HOTCHKISS COMMUNITY CENTER
RENOVATION

PROJECT MANUAL

Construction Documents

02 February 2023

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CITY OF RICHMOND

PARKS, RECREATION AND COMMUNITY FACILITIES

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Note: Refer to Drawings for Short-Form Mechanical, Electrical & Plumbing Specifications

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SUMMARY

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Description.
2. Time for completion.
3. Permits and fees.
4. Work by Owner.
5. Contractor's use of site and premises.
6. Work restrictions.
7. Drawings and Specifications.
8. Additional Specification Requirements.

B. Related Sections: Section 01 50 00 - Temporary Facilities and Controls for limitations and procedures governing temporary use of Owner's facilities.

1.2 DESCRIPTION

A. This construction primarily consists of work associated with mechanical system upgrades and interior renovations of an existing facility.

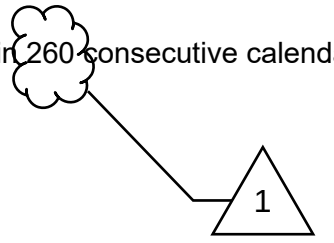
B. The Work includes selective demolition and alterations and replacement of the HVAC system. Renovation work will include, but not be limited to, miscellaneous alterations and finish improvements.

C. Perform Work of this Contract under the form of agreement between the Owner Contractor in accordance with the General and Supplementary Conditions of Contract.
1. Project will be constructed under a single prime contract.

D. All Work shown or specified is part of this project unless noted as “NIC” or “By Owner”. All equipment indicated on the drawings and herein specified shall be Contractor Furnished & Contractor Installed (CFCI), unless specifically noted otherwise.

1.3 TIME FOR COMPLETION

A. The Owner’s goal is to final completion within 260 consecutive calendar days after the Notice to Proceed.



1.4 PERMITS AND FEES

A. The Contractor shall apply for and pay the building permit fee as part of this Work.

B. The Contractor shall apply for and pay fees for all other necessary permits, except as noted otherwise in these Construction Documents.

C. The Owner will pay for all utility connection fees related to the project.

1.5 WORK BY OWNER

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

B. The following work or products shall be Owner Furnished and Owner Installed (OFOI), and are not part of the Work to be performed under this construction contract, except where certain rough-in or other preparatory work is noted to be included:
1. Telephone / Computer Equipment & Cabling.
2. Access Control and Security Systems.
3. Interior Signs.
4. Furnishings.

C. Contractor Responsibilities Relative to OFOI Items:
1. Plan, schedule and coordinate the installation of owner-furnished equipment or systems with all trades engaged in this contract.
2. Provide rough-in services, blocking and other required preparation work to accommodate OFOI items.
3. Review Owner-reviewed Shop Drawings, Product Data, and Samples.
4. Identify potential problems by appropriate planning and scheduling techniques and bring them to the attention of the Architect in a timely manner to allow for their orderly resolution.
5. Cooperate with the Owner and his subcontractors as they undertake their work simultaneously with the work of this contract.

1.6 CONTRACTOR'S USE OF SITE AND PREMISES

A. Limit use of site and premises to allow:
1. Work by Owner and it’s authorized agents and contractors.
2. Use of other site areas not directly affected by this Work by the public.

B. Emergency Building Exits During Construction: Maintain existing exits and provide temporary exits as required by authorities having jurisdiction.

C. Construction Operations: Limited to use of Project site to work in areas indicated. Do not disturb portions of Project site beyond areas in which the Work is indicated.
1. Limits: Confine construction operations to areas of work. Interior access to be coordinated with the Owner and shall be limited to areas of work.

2. Limits: Do not disturb site area in any way, except for areas of work. Damage to vegetation to be replaced at contractor's own expense.
3. Driveways, Walkways and Entrances: Keep driveways, walks and stairs open at all times, unless authorized by the Owner.
   a. On site area for Contractor use will be available. Owner to designate parking and lay-down areas for Contractor use.
   b. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on site.

1.7 WORK RESTRICTIONS

A. Work Restrictions, General: Comply with restrictions on construction operations.
   1. Comply with limitations on use of public streets and with other requirements of authorities having jurisdiction.

B. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after providing temporary utility services according to the requirements indicated:
   1. Notify Owner not less than two days in advance of proposed utility interruptions.

C. Nonsmoking Building: Smoking is not permitted within the building or within 25 feet of entrances, operable windows or outdoor air-intakes.

D. Controlled Substances: Use of tobacco products and other controlled substances on Project site is not permitted.

1.8 DRAWINGS AND SPECIFICATIONS

A. The Contractor shall maintain during the work and shall provide the Architect with one set of marked prints showing any modifications between the original plans and final “as-constructed” conditions. The Contractor shall provide the marked set of drawings to the Architect at the final inspection.

B. The drawings for plumbing, sprinkler, heating, ventilating, air-conditioning and electrical work are diagrammatic illustrations merely intended to show the general arrangements and locations of piping, ducts and fixtures, except where specific dimensions are shown. Make reasonable modifications as required for the proper execution of the work in a manner acceptable to the Architect, and to avoid piping, ducts, conduits or structural members without additional cost to the Owner.

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

1.9 ADDITIONAL SPECIFICATION REQUIREMENTS

A. Specifications On Drawings: Be advised that various specification requirements for concrete, masonry, structural steel, plumbing, mechanical and electrical work are indicated on the drawings as opposed to being included in this Project Manual.

B. Where fire-resistive ratings for various construction elements are indicated on the drawings, provide materials and construct assemblies in compliance with the cited or appropriate Underwriter's Laboratories Design No. for the situation.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

END OF SECTION

SECTION 01 20 00

PRICE AND PAYMENT PROCEDURES

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Clarification

B. Alternates.

C. Schedule of values.

D. Applications for payment.

E. Change procedures.

F. Defect assessment.

1.2 CLARIFICATION

A. Where requirements of this Specification Section conflict with those stipulated in the General and Special Conditions of the Contract, the requirements of the Owner’s General & Special Conditions shall govern.

1.3 ALTERNATES

A. Provide proposals for stipulated Alternates on Bid Forms. These alternate proposals will be reviewed and accepted or rejected at Owner's option. Accepted Alternates will be identified in Owner-Contractor Agreement. The Owner-Contractor Agreement may identify certain Alternates to remain an Owner option for a stipulated period of time.

B. Coordinate related Work and modify surrounding Work. Description for each Alternate is recognized to be abbreviated, but requires that each change shall be complete for scope of Work affected.
   1. Coordinate related requirements among Specification Sections as required.
   2. Include as part of each Alternate: Miscellaneous devices, appurtenances, and similar items incidental to or necessary for complete installation.
   3. Coordinate Alternate with adjacent Work and modify or adjust as necessary to ensure integration.

C. Schedule of Alternates:
   1. Alternate No. 1: Provide a new metal building facing over the existing liner system at the wall and ceiling of the existing Gymnasium. Product quality standard: Lamtec Corporation WMP 50 – White.

1.4 SCHEDULE OF VALUES

A. Coordinate preparation of the schedule of values with preparation of Contractor's construction schedule.
   1. Coordinate line items in the schedule of values with other required administrative forms and schedules, including the following:
      a. Application for Payment forms with continuation sheets.
      b. Submittal schedule.
      c. Items required to be indicated as separate activities in Contractor's construction schedule.
   2. Submit the schedule of values to Architect at earliest possible date but no later than seven (7) days before the date scheduled for submittal of initial Applications for Payment

B. Format and Content: Utilize Table of Contents of this Project Manual. Identify each line item with number and title of major specification Section. Identify site mobilization, bonds and insurance.
   1. Identification: Include the following Project information on the schedule of values:
      a. Project name and location.
      b. Name of Architect.
      c. Architect's project number.
      d. Contractor's name and address.
      e. Date of submittal.
   2. Arrange schedule of values consistent with format of AIA Document G703.
   3. Provide a breakdown of the Contract Sum in enough detail to facilitate continued evaluation of Applications for Payment and progress reports. Coordinate with Project Manual table of contents. Provide multiple line items for principle subcontract amounts in excess of five percent of the Contract Sum.
   4. Round amounts to the nearest whole dollar; total shall equal the Contract Sum.
   5. Provide a separate line item in the schedule of values for each part of the Work where Applications for Payment may include materials or equipment purchased or fabricated and stored, but not yet installed.
   6. Provide separate line items in the schedule of values for initial cost of materials, for each subsequent state of completion, and for total installed value of that part of the Work.
   7. Include in each line item amount of allowances as specified in this Section.
   8. Include separately from each line item, direct proportional amount of Contractor's overhead and profit.
   9. Revise schedule to list approved Change Orders, with each Application For Payment.

1.5 APPLICATIONS FOR PAYMENT

A. Each Application for Payment shall be consistent with previous applications and payments as certified by Architect and paid for by Owner.
   1. Initial Application for Payment, Application for Payment at time of Substantial Completion, and final Application for Payment involve additional requirements.

B. Payment Period: Submit Application for Payment to Architect by the first of the month. The period covered by each Application for Payment is one month, ending on the last day of the month.

C. Application for Payment Forms: Use AIA Document G702 and AIA Document G703 as form for Applications for Payment.

D. Application Preparation: Complete every entry on form. Notarize and execute by a person authorized to sign legal documents on behalf of Contractor. Architect will return incomplete applications without this action.
   1. Entries shall match data on the schedule of values and Contractor's construction schedule. Use updated schedules if revisions were made.
   2. Include amounts of Change Orders and Construction Change Directives issued before last day of construction period covered by application.

E. Transmittal: Submit three signed and notarized original copies of each Application for Payment to Architect by a method ensuring receipt within 24 hours. One copy shall include waivers of lien and similar attachments, if required.
   1. Transmit each copy with a transmittal form listing attachments and recording appropriate information about application.

F. Waivers of Mechanic's Lien: With each Application for Payment, submit waivers of mechanic's lien from entities lawfully entitled to file a mechanic's lien arising out of the Contract and related to the Work covered by the payment.
   1. Submit partial waivers on each item for amount requested in previous application, after deduction for retainage, on each item.
   2. When an application show completion of an item, submit conditional final waivers.
   3. Owner reserves the right to designate which entities involved in the Work must submit waivers.
   4. Waiver Forms: Submit executed waivers of lien on forms acceptable to the Owner.

G. Initial Application for Payment: Administrative actions and submittals that must preceded or coincide with submittal of first Application for Payment include the following:
   1. List of subcontractors.
   2. Schedule of values.
   3. Contractor's construction schedule (preliminary if not final).
   4. Schedule of unit prices.
   5. Submittal schedule (preliminary if not final).

6. Certificates of insurance and insurance policies.

H. Application for Payment at Substantial Completion: After Architect issues the Certificate of Substantial Completion, submit an Application for Payment showing 100 percent completion for portion of the Work claimed as substantially complete.
   1. Include documentation supporting claim that the Work is substantially complete with a statement showing an accounting of changes to the Contract Sum.
   2. This application shall reflect Certificates of Partial Substantial Completion issued previously for Owner occupancy of designated portions of the Work.

I. Final Application for Payment: After completing Project close out requirements, submit final Application for Payment with releases and supporting documentation not previously submitted and accepted, including, but not limited to the following:
   1. Evidence of completion of Project close out requirements.
   2. Insurance certificates for products and completed operations where required and proof that taxes, fee and similar obligations were paid.
   3. Updated final statement, accounting for final changes to the Contract Sum.
   4. AIA Document G706-1994, "Contractor's Affidavit of Payment of Debts and Claims."
   5. AIA Document G706A-1994, "Contractor's Affidavit of Release of Liens."
   6. AIA Document G707-1994, "Consent of Surety to Final Payment."
   7. Evidence that claims have been settled.
   8. Final meter readings for utilities, a measured record of stored fuel, and similar data as of date of Substantial Completion or when Owner took possession of and assumed responsibility for corresponding elements of the Work.
   9. Final liquidated damages settlement statement.

J. Substantiating Data: When Architect requires substantiating information, submit data justifying dollar amounts in question. Include the following with Application for Payment:
   1. Current construction photographs.
   2. Partial release of liens from major subcontractors and vendors.
   3. Affidavits attesting to off-site stored products.
      a. Payment shall be limited to a maximum of ninety percent (90%) of the value of off-site stored products.
   4. Construction progress schedules, revised and current.

1.6 CHANGE PROCEDURES

A. Submittals: Submit name of individual authorized to receive change documents, and be responsible for informing others in Contractor's employ or Subcontractors of changes to the Work.

B. The Architect will advise of minor changes in the Work not involving adjustment to Contract Sum/Price or Contract Time by issuing supplemental instructions on AIA Form G710.

C. The Architect may issue a Proposal Request including a detailed description of proposed change with supplementary or revised Drawings and specifications, a change in Contract Time for executing the change with stipulation of overtime work required and the period of time during which the requested price will be considered valid. Contractor will prepare and submit estimate within 10 days.

D. Contractor may propose changes by submitting a request for change to Architect, describing proposed change and its full effect on the Work. Include a statement describing reason for the change, and effect on Contract Sum/Price and Contract Time with full documentation and a statement describing effect on Work by separate or other Contractors. Document requested substitutions in accordance with Section 01 60 00.

E. Stipulated Sum/Price Change Order: Based on Proposal Request and Contractor's fixed price quotation or Contractor's request for Change Order as approved by Architect.

F. Construction Change Directive: Architect may issue directive, on AIA Form G713 Construction Change Directive signed by Owner, instructing Contractor to proceed with change in the Work, for subsequent inclusion in a Change Order. Document will describe changes in the Work, and designate method of determining any change in Contract Sum/Price or Contract Time. Promptly execute change.

G. Time and Material Change Order: Submit itemized account and supporting data after completion of change, within time limits indicated in Conditions of the Contract. Architect will determine change allowable in Contract Sum/Price and Contract Time as provided in Contract Documents.

H. Maintain detailed records of work done on Time and Material basis. Provide full information required for evaluation of proposed changes, and to substantiate costs for changes in the Work.

I. Document each quotation for change in cost or time with sufficient data to allow evaluation of quotation.

J. Change Order Forms: Standard City of Richmond form.

K. Execution of Change Orders: Architect will issue Change Orders for signatures of parties as provided in Conditions of the Contract.
   1. To the extent practical, change orders will be processed and finalized prior to each monthly pay request submittal.

L. Correlation Of Contractor Submittals:

1. Promptly revise Schedule of Values and Application for Payment forms to record each authorized Change Order as separate line item and adjust Contract Sum/Price.
2. Promptly revise progress schedules to reflect change in Contract Time, revise sub-schedules to adjust times for other items of work affected by the change, and resubmit.
3. Promptly enter changes in Project Record Documents.

1.7 DEFECT ASSESSMENT

A. Replace the Work, or portions of the Work, not conforming to specified requirements.

B. If, in the opinion of the Architect, it is not practical to remove and replace the Work, the Architect will direct appropriate remedy or adjust payment.

C. The defective Work may remain, but unit sum/price will be adjusted to new sum/price at discretion of Architect.

D. Defective Work will be partially repaired to instructions of Architect, and unit sum/price will be adjusted to new sum/price at discretion of Architect.

E. Individual specification sections may modify these options or may identify specific formula or percentage sum/price reduction.

F. Authority of Architect to assess defects and identify payment adjustments is final.

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

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

END OF SECTION

DOCUMENT 01 25 00

SUBSTITUTION PROCEDURES

PART 1 GENERAL

1.1 SUMMARY

A. Document Includes: Administration and procedural requirement for substitutions.

B. Related Requirements:
1. Section 01 33 00 - Submittal Procedures
2. Section 01 60 00 - Product Requirements

1.2 DEFINITIONS

A. Substitutions: Change in products, materials, equipment, and methods of construction from those required the Contract Documents and proposed by Contractor.

1.3 ACTION SUBMITTALS

A. Substitution Requests: Submit three copies of each request for consideration. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawings numbers and titles.
1. Substitution Request Form: Use CSI Form 13.1 A.
2. Documentation: Show compliance with requirements for substitutions and the following, as applicable:
a. Statement indicating why specified product or fabrication or installation cannot be provided, if applicable.
b. Coordination information, including a list of changes or revisions needed to other parts of the Work and to construction performed by Owner and separate contractors that will be necessary to accommodate proposed substitution.
c. Detailed comparison of significant qualities of proposed substitutions with those of the Work specified. Include annotated copy of applicable Specification Section. Significant qualities may include attributes such as performance, weight, size, durability, visual effect, sustainable design characteristics, warranties, and specific features and requirements indicated. Indicate deviations, if any, from the Work specified.
d. Product Data, including drawings and descriptions of products and fabrication and installation procedures.
e. Samples, where applicable or requested.
f. Certificates and qualification data, where applicable or requested.
g. List of similar installations for completed projects with project names and addresses and names of and addresses of Architects and Owners.

h. Material test reports from a qualified testing agency indicating and interpreting test results for compliance with requirements indicated.
i. Research reports evidencing compliance with building code in effect for Project, from ICC-ES.
j. Detailed comparison of Contractor's construction schedule using proposed substitution with products specified for the Work, including effect on the overall Contract Time. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating date of receipt of purchase order, lack of availability or delays in delivery.
k. Cost information, including a proposal of change, if any, in the Contract Sum.
l. Contractor's certification that proposed substitution complies with requirements in the Contract Documents expect as indicated in substitution request, is compatible with related materials, and is appropriate for applications indicated.
m. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to product indicated results.

3. Architect's Action: If necessary, Architect will request additional information or documentation for evaluation within seven days of receipt of a request for substitution. Architect will notify Contractor of acceptance or rejection of proposed substitution within fifteen days of receipt of request, or seven days of receipt of additional information or documentation, whichever is later.
a. Forms of Acceptance: Change Order, Construction Change Directive, or Architect's Supplemental Instructions for minor changes in the Work.
b. Use product specified if Architect does not issue a decision on use of a proposed substitution within time allocated.

