section.

- A. ANSI/DASMA 108 - American National Standards Institute Standard Method For Testing Sectional Garage Doors And Rolling Doors: Determination Of Structural Performance Under Uniform Static Air Pressure Difference.
- B. NFRC 102 - Test Procedure for Measuring the Steady-State Thermal Transmittance of Fenestration Systems.
- C. ASTM E 90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Element.
- D. ASTM E 330 - Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference.
- E. ASTM A 653 - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
- F. ASTM A 666 - Standard Specification for Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar.
- G. ASTM A 924 - Standard Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process.
- H. ASTM B 221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
- I. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum).
- J. NEMA MG 1 - Motors and Generators.

## 1.4 DESIGN / PERFORMANCE REQUIREMENTS



- A. Single-Source Responsibility: Provide doors, tracks, motors, and accessories from one manufacturer for each type of door. Provide secondary components from source acceptable to manufacturer of primary components.
- B. Products Requiring Electrical Connection: Listed and classified by Underwriters Laboratories, Inc. acceptable to authority having jurisdiction as suitable for purpose specified.

#### 1.5 SUBMITTALS

- A. Submit under provisions of Section 01300.
- B. Product Data: Manufacturer's data sheets on each product to be used, including:
  - 1. Preparation instructions and recommendations.
  - 2. Storage and handling requirements and recommendations.
  - 3. Details of construction and fabrication.
  - 4. Installation instructions.
- C. Shop Drawings: Include detailed plans, elevations, details of framing members, anchoring methods, required clearances, hardware, and accessories. Include relationship with adjacent construction.

**\*\* NOTE TO SPECIFIER \*\* Delete selection samples if colors have already been selected.**

- D. Selection Samples: For each finish product specified, two complete sets of color chips representing manufacturer's full range of available colors and patterns.
- E. Verification Samples: For each finish product specified, two samples, minimum size 6 inches (150 mm) long, representing actual product, color, and patterns.
- F. Manufacturer's Certificates: Certify products meet or exceed specified requirements.
- G. Operation and Maintenance Data: Submit lubrication requirements and frequency, and periodic adjustments required.

#### 1.6 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in performing Work of this section with a minimum of five years experience in the fabrication and installation of security closures.
- B. Installer Qualifications: Installer Qualifications: Company specializing in performing Work of this section with minimum three years and approved by manufacturer.

**\*\* NOTE TO SPECIFIER \*\* Include a mock-up if the project size and/or quality warrant taking such a precaution. The following is one example of how a mock-up on a large project might be specified. When deciding on the extent of the mock-up, consider all the major different types of work on the project.**

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

#### 1.7 DELIVERY, STORAGE, AND HANDLING

- A. Store products in manufacturer's unopened packaging until ready for installation.
- B. Protect materials from exposure to moisture. Do not deliver until after wet work is complete and dry.
- C. Store materials in a dry, warm, ventilated weathertight location.

1.8 PROJECT CONDITIONS

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

1.9 COORDINATION

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

1.10 WARRANTY

**\*\* NOTE TO SPECIFIER \*\*** Include the following warranty paragraph for Models 600, 610, 620, 625 or 627 rolling service doors and Models RSX®, RMX®, or RHX® commercial door operators provided together as a System. Delete if not applicable.

- A. Warranty: Manufacturer's limited door and operator system, except the counterbalance spring and finish, to be free from defects in materials and workmanship for 3 years or 20,000 cycles, whichever occurs first.

**\*\* NOTE TO SPECIFIER \*\*** Include the following warranty paragraph for Model 600, 610, 620, 625 or 627 rolling service doors and Model 653 shutters not provided as a system with operators. Delete if not applicable.

- B. Warranty: Manufacturer's limited door system warranty for 2 years for all parts and components.

**\*\* NOTE TO SPECIFIER \*\*** Include the following Optional PowderGuard Finish warranty paragraph if included for the Door(s) specified. Delete if not applicable.

- C. PowderGuard Finish

**\*\* NOTE TO SPECIFIER \*\*** Include the one of the following PowderGuard Finish warranty paragraphs for the finish specified. Delete if not applicable.

1. PowderGuard Premium Applied to curtain, guides, bottom bar, headplates: Manufacturer's limited Premium Finish warranty for 2 years.
2. PowderGuard Zinc Base Coat applied to guides, bottom bar, headplates plus PowderGuard Premium applied to curtain and top coat for guides, bottom bar, headplates: Manufacturer's limited Zinc Finish warranty for 4 years.
3. PowderGuard Textured: Applied to curtain, guides, bottom bar, headplates: Manufacturer's limited Textured Finish warranty for 3 years.
4. PowderGuard Zinc Base Coat applied to guides, bottom bar, headplates plus PowderGuard Textured applied to curtain and top coat for guides, bottom bar, headplates: Manufacturer's limited Zinc Finish warranty for 4 years.
5. PowderGuard Max: Applied to curtain, guides, bottom bar, headplates: Manufacturer's limited Max Finish warranty for 5 years.

## PART 2 PRODUCTS

### 2.1 MANUFACTURERS

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

**\*\* NOTE TO SPECIFIER \*\* Delete one of the following two paragraphs; coordinate with requirements of Division 1 section on product options and substitutions.**

- B. Substitutions: Not permitted.
- C. Requests for substitutions will be considered in accordance with provisions of Section 01600.

### 2.2 ROLLING SERVICE DOORS

**\*\* NOTE TO SPECIFIER \*\* Overhead Door Corporation Model 610 and 620 Industrial and Heavy Industrial Rolling Service Doors are available up to a standard maximum width of 40 feet and a standard maximum height of 30 feet. Edit as required to suit project requirements.**

**\*\* NOTE TO SPECIFIER \*\* Model 620 doors are suitable for heavy duty industrial and other similar projects requiring weatherstripping.**

- A. Heavy Duty Industrial Doors: Overhead Door Corporation, Model 620 Stormtite Rolling Service Doors.
1. Curtain: Interlocking roll-formed slats as specified following. Endlocks shall be attached to each end of alternate slats to prevent lateral movement.

**\*\* NOTE TO SPECIFIER \*\* Select one of the following profile paragraphs as required and delete the ones not required.**

- a. Flat profile type F-265 for doors up to 18 feet 4 inches (5.59 m) wide, fabricated of:

**\*\* NOTE TO SPECIFIER \*\* Select one of the following paragraphs and delete the ones not required. 22 gauge galvanized steel is standard.**

- 1) 22 gauge galvanized steel.
- 2) 20 gauge galvanized steel.
- 3) 18 gauge galvanized steel.
- 4) 16 gauge galvanized steel.
- 5) 22 gauge stainless steel.
- 6) 20 gauge stainless steel.
- 7) .040 inch (1 mm) aluminum.

- b. Flat profile type F-265 for doors between 18 feet 4 inches (5.59 m) and 25 feet 4 inches (7.72 m) wide, fabricated of:

**\*\* NOTE TO SPECIFIER \*\* Select one of the following paragraphs and delete the ones not required. 20 gauge galvanized steel is standard.**

- 1) 20 gauge galvanized steel.
- 2) 18 gauge galvanized steel.
- 3) 16 gauge galvanized steel.
- 4) 20 gauge stainless steel.
- 5) .050 inch (1.29 mm) aluminum.

- c. Flat profile type F-265 for doors between 25 feet 4 inches (7.72 m) and 40 feet (12.19 m) wide, fabricated of:

**\*\* NOTE TO SPECIFIER \*\* Select one of the following paragraphs and delete the ones not required. 18 gauge galvanized steel is standard.**

- 1) 18 gauge galvanized steel.
- 2) 16 gauge galvanized steel.
- 3) .050 inch (1.29 mm) aluminum. (Maximum width of 27 feet (8.23 m)).

2. Slats and Hood Finish:

**\*\* NOTE TO SPECIFIER \*\*** Select one of the following three paragraphs for the slat and hood material and finish required and delete the ones not required.

- a. Galvanized Steel: Slats and hood galvanized in accordance with ASTM A 653 and receive rust-inhibitive, roll coating process, including 0.2 mils thick baked-on prime paint, and 0.6 mils thick baked-on polyester top coat.

**\*\* NOTE TO SPECIFIER \*\*** Select one of the following two paragraphs for Polyester top coat or Powder top coat and delete the one not required. Polyester top coat is standard.

- 1) Polyester Top Coat.
  - (a) Gray polyester.
  - (b) Tan polyester.
  - (c) White polyester.
  - (d) Brown polyester.

2) Powder Coat:

**\*\* NOTE TO SPECIFIER \*\*** PowderGuard Premium polyester powder coat available in 197 colors; custom color match options available. PowderGuard Textured Finish available in 11 color options. PowderGuard Max Finish with 4 times the hardness of standard powder coat is also available in 197 colors. See PowderGuard Finish brochure for color selection

- (a) PowderGuard Premium powder coat color as selected by the Architect.
  - (b) PowderGuard Textured powder coat color as selected by the Architect.
  - (c) PowderGuard Max powder coat, color as selected by Architect.
- 3) Non-galvanized exposed ferrous surfaces shall receive one coat of rust-inhibitive primer.

- b. Stainless Steel: Slats and hood shall be stainless steel finished as follows.

**\*\* NOTE TO SPECIFIER \*\*** Select one of the following two paragraphs and delete the one not required.

- 1) Finish: 2B mill finish.
- 2) Finish: No. 4 satin finish.

- c. Aluminum: Slats and hood shall be aluminum finished as follows.

**\*\* NOTE TO SPECIFIER \*\*** Select one of the following paragraphs and delete those not required.

- 1) Finish: Mill finish.
- 2) Finish: Clear anodized finish.
- 3) Finish: Bronze anodized finish.
- 4) Powder Coat:

**\*\* NOTE TO SPECIFIER \*\*** PowderGuard Premium polyester powder coat available in 197 colors; custom color match options available. PowderGuard Textured Finish available in 11 color options. PowderGuard Max Finish with 4 times the hardness of standard powder coat is also available in 197 colors. See PowderGuard Finish brochure for color selection

- (a) PowderGuard Premium powder coat color as selected by the Architect.
- (b) PowderGuard Textured powder coat color as selected by the Architect.
- (c) PowderGuard Max powder coat, color as selected by Architect.

3. Weatherseals:

- a. Vinyl bottom seal, exterior guide and internal hood seals.

**\*\* NOTE TO SPECIFIER \*\*** Guide and lintel weatherseals are optional delete if not required.

- b. Interior guide weatherseal.
- c. Lintel weatherseal.
- 4. Bottom Bar:

**\*\* NOTE TO SPECIFIER \*\*** Select one of the following three paragraphs and delete the ones not required. Galvanized steel angles are optional for all doors.

- a. Extruded aluminum for doors up to 15 feet 4 inches (4.67 m) wide.
- b. Two primed steel angles for doors over 15 feet 4 inches (4.67 m) wide.
- c. Two galvanized steel angles.
- 5. Guides: Three structural steel angles.
- 6. Brackets:

**\*\* NOTE TO SPECIFIER \*\*** Select one of the following two paragraphs and delete the one not required.

- a. Hot rolled prime painted steel to support counterbalance, curtain and hood.
- b. Galvanized steel to support counterbalance, curtain and hood.
- 7. Finish; Bottom Bar, Guides, Headplate and Brackets:

**\*\* NOTE TO SPECIFIER \*\*** Select one of the following finish paragraphs and delete those not required. Black powder coat is standard. PowderGuard Premium and PowderGuard Max powder coat available in 197 colors; custom color match options available. PowderGuard Textured Finish available in 11 color options. See PowderGuard Finish brochure for color selections.

- a. PowderGuard Premium powder coat in black color.
- b. PowderGuard Premium powder coat color as selected by the Architect.
- c. PowderGuard Zinc base coat, gray.
- d. PowderGuard Zinc base coat with PowderGuard Premium powder coat color as selected by the Architect.
- e. PowderGuard Textured powder coat color as selected by the Architect.
- f. PowderGuard Max powder coat color as selected by the Architect.
- 8. Counterbalance: Helical torsion spring type housed in a steel tube or pipe barrel, supporting the curtain with deflection limited to 0.03 inch per foot of span. Counterbalance is adjustable by means of an adjusting tension wheel.
- 9. Hood: Provide with internal hood baffle weatherseal.