1.4 QUALITY ASSURANCE

A. Compatibility of Substitutions: Investigate and document compatibility of proposed substitution with related products and materials. Engage a qualified testing agency to perform compatibility tests recommended by manufacturers.

PART 2 PRODUCTS

2.1 SUBSTITUTIONS

A. Substitutions for Cause: Submit requests for substitution immediately on discovery of need for change, but not later than fifteen days prior to time required for preparation an review of related submittals.
1. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied:

a. Requested substitution is consistent with the Contract Documents and will product indicated results.
b. Requested substitution will not adversely affect Contractor's construction schedule.
c. Requested substitution has received necessary approvals of authorities having jurisdiction.
d. Requested substitution is compatible with other portions of Work.
e. Requested substitution has been coordinated with other portions of the Work.
f. Requested substitution provides specified warranty.
g. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

B. Substitutions for Convenience: Not Allowed.

PART 3 EXECUTION (Not Used)

END OF DOCUMENT

SECTION 01 30 00

ADMINISTRATIVE REQUIREMENTS

PART 1 GENERAL

1.1 SUMMARY

A. Section includes administrative provisions for coordinating construction operations on Project including, but not limited to the following:
   1. Coordination and project conditions.
   2. Requests for Information (RFIs).
   3. Preconstruction meeting.
   4. Pre-installation conferences.
   5. Progress meetings.
   6. Cutting and patching.
   7. Special procedures.
   8. Project Superintendent.

1.2 DEFINITIONS

A. RFI: Request from Owner, Architect or Contractor seeking information required by or clarifications of the Contract Documents.

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, with provisions for accommodating items installed later.
   1. Prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and lists of attendees at meetings.
      a. Prepare similar memoranda for Owner and separate contractors if coordination of their Work is required.

B. Coordination Drawings, General: Prepare coordination drawings according to requirements in individual Sections, where installation is not completely shown on Shop Drawings, where limited space availability necessitates coordination, or if coordination is required to facilitate integration of products and materials fabricated or installed by more than one entity.
   1. Content: Project-specific information, drawn accurately to a scale large enough to indicate and resolve conflicts. Do not base coordination drawings on standard printed data. Include the following information, as applicable:
      a. Indicate functional and spatial relationships of components of architectural, structural, civil, mechanical and electrical systems.
      b. Indicate dimensions shown on the Drawings. Specifically note dimensions that appear to be in conflict with submitted equipment

and minimum clearance requirements. Provide alternate sketches to Architect indicated proposed resolution of such conflicts. Minor dimension changes and difficult installation will not be considered changes to the Contract.

C. 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.

D. Coordinate space requirements, supports, and installation of mechanical and electrical Work indicated diagrammatically on Drawings. Follow routing shown for pipes, ducts, and conduit, as closely as practicable; place runs parallel with lines of building. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.

E. In finished areas, conceal pipes, ducts, and wiring within construction. Coordinate locations of fixtures and outlets with finish elements.

F. Coordinate completion and clean-up of Work of separate sections in preparation for Substantial Completion.

G. After Owner occupancy of premises, coordinate access to site for correction of defective Work and Work not in accordance with Contract Documents, to minimize disruption of Owner's activities.

1.4 REQUESTS FOR INFORMATION (RFIs)

A. General: Immediately on discovery of the need for additional information or interpretation of the Contract Documents, Contractor shall prepare and submit an RFI in the form specified.
   1. Architect will return RFIs submitted to Architect by other entities controlled by Contractor with no response.
   2. Coordinate and submit RFIs in a prompt manner as to avoid delays in Contractor's work or work of subcontractors.

B. Content to the RFI: Include a detailed, legible description of item needing information or interpretation and the following:
   1. Project name.
   2. Project number.
   3. Date.
   4. Name of Contractor.
   5. Name of Architect.
   6. RFI number, numbered sequentially.
   7. RFI subject.
   8. Specification Section number and title related paragraphs, as appropriate.
   9. Drawing number and detail references, as appropriate.
   10. Field dimensions and conditions, as appropriate.

11. Contractor's suggested resolution. If Contractor's solution(s) impacts the Contract Time or the Contract Sum, Contractor shall state impact in the RFI.
12. Contractor's signature.
13. Attachments: Include sketches, descriptions, measurements, photos, Product Data, Shop Drawings, coordination drawings and other information to fully describe items needing interpretation.

C. RFI Forms: AIA Document G716 or Contractor's own form.

D. Architect's Action: Architect will review each RFI, determine action required, and respond. Allow seven (7) working days for Architect's response for each RFI. RFIs received by Architect after 1:00 pm will be considered as received the following working day.
1. The following RFIs will be returned without action:
   a. Requests for approval of submittals.
   b. Request for approval of substitutions.
   c. Requests for coordination information already indicated in the Contract Documents.
   d. Requests for adjustments in the Contract Time or the Contract Sum.
   e. Requests for interpretations of Architect's actions on submittals.
   f. Incomplete RFIs or inaccurately prepared RFIs.
2. Architect's action may include a request for additional information, in which case Architect's time for response will date from time of receipt of additional information.
3. Architect's action on RFIs that may result in a change to the Contract Time or the Contract Sum may be eligible for Contractor to submit Change Proposal according to contract modification procedures.
   a. If Contractor believes the RFI response warrants change in the Contract Time or the Contract Sum, notify the Architect in writing within seven (7) days of receipt of the RFI response.

E. On receipt of Architect's action, immediately distribute the RFI response to affected parties. Review response and notify Architect within seven (7) days if Contractor disagrees with response.
1. Identification of related Minor Change in the Work, Construction Change Directive, and Proposal Request, as appropriate.
2. Identification of related Field Order, Work Change Directive and Proposal Request, as appropriate.

1.5 PRECONSTRUCTION MEETING

A. Architect will schedule and conduct a preconstruction conference before starting construction, at a time convenient to Owner and Architect, but no later than 15 days after execution of the Agreement.

B. Attendance Required: Owner, Architect/Engineer, and Contractor and its Superintendent; major subcontractors; suppliers; and other concerned parties.

Participants at the conference shall be familiar with Project and authorized to conclude matters related to the Work.

C. Agenda:
1. Tentative construction schedule.
2. Critical work sequencing and long-lead times.
3. Submission of executed bonds and insurance certificates.
4. Distribution of Contract Documents.
5. Submission of list of Subcontractors, list of products, schedule of values, and progress schedule.
6. Submission of list of key personnel with phone numbers for contact during an emergency situation at any time during construction.
7. Procedures and processing of field decisions, submittals, substitutions, applications for payments, proposal request, Change Orders, and Contract closeout procedures.
8. Procedures for RFIs.
9. Procedures for testing and inspecting.
10. Preparation of record documents.
11. Use of the premises and existing building.
12. Work restrictions.
13. Responsibility for temporary facilities and controls.
14. Procedures for disruptions or shutdowns.
15. Construction waste management and recycling.
16. Parking availability.
17. Office, work and storage areas.
18. Equipment deliveries and priorities.
19. First aid.
20. Security.
21. Progress Cleaning.

D. Contractor to record minutes and distribute copies within three days after meeting to participants, with copies to Architect/Engineer, Owner, and those affected by decisions made.

1.6 PRE-INSTALLATION CONFERENCE

A. Conduct a pre-installation conference at Project site before each construction activity that requires coordination with other construction.

B. Attendees: Installer and representatives of manufacturers and fabricators involved in or affected by the installation and its coordination or integration with other materials and installations that have preceded or will follow, shall attend the meeting. Advise Architect of schedule meeting dates.

C. Agenda: Review progress of other construction activities and preparations for the particular activity under consideration, including requirements for the following:
1. Contract Documents.
2. Options.
3. Related RFIs.

4. Related Change Orders.
5. Purchases.
6. Deliveries.
7. Submittals.
8. Review of mockups.
9. Possible conflicts.
10. Compatibility problems.
11. Time schedules.
12. Weather limitations.
13. Manufacturer's written instructions.
14. Warranty requirements.
15. Compatibility of materials.
16. Acceptability of substrates.
17. Temporary facilities and controls.
18. Space and access limitations.
19. Regulations of authorities having jurisdiction.
20. Testing and inspecting requirements.
21. Installation procedures.
22. Coordination with other work.
23. Required performance results.
24. Protection of adjacent work.
25. Protection of construction and personnel.

D. Record significant conference discussions, including corrective measures and actions.

E. Reporting: Distribute minutes to the meeting of each party present and to other parties requiring information.

F. Do not proceed with installation if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of the Work and reconvene the conference at the earliest feasible date.

1.7 PROGRESS MEETINGS

A. Schedule and administer meetings throughout progress of the Work at a minimum of twice a month intervals.

B. Make arrangements for meetings, prepare agenda with copies for participants, preside at meetings.

C. Attendance Required: Job superintendent, major subcontractors and suppliers, Owner, Architect/Engineer, as appropriate to agenda topics for each meeting.

D. Agenda:
1. Review minutes of previous meetings.
2. Review of Work progress.
3. Field observations, problems, and decisions.

4. Identification of problems impeding planned progress.
5. Review of submittals schedule and status of submittals.
6. Review of off-site fabrication and delivery schedules.
7. Maintenance of progress schedule.
8. Corrective measures to regain projected schedules.
9. Planned progress during succeeding work period.
10. Coordination of projected progress.
11. Maintenance of quality and work standards.
12. Effect of proposed changes on progress schedule and coordination.
13. Other business relating to Work.
14. Review present and future needs of each entity present, including the following:
    a. Interface requirements.
    b. Sequence of operations.
    c. Status of submittals.
    d. Deliveries.
    e. Off-site fabrication.
    f. Access.
    g. Site utilization.
    h. Temporary facilities and controls.
    i. Progress cleaning.
    j. Quality and work standards.
    k. Status of correction of deficient items.
    l. Field observations.
    m. Status of RFIs.
    n. Status of proposal requests.
    o. Pending changes.
    p. Status of change orders.
    q. Pending claims and disputes.
    r. Documentation of information for payment requests.

E. Contractor to record minutes and distribute copies within five days after meeting to participants, with copies to Owner, and those affected by decisions made.

1.8 PROJECT SUPERINTENDENT

A. Contractor shall provide a full-time non-working superintendent to manage daily operations on the project site. Superintendent shall serve in a management capacity and shall not be directly tasked with construction work.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

3.1 CUTTING AND PATCHING

A. Employ skilled and experienced installer to perform cutting and patching.

B. Submit written request in advance of cutting or altering elements affecting:
   1. Structural integrity of element.
   2. Integrity of weather-exposed or moisture-resistant elements.
   3. Efficiency, maintenance, or safety of element.
   4. Visual qualities of sight exposed elements.
   5. Work of Owner or separate contractor.

C. Execute cutting, fitting, and patching including excavation and fill, to complete Work, and to:
   1. Fit the several parts together, to integrate with other Work.
   2. Uncover Work to install or correct ill-timed Work.
   3. Remove and replace defective and non-conforming Work.
   4. Remove samples of installed Work for testing.
   5. Provide openings in elements of Work for penetrations of mechanical and electrical Work.

D. Execute work by methods to avoid damage to other Work, and to provide proper surfaces to receive patching and finishing.

E. Cut masonry and concrete materials using masonry saw or core drill.

F. Restore Work with new products in accordance with requirements of Contract Documents.

G. Remove unsuitable material not marked for salvage, including rotting wood, corroded metals, and deteriorated masonry and concrete. Replace materials as specified for finished work.

H. Remove debris and abandoned items from area and from concealed spaces.

I. Prepare surface and remove surface finishes to permit installation of new Work and finishes.

J. Fit Work tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.

K. Maintain integrity of wall, ceiling, or floor construction; completely seal voids.

L. At penetrations of fire rated walls, partitions, ceiling, or floor construction, completely seal voids with fire rated material in accordance with Section 07 84 00, to full thickness of penetrated element.

M. Refinish surfaces to match adjacent finishes. For continuous surfaces, refinish to nearest intersection; for assembly, refinish entire unit.

N. Identify hazardous substances or conditions exposed during the Work to Architect/Engineer for decision or remedy.

END OF SECTION

DOCUMENT 01 32 00

CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for documenting the progress of construction during performance of the Work, including the following:
   1. Contractor's construction schedule.
   2. Construction schedule updating reports.
   3. Daily construction reports.
   4. Site condition reports.

1.2 DEFINITIONS

A. Activity: A discrete part of the project that can be identified for planning, scheduling, monitoring, and controlling the construction project. Activities included in a construction schedule consume time and resources.
   1. Critical Activity: An activity on the critical path that must start and finish on the planned early start and finish times.
   2. Predecessor Activity: An activity that precedes another activity in the network.
   3. Successor Activity: An activity that follows another activity in the network.

B. CMP: Critical path method, which is a method of planning and scheduling a construction project where activities are arranged based on activity relationships. Network calculations determine when activities can be performed and the critical path of Project.

C. Critical Path: The longest connected chain of interdependent activities through the network schedule that establishes the minimum overall Project duration and contains no float.

D. Float: The measure of leeway in starting and completing an activity.
   1. Float time is not for the exclusive use or benefit of either Owner or Contractor, but is a jointly owned, expiring Project resource available to both parties as needed to meet schedule milestones and Contract completion date.

1.3 INFORMATIONAL SUBMITTALS

A. Format for Submittals: Submit required submittals in the following format:
   1. PDF electronic file.

B. Contractor's Construction Schedule: Initial schedule, of size required to display entire schedule for entire construction period.

C. Construction Schedule Updating Reports: Submit with Applications for Payment.

D. Daily Construction Reports: Submit at biweekly intervals.

E. Site Conditions Reports: Submit at time of discovery of differing conditions.

1.4 COORDINATION

A. Coordinate Contractor's construction schedule with the schedule of values, submittal schedule, progress reports, payment requests and other required schedules and reports.
   1. Secure time commitments for performing critical elements of the Work from entities involved.
   2. Coordinate each construction activity in the network with other activities and schedule them in proper sequence.

PART 2 PRODUCTS

2.1 CONTRACTOR'S CONSTRUCTION SCHEDULE, GENERAL

A. Time Frame: Extend schedule for date established for commencement of the Work to date of final competition.
   1. Contract completion date shall not be changed by submission of a schedule that shows an early completion date, unless specifically authorized by Change Order.

B. Activities: Treat each separate area as a separate numbered activity for each main element of the Work. Comply with the following:
   1. Activity Duration: Define activities so no activity is longer than 10 days, unless specifically allowed by Architect.
   2. Procurement Activities: Include procurement process activities for the following long lead items and major items, requiring a cycle of more than 60 days, as separate activities in schedule. Procurement cycle activities include, but are not limited to, submittals, approvals, purchasing, fabrication and delivery.
   3. Submittal Review Time: Include review and resubmittal times indicated in Section 01 33 00 - Submittal Procedures in schedule. Coordinate submittal review times in Contractor's construction schedule with submittal schedule.
   4. Substantial Completion: Indicate completion in advance of date established for Substantial Completion, and allow time for Architect's administrative procedures necessary for certification of Substantial Completion.
   5. Punch List and Final Completion: Include not more than 30 days for completion of punch list items and final completion.

2.2 CONTRACTOR'S CONSTRUCTION SCHEDULE (GNATT CHART)

A. Gnatt-Chart Schedule: Submit a comprehensive, fully developed, horizontal, Gnatt-chart-type, Contractor's construction schedule within 30 days of date established for the Notice to Proceed.

B. Preparation: Indicate each significant construction activity separately. Indentify first workday of each week with a continuous vertical line.
   1. For construction activities that require three months or longer to complete, indicate an estimated completion percentage in 10 percent increments within time bar.

2.3 REPORTS

A. Daily Construction Reports: Prepare a daily construction report recording the following information concerning events at Project site:
   1. List of subcontractors and Project site.
   2. List of separate contractors at Project site.
   3. Approximate count of personnel at Project site.
   4. Equipment at Project site.
   5. Material deliveries.
   6. High and low temperatures and general weather conditions, including presence of rain or snow.
   7. Accidents.
   8. Meetings and significant decisions.
   9. Unusual events.
   10. Stoppages, delays, shortages and losses.
   11. Meter readings and similar recordings.
   12. Emergency procedures.
   13. Orders and requests of authorities having jurisdiction.
   14. Change Orders received and implemented.
   15. Change Directives received and implemented.
   16. Services connected and disconnected.
   17. Equipment or system tests and startups.
   18. Partial completions and occupancies.
   19. Substantial Completions authorized.

B. Site Condition Reports: Immediately on discovery of a difference between site conditions and the Contract Documents, prepare and submit a detailed report. Submit with a Request for Information. Include a detailed description of the differing conditions, together with recommendations for changing the Contract Documents.

PART 3 EXECUTION

3.1 CONTRACTOR'S CONSTRUCTION SCHEDULE

A. Contractor's Construction Schedule Updating: At monthly intervals, update schedule to reflect actual construction progress and activities. Issue schedule before each regularly scheduled progress meeting.
   1. Revise schedule immediately after each meeting or other activity where revisions have been recognized or made. Issue updated schedule concurrently with the report of each such meeting.
   2. Include a report with updated schedule that indicates every change, including, but not limited to, changes in logic, durations, actual starts and finishes, and activity durations.
   3. As the Work progresses, indicate final completion percentage for each activity.

B. Distribution: Distribute copies of approved schedule to Architect, Owner, separate contractors, testing and inspecting agencies, and other parties identified by Contractor with a need-to-know schedule responsibility.
   1. Post copies in Project meeting rooms and temporary field offices.
   2. When revisions are made, distribute updated schedules to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in performance of construction activities.