**\*\* NOTE TO SPECIFIER \*\*** Select one of the following three paragraphs and delete the ones not required.

- a. 24 gauge galvanized steel with intermediate supports as required.
- b. Stainless steel, 24 gauge hood with intermediate supports as required.
- c. Aluminum hood with intermediate supports as required.

**\*\* NOTE TO SPECIFIER \*\*** Select one of the following paragraphs for manual operation or electric motor operation and delete the one not required.

- 10. Manual Operation:

**\*\* NOTE TO SPECIFIER \*\*** Select one of the following manual operation paragraphs and delete the ones not required.

- a. Manual push up for doors up to 96 SF.
- b. Chain hoist for doors up to 96 SF.
- c. Chain hoist for doors over 96 SF.
- d. Crank operation.

**\*\* NOTE TO SPECIFIER \*\*** Include the following paragraph if electric motor operation is required and delete if not required.

- 11. Electric Motor Operation: Provide UL listed electric operator, size as recommended by manufacturer to move door in either direction at not less than 2/3 foot per second.
- a. Sensing Edge Protection:

**\*\* NOTE TO SPECIFIER \*\*** Select one of the following two paragraphs and delete the one not required.

- 1) Pneumatic sensing edge.
- 2) Electric sensing edge.

b. Operator Controls:

**\*\* NOTE TO SPECIFIER \*\*** Select one of the following operation paragraphs and delete the one not required.

- 1) Push-button operated control stations with open, close, and stop buttons.
- 2) Key operation with open, close, and stop controls.
- 3) Push-button and key operated control stations with open, close, and stop buttons.

**\*\* NOTE TO SPECIFIER \*\*** Select one of the following location paragraphs and delete the one not required.

- 4) Controls for interior location.
- 5) Controls for exterior location.
- 6) Controls for both interior and exterior location.

**\*\* NOTE TO SPECIFIER \*\*** Select one of the following two paragraphs and delete the one not required.

- 7) Controls surface mounted.
- 8) Controls flush mounted.

c. Special Operation:

**\*\* NOTE TO SPECIFIER \*\*** Select one of the following operation paragraphs and delete the one not required.

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

- d. Motor Voltage: 115/230 single phase, 60 HZ
12. Wind Load Design:

**\*\* NOTE TO SPECIFIER \*\*** Select one of the following paragraphs and delete the one not required. Standard wind load is 20 PSF. Contact the manufacturer for current data on Miami-Dade County, FBC Certification or TDI approval and insert below.

- a. Standard wind load shall be 20 PSF.
- b. Miami-Dade County NOA \_\_\_\_.
- c. FBC certification FL# \_\_\_\_.
- d. TDI Approval # \_\_\_\_.

31 PSF

13. Operation: Design door assembly, including operator, to operate for not less than 20,000 cycles.

14. Locking:

**\*\* NOTE TO SPECIFIER \*\*** Select one of the following paragraphs and delete the ones not required.

- a. Two interior bottom bar slide bolts for manually operated doors.
- b. Interior bottom bar slide bolt with chain hoist operation.
- c. Chain keeper locks for chain hoist operation.
- d. Interior slide bolt lock for electric operation with interlock switch.
- e. Cylinder lock for electric operation with interlock switch.

15. Wall Mounting Condition:

**\*\* NOTE TO SPECIFIER \*\*** Select one of the following two paragraphs and delete the one not required.

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

**\*\* NOTE TO SPECIFIER \*\*** Vision Lites are optional. Select the size and open or covered openings. Delete if not required.

16. Vision Lites: Provide with uniformly spaced openings.

- a. Size: 3 inch by 5/8 inch (76 mm by 16 mm).
- b. Size: 10 inch by 1 inch (254 mm by 25.4 mm)
- c. Provide open with no cover.
- d. Provide with Plexiglas covers over openings.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Verify opening sizes, tolerances and conditions are acceptable.
- B. Examine conditions of substrates, supports, and other conditions under which this work is to be performed.
- C. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

### 3.2 PREPARATION

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

### 3.3 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Use anchorage devices to securely fasten assembly to wall construction and building framing without distortion or stress.
- C. Securely and rigidly brace components suspended from structure. Secure guides to structural members only.
- D. Fit and align assembly including hardware; level and plumb, to provide smooth operation.

**\*\* NOTE TO SPECIFIER \*\* Select the following paragraph for electric operation of coiling doors and delete if not required.**

- E. Coordinate installation of electrical service with Section 16150. Complete wiring from disconnect to unit components.
- F. Coordinate installation of sealants and backing materials at frame perimeter as specified in Section 07900.
- G. Install perimeter trim and closures.
- H. Instruct Owner's personnel in proper operating procedures and maintenance schedule.

### 3.4 ADJUSTING

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

- B. Adjust hardware and operating assemblies for smooth and noiseless operation.
- 3.5 CLEANING
- A. Clean curtain and components using non-abrasive materials and methods recommended by manufacturer.
  - B. Remove labels and visible markings.
  - C. Touch-up, repair or replace damaged products before Substantial Completion.
- 3.6 PROTECTION
- A. Protect installed products until completion of project.

END OF SECTION





SECTION 08734  
COMMERCIAL DOOR OPERATORS  
RHX® OVERHEAD ROLLING DOOR AND GRILLE OPERATOR

Display hidden notes to specifier by using 'Tools'/'Options'/'View'/'Hidden Text'. On newer versions of Microsoft Word click on round Windows logo in top left corner, Click on 'Word Options' button at bottom of drop down menu. Click on 'Display' on left menu bar, and check the box for 'Hidden Text'.

**PART 1 GENERAL**

1.1 SECTION INCLUDES

- A. Overhead Rolling Door and Grille Openers.

1.2 RELATED SECTIONS

- A. Section 05500 - Metal Fabrications: Support framing and framed opening.
- B. Section 06200 - Finish Carpentry: Wood jamb and head trim.
- C. Section 08330 – Overhead Coiling Doors.
- D. Section 08331 – Overhead Coiling Fire Doors.
- E. Section 08360 - Sectional Overhead Doors.
- F. Section 08710 - Door Hardware: Product Requirements for cylinder core and keys.
- G. Section 09900 - Painting: Field applied finish.
- H. Section 16130 - Raceway and Boxes: Conduit from electric circuit to door operator and from door operator to control station.
- I. Section 16150 - Wiring Connections: Power to disconnect.

1.3 REFERENCES

- A. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum).
- B. NEMA ICS 6 - Enclosures for Industrial Controls and Systems.
- C. NEMA MG 1 - Motors and Generators.

1.4 DESIGN / PERFORMANCE REQUIREMENTS

- A. Products Requiring Electrical Connection: Listed and classified by Underwriters Laboratories, Inc. acceptable to authority having jurisdiction as suitable for purpose specified.
- B. Electric Motors shall be alternating-current squirrel-cage motors conforming with NEMA MG 1.
- C. Wiring Connections: Requirements for electrical characteristics.

*Any of these*

1. 115 volts, 60 Hz single phase.
2. 208 volts, 60 Hz single phase or three phase.
3. 230 volts, 60 Hz single phase or three phase.
4. 460 volts, 60 Hz three phase.
5. 575 volts, 60 Hz three phase.

#### 1.5 SUBMITTALS

- A. Submit under provisions of Section 01300.
- B. Product Data: Manufacturer's data sheets on each product to be used, including:
  1. Preparation instructions and recommendations.
  2. Storage and handling requirements and recommendations.
  3. Details of construction and fabrication.
  4. Installation methods.
- C. Shop Drawings: Include detailed plans, elevations, details of framing members, required clearances and accessories. Include relationship with adjacent construction.
- D. Manufacturer's Certificates: Certify products meet or exceed specified requirements.
- E. Operation and Maintenance Data: Submit lubrication requirements and frequency, and periodic adjustments required.

#### 1.6 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified with minimum of five years documented experience.
- B. Installer Qualifications: Authorized representative of the manufacturer with minimum five years documented experience.
- C. Mock-Up: Provide a mock-up for evaluation of surface preparation techniques and application workmanship.
  1. Install in areas designated by Architect.
  2. Do not proceed with remaining work until workmanship and installation is approved by Architect.
  3. Refinish mock-up area as required to produce acceptable work.

#### 1.7 DELIVERY, STORAGE, AND HANDLING

- A. Store products in manufacturer's unopened packaging until ready for installation.
- B. Protect materials from exposure to moisture. Do not deliver until after wet work is complete and dry.
- C. Store materials in a dry, warm, ventilated weathertight location.

#### 1.8 PROJECT CONDITIONS

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

#### 1.9 WARRANTY

- A. Provide operators with a 2 year limited warranty on motor and parts.

## PART 2 PRODUCTS

### 2.1 MANUFACTURERS

- A. Acceptable Manufacturer: Overhead Door Corp., 2501 S. State Hwy. 121, Suite 200, Lewisville, TX 75067. ASD. Tel. Toll Free: (800) 275-3290. Phone: (469) 549-7100. Fax: (972) 906-1499. Web Site: [www.overheaddoor.com](http://www.overheaddoor.com). E-mail: [sales@overheaddoor.com](mailto:sales@overheaddoor.com).
- B. Substitutions: Not permitted.
- C. Requests for substitutions will be considered in accordance with provisions of Section 01600.

### 2.2 OVERHEAD ROLLING DOOR AND GRILLE OPERATORS

- A. Heavy Duty Rolling Door and Grille Operator: Model RHX True Gear Head Type Door Operator:
1. Application:
    - a. Rolling Steel Doors.
    - b. Rolling Steel Fire Doors.
    - c. Rolling Steel Grille.
  2. Electric Motor: UL listed.
    - a. Rating:
      - 1) 1/2 horsepower single phase or three phase with automatic thermal reset overload.
      - 2) 3/4 horsepower or 1 horsepower single phase with manual reset overload.
      - 3) 3/4 horsepower or 1 horsepower three phase with automatic thermal reset overload.
      - 4) 3 horsepower three phase with automatic thermal reset overload.
    - b. Motor frame comply with:
      - 1) NEMA 48 for 1/2 hp single phase.
      - 2) NEMA 56 for 1/2 hp three phase.
      - 3) NEMA 56 3/4 and 1 hp all phases.
      - 4) NEMA 56 for 3 hp three phase.
    - c. Construction:
      - 1) Open drip-proof construction.
      - 2) Totally Enclosed Non Ventilated – TENV construction.
      - 3) Totally Enclosed Fan Cooled – TEFC construction.
      - 4) Washdown – NEMA 4 / NEMA 4X construction
    - d. The operator shall be suited for:
      - 1) NEMA ICS 6 Type 1 general purpose environment.
      - 2) NEMA ICS 6 Type 4 water tight dust tight environment.
      - 3) NEMA ICS 6 Type 4X water tight dust tight environment with corrosion-resistance.
    - e. Reduction: Primary reduction is worm gear in oil bath.
    - f. Duty cycle: Accommodate heavy usage, up to 60 cycles per hour under a large constant load.
      - 1) Brake: DC Disc type with selectable Progressive Braking for smooth stopping.
      - 2) Clutch: Adjustable torque-limiter type.

3) Limit System: LimitLock limit system, magnetic type providing absolute positioning with push to set and remote setting capabilities. Limit system shall remain synchronized with the door during manual operation and supply power interruptions.

3. Control System: Microprocessor based with relay motor controls on a single board. System incorporates a 16 character Liquid Crystal Display (LCD) to display the system status. System shall include the following:
- a. Capable of monitoring and reporting on a variety of operating conditions, including: Current operating status, Current command status, Motor movement status, Current error status (if applicable), Hoist Interlock status (if applicable), External Interlock status, and 24VDC status.
  - b. A delay-on-reverse operating protocol.
  - c. Maximum run timers in both directions of travel that limit motor run time in the event a clutch slips or some other problem occurs.
  - d. Provisions for the connection of a 2-wire monitored photo-eye or a 2-wire monitored edge sensor, as well as non-monitored 2-wire sensing edges, photo-eyes or other entrapment protection devices.
  - e. Control action will be constant contact close until a monitored entrapment device is installed, allowing for selection of momentary contact.
  - f. Provisions for connection of single and/or 3-button control stations.
  - g. Provisions for connection of an external 3-wire radio controls and related control devices.
  - h. On board open, close and stop control keys for local operation.
  - i. CodeDodger radio receiver that is dual frequency cycling at 315 Mhz and 390 Mhz capable of storing 250 single button and/or 250 Open-Close-Stop transmitters with the ability to add and/or delete transmitters individually, identify and store activating transmitter IDs.

4. Mounting:

a. Rolling Steel doors:

- 1) Front of hood and chain/sprocket coupling to door.
- 2) Top of hood and chain/sprocket coupling to door.
- 3) Wall-mount and chain/sprocket coupling to door.
- 4) Bench mount and chain/sprocket coupling to door.

5. Release:

- a. Release shall be a pull and hold type mechanism with single cable operation and an integrated interlock switch on hoist units.

6. Hoist: Chain hoist consists of chain pocket wheel, chain guard and smooth hand chain on hoist units.

7. Entrapment Protection

- a. Control system shall have provisions to connect monitored entrapment protection devices such as monitored electric sensing edge, or monitored photo-eye and to provide constant contact close control operation in lieu of such devices.

8. Control accessories:

a. Operator Controls:

- 1) Push-button operated control stations with open, close, and stop buttons.
- 2) Key operation with open, close, and stop controls.
- 3) Push-button and key operated control stations with open, close, and stop buttons.
- 4) Controls for interior location.
- 5) Controls for exterior location.
- 6) Controls for both interior and exterior location.
- 7) Controls surface mounted.

choose

- 8) Controls flush mounted.
- b. Special Operation:
  - 1) Vehicle detector operation.
  - 2) Radio control operation.
  - 3) Card reader control.
  - 4) OHD monitored photo-eyes.
  - 5) Commercial photo-eyes.
  - 6) Timer Close Module for unattended timed door closing. Auxiliary control inputs, safety inputs, timer hold input and automatic door closing feature with selectable time delay. Safety inputs can be configured using on board keypad.
  - 7) Commercial light package.
  - 8) Auxiliary Output Module for up, down, and mid-stop limit status via several auxiliary sets of dry contacts that are microprocessor controlled. ADA compliant outputs that activate when door is moving up, down, or both directions and can be configured using the on board keypad.

### **PART 3 EXECUTION**

#### **3.1 EXAMINATION**

- A. Verify door sizes, configuration, tolerances and conditions are acceptable.
- B. Examine conditions of substrates, supports, and other conditions under which this work is to be performed.
- C. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

#### **3.2 PREPARATION**

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

#### **3.3 INSTALLATION**

- A. Install in accordance with manufacturer's instructions.
- B. Use anchorage devices to securely fasten assembly without distortion or stress.
- C. Fit and align assembly including hardware; level and plumb, to provide smooth operation.
- D. Coordinate installation of electrical service with Section 16150. Complete wiring from disconnect to unit components.

#### **3.4 ADJUSTING**

- A. Test for proper operation and adjust as necessary to provide proper operation without binding or distortion.
- B. Adjust hardware and operating assemblies for smooth and noiseless operation.

3.5 CLEANING

- A. Clean components using non-abrasive materials and methods recommended by manufacturer.
- B. Touch-up, repair or replace damaged products before Substantial Completion.

3.6 PROTECTION

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

3.7 SCHEDULES

- A. :
  - 1.
  - 2.
  - 3.
- B. :
  - 1.
  - 2.
  - 3.

END OF SECTION

SECTION 083113

ACCESS DOORS AND FRAMES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes access doors and frames for walls and ceilings.

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product.
  - 1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.
- B. Samples: For each type of access door and frame and for each finish specified, complete assembly minimum 6 by 6 inches in size.
- C. Product Schedule: For access doors and frames. Use same designations indicated on Drawings.

1.3 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For testing and inspecting agency.

PART 2 - PRODUCTS

2.1 ACCESS DOORS AND FRAMES

- A. Flush Access Doors with Concealed Flanges:
  - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. Acudor Products, Inc.
    - b. Babcock-Davis.
    - c. J. L. Industries, Inc.; Div. of Activar Construction Products Group.
    - d. Karp Associates, Inc.
    - e. Larsen's Manufacturing Company.
    - f. Milcor Inc.
    - g. Nystrom, Inc.

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2. Description: Face of door flush with frame; with concealed flange for gypsum board installation and concealed hinge.
3. Locations: Walls and ceilings.
4. Metallic-Coated Steel Sheet for Door: Nominal 0.064 inch, 16 gage factory primed.
5. Frame Material: Same material and thickness as door.
6. Latch and Lock: Cam latch, key operated.

## 2.2 MATERIALS

- A. Metallic-Coated Steel Sheet: ASTM A 653/A 653M, Commercial Steel (CS), Type B; with minimum G60 or A60 metallic coating.
- B. Frame Anchors: Same material as door face.
- C. Inserts, Bolts, and Anchor Fasteners: Hot-dip galvanized steel according to ASTM A 153/A 153M or ASTM F 2329.

## 2.3 FABRICATION

- A. General: Provide access door and frame assemblies manufactured as integral units ready for installation.
- B. Metal Surfaces: For metal surfaces exposed to view in the completed Work, provide materials with smooth, flat surfaces without blemishes. Do not use materials with exposed pitting, seam marks, roller marks, rolled trade names, or roughness.
- C. Doors and Frames: Grind exposed welds smooth and flush with adjacent surfaces. Furnish mounting holes, attachment devices and fasteners of type required to secure access doors to types of supports indicated.
  1. For concealed flanges with drywall bead, provide edge trim for gypsum panels securely attached to perimeter of frames.
  2. For concealed flanges with plaster bead for full-bed plaster applications, provide zinc-coated expanded-metal lath and exposed casing bead welded to perimeter of frames.
- D. Latch and Lock Hardware:
  1. Quantity: Furnish number of latches and locks required to hold doors tightly closed.
  2. Keys: Furnish two keys per lock and key all locks alike.

## 2.4 FINISHES

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.



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- B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- C. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.
- D. Painted Finishes: Comply with coating manufacturer's written instructions for cleaning, conversion coating, and applying and baking finish.
  - 1. Factory Primed: Apply manufacturer's standard, lead- and chromate-free, universal primer immediately after surface preparation and pretreatment.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Comply with manufacturer's written instructions for installing access doors and frames.

3.3 ADJUSTING

- A. Adjust doors and hardware, after installation, for proper operation.

END OF SECTION

## SECTION 088000

### GLAZING

#### PART 1 GENERAL

##### 1.1 SUMMARY

- A. Work Results:
  - 1. Glass for interior aluminum-framed storefront windows.
  - 2. Insulated glass for folding door system.
- B. Principal Products:
  - 1. Monolithic glass.
  - 2. Insulating glazing units.

##### 1.2 ADMINISTRATIVE REQUIREMENTS

- A. Preinstallation Meeting Attendees and Procedures:
  - 1. Conduct meeting at project site in conjunction with preinstallation meetings for fenestration framing systems.
  - 2. Agenda Items:
    - a. Coordinate schedules and material deliveries.

##### 1.3 ACTION SUBMITTALS

- A. Product Data:
  - 1. Each type of glass.
- B. Samples: 12- by 12-inch samples of each glass type except clear monolithic.

##### 1.4 CLOSEOUT SUBMITTALS

- A. Warranty Documentation: For insulating glass.

##### 1.5 FIELD CONDITIONS

- A. Ambient Conditions:
  - 1. Temperature: Minimum 40 degrees F and rising.
  - 2. Install glass only on when glazing frames are free of moisture, including condensation, frost, and ice.

1.6 WARRANTY

- A. Manufacturer Warranty:
  - 1. Coated Glass: Warrant against peeling, cracking, or other coating deterioration.
    - a. Warranty Period: 10 years.
  - 2. Insulating Glass: Warrant against the following:
    - a. Edge seal failure.
    - b. Internal condensation that does not dissipate.
    - c. Spacer delamination.
    - d. Warranty Period: 10 years.

## PART 2 PRODUCTS

### 2.1 BASE GLASS

- A. Clear Glass: ASTM C1036, Type I, Class 1, Quality-Q3.

### 2.2 COATED GLASS

- A. Vacuum Deposition Coated Glass: ASTM C1376.
  - 1. Color and Performance Attributes: See glass types on Drawings.
  - 2. Insulating Glass: Delete or omit coating from glass edges where spacer sealant is applied.

### 2.3 INSULATING GLASS

- A. Insulating Glass Units: Factory assembled double-pane units tested per ASTM E2190 and certified by IGCC.
- B. Warm Edge Spacer Strips: Rigid plastic or Stainless steel with desiccant fill.
  - 1. Manufacturers and Products:
    - a. Quanex Building Products Duraseal.
    - b. Technoform TGI-Spacer M.
    - c. Viracon VTS.
    - d. Vitro Intercept.
- C. Space Fill: Dehydrated argon.
- D. Edge Seals:
  - 1. Primary Seal: Polyisobutylene.
  - 2. Secondary Seal: Silicone.

### 2.4 GLASS TYPES

- A. Glass Type GL-01: 6 mm clear glass, tempered where shown or where safety glazing is required.
- B. Glass Type GL-02: Insulating unit.
  - 1. Manufacturers and Products:

SOSH Architects  
Atlantic City, NJ

Atlantic County Voting Machine Warehouse Alteration  
Northfield, NJ 08225

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- a. Guardiany.

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- b. Viracon.
- c. Vitro Solarban.
- 2. Outer Lite: 6 mm heat-strengthened glass.
  - a. Tint: Clear.
  - b. Vacuum Deposition Coating: Low-E, #2 surface.
- 3. Inner Lite: 6 mm heat-strengthened glass.
  - a. Tint: Clear.

## 2.5 INSTALLATION MATERIALS

- A. Setting Blocks: ASTM C864, neoprene or EPDM, or ASTM C1115, silicone; Shore A durometer hardness.
- B. Spacers: ASTM C864, neoprene or EPDM, or ASTM C1115, silicone; Shore A durometer hardness.
- C. Glazing Gaskets: Specified with framing system.

## 2.6 PERFORMANCE

- A. Impact:
  - 1. Safety Glazing: 16 CFR 1201, Category II.

## 2.7 FABRICATION

- A. Fabricate before delivering glass to site.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Verification of Conditions:
  - 1. Framing is ready to receive glazing.
  - 2. Weep systems are unblocked and functional.
  - 3. Face and edge clearances are sufficient.
  - 4. Framing joints are properly sealed.
- B. Examine glass lites for damage and defects before installation.
- C. Do not install tempered glass with noticeable roller pick optical distortion.

### 3.2 PREPARATION

- A. Clean glazing channels and rabbets; remove loose materials and moisture.

- B. Remove protective coatings on metal surfaces.

- C. Clean glass just before installation.

### 3.3 INSTALLATION - GENERAL

- A. Install glass without direct contact on framing surfaces.
- B. Maintain manufacturer recommended edge and face clearances between glass and frame members.
- C. Set glass centered in openings on setting blocks.
- D. Provide edge blocking needed to prevent sideways movement of glass in framing.
- E. Set glass with correct orientation of exterior side.

### 3.4 INSTALLATION - GASKET GLAZING

- A. Fabricate gaskets to fit openings.
- B. Install gaskets in single pieces on each side of opening with joints only at corners.
- C. Where recommended by framing system manufacturer, seal corners watertight.
- D. Compress gaskets to produce weathertight seal without causing bending stresses in glass.

### 3.5 CLEANING

- A. Remove nonpermanent labels and clean surfaces after installation.
- B. Clean glass on both sides shortly before inspection for Substantial Completion.

### 3.6 PROTECTION

- A. Protect glass vulnerable to damage with streamers attached to framing.
- B. Exterior Glass:
  - 1. Protect glass from contact with contaminating substances.
  - 2. Examine glass surfaces below concrete or masonry for alkaline deposits and dirt, and remove such soiling when observed.
  - 3. Provide new replacement units for damaged glass, including glass with stains or etching that cannot be removed.

**END OF SECTION**



## SECTION 092216

### NON-STRUCTURAL METAL FRAMING

#### PART 1 - GENERAL

##### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

##### 1.2 SUMMARY

- A. Section Includes:
  - 1. Non-load-bearing steel framing systems for interior partitions.
  - 2. Suspension systems for interior ceilings and soffits.
  - 3. Grid suspension systems for gypsum board ceilings.

##### 1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.

##### 1.4 INFORMATIONAL SUBMITTALS

- A. Product Certificates: For each type of code-compliance certification for studs and tracks.
- B. Evaluation Reports: For embossed, high-strength steel studs and tracks firestop tracks post-installed anchors and power-actuated fasteners, from ICC-ES or other qualified testing agency acceptable to authorities having jurisdiction.