END OF DOCUMENT

SECTION 01 33 00

SUBMITTAL PROCEDURES

PART 1 GENERAL

1.1 SUMMARY

A. Section includes requirements for the submittal schedule and administrative and procedural requirement for submitting the following:
   1. Proposed products list.
   2. Product data.
   3. Shop drawings.
   4. Samples.
   5. Test reports.
   6. Certificates.
   7. Manufacturer's instructions.
   8. Manufacturer's field reports.
   9. Construction photographs.
   10. Record Drawings.
   11. Product Warranties and Product Bonds.

1.2 DEFINITIONS

A. Action Submittals: Written and graphic information and physical samples that require Architect's responsive action.

B. Informational Submittals: Written and graphic information and physical samples that do not require Architect's responsive action. Submittals may be rejected for not complying with requirements.

1.3 ACTION SUBMITTALS

A. Submittal Schedule: Submit a schedule of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review, ordering, manufacturing, fabrication and delivery when establishing dates. Include additional time required for making corrections or revisions to submittals noted by Architect and additional time of handling and reviewing submittals required by those corrections.
   1. Submittal Schedule required to be submitted and approved prior to other submittals.

1.4 SUBMITTAL ADMINSTRATIVE REQUIREMENTS

A. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.
   1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.

2. Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.
    a. Architect reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.

B. Processing Time: Allow time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Architect's receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.
1. Initial Review: Allow 15 days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Architect will advise Contractor when a submittal being processed must be delayed for coordination.
2. Intermediate Review: If intermediate submittal is necessary, process it in the same manner as initial submittal.
3. Resubmittal Review: All 15 days for review of each resubmittal.

C. Electronic Submittals: Identify and incorporate information in each electronic submittal files as follows:
1. Assemble complete submittal package into a single PDF file incorporating submittal requirements of a single Specification Section and transmittal form. Each submittal is to be submitted as a separate file.
2. Submit Submittals via email or FTP site as directed by Architect.
3. All submittal files to be in unprotected PDF file format that may be readily edited, marked up or otherwise altered by PDF editing software such as Adobe Acrobat or Bluebeam.
4. Format pages of submittal package as standard sheet sizes no smaller than letter size.
5. Format file name as follows:
   "Submittal Number" - "Specification Number"- "Type"-"Description".pdf
    a. Submittal Number: Three digit consecutive submittal number with two digit revision suffix. Ex: "003.01"
    b. Specification number: Ex "013000"
    c. Type: Ex: Product Data, Shop Drawing, Sample Warranty, etc.
    d. General Description: Ex: "Joint Sealants."

   File Name example: 003.01-013300-Product Data-TPO Roofing.pdf
6. Provide means and location for insertion to permanently record Contractor's review and approval markings and action taken by Architect. Contractor to mark submittal with electronic duplicate of typical submittal stamp.
7. Transmittal Form for Electronic Submittals: Use format acceptable to Architect, containing the following information:
    a. Project name.
    b. Date.

c. Name and address of Architect.
d. Name of Construction Manager.
e. Name of Contractor.
f. Name of firm or entity that prepared submittal.
g. Names of subcontractor, manufacturer, and supplier.
h. Category and type of submittal.
i. Submittal purpose and description.
j. Specification Section number and title.
k. Specification paragraph number or drawing designation and generic name for each of multiple items.
l. Drawing number and detail references, as applicable.
m. Location(s) where product is to be installed, as appropriate.
n. Related physical samples submitted directly.
o. Indication of full or partial submittal.
p. Transmittal number, numbered consecutively.
q. Submittal and transmittal distribution record.
r. Other necessary identification.
s. Remarks.

D. Options: Identify options requiring selection by Architect.

E. Deviations: Identify deviations from the Contract Documents on submittals.
1. Only deviations from Contract Documents identified and marked by Contractor and noted as acceptable by Architect shall be incorporated into the project.

F. Resubmittals: Make resubmittals in same form and number of copies as initial submittal.
1. Note date and content of previous submittal.
2. Note date and content of revision in label or title block and clearly indicate extent of revision.
3. Resubmit submittals until they are marked with approval notation from Architect's action stamp.

G. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.

H. Use for Construction: Retain complete copies of submittals on Project site. Use only final action submittals that are marked with approval notation from Architect's action stamp.

PART 2 PRODUCTS

2.1 SUBMITTAL PROCEDURES

A. General Submittal Procedure Requirements:
   1. Format: Unless otherwise noted, provide Electronic Submittals.

B. Sequentially number transmittal forms. Mark revised submittals with original number and sequential alphabetic suffix.

C. Apply Contractor's stamp, signed or initialed certifying that review, approval, verification of products required, field dimensions, adjacent construction Work, and coordination of information is in accordance with requirements of the Work and Contract Documents.

D. Allow space on submittals for Contractor and Architect/Engineer review stamps.

E. Distribute copies of reviewed submittals as appropriate. Instruct parties to promptly report inability to comply with requirements.

F. Submittals not requested will not be recognized or processed.

G. Incomplete Submittals: Architect/Engineer will not review. Complete submittals for each item are required. Delays resulting from incomplete submittals are not the responsibility of Architect/Engineer.

H. Shop drawings will be reviewed for general conformance with the design concept. Apparent dimensional and quantitative discrepancies observed during the Architect's review will be noted for the Contractor's convenience only and should not be accepted as correct or complete or in any way understood to modify the Contractor's responsibilities in complying with the contract documents.

I. Coordination Drawings Submittals: Comply with requirements specified in Section 01 30 00 - Administrative Requirements.

J. Contractor's Construction Schedule: Comply with requirements specified in Section 01 32 00 - Construction Progress Documentation.

K. Application for Payment and Schedule of Value: Comply with requirements specified in Section 01 20 00 - Price and Payment Procedures.

L. Test and Inspection Reports and Schedule of Tests and Inspections Submittals: Comply with requirements specified in Section 01 40 00 - Quality Requirements.

M. Closeout Submittals and Maintenance Material Submittals: Comply with requirements specified in Section 01 70 00 - Execution Requirements.

2.2 INFORMATIONAL SUBMITTALS

A. Subcontractor List: Prepare a written summary identifying individuals or firms proposed for each portion of the Work, including those who are to furnish

products or equipment fabricated to a special design. Include the following information in tabular form:

1. Name, address and telephone number of entity performing subcontract or supplying products.
2. Number and title of related Specification Section(s) covered by subcontract.
3. Drawing number and detail references, as appropriate, covered by subcontract.

2.3 PRODUCT DATA

A. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment within a specification section.
   1. If information must be specifically prepared for submittal because standard published data are not suitable for use, submit as Shop Drawings, not as Product Data.
   2. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information specific to this Project.
   3. Include the following information, as applicable:
      a. Manufacturer's catalog cuts.
      b. Manufacturer's product specifications.
      c. Standard color charts.
      d. Statement of compliance with specified referenced standards.
      e. Testing by recognized testing agency.
      f. Application of testing agency labels and seals.
      g. Notation of coordination requirements.
      h. Availability and delivery time information.

B. Indicate product utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances. Provide the following as applicable:
   1. Wiring diagrams showing factory-installed wiring.
   2. Printed performance curves.
   3. Operational range diagrams.
   4. Clearances to other construction, if not indicated on accompanying Shop Drawings.

C. When specified in individual specification sections, submit printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing, to Architect/Engineer for delivery to Owner.
   1. Indicate special procedures, perimeter conditions requiring special attention, and special environmental criteria for application or installation.

D. When specified in individual specification sections, submit certifications by manufacturer, installation/application subcontractor, or Contractor to Architect/Engineer.

1. Indicate material or product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits and certifications as appropriate.
2. Certificates many be recent or previous test results on material or Product, but must be acceptable to the Architect/Engineer.

E. Submit Product Data before or concurrent with Samples.

2.4 SHOP DRAWINGS

A. Shop Drawings: Submit to Architect/Engineer for review for limited purpose of checking for conformance with information given and design concept expressed in Contract Documents.

B. Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data.

C. Indicate special utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.

D. When required by individual Specification Sections, provide Shop Drawings signed and sealed by a professional Engineer responsible for designing components shown on Shop Drawings.
1. Include signed and sealed calculations to support design.
2. Submit Shop Drawings and calculations in form suitable for submission to and approval by authorities having jurisdiction.
3. Make revisions and provide additional information when required by authorities having jurisdiction.

E. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:
1. Identification of products.
2. Schedules.
3. Compliance with specified standards.
4. Notation of coordination requirements.
5. Notation of dimensions established by field measurement.
6. Relationship and attachment to adjoining construction clearly indicated.
7. Seal and signature of professional engineer if specified.

F. Sheet Size: Submit shop drawings on sheets at least 8-1/2 x 11 inches, but no larger than 30 by 42 inches.

2.5 SAMPLES

A. Samples: Submit to Architect/Engineer for review for limited purpose of checking for conformance with information given and design concept expressed in Contract Documents.

1. Submit to Architect/Engineer for aesthetic, color, or finish selection.
2. Submit samples of finishes from full range of manufacturers' standard colors, textures, and patterns for Architect/Engineer selection.
3. Initial selections will be made from manufacturer's color / finish charts.
4. Final selections will be made from large samples of authentic colors and finishes produced on the intended substrate.
5. Provide number of samples as requested by the Architect.

B. Submit samples to illustrate functional and aesthetic characteristics of Products, with integral parts and attachment devices. Coordinate sample submittals for interfacing work.

C. Include identification on unexposed side of each Sample that include the following:
1. Generic description of Sample.
2. Product name and name of manufacturer.
3. Sample source.
4. Number and title of applicable Specification Section.

D. Submit three sets of Samples or number of final selection samples specified in individual specification sections; Architect/Engineer will retain two samples; remainder will be returned.

E. For projects where electronic samples are required, provide corresponding electric submittal of Sample transmittal, digital file illustrating Sample characteristics and identification information for record.

F. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.

G. Samples will not be used for testing purposes unless specifically stated in specification section.

2.6 ELECTRONIC CAD FILES OF PROJECT DRAWINGS

A. Electronic CAD Files of Project Drawings: May only be used to expedite production of Shop Drawings for the Project. Use for other Projects or purposes is not allowed.

B. Electronic CAD Files of Project Drawings: Distributed only under the following conditions:
1. Use of files is solely at receiver's risk. Architect/Engineer does not warrant accuracy of files. Receiving files in electronic form does not relieve receiver of responsibilities for measurements, dimensions, and quantities set forth in Contract Documents. In the event of ambiguity, discrepancy, or conflict between information on electronic media and that in Contract

Documents, notify Architect/Engineer of discrepancy and use information in hard-copy Drawings and Specifications.

2. CAD files do not necessarily represent the latest Contract Documents, existing conditions, and as-built conditions. Receiver is responsible for determining and complying with these conditions and for incorporating addenda and modifications.
3. User is responsible for removing information not normally provided on Shop Drawings and removing references to Contract Documents. Shop Drawings submitted with information associated with other trades or with references to Contract Documents will not be reviewed and will be immediately returned.
4. Receiver shall not hold Architect/Engineer responsible for data or file clean-up required to make files usable, nor for error or malfunction in translation, interpretation, or use of this electronic information.
5. Receiver shall understand that even though Architect/Engineer has computer virus scanning software to detect presence of computer viruses, there is no guarantee that computer viruses are not present in files or in electronic media.
6. Receiver shall not hold Architect/Engineer responsible for such viruses or their consequences, and shall hold Architect/Engineer harmless against costs, losses, or damage caused by presence of computer virus in files or media.

2.7 TEST REPORTS

A. Submit for Architect/Engineer's knowledge as contract administrator or for Owner.

B. Submit test reports for information for limited purpose of assessing conformance with information given and design concept expressed in Contract Documents.

2.8 CERTIFICATES

A. When specified in individual specification sections, submit certification by manufacturer, installation/application subcontractor, or Contractor to Architect/Engineer, in quantities specified for Product Data.

B. Indicate material or product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.

C. Certificates may be recent or previous test results on material or Product, but must be acceptable to Architect/Engineer.

2.9 MANUFACTURER'S INSTRUCTIONS

A. When specified in individual specification sections, submit printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing, to Architect/Engineer for delivery to Owner in quantities specified for Product Data.

B. Indicate special procedures, perimeter conditions requiring special attention, and special environmental criteria required for application or installation.

2.10 MANUFACTURER'S FIELD REPORTS

A. Submit reports for Architect/Engineer's benefit as contract administrator or for Owner.

B. Submit report in triplicate within 15 days of observation to Architect/Engineer for information.

C. Submit for information for limited purpose of assessing conformance with information given and design concept expressed in Contract Documents.

2.11 CONSTRUCTION PHOTOGRAPHS

A. Provide digital photographs of site and construction throughout progress of Work.

B. Each month submit digital photographic files on compact disk with Application for Payment.

C. Take minimum ten site photographs and twenty interior photographs indicating relative progress of the Work, three days maximum prior to submitting.

D. Identify each digital photographic file with date.

2.12 RECORD DRAWINGS

A. The Contractor will be provided one complete set of drawings to be kept in field office for purpose of recording changes from the original contract documents. The Contractor is responsible for recording on the set any significant difference between work indicated and work actually executed. The documents shall be labeled "Record Drawings", shall be kept in a clean, dry environment, and shall be used for no other purpose. Return the Record Drawings to the Architect prior to final inspection, after all changes are recorded. Include or attach to the Record Drawings any revised drawings or addenda.

2.13 PRODUCT WARRANTIES AND PRODUCT BONDS

A. Obtain, execute and assemble transferable warranty documents and bonds from subcontractors, suppliers, and manufacturers. See individual specification sections and section 01 7 00 for required documents.

PART 3 EXECUTION

3.1 CONTRACTOR'S REVIEW

A. Action and Informational Submittals: Review each submittal and check for coordination with other Work of the Contract and compliance with the Contract Documents. Note corrections and field dimensions. mark with approval stamp before submitting to Architect.

3.2 ARCHITECT'S ACTION

A. Action Submittals: Architect will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action:
   1. No Exceptions Taken.
   2. Make Corrections Noted.
   3. Revise and Resubmit.
   4. Rejected.

B. Informational Submittals: Architect will review each submittal and will not return it, or will return it if it does not comply with requirements. Architect will forward each submittal to appropriate party.

END OF SECTION

SECTION 01 40 00

QUALITY REQUIREMENTS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Quality control and control of installation.

B. Tolerances

C. References.

D. Testing and inspection services.

E. Manufacturers' field services.

F. Examination.

G. Preparation.

H. Repair and Protection.

I. Inspection and Testing Log.

1.2 QUALITY CONTROL AND CONTROL OF INSTALLATION

A. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce Work of specified quality.

B. Comply with manufacturers' instructions, including each step in sequence.

C. When manufacturers' instructions conflict with Contract Documents, request clarification from Architect/Engineer before proceeding.

D. Comply with specified standards as minimum quality for the Work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.

E. Perform Work by persons qualified to produce required and specified quality.

F. Verify field measurements are as indicated on Shop Drawings or as instructed by manufacturer.

G. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, or disfigurement.

1.3 TOLERANCES

A. Monitor fabrication and installation tolerance control of products to produce acceptable Work. Do not permit tolerances to accumulate.

B. Comply with manufacturers' tolerances. When manufacturers' tolerances conflict with Contract Documents, request clarification from Architect/Engineer before proceeding.

C. Adjust products to appropriate dimensions; position before securing products in place.

1.4 REFERENCES

A. For products or workmanship specified by association, trade, or other consensus standards, comply with requirements of standard, except when more rigid requirements are specified or are required by applicable codes.

B. Conform to reference standard by date of issue current on date of Contract Documents, except where specific date is established by code.

C. Obtain copies of standards where required by product specification sections.

D. When specified reference standards conflict with Contract Documents, request clarification from Architect/Engineer before proceeding.

E. Neither contractual relationships, duties, nor responsibilities of parties in Contract nor those of Architect/Engineer shall be altered from Contract Documents by mention or inference otherwise in reference documents.

1.5 TESTING AND INSPECTION SERVICES

A. Testing Agency Qualifications: An NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspecting as indicated, as documented according to ASTM E 329; and with additional qualifications as specified in individual Sections; and, where required by authorities having jurisdiction, that is acceptable to authorities.
   1. NRTL: A nationally recognized testing laboratory according to 29 CFR 1910.7.
   2. NVLAP: A testing agency accredited according to NIST's National Voluntary Laboratory Accreditation Program.

B. Owner will employ and pay for specified services of an independent firm to perform testing and inspection.

C. The independent firm will perform tests, inspections and other services specified in individual specification sections and as required by Architect/Engineer, Owner, and/or Authority having jurisdiction.

D. Reports will be submitted by independent firm to Architect/Engineer, Owner and Contractor, indicating observations and results of tests and indicating compliance or non-compliance with Contract Documents. Include the following:
   1. Date of issue.
   2. Project title and number.
   3. Name, address and telephone number of testing agency.
   4. Dates and locations of samples and tests or inspections.
   5. Names of individuals making tests and inspections.
   6. Description of the Work and test and inspection method.
   7. Identification of product and Specification Section.
   8. Complete test or inspection data.
   9. Test and inspection results and an interpretation of test results.
   10. Record or temperature and weather conditions at time of sample taking and testing and inspecting.
   11. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
   12. Name and signature of laboratory inspector.
   13. Recommendations on retesting and reinspecting.

E. Cooperate with independent firm; furnish samples of materials, equipment, tools, storage, safe access, and assistance by incidental labor as requested.
   1. Make arrangements with independent firm and pay for additional samples and tests required for Contractor's use.

F. Testing and employment of testing agency or laboratory shall not relieve Contractor of obligation to perform Work in accordance with requirements of Contract Documents.

G. Re-testing or re-inspection required because of non-conformance to specified requirements shall be performed by same independent firm on instructions by Architect/Engineer. Payment for re-testing or re-inspection will be charged to Contractor by deducting testing charges from Contract Sum/Price.

H. Limits On Testing Authority:
   1. Agency or laboratory may not release, revoke, alter, or enlarge on requirements of Contract Documents.
   2. Agency or laboratory may not approve or accept any portion of the Work.
   3. Agency or laboratory may not assume duties of Contractor.
   4. Agency or laboratory has no authority to stop the Work.

1.6 MANUFACTURERS' FIELD SERVICES

A. When specified in individual specification sections, require material or product suppliers or manufacturers to provide qualified staff personnel to observe site conditions, conditions of surfaces and installation, quality of workmanship, start-up of equipment, test, adjust and balance of equipment, as applicable, and to initiate instructions when necessary.

B. Submit qualifications of observer to Architect/Engineer 30 days in advance of required observations. Observer subject to approval of Architect/Engineer.

C. Report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturers' written instructions.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify existing site conditions and substrate surfaces are acceptable for subsequent Work. Beginning new Work means acceptance of existing conditions.

B. Verify existing substrate is capable of structural support or attachment of new Work being applied or attached.

C. Examine and verify specific conditions described in individual specification sections.

D. Verify utility services are available, of correct characteristics, and in correct locations.

3.2 PREPARATION

A. Clean substrate surfaces prior to applying next material or substance.

B. Seal cracks or openings of substrate prior to applying next material or substance.

C. Apply manufacturer required or recommended substrate primer, sealer, or conditioner prior to applying new material or substance in contact or bond.

3.3 REPAIR AND PROTECTION

A. General: On completion of testing, inspecting, sample taking and similar services, repair damaged construction and restore substrates and finishes.

B. Protect construction exposed by or for quality-control service activities.

C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

3.4 TEST AND INSPECTION LOG

A. Test and Inspection Log: Prepare a record of tests and inspections. Include the following:
   1. Date test or inspection was conducted.
   2. Description of the Work tested or inspected.

3. Date test or inspection results were transmitted to Architect.
4. Identification of testing agency or special inspector conducting test or inspection.

B. Maintain log at Project site. Post changes and revisions as they occur. Provide access to test and inspection log for Architect's reference during normal working hours.

END OF SECTION

SECTION 01 50 00

TEMPORARY FACILITIES AND CONTROLS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Temporary Utilities:
1. Temporary electricity.
2. Temporary lighting for construction purposes.
3. Temporary heating.
4. Temporary cooling.
5. Temporary ventilation.
6. Communication services.
7. Temporary water service.
8. Temporary sanitary facilities.

B. Construction Facilities:
1. Field offices and sheds.
2. Vehicular access.
3. Progress cleaning and waste removal.

C. Temporary Controls:
1. Enclosures.
2. Protection of the Work.
3. Security.
4. Facilities Protection.
5. Dust control.
6. Noise control.
7. Pest and rodent control.
8. Pollution control.

D. Removal of utilities, facilities, and controls.

1.2 INFORMATIONAL SUBMITTALS

A. Site Plan: Show temporary facilities, utility hookups, staging areas, and parking areas for construction personnel.

B. Fire-Safety Program: Show compliance with requirements of NFPA 241 and authorities having jurisdiction. Indicate Contractor personnel responsible for management of fire prevention program.

1.3 TEMPORARY ELECTRICITY

A. Owner will pay cost of energy used. Exercise measures to conserve energy. Utilize Owner’s existing power service.

B. Complement existing power service capacity and characteristics as required for construction operations.

C. Provide flexible power cords as required for portable construction tools and equipment.

D. Permanent convenience receptacles may be utilized during construction.

1.4 TEMPORARY LIGHTING FOR CONSTRUCTION PURPOSES

A. Permanent building lighting may be utilized during construction.

B. As required, provide and maintain lighting for construction operations.

C. Provide and maintain 1 watt/sq ft HID lighting to interior work areas after dark to exterior staging and storage areas after dark for security purposes.

D. Provide and maintain .25 watt/sq ft HID lighting to interior work areas after dark for security purposes.

E. Provide branch wiring from power source to distribution boxes with lighting conductors, pigtails, lamps and the like, for specified lighting levels.

F. Maintain lighting and provide routine repairs.

1.5 TEMPORARY HEATING

A. Existing facilities may be used.

B. Owner will pay cost of temporary heat. Exercise measures to conserve energy. Utilize Owner's existing heat plant, extend and supplement with temporary heat devices as needed to maintain specified conditions for construction operations.

C. Before operating permanent equipment for temporary heating purposes, verify installation is approved for operation, equipment is lubricated, and filters are in place. Provide and pay for operation, maintenance, and regular replacement of filters worn or consumed parts. Replace filters at Substantial Completion.

1.6 TEMPORARY COOLING

A. Existing facilities may be used.

B. Owner will pay cost of temporary cooling. Exercise measures to conserve energy. Utilize Owner's existing cooling plant, extend and supplement with temporary cooling devices as needed to maintain specified conditions for construction operations.

C. Before operating permanent equipment for temporary heating purposes, verify installation is approved for operation, equipment is lubricated, and filters are in

place. Provide and pay for operation, maintenance, and regular replacement of filters worn or consumed parts. Replace filters at Substantial Completion.

1.7 TEMPORARY VENTILATION

A. Ventilate enclosed areas to achieve curing of materials, to dissipate humidity, and to prevent accumulation of dust, fumes, vapors, or gases.
   1. Do not allow construction dust, fumes, vapors, or gases into adjacent occupied areas of the facility.

B. Utilize existing ventilation equipment. Extend and supplement equipment with temporary fan units as required to maintain clean air for construction operations.

1.8 COMMUNICATION SERVICES

A. Provide superintendent with cellular telephone.

B. Internet Service: Provide, maintain and pay for broadband Internet service to field office at time of Project mobilization. Provide desktop computer with operating system and appropriate office function software and printer.

1.9 TEMPORARY WATER SERVICE

A. Owner will pay cost of temporary water. Exercise measures to conserve energy. Utilize Owner's existing water system, extend and supplement with temporary devices as needed to maintain specified conditions for construction operations.

1.10 TEMPORARY SANITARY FACILITIES

A. Provide and maintain required facilities and enclosures. Existing facility use is not permitted. Provide facilities at time of Project mobilization.

B. Provide temporary toilets, wash facilities and drinking water for use of construction personnel. Comply with requirements of authorities having jurisdiction for type, number, location operation and maintenance of fixtures and facilities. Coordinate location with Owner.

1.11 FIELD OFFICES AND SHEDS

A. Field Offices, General: The Owner shall arrange a space in the building for Progress Meetings. Contractor to provide facilities as necessary to maintain required documents on site.

B. Storage and Fabrication Sheds: Provide sheds sized, furnished and equipped to accommodate materials and equipment for construction operations as necessary.

1.12 EQUIPMENT

A. Fire Extinguishers: Portable, UL rated; with class and extinguishing agent as required by locations and classes of fire exposure.

1.13 VEHICULAR ACCESS

A. Traffic Controls:
   1. Protect existing site improvements including curbs, pavement and utilities.
   2. Provide unimpeded access for emergency vehicles.
   3. Provide and maintain access to fire hydrants and control valves free of obstructions.

B. Parking: On-site parking will be designated by the Owner for use by construction personnel.

1.14 PROGRESS CLEANING AND WASTE REMOVAL

A. Maintain areas free of waste materials, debris, and rubbish. Maintain site and premises in clean and orderly condition.

B. Remove debris and rubbish from pipe chases, plenums, crawl spaces and other closed or remote spaces, before enclosing spaces.

C. Broom and vacuum clean interior areas prior to start of surface finishing, and continue cleaning to eliminate dust.

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

E. Waste Disposal Facilities: Provide waste-collection containers in sizes adequate to handle waste from construction operations. Comply with requirements of authorities having jurisdiction.

1.15 ENCLOSURES

A. Exterior Enclosures:
   1. Provide temporary insulated weather tight closure of exterior openings to accommodate acceptable working conditions and protection for products, to allow for temporary heating and maintenance of required ambient temperatures identified in individual specification sections, and to prevent entry of unauthorized persons. Provide access doors with self-closing hardware and locks.

B. Interior Enclosures:
   1. Provide temporary partitions to separate work areas from Owner occupied areas, to prevent penetration of dust and moisture into Owner occupied areas, and to prevent damage to existing materials and equipment.

2. Construction: Framing and reinforced polyethylene or gypsum board sheet materials with closed joints and sealed edges at intersections with existing surfaces:
   a. STC rating of 35 in accordance with ASTM E90 where required by Owner.
   b. Maximum flame spread rating of 25 in accordance with ASTM E84.
3. Paint surfaces exposed to view from Owner occupied areas.

1.16 SECURITY

A. Security Program:
1. Protect Work and Owner's operations from theft, vandalism, and unauthorized entry.
2. Initiate program in coordination with Owner's existing security system at project mobilization.
3. Maintain program throughout construction period until Owner acceptance precludes need for Contractor security.

B. Entry Control:
1. Restrict entrance of persons and vehicles into Project site and existing facilities.
2. Allow entrance only to authorized persons with proper identification.
3. Maintain log of workers and visitors, make available to Owner on request.
4. Owner will control entrance of persons and vehicles related to Owner's operations.

1.17 FACILITIES PROTECTION

A. Protection of Existing Facilities: Protect existing vegetation, equipment, structures, utilities and other improvements at Project site and on adjacent properties, except those indicated to be removed or altered. Repair damage to existing facilities.

B. Temporary Fire Protection: Install and maintain temporary fire-protection facilities of types needed to protect against reasonably predictable and controllable fire losses. comply with NFPA 241; manage fire prevention program.
1. Prohibit smoking in construction areas.
2. Supervise welding operations, combustion-type temporary heating units, and similar sources of fire ignition according to requirements of authorities having jurisdiction.
3. Develop and supervise an overall fire-prevention and -protection program for personnel at Project site. Review needs with local fire department and establish procedures to be followed. Instruct personnel in methods and procedures. Post warnings and information.

1.18 DUST CONTROL

A. Execute Work by methods to minimize raising dust from construction operations.

B. Provide positive means to prevent air-borne dust from dispersing into atmosphere.

1.19 NOISE CONTROL

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

1.20 PEST AND RODENT CONTROL

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

B. Provide methods, means, and facilities to prevent rodents from accessing or invading premises.

1.21 POLLUTION CONTROL

A. Provide methods, means, and facilities to prevent contamination of soil, water, and atmosphere from discharge of noxious, toxic substances, and pollutants produced by construction operations.

B. Comply with pollution and environmental control requirements of authorities having jurisdiction.

1.22 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS

A. Remove temporary utilities, equipment, facilities, materials, prior to Substantial Completion inspection.

B. Clean and repair damage caused by installation or use of temporary work.

C. Restore existing and permanent facilities used during construction to original condition. Restore permanent facilities used during construction to specified condition.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

END OF SECTION

SECTION 01 60 00

PRODUCT REQUIREMENTS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Products.

B. Product delivery requirements.

C. Product storage and handling requirements.

D. Product options.

E. Product substitution procedures.

F. Equipment electrical characteristics and components.

1.2 PRODUCTS

A. Provide products that comply with the Contract Documents, are undamaged and new at time of installation.

B. Furnish products of qualified manufacturers suitable for intended use. Furnish products of each type by single manufacturer unless specified otherwise.

C. Do not use materials and equipment removed from existing premises, except as specifically permitted by Contract Documents.

D. Furnish interchangeable components from same manufacturer for components being replaced.

E. Provide products complete with accessories, trim, finish, fasteners and other items needed for a complete installation and indicated use and effect.

F. Owner reserves the right to limit selection to products with warranties not in conflict with requirements of the Contract Documents.

1.3 PRODUCT DELIVERY REQUIREMENTS

A. Transport and handle products in accordance with manufacturer's instructions.

B. Schedule delivery to minimize long-term storage at Project site and to prevent overcrowding of construction spaces.

C. Promptly inspect shipments to ensure products comply with requirements, quantities are correct, and products are undamaged.

D. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage.

1.4 PRODUCT STORAGE AND HANDLING REQUIREMENTS

A. Store and protect products in accordance with manufacturers' instructions.

B. Store with seals and labels intact and legible.

C. Store sensitive products in weather tight, climate controlled, enclosures in an environment favorable to product.

D. For exterior storage of fabricated products, place on sloped supports above ground.

E. Provide bonded off-site storage and protection when site does not permit on-site storage or protection.

F. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to prevent condensation and degradation of products.

G. Store loose granular materials on solid flat surfaces in well-drained area. Prevent mixing with foreign matter.

H. Provide equipment and personnel to store products by methods to prevent soiling, disfigurement, or damage.

I. Arrange storage of products to permit access for inspection. Periodically inspect to verify products are undamaged and are maintained in acceptable condition.

1.5 PRODUCT OPTIONS

A. Products Specified by Reference Standards or by Description Only: Any product meeting those standards or description.

B. Basis-of-Design Product Specification: A specification in which a specific manufacturer's product is named and accompanied by the words "basis-of-design product," including make or model number or other designation, to establish the significant qualities related to type, function, dimension, in-service performance, physical properties, appearance and other characteristics for purposes of evaluating comparable products of additional manufacturers named in the specification.

1.6 PRODUCT SUBSTITUTION PROCEDURES

A. Comply with requirements in Section 01 25 00 - Substitution Procedures.

B. Substitutions will not be considered when they are indicated or implied on Shop Drawing or Product Data submittals, without separate written request, or when acceptance will require revision to Contract Documents.

PART 2 PRODUCTS

2.1 EQUIPMENT ELECTRICAL CHARACTERISTICS AND COMPONENTS

A. Wiring Terminations: Furnish terminal lugs to match branch circuit conductor quantities, sizes, and materials indicated. Include lugs for terminal box.

B. Cord and Plug: Furnish minimum 6 foot cord and plug including grounding connector for connection to electric wiring system. Cord of longer length is specified in individual specification sections.

PART 3 EXECUTION

Not Used.

END OF SECTION

SECTION 01 70 00

EXECUTION REQUIREMENTS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Closeout procedures.

B. Final cleaning.

C. Starting of systems.

D. Demonstration and instructions.

E. Testing, adjusting and balancing.

F. Protecting installed construction.

G. Project record documents.

H. Operation and maintenance data.

I. Spare parts and maintenance products.

J. Product warranties and product bonds.

K. Maintenance service.

1.2 SUBSTANTIAL COMPLETION PROCEDURES

A. Contractor's List of Incomplete Items: Prepare and submit a list of items to be completed and corrected (Contractor's punch list), indicating the value of each item on the list and reasons why the Work is incomplete.

B. Submittals Prior to Substantial Completion: Complete the following a minimum of 10 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.
   1. Certificates of Release: Obtain and submit releases from authorities having jurisdiction permitting Owner unrestricted use of the Work an access to services and utilities. Include occupancy permits, operating certificates and similar releases.
   2. Submit closeout submittals, including project record documents, operation and maintenance manuals, final completion construction photographic documentation, damage or settlement surveys, property surveys, and similar final record information.

3. Submit closeout submittals specified in individual Sections, including specific warranties, workmanship bonds, maintenance service agreements, final certifications and similar documents.
4. Submit maintenance material submittals specified in individual Sections, including tools, spare parts, extra materials, and similar items, and deliver to location designated by Architect. Label with Manufacturer's name and model number where applicable.
5. Advise Owner of pending insurance changeover requirements.
6. Complete startup and testing of systems and equipment.
7. Perform preventative maintenance on equipment used prior to Substantial Completion.
8. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
9. Complete final cleaning requirements, including touch up painting.
10. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.

C. Inspection: Submit a written request for inspection to determine Substantial Completion a minimum of 10 days prior to date the work will be completed and ready for final inspection and tests. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Architect, that must be completed or corrected before certificates will be issued.
1. Re-inspection: Request re-inspection when the Work indentified in previous inspections as incomplete is complete or corrected.
2. Results of completed inspection will form the basis of requirements for final completion.

1.3 FINAL COMPLETION PROCEDURES

A. Preliminary Procedures: Before requesting final inspection for determining final completion, complete the following:
1. Submit a final Application for Payment.
2. Certified List of Incomplete Items: Submit certified copy of Architect's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Architect. Certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
3. Certificate of Insurance: Submit evidence of final, continuing insurance coverage complying with insurance requirements.
4. Instruct Owner's personnel in operation, adjustment and maintenance of products, equipment and inspection.

B. Inspection: Submit a written request for final inspection to determine acceptance. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare final Certificate of Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.

1. Re-inspection: Request re-inspection when the Work identified in previous inspections as incomplete is completed or corrected.

1.4 LIST OF INCOMPLETE ITEMS (PUNCH LIST)

A. Organization of List: Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction. Use CSI Form 14.1A. Submit list of incomplete items in the following format:
1. PDF electronic file. Architect will return annotated copy.

1.5 CLOSEOUT PROCEDURES

A. Complete the Work in accordance with time requirements stipulated in the Construction Contract.

B. 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/Engineer's review.

C. Provide submittals to Architect/Engineer Owner required by authorities having jurisdiction.

D. Submit final Application for Payment identifying total adjusted Contract Sum, previous payments, and sum remaining due.

1.6 FINAL CLEANING

A. Execute final cleaning prior to final project assessment.
1. Employ experienced personnel or professional cleaning firm.

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.

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. Remove waste and surplus materials, rubbish, and construction facilities from site.

1.7 STARTING OF SYSTEMS

A. Coordinate schedule for start-up of various equipment and systems.

B. Notify Architect/Engineer seven days prior to start-up of each item.

C. Verify each piece of equipment or system has been checked for proper lubrication, drive rotation, belt tension, control sequence, and for conditions which may cause damage.

D. Verify tests, meter readings, and specified electrical characteristics agree with those required by equipment or system manufacturer.

E. Verify wiring and support components for equipment are complete and tested.

F. Execute start-up under supervision of applicable manufacturer's representative and/or Contractors' personnel in accordance with manufacturers' instructions.

G. When 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 prior to start-up, and to supervise placing equipment or system in operation.