##### 1.5 QUALITY ASSURANCE

- A. Code-Compliance Certification of Studs and Tracks: Provide documentation that framing members are certified according to the product-certification program of the Certified Steel Stud Association, the Steel Framing Industry Association, or the Steel Stud Manufacturers Association.

## PART 2 - PRODUCTS

### 2.1 PERFORMANCE REQUIREMENTS

- A. Fire-Test-Response Characteristics: For fire-resistance-rated assemblies that incorporate non-load-bearing steel framing, provide materials and construction identical to those tested in assembly indicated, according to ASTM E119 by an independent testing agency.
- B. STC-Rated Assemblies: For STC-rated assemblies, provide materials and construction identical to those tested in assembly indicated on Drawings, according to ASTM E90 and classified according to ASTM E413 by an independent testing agency.
- C. Horizontal Deflection: For composite and non-composite wall assemblies, limited to 1/240 of the wall height based on horizontal loading of 5 lbf/sq. ft..

### 2.2 FRAMING SYSTEMS

- A. Framing Members, General: Comply with ASTM C754 for conditions indicated.
  - 1. Steel Sheet Components: Comply with ASTM C645 requirements for steel unless otherwise indicated.
  - 2. Protective Coating: ASTM A653/A653M, G40, hot-dip galvanized unless otherwise indicated.
- B. Studs and Tracks: ASTM C645. Use either conventional steel studs and tracks or embossed, high-strength steel studs and tracks.
  - 1. Steel Studs and Tracks:
    - a. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
      - 1) CEMCO; California Expanded Metal Products Co.
      - 2) MarinoWARE.
      - 3) Phillips Manufacturing Co.
      - 4) SCAFCO Steel Stud Company.
      - 5) Steel Construction Systems.
      - 6) Steel Network, Inc. (The).
      - 7) Telling Industries
    - b. Minimum Base-Steel Thickness: As required by performance requirements for horizontal deflection.
    - c. Depth: As indicated on Drawings.

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2. Embossed, High Strength Steel Studs and Tracks: Roll-formed and embossed with surface deformations to stiffen the framing members so that they are structurally comparable to conventional ASTM C645 steel studs and tracks.
    - a. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
      - 1) CEMCO; California Expanded Metal Products Co.
      - 2) ClarkDietrich.
      - 3) MarinoWARE.
      - 4) SCAFCO Steel Stud Company.
      - 5) Steel Construction Systems.
      - 6) Telling Industries.
      - 7) The Steel Network, Inc.
    - b. Minimum Base-Steel Thickness: As required by horizontal deflection performance requirements.
    - c. Depth: As indicated on Drawings.
- C. Slip-Type Head Joints: Where indicated, provide one of the following:
1. Clip System: Clips designed for use in head-of-wall deflection conditions that provide a positive attachment of studs to tracks while allowing vertical movement. Maximum floor deflection as determined by Structural Engineer.
    - a. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
      - 1) CEMCO; California Expanded Metal Products Co.
      - 2) ClarkDietrich.
      - 3) Fire Trak Corp.
      - 4) MarinoWARE.
      - 5) SCAFCO Steel Stud Company.
      - 6) Steel Construction Systems.
      - 7) Super Stud Building Products Inc.
      - 8) The Steel Network, Inc.
  2. Single Long-Leg Track System: ASTM C645 top track with 2-inch-deep flanges in thickness not less than indicated for studs, installed with studs friction fit into top track and with continuous bridging located within 12 inches of the top of studs to provide lateral bracing.
  3. Deflection Track: Steel sheet top track manufactured to prevent cracking of finishes applied to interior partition framing resulting from deflection of structure above; in thickness not less than indicated for studs and in width to accommodate depth of studs.

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- a. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
  - 1) CEMCO; California Expanded Metal Products Co.
  - 2) ClarkDietrich.
  - 3) MarinoWARE.
  - 4) Perfect Wall, Inc.
  - 5) Steel Construction Systems.
  - 6) Telling Industries.
  - 7) The Steel Network, Inc.
  
- D. Firestop Tracks: Top track manufactured to allow partition heads to expand and contract with movement of structure while maintaining continuity of fire-resistance-rated assembly indicated; in thickness not less than indicated for studs and in width to accommodate depth of studs.
  1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
    - a. BlazeFrame Industries.
    - b. CEMCO; California Expanded Metal Products Co.
    - c. ClarkDietrich Building Systems.
    - d. Fire Trak Corp.
    - e. MarinoWARE.
    - f. Steel Network, Inc. (The)
  
- E. Flat Strap and Backing Plate: Steel sheet for blocking and bracing in length and width indicated.
  1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
    - a. ClarkDietrich.
    - b. MarinoWARE.
    - c. SCAFCO Steel Stud Company.
    - d. Steel Construction Systems.
  
  2. Minimum Base-Steel Thickness: As determined by Structural Engineer.
  
- F. Cold-Rolled Channel Bridging: Steel, 0.0538-inch minimum base-steel thickness, with minimum 1/2-inch-wide flanges.
  1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. ClarkDietrich.
    - b. MarinoWARE.

- c. SCAFCO Steel Stud Company.
    - d. Steel Construction Systems.
  - 2. Depth: 1-1/2 inches.
  - 3. Clip Angle: Not less than 1-1/2 by 1-1/2 inches, 0.068-inch-thick, galvanized steel.
- G. Hat-Shaped, Rigid Furring Channels: ASTM C645.
- 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
    - a. ClarkDietrich.
    - b. MarinoWARE.
    - c. SCAFCO Steel Stud Company.
    - d. Steel Construction Systems.
  - 2. Minimum Base-Steel Thickness: 0.0296 inch.
  - 3. Depth: As indicated on Drawings.

## 2.3 SUSPENSION SYSTEMS

- A. Tie Wire: ASTM A641/A641M, Class 1 zinc coating, soft temper, 0.062-inch-diameter wire, or double strand of 0.048-inch-diameter wire.
- B. Hanger Attachments to Concrete:
  - 1. Post-Installed Anchors: Fastener systems with an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES as appropriate for the substrate.
    - a. Uses: Securing hangers to structure.
    - b. Material for Interior Locations: Carbon-steel components zinc-plated to comply with ASTM B633 or ASTM F1941, Class Fe/Zn 5, unless otherwise indicated.
  - 2. Power-Actuated Anchors: Fastener systems with an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC70.
- C. Wire Hangers: ASTM A641/A641M, Class 1 zinc coating, soft temper.
- D. Carrying Channels (Main Runners): Cold-rolled, commercial-steel sheet with a base-steel thickness of 0.0538 inch and minimum 1/2-inch-wide flanges.
  - 1. Depth: As indicated on Drawings.
- E. Furring Channels (Furring Members):

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1. Cold-Rolled Channels: 0.0538-inch uncoated-steel thickness, with minimum 1/2-inch-wide flanges, 3/4 inch deep.
  2. Steel Studs and Tracks: ASTM C645.
    - a. Minimum Base-Steel Thickness: As determined by Structural Engineer.
    - b. Depth: As indicated on Drawings.
  3. Embossed, High-Strength Steel Studs and Tracks: ASTM C645.
    - a. Minimum Base-Steel Thickness: As determined by Structural Engineer.
    - b. Depth: As indicated on Drawings.
  4. Hat-Shaped, Rigid Furring Channels: ASTM C645, 7/8 inch deep.
    - a. Minimum Base-Steel Thickness: As determined by Structural Engineer.
- F. Grid Suspension System for Gypsum Board Ceilings: ASTM C645, direct-hung system composed of main beams and cross-furring members that interlock.
1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
    - a. Armstrong World Industries, Inc.
    - b. Chicago Metallic Corporation.
    - c. USG Corporation.

## 2.4 AUXILIARY MATERIALS

- A. General: Provide auxiliary materials that comply with referenced installation standards.
1. Fasteners for Steel Framing: Of type, material, size, corrosion resistance, holding power, and other properties required to fasten steel members to substrates.
- B. Isolation Strip at Exterior Walls: Provide one of the following:
1. Asphalt-Saturated Organic Felt: ASTM D226/D226M, Type I (No. 15 asphalt felt), nonperforated.
  2. Foam Gasket: Adhesive-backed, closed-cell vinyl foam strips that allow fastener penetration without foam displacement, 1/8 inch thick, in width to suit steel stud size.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine areas and substrates, with Installer present, and including welded hollow-metal frames, cast-in anchors, and structural framing, for compliance with requirements and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.2 PREPARATION

- A. Suspended Assemblies: Coordinate installation of suspension systems with installation of overhead structure to ensure that inserts and other provisions for anchorages to building structure have been installed to receive hangers at spacing required to support the Work and that hangers will develop their full strength.
  - 1. Furnish concrete inserts and other devices indicated to other trades for installation in advance of time needed for coordination and construction.
- B. Coordination with Sprayed Fire-Resistive Materials:
  - 1. Before sprayed fire-resistive materials are applied, attach offset anchor plates or ceiling tracks to surfaces indicated to receive sprayed fire-resistive materials. Where offset anchor plates are required, provide continuous plates fastened to building structure not more than 24 inches o.c.
  - 2. After sprayed fire-resistive materials are applied, remove them only to extent necessary for installation of non-load-bearing steel framing. Do not reduce thickness of fire-resistive materials below that are required for fire-resistance ratings indicated. Protect adjacent fire-resistive materials from damage.

### 3.3 INSTALLATION, GENERAL

- A. Installation Standard: ASTM C754.
  - 1. Gypsum Board Assemblies: Also comply with requirements in ASTM C840 that apply to framing installation.
- B. Install framing and accessories plumb, square, and true to line, with connections securely fastened.
- C. Install supplementary framing, and blocking to support fixtures, equipment services, heavy trim, grab bars, toilet accessories, furnishings, or similar construction.
- D. Install bracing at terminations in assemblies.

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- E. Do not bridge building control and expansion joints with non-load-bearing steel framing members. Frame both sides of joints independently.

### 3.4 INSTALLING FRAMED ASSEMBLIES

- A. Install framing system components according to spacings indicated, but not greater than spacings required by referenced installation standards for assembly types.
- B. Where studs are installed directly against exterior masonry walls or dissimilar metals at exterior walls, install isolation strip between studs and exterior wall.
- C. Install studs so flanges within framing system point in same direction.
- D. Install tracks at floors and overhead supports. Extend framing full height to structural supports or substrates above suspended ceilings except where partitions are indicated to terminate at suspended ceilings. Continue framing around ducts that penetrate partitions above ceiling.
  - 1. Slip-Type Head Joints: Where framing extends to overhead structural supports, install to produce joints at tops of framing systems that prevent axial loading of finished assemblies.
  - 2. Door Openings: Screw vertical studs at jambs to jamb anchor clips on door frames; install track section (for cripple studs) at head and secure to jamb studs.
    - a. Install two studs at each jamb unless otherwise indicated.
    - b. Install cripple studs at head adjacent to each jamb stud, with a minimum 1/2-inch clearance from jamb stud to allow for installation of control joint in finished assembly.
    - c. Extend jamb studs through suspended ceilings and attach to underside of overhead structure.
  - 3. Other Framed Openings: Frame openings other than door openings the same as required for door openings unless otherwise indicated. Install framing below sills of openings to match framing required above door heads.
  - 4. Fire-Resistance-Rated Partitions: Install framing to comply with fire-resistance-rated assembly indicated and support closures and to make partitions continuous from floor to underside of solid structure.
    - a. Firestop Track: Where indicated, install to maintain continuity of fire-resistance-rated assembly indicated.
  - 5. Sound-Rated Partitions: Install framing to comply with sound-rated assembly indicated.
- E. Direct Furring:
  - 1. Screw to wood framing.
  - 2. Attach to concrete or masonry with stub nails, screws designed for masonry attachment, or powder-driven fasteners spaced 24 inches o.c.



F. Z-Shaped Furring Members:

1. Erect insulation, specified in Section 072100 "Thermal Insulation," vertically and hold in place with Z-shaped furring members spaced 24 inches o.c.
2. Except at exterior corners, securely attach narrow flanges of furring members to wall with concrete stub nails, screws designed for masonry attachment, or powder-driven fasteners spaced 24 inches o.c.
3. At exterior corners, attach wide flange of furring members to wall with short flange extending beyond corner; on adjacent wall surface, screw-attach short flange of furring channel to web of attached channel. At interior corners, space second member no more than 12 inches from corner and cut insulation to fit.