H. Submit a written report in accordance with Section 01 33 00 that equipment or system has been properly installed and is functioning correctly.

1.8 DEMONSTRATION AND INSTRUCTIONS

A. Demonstrate operation and maintenance of products to Owner's personnel two weeks prior to date of Substantial Completion.

B. 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.

C. Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, maintenance, and shutdown of each item of equipment at scheduled time, at equipment location.

D. Prepare and insert additional data in operations and maintenance manuals when need for additional data becomes apparent during instruction.

E. Required instruction time for each item of equipment and system is specified in individual sections.

1.9 TESTING, ADJUSTING AND BALANCING

A. Perform services specified per HVAC specifications.

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 activity in immediate work area to prevent damage.

C. Provide protective coverings at walls, projections, jambs, sills, and soffits of openings.

D. Protect finished floors, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects, by protecting with durable sheet materials.

1.11 PROJECT RECORD DOCUMENTS

A. Maintain on site one set of the following record documents; record actual revisions to the Work:
   1. Drawings.
   2. Specifications.
   3. Addenda.
   4. Change Orders and other modifications to the Contract.
   5. Reviewed Shop Drawings, Product Data, and Samples.
   6. Manufacturer's instruction for assembly, installation, and adjusting.

B. Ensure entries are complete and accurate, enabling future reference by Owner.

C. Store record documents separate from documents used for construction.

D. Record information concurrent with construction progress, not less than weekly.

E. Specifications: Legibly mark and record at each product section description of actual products installed, including the following:
   1. Manufacturer's name and product model and number.
   2. Product substitutions or alternates utilized.
   3. Changes made by Addenda and modifications.

F. Record Drawings and Shop Drawings: Legibly mark each item to record actual construction including:
   1. Include Contract modifications such as Addenda, supplementary instructions, change directives, field orders, minor changes in the Work, and change orders.
   2. Include locations of concealed elements of the Work.
   3. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the Work.
   4. Field changes of dimension and detail.
   5. Details not on original Contract drawings.
   6. Format: Identify and date each record Drawing, include the designation "PROJECT RECORD DRAWING" in a prominent location.

G. Submit PDF electronic files of marked-up documents to Architect/Engineer with claim for final Application for Payment.

1.12 OPERATION AND MAINTENANCE DATA

A. Submit in PDF composite electronic indexed file.

B. Submit data bound in 8-1/2 x 11 inch (A4) text pages, three D side ring capacity expansion binders with durable plastic covers.

C. Prepare binder cover with printed title "OPERATION AND MAINTENANCE INSTRUCTIONS", title of project, and subject matter of binder when multiple binders are required.

D. Internally subdivide binder contents with permanent page dividers, logically organized as described below; with tab titling clearly printed under reinforced laminated plastic tabs.

E. Drawings: Provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.

F. Contents: Prepare Table of Contents for each volume, with each product or system description identified, typed on white paper, in three parts as follows:
   1. Part 1: Directory, listing names, addresses, and telephone numbers of Architect/Engineer, 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. Identify the following:
      a. Significant design criteria.
      b. List of equipment.
      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. Shop drawings and product data.
      b. Certificates.
      c. Photocopies of warranties and bonds.

1.13 SPARE PARTS AND MAINTENANCE PRODUCTS

A. Furnish spare parts, maintenance, and extra products in quantities specified in individual specification sections.

B. Deliver to Project site and place in location as directed by Owner; obtain receipt prior to final payment.

1.14 PRODUCT WARRANTIES AND PRODUCT BONDS

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

B. Execute and assemble transferable warranty documents and bonds from subcontractors, suppliers, and manufacturers.

C. Verify documents are in proper form, contain full information, and are notarized.

D. Co-execute submittals when required.

E. Include Table of Contents and assemble in three D side ring binder with durable plastic cover.
   1. Bind warranties and bonds in heavy-duty, three-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2 by 11 inch paper.
   2. Provide heavy paper dividers with plastic -covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address and telephone number of the installer.
   3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name and name of Contractor.

F. Provide additional copies of each warranty to include in operation and maintenance manuals.

G. Submit prior to final Application for Payment.

H. Time Of Submittals:
   1. For equipment or component parts of equipment put into service during construction with Owner's permission, submit documents within ten days after acceptance.
   2. Make other submittals within ten days after Date of Substantial Completion, prior to final Application for Payment.
   3. For items of Work for which acceptance is delayed beyond Date of Substantial Completion, submit within ten days after acceptance, listing date of acceptance as beginning of warranty or bond period.

1.15 MAINTENANCE SERVICE

A. Furnish service and maintenance of components indicated in specification sections.

B. Examine system components at frequency consistent with reliable operation. Clean, adjust, and lubricate as required.

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.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

END OF SECTION

SECTION 02 41 19

SELECTIVE STRUCTURE DEMOLITION

PART 1 GENERAL

1.1 SUMMARY

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

1.2 CLOSEOUT SUBMITTALS

A. Section 01 70 00 - Execution Requirements: Requirements for submittals.

B. Project Record Documents: Accurately record actual locations of capped utilities, concealed utilities discovered during demolition and subsurface obstructions.

1.3 QUALITY ASSURANCE

A. Conform to applicable code for demolition work, dust control, products requiring electrical disconnection and re-connection.

B. Conform to applicable code for procedures when hazardous or contaminated materials are discovered.

C. Obtain required permits from authorities having jurisdiction.

1.4 SEQUENCING

A. Section 01 10 00 - Summary: Requirements for sequencing.

B. Owner may conduct salvage operations before demolition begins to remove materials Owner chooses to retain.

1.5 PROJECT CONDITIONS

A. Cease operations immediately if structure appears to be in danger and notify Architect/Engineer. Do not resume operations until directed.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

3.1 EXAMINATION

A. Examine areas indicated to be demolished before demolition.

B. Determine where removals may result in structural deficiency or unplanned building collapse during demolition. Coordinate demolition sequence and procedures to prevent structures from becoming unstable.

C. Determine where demolition may affect structural integrity or weather resistance of adjacent buildings indicated to remain.
   1. Identify measures required to protect buildings from damage.
   2. Identify remedial work including patching, repairing, bracing, and other work required to leave buildings indicated to remain in structurally sound and weathertight and watertight condition.

3.2 PREPARATION

A. Call Local Utility Line Information service not less than three working days before performing Work.
   1. Request underground utilities to be located and marked within and surrounding construction areas.

B. Notify affected utility companies before starting work and comply with their requirements.

C. Mark location and termination of utilities.

D. Erect, and maintain temporary barriers and security devices, including warning signs and lights, and similar measures, for protection of the public, Owner, and existing improvements indicated to remain.

E. Erect and maintain weatherproof closures for exterior openings.

F. Erect and maintain temporary partitions to prevent spread of dust, odors, and noise to non-renovated areas adjacent to construction.

G. Prevent movement of structure; provide temporary bracing and shoring required to ensure safety of existing structure.

H. Provide appropriate temporary signage including signage for exit or building egress.

I. Do not close or obstruct building egress path.

J. Do not disable or disrupt building fire or life safety systems without 3 days prior written notice to Owner.

3.3 SALVAGE REQUIREMENTS

A. Coordinate with Owner to identify building components and equipment required to be removed and delivered to Owner.

B. Tag components and equipment Owner designates for salvage.

C. Protect designated salvage items from demolition operations until items can be removed.

D. Carefully remove building components and equipment indicated to be salvaged.

E. Disassemble as required to permit removal from building.

F. Package small and loose parts to avoid loss.

G. Mark equipment and packaged parts to permit identification and consolidation of components of each salvaged item.

H. Prepare assembly instructions consistent with disassembled parts. Package assembly instructions in protective envelope and securely attach to each disassembled salvaged item.

I. Deliver salvaged items to Owner. Obtain signed receipt from Owner.

3.4 DEMOLITION

A. Conduct demolition to minimize interference with adjacent building areas.

B. Maintain protected egress from and access to adjacent existing buildings at all times.

C. Do not close or obstruct roadways or sidewalks without permits.

D. Cease operations immediately when structure appears to be in danger and notify Architect/Engineer.

E. Disconnect and remove designated utilities within demolition areas.

F. Cap and identify abandoned utilities at termination points when utility is not completely removed. Annotate Record Drawings indicating location and type of service for capped utilities remaining after demolition.

G. Demolish in orderly and careful manner. Protect existing improvements and supporting structural members.

H. Carefully remove building components indicated to be reused.
   1. Disassemble components as required to permit removal.
   2. Package small and loose parts to avoid loss.
   3. Mark components and packaged parts to permit reinstallation.
   4. Store components, protected from construction operations, until reinstalled.

I. Remove demolished materials from site except where specifically noted otherwise. Do not burn or bury materials on site.

J. Remove materials as Work progresses. Upon completion of Work, leave areas in clean condition.

K. Remove temporary Work.

END OF SECTION

SECTION 03 30 00

CAST-IN-PLACE CONCRETE

PART 1 · GENERAL

1.1 SUMMARY

A. Section includes cast-in-place concrete, including formwork, reinforcement, concrete materials, mixture design, placement procedures, and finishes for the following:
   1. Repair to existing slabs after demolition work.

1.2 DEFINITIONS

A. Cementitious Materials: Portland cement alone or in combination with one or more of the following: blended hydraulic cement, fly ash, slag cement, other pozzolans, and silica fume; materials subject to compliance with requirements.

B. W/C Ratio: The ratio by weight of water to cementitious materials.

1.3 REFERENCE STANDARDS

A. American Concrete Institute:
   1. ACI 301 - Specifications for Structural Concrete.
   2. ACI 305R- Standard Specification for Hot Weather Concreting.
   3. ACI 306.1 - Standard Specification for Cold Weather Concreting.
   4. ACI 308.1 - Standard Specification for Curing Concrete.
   5. ACI 318 - Building Code Requirements for Structural Concrete.

B. ASTM International:
   1. ASTM C33 - Standard Specification for Concrete Aggregates.
   2. ASTM C39/C39M - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens.
   3. ASTM C94/C94M - Standard Specification for Ready-Mixed Concrete.
   4. ASTM C143 – Standard Test Method for Slump of Hydraulic-Cement Concrete.
   5. ASTM C150 - Standard Specification for Portland Cement.
   6. ASTM C172 - Standard Practice for Sampling Freshly Mixed Concrete.
   7. ASTM C260 – Standard Specification for Air-Entraining Admixtures for Concrete.
   8. ASTM C330 – Standard Specification for Lightweight Aggregates for Structural Concrete.
   9. ASTM E1643 - Standard Practice for Installation of Water Vapor Retarders Used in Contact with Earth or Granular Fill under Concrete Slabs.
   10. ASTM E1745 - Standard Specification for Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs.

1.4 SUBMITTALS

A. Section 01 33 00 – Submittal Procedures.

B. Product Data: Submit data on joint devices, attachment accessories, admixtures and vapor retarder

C. Design Data:
1. Submit concrete mix design for each concrete strength.
2. Submit separate mix designs when admixtures are required for the following:
   a. Hot and cold weather concrete work.
   b. Air entrained concrete work.
3. Identify mix ingredients and proportions, including admixtures.
4. Identify chloride content of admixtures and whether or not chloride was added during manufacture.
5. Manufacturer’s Certificate: Certify that products meet or exceed specified requirements.
6. Manufacturer’s Installation Instructions: Submit installation procedures and interface required with adjacent Work.

1.5 QUALITY ASSURANCE

A. Perform Work according to ACI 301.

B. Comply with ACI 305R when pouring concrete during hot weather.

C. Comply with ACI 306.1 when pouring concrete during cold weather.

D. Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C 94/C 94M requirements for production facilities and equipment.
1. Manufacturer certified according to NRMCA's "Certification of Ready Mixed Concrete Production Facilities."

E. Testing Agency Qualifications: An independent agency, acceptable to authorities having jurisdiction, qualified according to ASTM C 1077 and ASTM E 329 for testing indicated.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Steel Reinforcement: Deliver, store, and handle steel reinforcement to prevent bending and damage.

1.7 FIELD CONDITIONS

A. Cold-Weather Placement: Comply with ACI 306.1 and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.
   1. When average high and low temperature is expected to fall below 40 deg F for three successive days, maintain delivered concrete mixture temperature within the temperature range required by ACI 301.
   2. Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.
   3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in mixture designs.

B. Hot-Weather Placement: Comply with ACI 301 and as follows:
   1. Maintain concrete temperature below 90 deg F at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated to total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
   2. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade uniformly moist without standing water, soft spots, or dry areas.

PART 2 PRODUCTS

2.1 FORM-FACING MATERIALS

A. Rough-Formed Finished Concrete: Plywood, lumber, metal, or another approved material. Provide lumber dressed on at least two edges and one side for tight fit.

B. Form-Release Agent: Commercially formulated form-release agent that will not bond with, stain, or adversely affect concrete surfaces and will not impair subsequent treatments of concrete surfaces.
   1. Formulate form-release agent with rust inhibitor for steel form-facing materials.

2.2 STEEL REINFORCEMENT

A. Unless otherwise indicated, materials shall meet following minimum standards:
   1. Reinforcing Bars: ASTM A 615, Grade 60, deformed.
   2. Plain-Steel Welded Wire Reinforcement: ASTM A 185, plain, fabricated from as-drawn steel wire into flat sheets.

2.3 CONCRETE MATERIALS

A. Cementitious Material: Use the following cementitious materials, of the same type, brand, and source, throughout Project:
   1. Portland Cement: ASTM C 150, Type I/II.
      a. Fly Ash: ASTM C 618, Class F.
      b. Ground Granulated Blast-Furnace Slag: ASTM C 989, Grade 120.

B. Normal-Weight Aggregates: ASTM C 33, Class 3S coarse aggregate or better, graded. Provide aggregates from a single source.
   1. Maximum Coarse-Aggregate Size: 3/4 inch nominal.
   2. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.

C. Water: ASTM C 94/C 94M.

2.4 ADMIXTURES

A. Air-Entraining Admixture: ASTM C 260.

B. Chemical Admixtures: Provide admixtures certified by manufacturer to be compatible with other admixtures and that will not contribute water-soluble chloride ions exceeding those permitted in hardened concrete. Do not use calcium chloride or admixtures containing calcium chloride.
   1. Water-Reducing Admixture: ASTM C 494/C 494M, Type A.
   2. Retarding Admixture: ASTM C 494/C 494M, Type B.
   3. Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type D.
   4. High-Range, Water-Reducing Admixture: ASTM C 494/C 494M, Type F.
   5. High-Range, Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type G.
   6. Plasticizing and Retarding Admixture: ASTM C 1017/C 1017M, Type II.

2.5 VAPOR RETARDERS AND BARRIERS

A. Vapor Barrier: A 15 mil vapor barrier with a water vapor transmission rate (WVTR) of 0.008 grains/h-sq. ft. or lower when tested in accordance with ASTM E 96; meeting or exceeding the requirement of ASTM E 1745 Class A; and wherein the vapor barrier component (plastic) is no less than 15 mils thick in accordance with ACI 302.1 R-96, and consists of multi-layer extruded virgin polyolefin plastic. Ungraded polyethylene sheet is not acceptable. Include companion joint tape, mastic, and accessory materials.
   1. Available products include:
      a. Stego Wrap Vapor Barrier (15 mil) by Stego Industries LLC.
      b. Perminator 15 by W.R. Meadows
      c. Griffolyn 15 Mil Green by Reef Industries

2.6 CURING MATERIALS

A. Evaporation Retarder: Waterborne, monomolecular film forming, manufactured for application to fresh concrete.

B. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.

C. Water: Potable.

D. Clear, Waterborne, Membrane-Forming Curing and Sealing Compound: ASTM C 1315, Type 1, Class A, certified by manufacturer that the product will not interfere with bonding of floor covering. VOC content not to exceed 350 g/L for interior applications.

2.7 RELATED MATERIALS

A. Bonding Agent: ASTM C 1059/C 1059M, Type II, nonredispersible, acrylic emulsion or styrene butadiene. VOC content not to exceed 350 g/L for interior applications.

B. Epoxy Bonding Adhesive: ASTM C 881, two-component epoxy resin, capable of humid curing and bonding to damp surfaces, of class suitable for application temperature and of grade to suit requirements, and as follows:
   1. Types IV and V, load bearing, for bonding hardened or freshly mixed concrete to hardened concrete.
   2. VOC content not to exceed 350 g/L for interior applications.

2.8 REPAIR MATERIALS

A. Repair Underlayment: Cement-based, polymer-modified, self-leveling product that can be applied in thicknesses from 1/8 inch and that can be feathered at edges to match adjacent floor elevations.
   1. Cement Binder: ASTM C 150/C 150M, portland cement or hydraulic or blended hydraulic cement as defined in ASTM C 219.
   2. Primer: Product of underlayment manufacturer recommended for substrate, conditions, and application. VOC content not to exceed 200 g/L for interior applications.
   3. Aggregate: Well-graded, washed gravel, 1/8 to 1/4 inch or coarse sand as recommended by underlayment manufacturer.
   4. Compressive Strength: Not less than 4100 psi at 28 days when tested according to ASTM C 109/C 109M.

B. Repair Overlayment: Cement-based, polymer-modified, self-leveling product that can be applied in thicknesses from 1/4 inch and that can be filled in over a scarified surface to match adjacent floor elevations.
   1. Cement Binder: ASTM C 150/C 150M, portland cement or hydraulic or blended hydraulic cement as defined in ASTM C 219.

2. Primer: Product of topping manufacturer recommended for substrate, conditions, and application. VOC content not to exceed 200 g/L for interior applications.
3. Aggregate: Well-graded, washed gravel, 1/8 to 1/4 inch or coarse sand as recommended by topping manufacturer.
4. Compressive Strength: Not less than 5000 psi at 28 days when tested according to ASTM C 109/C 109M.