G. Installation Tolerance: Install each framing member so fastening surfaces vary not more than 1/8 inch from the plane formed by faces of adjacent framing.

3.5 INSTALLING CEILING SUSPENSION SYSTEMS

- A. Install suspension system components according to spacings indicated on the drawings, but not greater than spacings required by ASTM C754 installation standards for assembly types.
- B. Isolate suspension systems from building structure where they abut or are penetrated by building structure to prevent transfer of loading imposed by structural movement.
- C. Suspend hangers from building structure as follows:
  1. Install hangers plumb and free from contact with insulation or other objects within ceiling plenum that are not part of supporting structural or suspension system.
    - a. Splay hangers only where required to miss obstructions and offset resulting horizontal forces by bracing, countersplaying, or other equally effective means.
  2. Where width of ducts and other construction within ceiling plenum produces hanger spacings that interfere with locations of hangers required to support standard suspension system members, install supplemental suspension members and hangers in the form of trapezes or equivalent devices.
    - a. Size supplemental suspension members and hangers to support ceiling loads within performance limits established by referenced installation standards.
  3. Wire Hangers: Secure by looping and wire tying, either directly to structures or to inserts, eye screws, or other devices and fasteners that are secure and appropriate for substrate, and in a manner that will not cause hangers to deteriorate or otherwise fail.
  4. Flat Hangers: Secure to structure, including intermediate framing members, by attaching to inserts, eye screws, or other devices and fasteners that are secure and appropriate for structure and hanger, and in a manner that will not cause hangers to deteriorate or otherwise fail.
  5. Do not attach hangers to steel roof deck.

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6. Do not attach hangers to permanent metal forms. Furnish cast-in-place hanger inserts that extend through forms.
  7. Do not attach hangers to rolled-in hanger tabs of composite steel floor deck.
  8. Do not connect or suspend steel framing from ducts, pipes, or conduit.
- D. Fire-Resistance-Rated Assemblies: Wire tie furring channels to supports.
- E. Grid Suspension Systems: Attach perimeter wall track or angle where grid suspension systems meet vertical surfaces. Mechanically join main beam and cross-furring members to each other and butt-cut to fit into wall track.
- F. Installation Tolerances: Install suspension systems that are level to within 1/8 inch in 12 feet measured lengthwise on each member that will receive finishes and transversely between parallel members that will receive finishes.

END OF SECTION

SECTION 092900

GYPSUM BOARD

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
  - 1. Interior gypsum board.
  - 2. Exterior gypsum board for ceilings and soffits.
  - 3. Tile backing panels.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Samples for Verification: For the following products:
  - 1. Trim Accessories: Full-size Sample in 12-inch- long length for each trim accessory indicated.

1.4 DELIVERY, STORAGE AND HANDLING

- A. Store materials inside under cover and keep them dry and protected against weather, condensation, direct sunlight, construction traffic, and other potential causes of damage. Stack panels flat and supported on risers on a flat platform to prevent sagging.

1.5 FIELD CONDITIONS

- A. Environmental Limitations: Comply with ASTM C840 requirements or gypsum board manufacturer's written instructions, whichever are more stringent.
- B. Do not install paper-faced gypsum panels until installation areas are enclosed and conditioned.
- C. Do not install panels that are wet, moisture damaged, and mold damaged.

1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
2. Indications that panels are mold damaged include, but are not limited to, fuzzy or blotchy surface contamination and discoloration.

## PART 2 - PRODUCTS

### 2.1 PERFORMANCE REQUIREMENTS

- A. Fire-Resistance-Rated Assemblies: For fire-resistance-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E119 by an independent testing agency.
- B. STC-Rated Assemblies: For STC-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E90 and classified according to ASTM E413 by an independent testing agency.

### 2.2 GYPSUM BOARD, GENERAL

- A. Size: Provide maximum lengths and widths available that will minimize joints in each area and that correspond with support system indicated.

### 2.3 INTERIOR GYPSUM BOARD

- A. Mold-Resistant Gypsum Board: ASTM C1396/C1396M. With moisture- and mold-resistant core and paper surfaces.
  1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
    - a. American Gypsum
    - b. CertainTeed Corporation.
    - c. Georgia-Pacific Gypsum LLC.
    - d. National Gypsum Company.
    - e. USG Corporation.
  2. Core: 5/8 inch, Type X, unless otherwise indicated.
  3. Long Edges: Tapered.
  4. Mold Resistance: ASTM D3273, score of 10 as rated according to ASTM D3274.

### 2.4 EXTERIOR GYPSUM BOARD FOR CEILINGS AND SOFFITS

- A. Exterior Gypsum Soffit Board: ASTM C1396/C1396M, with manufacturer's standard edges.

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1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
  - a. CertainTeed Gypsum.
  - b. Continental Building Products, LLC.
  - c. Georgia-Pacific Gypsum LLC.
  - d. USG Corporation.
2. Core: 5/8 inch, Type X.

## 2.5 TILE BACKING PANELS

- A. Cementitious Backer Units: ANSI A118.9 and ASTM C1288 or ASTM C1325, with manufacturer's standard edges.
  1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
    - a. CertainTeed Corporation.
    - b. Continental Building Products, LLC.
    - c. National Gypsum Company.
    - d. USG Corporation.
    - e. James Hardie Building Products, Inc.
  2. Thickness: As indicated.
  3. Mold Resistance: ASTM D3273, score of 10 as rated according to ASTM D3274.

## 2.6 TRIM ACCESSORIES

- A. Interior Trim: ASTM C1047.
  1. Material: Galvanized or aluminum-coated steel sheet, rolled zinc, plastic, or paper-faced galvanized-steel sheet.
  2. Shapes:
    - a. Cornerbead.
    - b. Bullnose bead.
    - c. LC-Bead: J-shaped; exposed long flange receives joint compound.
    - d. L-Bead: L-shaped; exposed long flange receives joint compound.
    - e. U-Bead: J-shaped; exposed short flange does not receive joint compound.
    - f. Expansion (control) joint.
    - g. Base-of-Wall Galvanized Moisture Barrier Trim: Galvanized-steel sheet, 2 inches high.

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- 1) Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
    - a) VersaDry LLC.
  - h. Base-of-Wall PVC Moisture Barrier Trim: Extruded PVC, 1-3/4 inch high.
    - 1) Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
      - a) Clark Dietrich.
      - b) Waterguard.
- B. Exterior Trim: ASTM C1047.
1. Material: Hot-dip galvanized-steel sheet, plastic, or rolled zinc.
  2. Shapes:
    - a. Cornerbead.
    - b. LC-Bead: J-shaped; exposed long flange receives joint compound.
    - c. Expansion (Control) Joint: One-piece, rolled zinc with V-shaped slot and removable strip covering slot opening.

## 2.7 JOINT TREATMENT MATERIALS

- A. General: Comply with ASTM C475/C475M.
- B. Joint Tape:
1. Interior Gypsum Board: Paper.
  2. Exterior Gypsum Soffit Board: Paper.
  3. Tile Backing Panels: As recommended by panel manufacturer.
- C. Joint Compound for Interior Gypsum Board: For each coat, use formulation that is compatible with other compounds applied on previous or for successive coats.
1. Prefilling: At open joints, rounded or beveled panel edges, and damaged surface areas, use setting-type taping compound.
  2. Embedding and First Coat: For embedding tape and first coat on joints, fasteners, and trim flanges, use drying-type, all-purpose compound.
    - a. Use setting-type compound for installing paper-faced metal trim accessories.
  3. Fill Coat: For second coat, use drying-type, all-purpose compound.
  4. Finish Coat: For third coat, use drying-type, all-purpose compound.

- D. Joint Compound for Exterior Applications:
  - 1. Exterior Gypsum Soffit Board: Use setting-type taping compound and setting-type, sandable topping compound.
- E. Joint Compound for Tile Backing Panels:
  - 1. Cementitious Backer Units: As recommended by backer unit manufacturer.

## 2.8 AUXILIARY MATERIALS

- A. Provide auxiliary materials that comply with referenced installation standards and manufacturer's written instructions.
- B. Laminating Adhesive: Adhesive or joint compound recommended for directly adhering gypsum panels to continuous substrate.
- C. Steel Drill Screws: ASTM C1002 unless otherwise indicated.
  - 1. Use screws complying with ASTM C954 for fastening panels to steel members from 0.033 to 0.112 inch thick.
  - 2. For fastening cementitious backer units, use screws of type and size recommended by panel manufacturer.
- D. Sealant: As specified in Section 079200 "Joint Sealants."

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine areas and substrates including welded hollow-metal frames and support framing, with Installer present, for compliance with requirements and other conditions affecting performance of the Work.
- B. Examine panels before installation. Reject panels that are wet, moisture damaged, and mold damaged.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.2 INSTALLATION AND FINISHING OF PANELS, GENERAL

- A. Comply with ASTM C840.

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- B. Install ceiling panels across framing to minimize the number of abutting end joints and to avoid abutting end joints in central area of each ceiling. Stagger abutting end joints of adjacent panels not less than one framing member.
- C. Install panels with face side out. Butt panels together for a light contact at edges and ends with not more than 1/16 inch of open space between panels. Do not force into place.
- D. Locate edge and end joints over supports, except in ceiling applications where intermediate supports or gypsum board back-blocking is provided behind end joints. Do not place tapered edges against cut edges or ends. Stagger vertical joints on opposite sides of partitions. Do not make joints other than control joints at corners of framed openings.
- E. Form control and expansion joints with space between edges of adjoining gypsum panels.
- F. Cover both faces of support framing with gypsum panels in concealed spaces (above ceilings, etc.), except in chases braced internally.
  - 1. Unless concealed application is indicated or required for sound, fire, air, or smoke ratings, coverage may be accomplished with scraps of not less than 8 sq. ft. in area.
  - 2. Fit gypsum panels around ducts, pipes, and conduits.
  - 3. Where partitions intersect structural members projecting below underside of floor/roof slabs and decks, cut gypsum panels to fit profile formed by structural members; allow 1/4- to 3/8-inch- wide joints to install sealant.
- G. Isolate perimeter of gypsum board applied to non-load-bearing partitions at structural abutments. Provide 1/4- to 1/2-inch- wide spaces at these locations and trim edges with edge trim where edges of panels are exposed. Seal joints between edges and abutting structural surfaces with acoustical sealant.
- H. Attachment to Steel Framing: Attach panels so leading edge or end of each panel is attached to open (unsupported) edges of stud flanges first.
- I. Wood Framing: Install gypsum panels over wood framing, with floating internal corner construction. Do not attach gypsum panels across the flat grain of wide-dimension lumber, including floor joists and headers. Float gypsum panels over these members or provide control joints to counteract wood shrinkage.
- J. STC-Rated Assemblies: Seal construction at perimeters, behind control joints, and at openings and penetrations with a continuous bead of acoustical sealant. Install acoustical sealant at both faces of partitions at perimeters and through penetrations. Comply with ASTM C919 and with manufacturer's written instructions for locating edge trim and closing off sound-flanking paths around or through assemblies, including sealing partitions above acoustical ceilings.

### 3.3 INSTALLATION OF INTERIOR GYPSUM BOARD

- A. Install interior gypsum board at locations on drawings.



B. Single-Layer Application:

1. On ceilings, apply gypsum panels before wall/partition board application to greatest extent possible and at right angles to framing unless otherwise indicated.
2. On partitions/walls, apply gypsum panels vertically (parallel to framing) unless otherwise indicated or required by fire-resistance-rated assembly, and minimize end joints.
  - a. Stagger abutting end joints not less than one framing member in alternate courses of panels.
  - b. At stairwells and other high walls, install panels horizontally unless otherwise indicated or required by fire-resistance-rated assembly.
3. On Z-shaped furring members, apply gypsum panels vertically (parallel to framing) with no end joints. Locate edge joints over furring members.
4. Fastening Methods: Apply gypsum panels to supports with steel drill screws.