2.9 CONCRETE MIXTURES, GENERAL

A. Prepare design mixtures for each type and strength of concrete, proportioned on the basis of laboratory trial mixture or field test data, or both, according to ACI 301.
1. Use a qualified independent testing agency for preparing and reporting proposed mixture designs based on laboratory trial mixtures.

B. Cementitious Materials: Limit percentage by weight, of cementitious materials other than portland cement in concrete as follows:
1. Fly Ash: 25 percent.
2. Slag Cement: 50 percent.
3. Limit total percentage of portland cement substitutes to 50 percent.

C. Limit water-soluble, chloride-ion content in hardened concrete to 0.30 percent by weight of cement, typical.

D. Admixtures: Use admixtures according to manufacturer's written instructions.
1. Use high-range water-reducing admixture in concrete, as required, for placement and workability.
2. Use water-reducing and -retarding admixture when required by high temperatures, low humidity, or other adverse placement conditions.
3. Use water-reducing admixture in pumped concrete, concrete for heavy-use industrial slabs and parking structure slabs, concrete required to be watertight, and concrete with a w/c ratio below 0.50.
4. Do not use admixtures containing calcium chloride or chloride ions in excess of 0.1 percent.

2.10 CONCRETE MIXTURES FOR BUILDING ELEMENTS

A. All normal weight concrete except slabs-on-grade: Proportion normal-weight concrete mixture as follows:
1. Minimum Compressive Strength: As indicated at 28 days.
2. Slump Limit: 4 inches minimum, 8 inches maximum for concrete with verified slump of 2 to 4 inches before adding high-range water-reducing admixture or plasticizing admixture, plus or minus 1 inch.
3. Air Content:
a. At exterior exposed conditions. 5 percent, plus or minus 1 percent at point of delivery for 1-inch nominal maximum aggregate size.
b. All other conditions: No air entrainment required. Do not allow air content of trowel finished floors to exceed 3 percent.

B. Slabs-on-Grade: Proportion normal-weight concrete mixture as follows:
   1. Minimum Compressive Strength: As indicated at 28 days.
   2. Slump Limit: 4 inches minimum, 8 inches maximum for concrete with verified slump of 2 to 4 inches before adding high-range water-reducing admixture or plasticizing admixture, plus or minus 1 inch.
   3. Air Content: Do not allow air content of troweled finished floors to exceed 3 percent.

2.11 FABRICATING REINFORCEMENT

A. Fabricate steel reinforcement according to CRSI's "Manual of Standard Practice."

2.12 CONCRETE MIXING

A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C 94/C 94M and ASTM C 1116/C 1116M, and furnish batch ticket information.
   1. When air temperature is between 85 and 90 deg F, reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F, reduce mixing and delivery time to 60 minutes.

PART 3 EXECUTION

3.1 FORMWORK INSTALLATION

A. Design, erect, shore, brace, and maintain formwork, according to ACI 301, to support vertical, lateral, static, and dynamic loads, and construction loads that might be applied, until structure can support such loads.

B. Construct formwork so concrete members and structures are of size, shape, alignment, elevation, and position indicated, within tolerance limits of ACI 117.

C. Limit concrete surface irregularities, designated by ACI 347 as abrupt or gradual, as follows:
   1. Class A, 1/8 inch for smooth-formed finished surfaces.
   2. Class B, 1/4 inch for rough-formed finished surfaces.

D. Construct forms tight enough to prevent loss of concrete mortar.

E. Construct forms for easy removal without hammering or prying against concrete surfaces. Provide crush or wrecking plates where stripping may damage cast-concrete surfaces. Provide top forms for inclined surfaces steeper than 1.5 horizontal to 1 vertical.

   1. Install keyways, reglets, recesses, and the like, for easy removal.
   2. Do not use rust-stained steel form-facing material.

F. Set edge forms, bulkheads, and intermediate screed strips for slabs to achieve required elevations and slopes in finished concrete surfaces. Provide and secure units to support screed strips; use strike-off templates or compacting-type screeds.

G. Provide temporary openings for cleanouts and inspection ports where interior area of formwork is inaccessible. Close openings with panels tightly fitted to forms and securely braced to prevent loss of concrete mortar. Locate temporary openings in forms at inconspicuous locations.

H. Chamfer exterior corners and edges of permanently exposed concrete.

I. Form openings, chases, offsets, sinkages, keyways, reglets, blocking, screeds, and bulkheads required in the Work. Determine sizes and locations from trades providing such items.

J. Clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, and other debris just before placing concrete.

K. Retighten forms and bracing before placing concrete, as required, to prevent mortar leaks and maintain proper alignment.

L. Coat contact surfaces of forms with form-release agent, according to manufacturer's written instructions, before placing reinforcement.

3.2 EMBEDDED ITEM INSTALLATION

A. Place and secure anchorage devices and other embedded items required for adjoining work that is attached to or supported by cast-in-place concrete. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
   1. Install anchor rods, accurately located, to elevations required and complying with tolerances in Section 7.5 of AISC 303.

3.3 REMOVING FORMS

A. General: Formwork for sides of columns and similar parts of the Work that does not support weight of concrete may be removed after cumulatively curing at not less than 50 deg F for 24 hours after placing concrete. Concrete has to be hard enough to not be damaged by form-removal operations, and curing and protection operations need to be maintained.

3.4 VAPOR-RETARDER AND VAPOR BARRIER

A. Sheet Vapor Retarders: Place, protect, and repair sheet vapor retarder according to ASTM E 1643 and manufacturer's written instructions.
   1. Lap joints 6 inches and seal with manufacturer's recommended tape.

3.5 STEEL REINFORCEMENT INSTALLATION

A. General: Comply with CRSI's "Manual of Standard Practice" for fabricating, placing, and supporting reinforcement.
   1. Do not cut or puncture vapor retarder. Repair damage and reseal vapor retarder before placing concrete.

B. Clean reinforcement of loose rust and mill scale, earth, ice, and other foreign materials that reduce bond to concrete.

C. Accurately position, support, and secure reinforcement against displacement. Locate and support reinforcement with bar supports to maintain minimum concrete cover. Do not tack weld crossing reinforcing bars.

D. Set wire ties with ends directed into concrete, not toward exposed concrete surfaces.

E. Install welded-wire reinforcement in longest practicable lengths on bar supports spaced to minimize sagging. Lap edges and ends of adjoining sheets at least one mesh spacing. Offset laps of adjoining sheet widths to prevent continuous laps in either direction. Lace overlaps with wire.

3.6 JOINTS

A. General: Construct joints true to line with faces perpendicular to surface plane of concrete.

B. Construction Joints: Install so strength and appearance of concrete are not impaired, at locations indicated or as approved by Architect.
   1. Place joints perpendicular to main reinforcement. Continue reinforcement across construction joints unless otherwise indicated. Do not continue reinforcement through sides of strip placements of floors and slabs.
   2. Form keyed joints as indicated. Embed keys at least 1-1/2 inches into concrete.
   3. Locate joints for beams, slabs, joists, and girders in the middle third of spans. Offset joints in girders a minimum distance of twice the beam width from a beam-girder intersection.
   4. Locate horizontal joints in walls and columns at underside of floors, slabs, beams, and girders and at the top of footings or floor slabs.
   5. Space vertical joints in walls at 30 feet on center maximum unless indicated otherwise.. Locate joints beside piers integral with walls, near corners, and in concealed locations where possible.
   6. Use a bonding agent at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.

3.7 CONCRETE PLACEMENT

A. Before placing concrete, verify that installation of formwork, reinforcement, and embedded items is complete and that required inspections are completed.

B. Notify the Owner's Inspection Service to permit inspection of sub-base a minimum of 24 hours prior to placement of reinforcing steel and concrete. The Inspection Service shall inspect and approve all foundation subgrades prior to placing concrete.

C. Notify the Owner's Inspection Service to permit inspection of reinforcing steel a minimum of 24 hours prior to concrete placement. Notify Inspection Service 24 hours prior to any scheduled concrete pour.

D. Do not add water to concrete during delivery, at Project site, or during placement unless withheld at the plant as indicated on delivery ticket and approved by Architect.

E. Before test sampling and placing concrete, water may be added at Project site, subject to limitations of ACI 301.
   1. Do not add water to concrete after adding high-range water-reducing admixtures to mixture.

F. Deposit concrete continuously in one layer or in horizontal layers of such thickness that no new concrete is placed on concrete that has hardened enough to cause seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as indicated. Deposit concrete to avoid segregation.
   1. Deposit concrete in horizontal layers of depth not to exceed formwork design pressures and in a manner to avoid inclined construction joints.
   2. Consolidate placed concrete with mechanical vibrating equipment according to ACI 301.
   3. Do not use vibrators to transport concrete inside forms. Insert and withdraw vibrators vertically at uniformly spaced locations to rapidly penetrate placed layer and at least 6 inches into preceding layer. Do not insert vibrators into lower layers of concrete that have begun to lose plasticity. At each insertion, limit duration of vibration to time necessary to consolidate concrete and complete embedment of reinforcement and other embedded items without causing mixture constituents to segregate.

G. Deposit and consolidate concrete for floors and slabs in a continuous operation, within limits of construction joints, until placement of a panel or section is complete.
   1. Consolidate concrete during placement operations, so concrete is thoroughly worked around reinforcement and other embedded items and into corners.
   2. Maintain reinforcement in position on chairs during concrete placement.
   3. Screed slab surfaces with a straightedge and strike off to correct elevations.
   4. Slope surfaces uniformly to drains where required.
   5. Begin initial floating using bull floats or darbies to form a uniform and open-textured surface plane, before excess bleedwater appears on the surface. Do not further disturb slab surfaces before starting finishing operations.

3.8 MISCELLANEOUS CONCRETE ITEM INSTALLATION

A. Filling In: Fill in holes and openings left in concrete structures after work of other trades is in place unless otherwise indicated. Mix, place, and cure concrete, as specified, to blend with in-place construction. Provide other miscellaneous concrete filling indicated or required to complete the Work.

3.9 CONCRETE PROTECTING AND CURING

A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and ACI 301 for hot-weather protection during curing.

B. Evaporation Retarder: Apply evaporation retarder to unformed concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.

C. Formed Surfaces: Cure formed concrete surfaces, including underside of beams, supported slabs, and other similar surfaces. If forms remain during curing period, moist cure after loosening forms. If removing forms before end of curing period, continue curing for remainder of curing period.

D. Unformed Surfaces: Begin curing immediately after finishing concrete. Cure unformed surfaces, including floors and slabs, concrete floor toppings, and other surfaces.

E. Cure concrete according to ACI 308.1, by one or a combination of the following methods:
   1. Moisture Curing: Keep surfaces continuously moist for not less than seven days with the following materials:
      a. Water.
      b. Continuous water-fog spray.
      c. Absorptive cover, water saturated, and kept continuously wet. Cover concrete surfaces and edges with 12-inch lap over adjacent absorptive covers.
   2. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches, and sealed by waterproof tape or adhesive. Cure for not less than seven days. Immediately repair any holes or tears during curing period, using cover material and waterproof tape.
      a. Moisture cure or use moisture-retaining covers to cure concrete surfaces to receive floor coverings.
      b. Moisture cure or use moisture-retaining covers to cure concrete surfaces to receive penetrating liquid floor treatments.
      c. Cure concrete surfaces to receive floor coverings with either a moisture-retaining cover or a curing compound that the

manufacturer certifies does not interfere with bonding of floor covering used on Project.

3. Curing and Sealing Compound: Apply uniformly to floors and slabs indicated in a continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Repeat process 24 hours later and apply a second coat. Maintain continuity of coating and repair damage during curing period.

3.10 CONCRETE SURFACE REPAIRS

A. Defective Concrete: Repair and patch defective areas when approved by Architect. Remove and replace concrete that cannot be repaired and patched to Architect's approval.

B. Patching Mortar: Mix dry-pack patching mortar, consisting of 1 part portland cement to 2-1/2 parts fine aggregate passing a No. 16 sieve, using only enough water for handling and placing.

C. Repairing Formed Surfaces: Surface defects include color and texture irregularities, cracks, spalls, air bubbles, honeycombs, rock pockets, fins and other projections on the surface, and stains and other discolorations that cannot be removed by cleaning.

1. Immediately after form removal, cut out honeycombs, rock pockets, and voids more than 1/2 inch in any dimension to solid concrete. Limit cut depth to 3/4 inch. Make edges of cuts perpendicular to concrete surface. Clean, dampen with water, and brush-coat holes and voids with bonding agent. Fill and compact with patching mortar before bonding agent has dried. Fill form-tie voids with patching mortar or cone plugs secured in place with bonding agent.
2. Repair defects on surfaces exposed to view by blending white portland cement and standard portland cement so that, when dry, patching mortar matches surrounding color. Patch a test area at inconspicuous locations to verify mixture and color match before proceeding with patching. Compact mortar in place and strike off slightly higher than surrounding surface.
3. Repair defects on concealed formed surfaces that affect concrete's durability and structural performance as determined by Architect.

D. Repairing Unformed Surfaces: Test unformed surfaces, such as floors and slabs, for finish and verify surface tolerances specified for each surface. Correct low and high areas. Test surfaces sloped to drain for trueness of slope and smoothness; use a sloped template.

1. Repair finished surfaces containing defects. Surface defects include spalls, popouts, honeycombs, rock pockets, crazing and cracks in excess of 0.01 inch wide or that penetrate to reinforcement or completely through unreinforced sections regardless of width, and other objectionable conditions.
2. After concrete has cured at least 14 days, correct high areas by grinding.

3. Correct localized low areas during or immediately after completing surface finishing operations by cutting out low areas and replacing with patching mortar. Finish repaired areas to blend into adjacent concrete.
4. Correct other low areas scheduled to receive floor coverings with a repair underlayment. Prepare, mix, and apply repair underlayment and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface. Feather edges to match adjacent floor elevations.
5. Correct other low areas scheduled to remain exposed with a repair topping. Cut out low areas to ensure a minimum repair topping depth of 1/4 inch to match adjacent floor elevations. Prepare, mix, and apply repair topping and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface.
6. Repair defective areas, except random cracks and single holes 1 inch or less in diameter, by cutting out and replacing with fresh concrete. Remove defective areas with clean, square cuts and expose steel reinforcement with at least a 3/4-inch clearance all around. Dampen concrete surfaces in contact with patching concrete and apply bonding agent. Mix patching concrete of same materials and mixture as original concrete, except without coarse aggregate. Place, compact, and finish to blend with adjacent finished concrete. Cure in same manner as adjacent concrete.
7. Repair random cracks and single holes 1 inch or less in diameter with patching mortar. Groove top of cracks and cut out holes to sound concrete and clean off dust, dirt, and loose particles. Dampen cleaned concrete surfaces and apply bonding agent. Place patching mortar before bonding agent has dried. Compact patching mortar and finish to match adjacent concrete. Keep patched area continuously moist for at least 72 hours.

E. Perform structural repairs of concrete, subject to Architect's approval, using epoxy adhesive and patching mortar.

F. Repair materials and installation not specified above may be used, subject to Architect's approval.

3.11 FIELD QUALITY CONTROL

A. Concrete Tests: Testing of composite samples of fresh concrete obtained according to ASTM C 172/C 172M shall be performed according to the following requirements:
1. Testing Frequency: Obtain one composite sample for each day's pour of each concrete mixture exceeding 5 cu. yd., but less than 25 cu. yd., plus one set for each additional 50 cu. yd. or fraction thereof.
2. Slump: ASTM C 143/C 143M; one test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mixture. Perform additional tests when concrete consistency appears to change.

3. Air Content: ASTM C 231/C 231M, pressure method, for normal-weight concrete; ASTM C 173/C 173M, volumetric method, for structural lightweight concrete; one test for each composite sample, but not less than one test for each day's pour of each concrete mixture.
4. Concrete Temperature: ASTM C 1064/C 1064M; one test hourly when air temperature is 40 deg F and below or 80 deg F and above, and one test for each composite sample.
5. Unit Weight: ASTM C 567/C 567M, fresh unit weight of structural lightweight concrete; one test for each composite sample, but not less than one test for each day's pour of each concrete mixture.
6. Compression Test Specimens: ASTM C 31/C 31M.
   a. Cast and laboratory cure two sets of three 4 x 8 cylinder specimens for each composite sample.

7. Compressive-Strength Tests: ASTM C 39/C 39M.
   a. 4 x 8 Specimens: Test two laboratory-cured specimens at 7 days and one set of three specimens at 28 days. Test one specimen at 56 days if required.
   b. A compressive-strength test shall be the average compressive strength from a set of specimens obtained from same composite sample and tested at age indicated.
8. When strength of field-cured cylinders is less than 85 percent of companion laboratory-cured cylinders, Contractor shall evaluate operations and provide corrective procedures for protecting and curing in-place concrete.
9. Strength of each concrete mixture will be satisfactory if every average of any three consecutive compressive-strength tests equals or exceeds specified compressive strength and no compressive-strength test value falls below specified compressive strength by more than 500 psi.
10. Test results shall be reported in writing to Architect, concrete manufacturer, and Contractor within 48 hours of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in Work, design compressive strength at 28 days, concrete mixture proportions and materials, compressive breaking strength, and type of break for both 7- and 28-day tests.
11. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by Architect but will not be used as sole basis for approval or rejection of concrete.
12. Additional Tests: Testing and inspecting agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by Architect. Testing and inspecting agency may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C 42/C 42M or by other methods as directed by Architect.

13. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.
14. Correct deficiencies in the Work that test reports and inspections indicate do not comply with the Contract Documents.

END OF SECTION

SECTION 04 05 03

MASONRY MORTARING AND GROUTING

PART 1 GENERAL

1.1 SUMMARY

A. Section includes mortar and grout for masonry.

B. Related Sections:
1. Section 04 20 00 - Unit Masonry: Installation of mortar and grout.

1.2 REFERENCES

A. American Concrete Institute:
1. ACI 530 - Building Code Requirements for Masonry Structures.
2. ACI 530.1 - Specifications for Masonry Structures.