C. Multilayer Application:

1. On ceilings, apply gypsum board indicated for base layers before applying face layers on walls/partitions; apply face layers in same sequence. Apply base layers at right angles to framing members and offset face-layer joints one framing member, 16 inches minimum, from parallel base-layer joints, unless otherwise indicated or required by fire-resistance-rated assembly.
2. On partitions/walls, apply gypsum board indicated for base layers and face layers vertically (parallel to framing) with joints of base layers located over stud or furring member and face-layer joints offset at least one stud or furring member with base-layer joints unless otherwise indicated or required by fire-resistance-rated assembly. Stagger joints on opposite sides of partitions.
3. On Z-shaped furring members, apply base layer vertically (parallel to framing) and face layer either vertically (parallel to framing) or horizontally (perpendicular to framing) with vertical joints offset at least one furring member. Locate edge joints of base layer over furring members.
4. Fastening Methods: Fasten base layers and face layers separately to supports with screws.

- D. Laminating to Substrate: Where gypsum panels are indicated as directly adhered to a substrate (other than studs, joists, furring members, or base layer of gypsum board), comply with gypsum board manufacturer's written instructions and temporarily brace or fasten gypsum panels until fastening adhesive has set.

### 3.4 INSTALLATION OF EXTERIOR GYPSUM PANELS FOR CEILINGS AND SOFFITS

A. Apply panels perpendicular to supports, with end joints staggered and located over supports.

1. Install with 1/4-inch open space where panels abut other construction or structural penetrations.
2. Fasten with corrosion-resistant screws.

### 3.5 INSTALLATION OF TILE BACKING PANELS

- A. Cementitious Backer Units: ANSI A108.11, as specified in this document and locations indicated on the drawings.
- B. Where tile backing panels abut other types of panels in same plane, shim surfaces to produce a uniform plane across panel surfaces.

### 3.6 INSTALLATION OF TRIM ACCESSORIES

- A. General: For trim with back flanges intended for fasteners, attach to framing with same fasteners used for panels. Otherwise, attach trim according to manufacturer's written instructions.
- B. Control Joints: Install control joints according to ASTM C840 and in specific locations approved by Architect for visual effect.
- C. Interior Trim: Install in the following locations:
  - 1. Cornerbead: Use at outside corners unless otherwise indicated.
  - 2. Bullnose Bead: Use where indicated.
  - 3. LC-Bead: Use at exposed panel edges.
  - 4. L-Bead: Use where indicated.
  - 5. U-Bead: Use at exposed panel edges.
- D. Exterior Trim: Install in the following locations:
  - 1. Cornerbead: Use at outside corners.
  - 2. LC-Bead: Use at exposed panel edges.

### 3.7 FINISHING GYPSUM BOARD

- A. General: Treat gypsum board joints, interior angles, edge trim, control joints, penetrations, fastener heads, surface defects, and elsewhere as required to prepare gypsum board surfaces for decoration. Promptly remove residual joint compound from adjacent surfaces.
- B. Prefill open joints and damaged surface areas.
- C. Apply joint tape over gypsum board joints, except for trim products specifically indicated as not intended to receive tape.
- D. Gypsum Board Finish Levels: Finish panels to levels indicated below and according to ASTM C840:
  - 1. Level 1: Ceiling plenum areas, concealed areas, and where indicated.
  - 2. Level 2: Panels that are substrate for tile and panels that are substrate for acoustical tile.

3. Level 3: Not Used.
4. Level 4: At panel surfaces that will be exposed to view unless otherwise indicated.
  - a. Primer and its application to surfaces are specified in Section 099123 "Interior Painting."
- E. Cementitious Backer Units: Finish according to manufacturer's written instructions.

### 3.8 PROTECTION

- A. Protect adjacent surfaces from drywall compound and promptly remove from floors and other non-drywall surfaces. Repair surfaces stained, marred, or otherwise damaged during drywall application.
- B. Protect installed products from damage from weather, condensation, direct sunlight, construction, and other causes during remainder of the construction period.
- C. Remove and replace panels that are wet, moisture damaged, and mold damaged.
  1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
  2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

END OF SECTION

## SECTION 095113

### ACOUSTICAL PANEL CEILINGS

#### PART 1 GENERAL

##### 1.1 SUMMARY

- A. Work Results:
  - 1. Suspended acoustical ceilings.
- B. Principal Products:
  - 1. Acoustical ceiling panels.
  - 2. Suspension grid.

##### 1.2 ADMINISTRATIVE REQUIREMENTS

- A. Coordination Procedures:
  - 1. Coordinate work results of this Section with ceiling-supported elements.
- B. Preinstallation Meeting Attendees and Procedures:
  - 1. Conduct meeting one week, minimum, before starting Work of this Section.
- C. Sequencing:
  - 1. Complete ceiling suspension system installation after overhead HVAC, electrical, and fire-suppression work is tested and approved.

##### 1.3 ACTION SUBMITTALS

- A. Product Data:
  - 1. Acoustical panels.
  - 2. Suspension grid and trim.
  - 3. Initial selection color and texture samples.
- B. Shop Drawings.
  - 1. Show grid layout and panel identification for each acoustical panel ceiling.
  - 2. Include mechanical and electrical items installed in ceilings.
  - 3. Installation details for seismic design loads sealed by professional engineer responsible for seismic attachment and bracing design.
- C. Samples:
  - 1. Each acoustical panel type, standard size.
  - 2. Each suspension grid type, 12-inch lengths with required colors.

1.4 CLOSEOUT SUBMITTALS

- A. Maintenance data.

## 1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver products after building is fully enclosed.

## 1.6 FIELD CONDITIONS

- A. Ambient Conditions: Perform work within following limitations.
  - 1. Building enclosed and environmental systems maintaining design conditions for Owner occupancy.
- B. Existing Conditions: Verify field measurements before fabrication. Show field measurements on Shop Drawings.

## PART 2 PRODUCTS

### 2.1 ACOUSTICAL PANELS

- A. Acoustical Panels:
  - 1. Manufacturers and Products: See Finish Schedule on Drawings.

### 2.2 SUSPENSION GRID

- A. Non-Fire-Rated Grid: ASTM C635, intermediate duty.
  - 1. Manufacturers and Products: See Finish Schedule on Drawings.
  - 2. Material: Steel; ASTM A653 G30 hot dip galvanized.
  - 3. Flange Caps: Painted aluminum, 15/16 and 9/16 inch wide.
  - 4. Cap Color: White.
- B. Hold-Down Clips: Supplied by ceiling system manufacturer.
- C. Seismic Accessories:
  - 1. Struts: Manufacturer standard compression struts designed to accommodate seismic forces.
  - 2. Clips: Manufacturer standard seismic clips designed and spaced to secure acoustical panels in place.

### 2.3 CEILING TRIM

- A. Wall Moldings:
  - 1. Material: Aluminum, painted finish matching grid.
  - 2. Profile: See Drawings.

2.4 INSTALLATION MATERIALS

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- A. Hanger Attachment: Five times design load per ASTM C635, Table 1.
- B. Wire Hangers: Galvanized steel wire.
  - 1. Diameter: Sized for three times hanger design load per ASTM C635, Table 1.
- C. Touch-up Paint: Type and color to match acoustic and grid units.

## 2.5 PERFORMANCE

- A. Seismic Design Criteria: See Structural Drawings.

## 2.6 FABRICATION

- A. Fabricate decorative edge trim at factory to accurate curves without flat spots, kinks, or other distortion.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Verify that hanger layout will not interfere with other work.
- B. Examine acoustical panels; discard panels that are wet, damaged, or exhibit mold.
- C. Verify that major work above ceiling is complete and inspected before installing grid.

### 3.2 INSTALLATION

- A. Installation Reference Standards:
  - 1. ASTM C636.
  - 2. CISCA Ceiling Systems Handbook.
  - 3. Seismic Standard: ASTM E580/E580M.
- B. Deflection: 1/360, maximum, when fully loaded.
- C. Grid Layout:
  - 1. Locate system on room axis according to reflected plan.
  - 2. Locate system to balanced grid design with edge units not less than 50 percent of acoustic unit size. Arrange system with long dimension of panels parallel to long dimension of the space.
- D. Hang suspension system independent of walls, columns, ducts, pipes and conduit. Where carrying members are spliced, avoid visible face plane displacement between adjacent members.
- E. Where ducts or other equipment prevent regular hanger spacing, reinforce hangers to span



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extra distance or suspend steel channels horizontally and fasten hangers to channels.

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- F. Install grid so that components are level and accurately aligned.
- G. Support tees on perimeter molding flanges.
- H. Perimeter Moldings: Fasten to substrates 16 inches on center, maximum.
  - 1. Install edge moldings at intersections of ceiling and vertical surfaces in acoustical sealant bed.
  - 2. Use longest practical lengths.
  - 3. Outside Corners: Miter or overlap molding.
  - 4. Inside Corners: Cut flanges and bend webs.
  - 5. At round obstructions or penetrations, install factory-formed closures that match perimeter molding.
- I. Lay directional pattern units with pattern running as shown on Drawings.
- J. Place acoustical panels with edges resting flat on suspension grid in uniform plane free of warping.
- K. Cutting Acoustical Panels:
  - 1. Cut to fit irregular grid and perimeter edge trim.
  - 2. Cut profiles to match factory edges.
  - 3. Field paint exposed cut edges.
- L. Lay acoustical insulation blankets in close contact to distance of 48 inches on both sides of partitions with acoustical insulation.
- M. Install hold-down clips at manufacturer recommended spacing.

### 3.3 TOLERANCES

- A. Plane: 1/8 inch variation in 10 feet, maximum, measured in any direction.
- B. Grid Plumbness: 2 degrees rotation variation, maximum.

### 3.4 ADJUSTING

- A. Touch up minor scratches and abrasions to match factory finish.
- B. Provide new components to replace damaged components that cannot be satisfactorily cleaned or repaired.

**END OF SECTION**

## **SECTION 096500**

### **RESILIENT FLOORING**

#### **PART 1 GENERAL**

##### **1.1 SUMMARY**

- A. Work Results:
  - 1. Resilient flooring and base.
- B. Principal Products:
  - 1. Luxury vinyl plank flooring.
  - 2. Vinyl base.

##### **1.2 ADMINISTRATIVE REQUIREMENTS**

- A. Preinstallation Meeting Attendees and Procedures:
  - 1. Conduct meeting one week, minimum, before starting Work of this Section.

##### **1.3 ACTION SUBMITTALS**

- A. Product Data:
  - 1. Resilient flooring products.
  - 2. Installation materials.
  - 3. Initial selection color samples.
- B. Product Schedule: Resilient flooring products.
- C. Samples:
  - 1. Resilient Tile Flooring: Full sized samples of each product.
  - 2. Resilient Base: 12 inch length of each product.

##### **1.4 CLOSEOUT SUBMITTALS**

- A. Operation and Maintenance Data: For resilient flooring.

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

- A. Storage and Handling Requirements:
  - 1. Store resilient flooring indoors and within ambient temperature range recommended by manufacturer.
  - 2. Store resilient tile flooring on flat surfaces.

## 1.6 FIELD CONDITIONS

- A. Ambient Conditions: Perform work within following limitations.
  - 1. Building enclosed and environmental systems maintaining design conditions for Owner occupancy.
  - 2. Establish ambient conditions 48 hours, minimum before and maintain conditions during and 48 hours, minimum after installation.

## PART 2 PRODUCTS

### 2.1 RESILIENT TILE FLOORING

- A. Luxury Vinyl Floor Plank: ASTM F1700.
  - 1. Manufacturers and Products: See Finish Schedule on Drawings.
  - 2. Type: B, Embossed Surface.
  - 3. Thickness: 0.125.
  - 4. Size: See Drawings.
  - 5. Color: Architect selected.

### 2.2 RESILIENT BASE

- A. Vinyl Base: ASTM F1861, Type TV.
  - 1. Manufacturers and Products: See Finish Schedule on Drawings.
  - 2. Style: See drawings.
  - 3. Height: See Drawings.
  - 4. Length: Coils.
  - 5. Inside Corners: Job formed.
  - 6. Outside Corners: Job formed.
  - 7. Color: Architect selected.

### 2.3 PERFORMANCE REQUIREMENTS

- A. Fire-Test-Response Characteristics:
  - 1. Class I per ASTM E648, Critical Radiant Flux Classification.

### 2.4 INSTALLATION MATERIALS

- A. Patching and Leveling Materials: Products recommended by flooring manufacturer for indicated substrates.
- B. Edge Strips: Metal; profiles shown on Drawings.
  - 1. Colors: Architect selected.
- C. Adhesives: Flooring manufacturer recommended product.
  - 1. VOC Content: 50 g/L, maximum.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Verify that concrete floors have cured 28 days, minimum.
- B. Moisture and Alkalinity Testing: See Section 090561.

### 3.2 PREPARATION

- A. Preparing Concrete Substrates: See Section 090561.

### 3.3 TILE FLOORING INSTALLATION

- A. Mix materials from multiple containers for consistent blend of colors.
- B. Lay out tiles so that units at opposite walls are equal width and more than half size.
- C. Install tiles in pattern on Drawings.
- D. Extend tile into recesses and under equipment.
- E. Terminate tile flooring at centerline of doors where adjacent floor finish is dissimilar.
- F. Scribe and cut tile for close fit at vertical surfaces so that cut edge will be concealed by wall base or other trim.
- G. Install tile with full adhesive coverage.
- H. Roll tile to eliminate entrapped air and ensure full adhesion.
- I. Install edge strips where tile terminates against dissimilar flooring. Butt end seams tight.

### 3.4 BASE INSTALLATION

- A. Installation:
  - 1. Form tight joints.
  - 2. Align the tops of bases with adjacent units.
  - 3. Ensure continuous contact between base and substrate. Fill voids between base and substrate with manufacturer recommended filler material.
  - 4. Do not stretch base.
- B. Job-Formed Corners:
  - 1. Outside Corners: Form bends without discoloration in corners.
  - 2. Inside Corners: Miter.

3.5 CLEANING AND PROTECTION

- A. Remove excess adhesive.
- B. Do not allow traffic on flooring until adhesives have fully set.
- C. Provide surface protection during construction period.

**END OF SECTION**

SECTION 099123

INTERIOR PAINTING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes surface preparation and the application of paint systems on interior substrates.
- B. Primers listed in Paint Schedule are in addition to shop applied primers specified in other Sections.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product. Include preparation requirements and application instructions.
- B. Samples for Initial Selection: For each type of topcoat product.
- C. Samples for Verification: For each type of paint system and in each color and gloss of topcoat.
  - 1. Submit Samples on rigid backing, 8 inches square.
  - 2. Step coats on Samples to show each coat required for system.
  - 3. Label each coat of each Sample.
  - 4. Label each Sample for location and application area.
- D. Product List: For each product indicated, include the following:
  - 1. Cross-reference to paint system and locations of application areas. Use same designations indicated on Drawings and in schedules.
  - 2. VOC content.
- E. Alternative paint manufacturers and products requested for approval. Submit proof of equivalency by providing products comparison to Basis of Design products showing description, technical and performance data for each product.

#### 1.4 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials, from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
  - 1. Paint: 5 percent, but not less than 1 gal. of each material and color applied.
- A. Coating Maintenance Manual: Upon conclusion of the project, the Contractor or paint manufacturer/supplier shall furnish a coating maintenance manual, such as Sherwin-Williams “Custodian Project Color and Product Information” report or equal. Manual shall include an Area Summary with finish schedule, Area Detail designating where each product/color/finish was used, product data pages, Material Safety Data Sheets, care and cleaning instructions, touch-up procedures, and color samples of each color and finish used.

#### 1.5 QUALITY ASSURANCE

- A. Mockups: Apply mockups of each paint system indicated and each color and finish selected to verify preliminary selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.
  - 1. Architect will select one surface to represent surfaces and conditions for application of each paint system specified in Part 3.
    - a. Vertical and Horizontal Surfaces: Provide samples of at least 100 sq. ft..
    - b. Other Items: Architect will designate items or areas required.
  - 2. Final approval of color selections will be based on mockups.
    - a. If preliminary color selections are not approved, apply additional mockups of additional colors selected by Architect at no added cost to Owner.
  - 3. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
  - 4. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

#### 1.6 DELIVERY, STORAGE, AND HANDLING

- A. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F.
  - 1. Maintain containers in clean condition, free of foreign materials and residue.
  - 2. Remove rags and waste from storage areas daily.



## 1.7 FIELD CONDITIONS

- A. Apply paints only when temperature of surfaces to be painted and ambient air temperatures are between 50 and 95 deg F.
- B. Do not apply paints when relative humidity exceeds 85 percent; at temperatures less than 5 deg F above the dew point; or to damp or wet surfaces.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURERS

- A. Basis-of-Design Product: Subject to compliance with requirements, provide products by The Sherwin Williams Co. or comparable product by one of the following:
  - 1. PPG Paints
  - 2. Benjamin Moore & Co.

### 2.2 PAINT, GENERAL

- A. Material Compatibility:
  - 1. Provide materials for use within each paint system that are compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
  - 2. For each coat in a paint system, provide products recommended in writing by manufacturers of topcoat for use in paint system and on substrate indicated.
- B. VOC Content: Products shall comply with VOC limits of authorities having jurisdiction and, for interior paints and coatings applied at Project site, the following VOC limits, exclusive of colorants added to a tint base, when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
  - 1. Flat Paints and Coatings: 50 g/L.
  - 2. Nonflat Paints and Coatings: 150 g/L.
  - 3. Dry-Fog Coatings: 400 g/L.
  - 4. Primers, Sealers, and Undercoaters: 200 g/L.
  - 5. Anticorrosive and Antirust Paints Applied to Ferrous Metals: 250 g/L.
  - 6. Zinc-Rich Industrial Maintenance Primers: 340 g/L.
  - 7. Pretreatment Wash Primers: 420 g/L.
  - 8. Floor Coatings: 100 g/L.
  - 9. Shellacs, Clear: 730 g/L.
  - 10. Shellacs, Pigmented: 550 g/L.

## 2.3 SOURCE QUALITY CONTROL

- A. Testing of Paint Materials: Owner reserves the right to invoke the following procedure:
1. Owner will engage the services of a qualified testing agency to sample paint materials. Contractor will be notified in advance and may be present when samples are taken. If paint materials have already been delivered to Project site, samples may be taken at Project site. Samples will be identified, sealed, and certified by testing agency.
  2. Testing agency will perform tests for compliance with product requirements.
  3. Owner may direct Contractor to stop applying coatings if test results show materials being used do not comply with product requirements. Contractor shall remove noncomplying paint materials from Project site, pay for testing, and repaint surfaces painted with rejected materials. Contractor will be required to remove rejected materials from previously painted surfaces if, on repainting with complying materials, the two paints are incompatible.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.
- B. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter as follows:
1. Concrete: 12 percent.
  2. Masonry (Clay and CMU): 12 percent.
  3. Wood: 15 percent.
  4. Gypsum Board: 12 percent.
- C. Gypsum Board Substrates: Verify that finishing compound is sanded smooth.
- D. Verify suitability of substrates, including surface conditions and compatibility with existing finishes and primers.
- E. Proceed with coating application only after unsatisfactory conditions have been corrected.
1. Application of coating indicates acceptance of surfaces and conditions.

### 3.2 INSPECTION

- A. Thoroughly examine surfaces scheduled to be painted prior to commencement of work. Report in writing any condition that may affect proper application. Do not commence work until such defects have been corrected.

- B. Where materials are being applied over previously painted surfaces or questionable surfaces, apply samples and perform in place test to check for compatibility, adhesion and film integrity of new materials to existing painted surfaces. Report in writing any condition that may affect application, appearance or performance of the paint.
- C. Painting of surface constitutes contractor's acceptance of surface and responsibility for any paint failure.

### 3.3 PREPARATION

- A. Comply with manufacturer's written instructions and recommendations applicable to substrates indicated.
- B. Remove hardware, covers, plates, and similar items already in place that are removable and are not to be painted. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.
  - 1. After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection if any.
- C. Clean substrates of substances that could impair bond of paints, including dust, dirt, oil, grease, and incompatible paints and encapsulants.
  - 1. Remove incompatible primers and reprime substrate with compatible primers or apply tie coat as required to produce paint systems indicated.
- D. Gypsum Board Surfaces: Fill minor defects with filler compound. Spot prime defects after repair.
- E. Concrete Substrates: Remove release agents, curing compounds, efflorescence, and chalk. Do not paint surfaces if moisture content or alkalinity of surfaces to be painted exceeds that permitted in manufacturer's written instructions.
- F. Masonry Substrates: Remove efflorescence and chalk. Do not paint surfaces if moisture content or alkalinity of surfaces or mortar joints exceed that permitted in manufacturer's written instructions.
- G. Steel Substrates: Remove rust, loose mill scale, and shop primer, if any. Clean using methods recommended in writing by paint manufacturer but not less than the following:
  - 1. SSPC-SP 2, "Hand Tool Cleaning."
  - 2. SSPC-SP 3, "Power Tool Cleaning."
  - 3. SSPC-SP 7/NACE No. 4, "Brush-off Blast Cleaning."
  - 4. SSPC-SP 11, "Power Tool Cleaning to Bare Metal."

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- H. Shop-Primed Steel Substrates: Clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with the same material as used for shop priming to comply with SSPC-PA 1 for touching up shop-primed surfaces.
- I. Galvanized-Metal Substrates: Remove grease and oil residue from galvanized sheet metal fabricated from coil stock by mechanical methods to produce clean, lightly etched surfaces that promote adhesion of subsequently applied paints.
- J. Aluminum Substrates: Remove loose surface oxidation.
- K. Wood Substrates:
  - 1. Scrape and clean knots, and apply coat of knot sealer before applying primer.
  - 2. Sand surfaces that will be exposed to view, and dust off.
  - 3. Prime edges, ends, faces, undersides, and backsides of wood.
  - 4. After priming, fill holes and imperfections in the finish surfaces with putty or plastic wood filler. Sand smooth when dried.
- L. Cotton or Canvas Insulation Covering Substrates: Remove dust, dirt, and other foreign material that might impair bond of paints to substrates.

### 3.4 SURFACE PREPARATION OF PREVIOUSLY PAINTED SURFACES

- A. Surfaces are to be clean and dry, free of dirt, dust, grease, and contaminants.
- B. Existing painted surfaces: Remove loose and peeling paint. De-gloss surface if recommended by manufacturer. Sand smooth. Clean entire surface as recommended by the paint manufacturer prior to painting.
- C. Gypsum Board Surfaces previously painted with epoxy paint: Dull existing epoxy surfaces by abrading and to the satisfaction of the Manufacturer. Wipe or vacuum surfaces clean of dust and foreign matter.

### 3.5 APPLICATION

- A. Apply paints according to manufacturer's written instructions and to recommendations.
  - 1. Use applicators and techniques suited for paint and substrate indicated.
  - 2. Paint surfaces behind movable equipment and furniture same as similar exposed surfaces. Before final installation, paint surfaces behind permanently fixed equipment or furniture with prime coat only.
  - 3. Paint front and backsides of access panels, removable or hinged covers, and similar hinged items to match exposed surfaces.
  - 4. Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.

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5. Primers specified in painting schedules may be omitted on items that are factory primed or factory finished if acceptable to topcoat manufacturers.
- B. Tint each undercoat a lighter shade to facilitate identification of each coat if multiple coats of same material are to be applied. Tint undercoats to match color of topcoat, but provide sufficient difference in shade of undercoats to distinguish each separate coat.
- C. If undercoats or other conditions show through topcoat, apply additional coats until cured film has a uniform paint finish, color, and appearance.
- D. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.
- E. Painting Fire Suppression, Plumbing, HVAC, Electrical, Communication, and Electronic Safety and Security Work:
  1. Paint the following work where exposed in equipment rooms:
    - a. Equipment, including panelboards.
    - b. Uninsulated metal piping.
    - c. Uninsulated plastic piping.
    - d. Pipe hangers and supports.
    - e. Metal conduit.
    - f. Plastic conduit.
    - g. Tanks that do not have factory-applied final finishes.
    - h. Duct, equipment, and pipe insulation having cotton or canvas insulation covering or other paintable jacket material.
  2. Paint the following work where exposed in occupied spaces:
    - a. Equipment, including panelboards.
    - b. Uninsulated metal piping.
    - c. Uninsulated plastic piping.
    - d. Pipe hangers and supports.
    - e. Metal conduit.
    - f. Plastic conduit.
    - g. Duct, equipment, and pipe insulation having cotton or canvas insulation covering or other paintable jacket material.
    - h. Other items as directed by Architect.
  3. Paint portions of internal surfaces of metal ducts, without liner, behind air inlets and outlets that are visible from occupied spaces.