B. ASTM International:
1. ASTM C5 - Standard Specification for Quicklime for Structural Purposes.
2. ASTM C91 - Standard Specification for Masonry Cement.
3. ASTM C94/C94M - Standard Specification for Ready-Mixed Concrete.
4. ASTM C143/C143M - Standard Test Method for Slump of Hydraulic Cement Concrete.
5. ASTM C144 - Standard Specification for Aggregate for Masonry Mortar.
6. ASTM C150 - Standard Specification for Portland Cement.
7. ASTM C199 - Standard Test Method for Pier Test for Refractory Mortars.
8. ASTM C206 - Standard Specification for Finishing Hydrated Lime.
9. ASTM C270 - Standard Specification for Mortar for Unit Masonry.
10. ASTM C387/C387M - Standard Specification for Packaged, Dry, Combined Materials for Mortar and Concrete.
11. ASTM C404 - Standard Specification for Aggregates for Masonry Grout.
12. ASTM C476 - Standard Specification for Grout for Masonry.
13. ASTM C595 - Standard Specification for Blended Hydraulic Cements.
14. ASTM C780 - Standard Test Method for Preconstruction and Construction Evaluation of Mortars for Plain and Reinforced Unit Masonry.
15. ASTM C1019 - Standard Test Method for Sampling and Testing Grout.
16. ASTM C1142 - Standard Specification for Extended Life Mortar for Unit Masonry.
17. ASTM C1314 - Standard Test Method for Compressive Strength of Masonry Prisms.
18. ASTM C1329 - Standard Specification for Mortar Cement.
19. ASTM C1357 - Standard Test Method for Evaluating Masonry Bond Strength.

1.3 SUBMITTALS

A. Section 01 33 00 - Submittal Procedures: Submittal requirements.

B. Samples: Submit two samples of mortar, illustrating mortar color and color range.

C. Design Data: Submit design mix when Property specification of ASTM C270 is to be used, required environmental conditions, and admixture limitations.

D. Test Reports:
1. Submit reports on mortar indicating conformance of component mortar materials to requirements of ASTM C270.
2. Submit reports on grout indicating conformance of component grout materials to requirements of ASTM C476.

E. Manufacturer's Installation Instructions: Submit manufacturer's installation instructions.

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

1.4 QUALITY ASSURANCE

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

1.5 ENVIRONMENTAL REQUIREMENTS

A. Section 01 60 00 - Product Requirements.

B. Cold Weather Requirements: In accordance with ACI 530.1 when ambient temperature or temperature of masonry units is less than 40 degrees F.

C. Hot Weather Requirements: In accordance with ACI 530.1 when ambient temperature is greater than 100 degrees F or ambient temperature is greater than 90 degrees F with wind velocity greater than 8 mph.

PART 2 PRODUCTS

2.1 COMPONENTS

A. Portland Cement: ASTM C150, Type I.

B. Mortar Aggregate: ASTM C144, standard masonry type for CMU work and ground marble, granite, natural colored sand or other sound stone of color necessary to produce required mortar color for all brick work.

C. Hydrated Lime: ASTM C207, Type S.

D. Grout Aggregate: ASTM C404, fine and coarse.

E. Water: Clean and potable.

F. Water Repellent: Granular or liquid type; product as recommended by concrete masonry unit manufacturer.

G. Mortar Color Pigments: Natural and synthetic iron oxides and chromium oxides, compounded for use in mortar mixes. Use only pigments with a record of satisfactory performance in masonry mortar.

H. Calcium chloride is not permitted.

2.2 MIXES

A. Mortar Mixes:
1. Mortar For Structural Masonry: ASTM C270, Type S using Proportion specification.
2. Mortar For Non-Structural Masonry: ASTM C270, Type N using Proportion specification.

B. Mortar Colors:
1. Concrete Masonry Units: Natural color.
2. Brick: as selected from full range of manufacturer colors

C. Mortar Mixing:
1. Thoroughly mix mortar ingredients in accordance with ASTM C270 in quantities needed for immediate use.
2. Achieve uniformly damp sand immediately before mixing process.
3. Add mortar color and admixtures to achieve uniformity of mix and coloration.
4. Re-temper only within two hours of mixing.

D. Grout Mixes:
1. Grout for Structural Masonry: 2,000 psi strength at 28 days; 8-11 inches slump; mixed in accordance with ASTM C476 Fine or Coarse grout.
2. Application:
a. Coarse Grout: For grouting spaces with minimum 4 inches dimension in every direction.
b. Fine Grout: For grouting other spaces.

E. Grout Mixing:
1. Mix grout in accordance with ASTM C94, modified to use ingredients complying with ASTM C476.
2. Thoroughly mix grout ingredients in quantities needed for immediate use in accordance with ASTM C476.
3. Add admixtures; mix uniformly.

PART 3 EXECUTION

3.1 INSTALLATION

A. Install mortar and grout in accordance with ACI 530.1 Specifications for Masonry Structures.

3.2 FIELD QUALITY CONTROL

A. Section 01 40 00 - Quality Requirements: Testing and Inspection Services.
   1. Refer to Section 04 20 00 - Unit Masonry for requirements.

3.3 SCHEDULES

A. Exterior Walls:
   1. Brick Unit Veneer Wythe: Type N mortar.
   2. Concrete Masonry Unit Wall: Type S mortar.

B. Interior Walls:
   1. Interior Reinforced / Load-Bearing Masonry Partitions: Type S mortar.
   2. Interior Non Load-Bearing Masonry Partitions: Type N mortar.

END OF SECTION

SECTION 04 20 00

UNIT MASONRY

PART 1 GENERAL

1.1 SUMMARY

A. Section includes brick work and concrete masonry units; reinforcement, anchorage and accessories.

B. Related Sections:
1. Section 04 05 03 - Masonry Mortar and Grout.

1.2 REFERENCES

A. American Concrete Institute:
1. ACI 530/530.1 - Building Code Requirements for Masonry Structures and Related Commentaries.

B. American Society for Testing and Materials:
1. ASTM A82/A82M - Standard Specification for Steel Wire, Plain, for Concrete Reinforcement.
2. ASTM A153/A153M - Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
3. ASTM A240/A240M - Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications.
4. ASTM A307 - Standard Specification for Carbon Steel Bolts and Studs, 60 000 PSI Tensile Strength.
5. ASTM A580/A580M - Standard Specification for Stainless Steel Wire.
6. ASTM A615/A615M - Standard Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement.
7. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
8. ASTM A951 - Standard Specification for Masonry Joint Reinforcement.
9. ASTM B370 - Standard Specification for Copper Sheet and Strip for Building Construction.
10. ASTM B695 - Standard Specification for Coatings of Zinc Mechanically Deposited on Iron and Steel.
11. ASTM C55 - Standard Specification for Concrete Brick.
12. ASTM C56 - Standard Specification for Structural Clay Non-Load-Bearing Tile.
13. ASTM C62 - Standard Specification for Building Brick (Solid Masonry Units Made From Clay or Shale).
14. ASTM C67 - Standard Test Methods for Sampling and Testing Brick and Structural Clay Tile.
15. ASTM C73 - Standard Specification for Calcium Silicate Face Brick (Sand-Lime Brick).

16. ASTM C90 - Standard Specification for Loadbearing Concrete Masonry Units.
17. ASTM C129 - Standard Specification for Nonloadbearing Concrete Masonry Units.
18. ASTM C140 - Standard Test Methods of Sampling and Testing Concrete Masonry Units.
19. ASTM C216 - Standard Specification for Facing Brick (Solid Masonry Units Made from Clay or Shale).
20. ASTM C652 - Standard Specification for Hollow Brick (Hollow Masonry Units Made From Clay or Shale).
21. ASTM D226 - Standard Specification for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing.
22. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
23. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials.

1.3 PREINSTALLATION MEETINGS

A. Convene minimum one week prior to commencing Work of this Section.

1.4 SUBMITTALS

A. Section 01 33 00 - Submittal Procedures: Submittal requirements.

B. Product Data: Submit data for masonry units and fabricated wire reinforcement, wall ties, anchors and other accessories.

C. Samples: Submit samples of each type of masonry unit to illustrate color, texture and extremes of color range.

D. Manufacturer’s Certificate: Certify that products meet or exceed the specified requirements.

E. Source Quality-Control Submittals: Indicated results of factory tests and inspections.

F. Qualifications Statements:
1. Submit qualifications for installer.

1.5 QUALITY ASSURANCE

A. Perform Work in accordance with ACI 530 Building Code Requirements for Masonry Structures and ACI 530.1 Specification for Masonry Structures.

1.6 QUALIFICATIONS

A. Installer: Company specializing in performing Work of this section with minimum three years experience.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Section 01 60 00 - Product Requirements: Product storage and handling requirements.

B. Accept masonry units on site. Inspect for damage.

1.8 ENVIRONMENTAL REQUIREMENTS

A. Section 01 60 00 - Product Requirements.

B. Cold Weather Requirements: In accordance with ACI 530.1 when ambient temperature or temperature of masonry units is less than 40 degrees F.

C. Hot Weather Requirements: In accordance with ACI 530.1 when ambient temperature is greater than 100 degrees F or ambient temperature is greater than 90 degrees F with wind velocity greater than 8 mph.

1.9 COORDINATION

A. Section 01 31 00 - Project Management and Coordination: Coordination and project conditions.

B. Coordinate masonry work with installation of veneers, window and door anchors.

C. Coordinate masonry work with installation of structural framing supported by masonry.

PART 2 PRODUCTS

2.1 COMPONENTS

A. Face Brick: ASTM C216, Type FBS, Grade SW and as follows:
   1. Size: 3-5/8 inches wide by 3-5/8 inches high by 7-5/8 inches long (closure modular).
   2. Colors as selected by Architect to be match existing conditions.
   3. Manufacturers:
      a. Lawrenceville #3-212 wire-cut modular

B. Concrete Masonry Units (CMU): ASTM C90; 105 pcf.
   1. Concrete Masonry Unit Size and Shape:
      a. Nominal modular size of 8 x 8 x 16 inches, 6 x 8 x 16 inches, and 4 x 8 x16 inches, as indicated on drawings
      b. Provide special shapes for lintels, bond beams, corners, jambs, sash, control joints, headers, bonding, and other special conditions (applicable for brick and CMU).
      c. Provide bullnose CMU units for outside corners, unless otherwise indicated.

2.2 MASONRY JOINT REINFORCEMENTS AND ANCHORAGE ACCESSORIES

A. General: ASTM A951 and as follows:
   1. Mill galvanized, carbon-steel wire for interior walls.
   2. Hot-dip galvanized, carbon-steel wire for exterior walls.
   3. Wire Size for Side Rods: W1.7 or 0.148-inch diameter for standard weight, W2.8 or 0.188-inch diameter for heavy weight. Provide “standard” weight unless indicated otherwise.
   4. Wire Size for Cross Rods: W1.7 or 0.148-inch diameter for both standard and heavy weight.
   5. Provide in lengths of not less than 10 feet, with prefabricated corner and tee units.

B. Single Wythe Joint Reinforcement: Ladder type; steel wire, hot dip galvanized to ASTM A641/A641M Class 2 after fabrication, 3/16 inch side rods with 9 gauge cross ties.

C. Multiple Wythe Joint Reinforcement: High strength system of adjustable joint reinforcement; conform to ACI/ASCE 530; suitable for design indicated on drawings.
   1. Ladder type; with moisture drip; adjustable eye and pintle type, steel wire, hot dip galvanized to ASTM A153/A153M-B2 (1.5 oz/sf min) after fabrication.
   2. 3/16” side rods x 3/16” cross rods.
   3. 3/16” eyes and cross rods welded at 16” o.c.
   4. Pintle Wire Diameter: Nominal 1/4” heavy duty.

D. Reinforcing Steel: ASTM A615/A615M, 60 ksi yield grade, deformed billet bars, uncoated finish.

E. Strap Anchors: A36 bent steel shape, 1/8 inch size x 1 1/2" inch thick, hot dip galvanized to ASTM A153/A153M B2 finish.

F. Intersecting Wall Ties: 1/2" x 1/2" mesh, 16 gage hot dip galvanized wire mesh units; 12" or 16" length x width to suit masonry wall.

G. Anchor Bolts: Headed, J-shaped or L-shaped.

H. Dowels: Stainless steel.

2.3 MISCELLANEOUS ACCESSORIES

A. Mortar and Grout: As specified in Section 04 05 03.

B. Bond Breaker: Polyethylene bond-breaker between GFMU and clay masonry work.

C. Membrane Flashing: 50 mil composite flexible flashing consisting of 3 oz/sq ft solid sheet of annealed copper, which is laminated on one side with polyester film and bonded on the other side with a highly adhesive, rubberized asphalt with a removable silicone liner.

D. Membrane Flashing Primer: One component, solvent-base, high tack primer designed to promote maximum adhesion of membrane.

E. Membrane Flashing Mastic: Rubberized asphalt based adhesive as recommended by membrane manufacturer to seal all horizontal terminations, seams, laps, protrusions and accidental cuts or punctures.

F. Metal Drip Edge Thru-Wall Flashing: Preformed stainless steel, ASTM A666, Type 304, soft temper; 24 gauge minimum thickness; smooth finish; "#FTS Drip Plate" by Hohmann & Barnard, Inc. or approved equivalent.

G. Lap Sealant and Primer: Types recommended by flashing manufacturer.

H. Preformed Control Joints: Rubber material. Furnish with corner and tee accessories.

I. Joint Filler: Closed cell neoprene.

J. Building Paper: ASTM D226, No. 15 asphalt saturated felt.

K. Weeps: Preformed plastic tube with screen closure.

L. Cleaning Solution:
1. Non-acidic, not harmful to masonry work or adjacent materials.
2. Use detergent and masonry cleaners recommended by brick and DMU manufacturers.

M. Steel Lintels: In exterior walls; size as indicated on Drawings, hot-dip galvanized.

2.4 SOURCE QUALITY CONTROL

A. Section 014000 - Quality Requirements: Testing, inspection and analysis requirements.

B. Test brick efflorescence in accordance with ASTM C67. Brick rated greater than "slightly effloresced" is not acceptable.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify field conditions are acceptable and are ready to receive work.

B. Verify items provided by other sections of work are properly sized and located.

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

3.2 PREPARATION

A. Direct and coordinate placement of metal anchors supplied to other sections.

B. Furnish temporary bracing during installation of masonry work. Maintain in place until building structure provides permanent support.

3.3 INSTALLATION

A. Establish lines, levels, and coursing indicated. Protect from displacement.

B. Maintain masonry courses to uniform dimension. Form bed and head joints of uniform thickness.

C. Coursing of Concrete Masonry Units:
1. Bond: Running.
2. For exposed masonry do not use units with less than nominal 4-inch horizontal face dimensions at corners or jamb.
3. Mortar Joints:
a. Typical Application: Concave.

D. Coursing of Face Brick Units:
1. Bond: Running and Soldier.
2. For exposed masonry do not use units with less than nominal 4-inch horizontal face dimensions at corners or jamb.
3. Mortar Joints: Concave, unless directed otherwise after approval of mock-ups.

E. Distribution/Blending of Brick Types:
1. Blend brick selection throughout primary brick work in uniform, distribution pattern in accordance with the approved masonry sample panel.
2. Cut-out and replace brick work that has excessively deviated from the approved masonry sample panel as determined by the Architect.

F. Placing And Bonding:
1. Lay solid, full depth face brick in full bed of mortar, with full head joints.
2. Place and secure thin brick to backing system in accordance with installation instructions by approved adhering system manufacturer.
3. Lay hollow masonry units with face shell bedding on head and bed joints.
4. Buttering corners of joints or excessive furrowing of mortar joints are not permitted.
5. Remove excess mortar as work progresses.
6. Interlock intersections and external corners.
7. Do not shift or tap masonry units after mortar has achieved initial set. Where adjustment is required, remove mortar and replace.
8. Perform job site cutting of masonry units with proper tools to assure straight, clean, unchipped edges. Prevent broken masonry unit corners or edges.
9. Cut mortar joints flush where wall tile is scheduled, resilient base is scheduled, cavity insulation vapor barrier adhesive is applied, sheet waterproofing is applied or bitumen dampproofing is applied.
10. Isolate masonry from vertical structural framing members with movement joint.
11. Isolate top of masonry from horizontal structural framing members and slabs or decks with compressible joint filler.

G. Weeps: Furnish weeps in outer wythe at 24 inches on center horizontally above through-wall flashing, above shelf angles and lintels, at bottom of walls, and other locations indicated.

H. Bond Breaks:
1. General: Install a layer of No. 15 asphalt saturated felt in horizontal joints to function as a bond break between courses of masonry where indicated.

I. Joint Reinforcement - Single Wythe Masonry:
1. Install horizontal joint reinforcement 16 inches oc.
2. Place masonry joint reinforcement in first and second horizontal joints above and below openings. Extend minimum 16 inches each side of opening.
3. Place joint reinforcement continuous in first and second joint below top of walls.
4. Lap joint reinforcement ends minimum 6 inches.
5. Reinforce joint corners and intersections with strap anchors 16 inches oc.

Reinforcement And Anchorages - Multiple Wythe Unit Masonry:
6. Install horizontal joint reinforcement 16 inches oc.
7. Place masonry joint reinforcement in first and second horizontal joints above and below openings. Extend minimum 16 inches each side of opening.
8. Place joint reinforcement continuous in first and second joint below top of walls.
9. Lap joint reinforcement ends minimum 6 inches.
10. Support and secure reinforcing bars from displacement. Maintain position within 1/2 inch of dimensioned position.
11. Embed anchors attached to structural steel members. Embed anchorages in every second block joint.
12. Reinforce stack bonded unit joint corners and intersections with strap anchors 16 inches oc.