### 3.6 FIELD QUALITY CONTROL

- A. Dry Film Thickness Testing: Owner may engage the services of a qualified testing and inspecting agency to inspect and test paint for dry film thickness.
  - 1. Contractor shall touch up and restore painted surfaces damaged by testing.
  - 2. If test results show that dry film thickness of applied paint does not comply with paint manufacturer's written recommendations, Contractor shall pay for testing and apply additional coats as needed to provide dry film thickness that complies with paint manufacturer's written recommendations.

### 3.7 CLEANING AND PROTECTION

- A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.
- B. After completing paint application, clean spattered surfaces. Remove spattered paints by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.
- C. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.
- D. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

### 3.8 SCHEDULE - INTERIOR SURFACES - LATEX

- A. Tints and colorants required should not add VOCs to the product.
- B. Shop Primed Ferrous Metal: Semi-Gloss Finish:
  - 1. Sherwin-Williams:
    - a. Primer: Pro Industrial Pro-Cryl Universal primer.
    - b. Finish: Two coats Pro Industrial High Performance Acrylic, semi-gloss.
      - 1) 0 g/L VOC. \* Product remains 0 g/L when tinted.
- C. Ferrous Metal and Galvanized Metals: Semi-Gloss Finish:
  - 1. Sherwin-Williams:
    - a. Primer: Pro Industrial Pro-Cryl Universal primer.
    - b. Finish: Two coats Pro Industrial High Performance Acrylic, semi-gloss.
      - 1) 0 g/L VOC. \* Product remains 0 g/L when tinted.

- D. Interior Concrete Ceilings: Flat Finish:
1. Sherwin-Williams:
    - a. Filler: One coat PrepRite Interior/Exterior Block Filler B25W25.
    - b. Finish: Two coats ProMar 200 Zero VOC, flat.
      - 1) 0 g/L VOC, Anti-Microbial, \* Product remains 0 g/L when tinted.
- E. Concrete Masonry Units (CMU): Semi-Gloss Finish:
1. Sherwin-Williams:
    - a. Filler: One coat PrepRite Interior/Exterior Block Filler B25W25.
    - b. Finish: Two coats ProMar 200 Zero VOC, semi-gloss.
      - 1) 0 g/L VOC, Anti-Microbial, \* Product remains 0 g/L when tinted.
- F. Concrete Masonry Units (Dry Areas, Restrooms, Offices, Locker Rooms, Closets and Stairwells): Epoxy Egg Shell Finish:
1. Sherwin-Williams:
    - a. Filler: Heavy Duty Block Filler, B42W46, <100 g/L VOC.
    - b. Finish: Two coats Pro Industrial Pre-Catalyzed Water Based Epoxy Eg-Shel, K45 Series, <150 g/L VOC, each coat.
- G. Gypsum Board: Flat Finish:
1. Sherwin-Williams:
    - a. Primer: One coat. ProMar 200 Zero VOC Primer.
    - b. Finish: Two coats. ProMar 200 Zero VOC Flat.
      - 1) 0 g/L VOC, Anti-Microbial, \* Product remains 0 g/L when tinted.
- H. Gypsum Board: Eggshell Finish:
1. Sherwin-Williams:
    - a. Primer: One coat ProMar 200 Zero VOC Primer.
    - b. Finish: Two coats ProMar 200 Zero VOC Eg-Shel.
      - 1) 0 g/L VOC, Anti-Microbial, \* Product remains 0 g/L when tinted.
- I. Gypsum Board: Semi-Gloss Finish:
1. Sherwin-Williams:

- a. Primer: One coat ProMar 200 Zero VOC Primer.
  - b. Finish: Two coats ProMar 200 Zero VOC semi-gloss.
    - 1) 0 g/L VOC, Anti-Microbial, \* Product remains 0 g/L when tinted.
- J. Wood: Semi-Gloss Finish – 100% acrylic:
- 1. Sherwin-Williams:
    - a. Primer: Not required.
    - b. Finish: Two coats Solo 100% Acrylic, semi-gloss.
      - 1) Product remains 0 g/L when tinted.
- K. Previously Painted Substrates:
- 1. Sherwin-Williams:
    - a. Primer: Extreme Bond Primer.
    - b. Finish: TBD.
- 3.9 SCHEDULE - INTERIOR SURFACES - HIGH PERFORMANCE (WATER BASED EPOXY)  
(NATATORIUM/AQUATIC CENTER)
- A. Concrete Masonry Units (Wet Areas, Pool Area, Showers): Semi-Gloss:
- 1. Sherwin-Williams:
    - a. Filler: One coat Kem Cati-Coat HS Epoxy Filler/Sealer, Part A B42W400, Part B B42V401, at 14.0 – 28.0 mils wet, 10.0 – 20.0 mils dry.
    - b. Finish: Two coats Macropoxy 646-100 Fast Cure Epoxy, B58-620.
- B. Concrete Masonry Units (Dry Areas, Restrooms, Offices, Locker Rooms, Closets and Stairwells): Egg Shell Finish:
- 1. Sherwin-Williams:
    - a. Filler: Heavy Duty Block Filler, B42W46, <100 g/L VOC.
    - b. Finish: Two coats Pro Industrial Pre-Catalyzed Water Based Epoxy Eg-Shel, K45 Series, <150 g/L VOC, each coat.
- C. Gypsum Board – Wet Areas Semi-Gloss:
- 1. Sherwin-Williams:
    - a. Primer: Promar 200 Zero VOC primer.



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- b. Finish: Two coats Pro Industrial Water Based Catalyzed Epoxy, gloss B73-300 Series, 0 g/L VOC,\* Product remains 0 g/L when tinted. (no pre-catalyzed coatings).

D. Gypsum Board – Dry areas Semi-Gloss:

1. Sherwin-Williams:

- a. Primer: Promar 200 Zero VOC primer.
- b. Finish: Two coats Pro Industrial Pre-Catalyzed Water Based Epoxy, semi-gloss K46 Series, <150 g/L VOC, each coat.

END OF SECTION

## SECTION 101423.16

### ROOM-IDENTIFICATION PANEL SIGNAGE

#### PART 1 - GENERAL

##### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

##### 1.2 SUMMARY

- A. Section includes room-identification signs that are directly attached to the building.
  - 1.

##### 1.3 COORDINATION

- A. Furnish templates for placement of sign-anchorage devices embedded in permanent construction by other installers.

##### 1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Shop Drawings: For room-identification signs.
  - 1. Include fabrication and installation details and attachments to other work.
  - 2. Show sign mounting heights, locations of supplementary supports to be provided by other installers, and accessories.
- C. Samples for Verification: For each type of sign assembly showing all components and with the required finish(es), in manufacturer's standard size unless otherwise indicated and as follows:
  - 1. Room-Identification Signs: Full-size Sample.
  - 2. Exposed Accessories: Full-size Sample of each accessory type.
  - 3. Full-size Samples, if approved, will be returned to Contractor for use in Project.

- D. Product Schedule: For room-identification signs. Use same designations indicated on Drawings or specified.

#### 1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For manufacturer.
- B. Sample Warranty: For special warranty.

#### 1.6 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For signs to include in maintenance manuals.

#### 1.7 FIELD CONDITIONS

- A. Field Measurements: Verify locations of anchorage devices embedded in permanent construction by other installers by field measurements before fabrication, and indicate measurements on Shop Drawings.

#### 1.8 WARRANTY

- A. Special Warranty: Manufacturer agrees to repair or replace components of signs that fail in materials or workmanship within specified warranty period.
  - 1. Failures include, but are not limited to, the following:
    - a. Deterioration of finishes beyond normal weathering.
    - b. Deterioration of embedded graphic image.
    - c. Separation or delamination of sheet materials and components.
  - 2. Warranty Period: Five years from date of Substantial Completion.

### PART 2 - PRODUCTS

#### 2.1 PERFORMANCE REQUIREMENTS

- A. Accessibility Standard: Comply with applicable provisions in the USDOJ's "2010 ADA Standards for Accessible Design" and ICC A117.1.

## 2.2 ROOM-IDENTIFICATION SIGNS

- A. Room-Identification Sign: Sign with smooth, uniform surfaces; with message and characters having uniform faces, sharp corners, and precisely formed lines and profiles; and as follows:
1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
    - a. takeform Signs.
    - b. ACE Sign Systems, Inc.
    - c. ASI Sign Systems, Inc.
    - d. Best Sign Systems, Inc.
    - e. Inpro Corporation.
    - f. Mohawk Sign Systems.
  2. Laminated-Sheet Sign: Photopolymer face sheet with raised graphics laminated to acrylic backing sheet to produce composite sheet.
    - a. Composite-Sheet Thickness: Manufacturer's standard for size of sign.
    - b. Colors: As selected by Architect from manufacturer's full range.
  3. Sign-Panel Perimeter: Finish edges smooth.
  4. Mounting: Manufacturer's standard method for substrates.
  5. Text and Typeface: Text and typeface as selected by Architect from manufacturer's full range.

## 2.3 SIGN MATERIALS

- A. Aluminum Extrusions: ASTM B221, alloy and temper recommended by aluminum producer and finisher for type of use and finish indicated.
- B. Acrylic Sheet: ASTM D4802, category as standard with manufacturer for each sign, Type UVF (UV filtering).

## 2.4 ACCESSORIES

- A. Fasteners and Anchors: Manufacturer's standard as required for secure anchorage of signs, noncorrosive and compatible with each material joined, and complying with the following:
1. Use concealed fasteners and anchors unless indicated to be exposed.
  2. For exterior exposure, furnish stainless-steel devices unless otherwise indicated.
- B. Adhesive: As recommended by sign manufacturer.

## 2.5 FABRICATION

- A. General: Provide manufacturer's standard sign assemblies according to requirements indicated.

## 2.6 GENERAL FINISH REQUIREMENTS

- A. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- B. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

## 2.7 ALUMINUM FINISHES

- A. Clear Anodic Finish: AAMA 611, Class I, 0.018 mm or thicker.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- A. General: Install signs using mounting methods indicated and according to manufacturer's written instructions.
  - 1. Install signs level, plumb, true to line, and at locations and heights indicated, with sign surfaces free of distortion and other defects in appearance.
  - 2. Install signs so they do not protrude or obstruct according to the accessibility standard.
  - 3. Before installation, verify that sign surfaces are clean and free of materials or debris that would impair installation.
  - 4. No historic portions of the building shall be damaged by sign installation.
- B. Accessibility: Install signs in locations on walls as indicated on Drawings and according to the accessibility standard.
- C. Mounting Methods:
  - 1. Concealed Studs: Using a template, drill holes in substrate aligning with studs on back of sign. Remove loose debris from hole and substrate surface.
    - a. Masonry Substrates Non-Historic Locations Only: Fill holes with adhesive. Leave recess space in hole for displaced adhesive. Place sign in position and push until flush to surface, embedding studs in holes. Temporarily support sign in position until adhesive fully sets.
    - b. Thin or Hollow Surfaces: Place sign in position and flush to surface, install washers and nuts on studs projecting through opposite side of surface, and tighten.

- c. No installation into historic masonry is permitted.
- 2. Through Fasteners Non-Historic Locations Only: Drill holes in substrate using predrilled holes in sign as template. Countersink holes in sign if required. Place sign in position and flush to surface. Install through fasteners and tighten.
- 3. Adhesive: Clean bond-breaking materials from non-historic substrate surface and remove loose debris. Apply linear beads or spots of adhesive symmetrically to back of sign and of suitable quantity to support weight of sign after cure without slippage. Keep adhesive away from edges to prevent adhesive extrusion as sign is applied and to prevent visibility of cured adhesive at sign edges. Place sign in position and push to engage adhesive. Temporarily support sign in position until adhesive fully sets.

### 3.2 ADJUSTING AND CLEANING

- A. Remove and replace damaged or deformed signs and signs that do not comply with specified requirements. Replace signs with damaged or deteriorated finishes or components that cannot be successfully repaired by finish touchup or similar minor repair procedures.
- B. Remove temporary protective coverings and strippable films as signs are installed.
- C. On completion of installation, clean exposed surfaces of signs according to manufacturer's written instructions and touch up minor nicks and abrasions in finish. Maintain signs in a clean condition during construction and protect from damage until acceptance by Owner.

END OF SECTION