J. Anchoring Masonry to Structural Members: Anchor masonry to structural members were masonry abuts or faces structural members to comply with the following:
1. For concealed applications only, provide an open space not less than 1 inch in width between masonry and structural member, unless otherwise indicated. Keep open space free of mortar or other rigid materials.
2. Anchor masonry to structural members with flexible anchors embedded in masonry joints and attached to structure.
3. Space anchors not more than 24 inches o.c. vertically and 36 inches o.c. horizontally.

K. Masonry Flashings:
1. Apply primer to substrates per membrane manufacturer’s recommendations.
2. Cut membrane (flexible type) flashing into 8-10 foot lengths.
3. Remove release liner and apply membrane to substrate in accordance with details indicated on Drawings and membrane manufacturer’s recommendations.

4. Cover inside and outside corners with two layers of membrane and seal with mastic.
5. Extend flashings horizontally to within ¼ inch of exterior face of outer wythe at foundation walls, above ledge or shelf angles and lintels, under parapet caps, and at bottom of walls and install metal drip edge.
6. Turn flashing up minimum 8 inches and secure with termination bar, seal to concrete or seal to sheathing over steel stud framed backing as applicable.
   a. Install compatible sealant continuous along top of termination bar.
7. Lap end joints minimum 6 inches and seal watertight.
8. Turn flashing, fold, and seal at corners, bends, and interruptions.
9. Fit membrane around vertical pipes and other penetrations that occur in masonry wall cavities; form special collars and make watertight.
10. Form end dams at end of flashings.

L. Lintels:
1. Install loose steel or precast concrete lintels over openings as indicated.
2. Install reinforced unit masonry lintels over openings in non-load bearing walls where steel or precast concrete lintels are not scheduled or indicated.
3. Do not splice reinforcing bars.
4. Support and secure reinforcing bars from displacement.
5. Place and consolidate grout fill without displacing reinforcing.
6. Allow masonry lintels to attain specified strength before removing temporary supports.
7. Maintain minimum 8 inch bearing on each side of opening.

M. Grouted Components:
1. Reinforce bond beam as indicated, 1 inch from bottom web.
2. Lap splices bar diameters required by code.
3. Support and secure reinforcing bars from displacement.
4. Place and consolidate grout fill without displacing reinforcing.
5. At bearing locations, fill masonry cores with grout for minimum 12 inches both sides of opening.

N. Cutting And Fitting:
1. Cut and fit for chases, pipes, conduit, sleeves and grounds. Coordinate with other sections of work to provide correct size, shape, and location.
2. Obtain Architect/Engineer’s approval prior to cutting or fitting masonry work not indicated or where appearance or strength of masonry work may be impaired.

3.4 ERECTION TOLERANCES

A. Maximum Variation From Unit to Adjacent Unit: 1/16 inch.

B. Maximum Variation from Plane of Wall: 1/4 inch in 10 ft and 1/2 inch in 20 ft or more.

C. Maximum Variation from Plumb: 1/4 inch per story non-cumulative; 1/2 inch in two stories or more.

D. Maximum Variation from Level Coursing: 1/8 inch in 3 ft and 1/4 inch in 10 ft; 1/2 inch in 30 ft.

E. Maximum Variation of Joint Thickness: 1/8 inch in 3 ft.

F. Maximum Variation from Cross Sectional Thickness of Walls: 1/4 inch.

G. Maximum Variation for Steel Reinforcement:
1. Plus or minus 1/2 inch when distance from centerline of steel to opposite face of masonry is 8 inches or less.
2. Plus or minus 1 inch when distance is between 8 and 24 inches.
3. Plus or minus 1 1/4 inch when distance is greater than 24 inches.
4. Plus or minus 2 inches from location along face of wall.

3.5 FIELD QUALITY CONTROL

A. The Owner's independent testing/inspection agency shall inspect the masonry construction during various work stages for compliance with project Drawings and specifications, and keep records which cover the following:
1. Quality and testing of masonry units and materials for mortar, grout and making of prisms when required.
   a. Proportioning, mixing and consistency of mortar and grout. Laying, mortaring and grouting of masonry units and elements.
   b. Condition, grade, size, spacing and placement of reinforcement.
   c. Any significant or unusual construction loads on masonry structural elements.
   d. General progress of the work.
   e. When ambient temperature falls below 40 degrees F or rises above 100 degrees F, a complete record of weather conditions and of preconditioning and protection given to masonry materials, and protection and curing of completed work shall be maintained.
   f. Inspection records shall be furnished to the Building Official, Owner and Architect/Engineer during progress of the work.

B. The inspector shall not supervise the construction, however, he shall visit the project with the frequency necessary to observe the various stages of work and long enough at each visit to ascertain that it is being done in compliance with the Contract Documents and code requirements. The inspector shall be present as frequently as he deems necessary to explain and interpret requirements; to judge whether the quality of work complies with the Contract Documents; to see that masonry materials are of the correct quality and properly installed; and to see that tests for quality control are being made as specified.

C. Evaluation of Quality Control Tests: In absence of other indications of noncompliance with requirements, masonry will be considered satisfactory if construction quality control test results meet minimum requirements indicated.

3.6 CLEANING

A. Remove excess mortar and mortar smears as work progresses.

B. Replace defective mortar. Match adjacent work.

C. Clean soiled surfaces with cleaning solution.

D. Use non-metallic tools in cleaning operations.

3.7 PROTECTION OF FINISHED WORK

A. Protect exposed external corners subject to damage.

B. Protect base of walls from mud and mortar splatter.

C. Protect masonry and other items built into masonry walls from mortar droppings and staining caused by mortar.

D. Protect tops of masonry work with waterproof coverings secured in place without damaging masonry. Provide coverings where masonry is exposed to weather when work is not in progress.

END OF SECTION

SECTION 05 12 00

STRUCTURAL STEEL

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes:
   1. Structural shapes.
   2. Grout.

B. Related Requirements:
   1. Section 05 21 00 – Steel Joist Framing: Framing requirements as indicated.
   2. Section 05 31 23 – Steel Roof Deck: Support framing for small openings in roof deck.
   3. Section 05 50 00 – Metal Fabrications: Steel fabrications affecting structural steel work.

1.2 REFERENCE STANDARDS

A. American Institute of Steel Construction:
   1. AISC 303 – Code of Standard Practice for Structural Steel Buildings and Bridges.
   2. ASCI 341 – Seismic Provisions for Structural Steel Buildings.
   3. ASCI 360 – Specification for Structural Steel Buildings.

B. ASTM International:

   1. ASTM A36 - Standard Specification for Carbon Structural Steel.
   2. ASTM A53 - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.
   3. ASTM A108 - Standard Specification for Steel Bar, Carbon and Alloy, Cold-Finished.
   4. ASTM A123 - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
   5. ASTM A193 - Standard Specification for Alloy-Steel and Stainless Steel Bolting for High Temperature or High Pressure Service and Other Special Purpose Applications.
   6. ASTM A307 - Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60 000 PSI Tensile Strength.
   7. ASTM A325 - Standard Specification for Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength.
   8. ASTM A490 - Standard Specification for Structural Bolts, Alloy Steel, Heat Treated, 150 ksi Minimum Tensile Strength.

9. ASTM A500 - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes.
10. ASTM A563 - Standard Specification for Carbon and Alloy Steel Nuts.
11. ASTM A992 - Standard Specification for Structural Steel Shapes.
12. ASTM B695 - Standard Specification for Coatings of Zinc Mechanically Deposited on Iron and Steel.
13. ASTM C1107 - Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink)
14. ASTM E94 - Standard Guide for Radiographic Examination.
15. ASTM E164 - Standard Practice for Contact Ultrasonic Testing of Weldments.
16. ASTM E165 - Standard Practice for Liquid Penetrant Examination for General Industry.
17. ASTM E709 - Standard Guide for Magnetic Particle Testing.
18. ASTM F436 - Standard Specification for Hardened Steel Washers.
19. ASTM F959 - Standard Specification for Compressible-Washer-Type Direct Tension Indicators for Use with Structural Fasteners.
20. ASTM F1554 - Standard Specification for Anchor Bolts, Steel, 36, 55, and 105-ksi Yield Strength.
21. ASTM F1852 - Standard Specification for "Twist Off" Type Tension Control Structural Bolt/Nut/Washer Assemblies, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength.
22. ASTM F2329 - Standard Specification for Zinc Coating, Hot-Dip, Requirements for Application to Carbon and Alloy Steel Bolts, Screws, Washers, Nuts, and Special Threaded Fasteners.

C. American Welding Society:
1. AWS A2.4 - Standard Symbols for Welding, Brazing, and Nondestructive Examination.
2. AWS D1.1 - Structural Welding Code - Steel.

D. Research Council on Structural Connections:
1. RCSC - Specification for Structural Joints Using ASTM A325 or A490 Bolts.

E. SSPC: The Society for Protective Coatings:
1. SSPC - Steel Structures Painting Manual.
2. SSPC Paint 15 - Steel Joist Shop Primer/Metal Building Primer.
3. SSPC SP 3 - Power Tool Cleaning.
4. SSPC SP 6 - Commercial Blast Cleaning.

1.3 COORDINATION

A. Section 01 30 00 – Administrative Requirements: Requirements for coordination.

B. Coordinate Work of this Section with the following:
1. Section 05 50 00 – Metal Fabrications for miscellaneous steel supports other than structural steel.

1.4 SUBMITTALS

A. Section 01 13 30 – Submittal Procedures: Requirements for submittals.

B. Shop Drawings:
1. Indicate profiles, sizes, spacing, locations of structural members, openings, attachments and bolts.
2. Connections and connections not detailed.
3. Indicated welded connections with AWS A2.4 welding symbols. Indicate new weld lengths.

C. Manufacturer's Mill Certificate: Certify that all products meet or exceed requirements of the Contract Documents.

D. Welders' Certificates: Certify welders employed on the Work, verifying AWS qualification within previous 12 months.

1.5 QUALIFICATIONS

A. Fabricator Qualifications: A qualified fabricator who participates in the AISC Quality Certification Program and is designated an AISC-Certified Plant, Category Sbd or the fabricator shall employ an approved independent inspection or quality control agency to conduct periodic, in-plant inspections at the fabricator's plant, at a frequency that will assure the fabricator's conformance to the requirements of the inspection agency's approved quality control program as required by the VUSBC (Virginia Uniform Statewide Building Code) 2006 Edition, effective May 1, 2008.

1.6 QUALITY ASSURANCE

A. Perform Work according to the following:
1. Structural Steel: AISC 360.

1.7 QUALIFICATIONS

A. Fabricator:
1. Company specializing in fabricating products specified in this Section with the following current AISC Certifications:
a. Standard Steel Building Structures (STD).
b. Conventional Steel Building Structures (SBD).

B. Erector:
1. Company specializing in performing Work of this Section with current AISC Certification: Category CSE.

C. Welders and Welding Procedures: AWS D1.1 qualified within previous 12 months.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Store materials to permit easy access for inspection and identification. Keep steel members off ground and spaced by using pallets or other supports and spacers. Protect steel members and packaged materials from erosion and deterioration.
   1. Store fasteners in a protected place. Clean and re-lubricate bolts and nuts that become dry or rusty before use.
   2. Do not store materials on structure in a manner that might cause distortion, damage, or overload to members or supporting structures. Repair or replace damaged materials or structures as directed.

1.9 COORDINATION

A. Furnish anchorage items to be embedded in or attached to other construction without delaying the Work. Provide setting diagrams, sheet metal templates, instructions, and directions for installation.

PART 2 - PRODUCTS

2.1 STRUCTURAL STEEL MATERIALS

A. Wide Flange Shapes: ASTM A992 / Fy=50KSI

B. Channels, Angles and Misc. Shapes: ASTM A36 / Fy=36KSI

C. Miscellaneous Plates and Bars: ASTM A36 / Fy=36KSI

D. Welding Electrodes: Comply with AWS requirements.

2.2 BOLTS, CONNECTORS AND ANCHORS

A. Anchor Bolts: ASTM A307.

B. High-Strength Bolts, Nuts, and Washers: ASTM A325-N.

C. Shear Connectors: As indicated on the Drawings.

D. Headed Anchor Rods: ASTM A307, Grade A, straight.
   1. Nuts: ASTM A 563 heavy hex carbon steel.
   2. Plate Washers: ASTM A36 carbon steel.
   3. Washers: ASTM F436 hardened carbon steel.
   4. Finish: Plain.

2.3 PRIMER

A. Primer: Provide Fabricator's standard lead- and chromate-free, nonasphaltic, rust-inhibiting primer.
   1. Interior Anti-Corrosive Paints: Maximum volatile organic compound content in accordance with Green Seal “GC-03 - Anti-Corrosive Paints”.

2.4 GROUT

A. Nonmetallic, Shrinkage-Resistant Grout: ASTM C 1107, factory-packaged, nonmetallic aggregate grout, noncorrosive, nonstaining, mixed with water to consistency suitable for application and a 30-minute working time.

2.5 SHOP CONNECTIONS

A. Weld Connections: Comply with AWS D1.1 for welding procedure specifications, tolerances, appearance, and quality of welds and for methods used in correcting welding work.

2.6 SHOP PRIMING

A. Shop prime steel surfaces except the following:

   1. Surfaces embedded in concrete or mortar. Extend priming of partially embedded members to a depth of 1 inches.
   2. Surfaces to be field welded.
   3. Surfaces to be high-strength bolted with slip-critical connections.
   4. Surfaces to receive sprayed fire-resistive materials.
   5. Galvanized surfaces.

B. Surface Preparation: Clean surfaces to be painted. Remove loose rust and mill scale and spatter, slag, or flux deposits. Prepare surfaces according to the following specifications and standards:

   1. SSPC-SP 2, "Hand Tool Cleaning, unless specified otherwise."

C. Priming: Immediately after surface preparation, apply primer according to manufacturer's written instructions and at rate recommended by SSPC to provide a dry film thickness of not less than 1.5 mils (3.0 mils at architecturally exposed structural steel). Use priming methods that result in full coverage of joints, corners, edges, and exposed surfaces.
   1. Apply two coats of shop paint to inaccessible surfaces after assembly or erection. Change color of second coat to distinguish it from first.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Section 01 70 00 – Execution and Closeout Requirements: Requirements for installation preparation.

B. Verify elevations of masonry-bearing surfaces and locations of anchor rods, bearing plates, and other embedments, with steel erector present, for compliance with requirements.

3.2 PREPARATION

A. Section 01 70 00 – Execution and Closeout Requirements: Requirements for installation preparation.

B. Provide temporary shores, guys, braces, and other supports during erection to keep structural steel secure, plumb, and in alignment against temporary construction loads and loads equal in intensity to design loads. Remove temporary supports when permanent structural steel, connections, and bracing are in place, unless otherwise indicated.

3.3 ERECTION

A. Allow for erection loads and for sufficient temporary bracing to maintain structure safe, plumb, and in alignment until completion of erection and installation of permanent bracing.

B. Field-weld components as indicated on Shop Drawings.

C. Field-connect members with threaded fasteners; snug tighten, unless otherwise noted.

D. Do not field-cut or alter structural members without approval of Architect/Engineer.

E. After erection, touch up welds and abrasions to match shop finishes.

3.4 GROUT INSTALLATION

A. Shim bearing plates and equipment supports to proper elevation, and snug-tighten anchor bolts.

B. Fill void under bearing surface with grout; install and pack grout to remove air pockets.

C. Moist-cure grout.

D. Remove forms after grout is set; trim grout edges to form smooth surface, splayed 45 degrees.

E. Tighten anchor bolts after grout has cured for a minimum of three days.

3.5 TOLERANCES

A. Section 01 40 00 – Quality Requirements: Requirements for tolerances.

B. Maximum Variation from Plumb: Per AISC Code of Steel Practice

C. Maximum Offset from Alignment: Per AISC Code of Steel Practice.

3.6 FIELD QUALITY CONTROL

A. Section 01 40 00 – Quality Requirements: Requirements for inspecting and testing.

B. Bolted Connections: Inspect according to AISC 303.
   1. Visually inspect all bolted connections.

C. Welding: Inspect welds according to AWS D1.1.
   1. Use certified welders, and conduct inspections and tests and required. Record types and locations of defects found in Work. Record work required and performed to correct deficiencies.
   2. Visually inspect all welds.

D. Correct defective bolted connections and welds.

END OF SECTION

SECTION 06 10 53

MISCELLANEOUS ROUGH CARPENTRY

PART 1 GENERAL

1.1 SUMMARY

A. Section includes, but is not limited to, the following:
   1. Blocking in wall openings.
   2. Concealed wood blocking for support of toilet and bath accessories, wall cabinets, wood trim and similar items.

1.2 REFERENCES

A. American Wood Protection Association:
   1. AWPA revised U1 - Use Category System: User Specification for Treated Wood.

B. ASTM International:
   1. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
   2. ASTM B695 - Standard Specification for Coatings of Zinc Mechanically Deposited on Iron and Steel
   3. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
   4. ASTM F1667 - Standard Specification for Driven Fasteners: Nails, Spikes, and Staples.

C. Forest Stewardship Council:
   1. FSC Guidelines - Forest Stewardship Council Guidelines.

D. Southern Pine Inspection Bureau:
   1. SPIB - Standard Grading Rules for Southern Pine Lumber.

E. U.S. Department of Commerce National Institute of Standards and Technology:
   1. DOC PS 20 - American Softwood Lumber Standard.

1.3 SUBMITTALS

A. Section 01 33 00 - Submittal Procedures: Submittal procedures.

B. Product Data: Submit technical data on wood preservative and fire retardant treatment materials and application instructions.

1.4 QUALITY ASSURANCE

A. Perform Work in accordance with the following:
   1. Lumber Grading Agency: Certified by DOC PS 20.

B. Surface Burning Characteristics:
   1. Fire Retardant Treated Materials: Maximum 25/450 flame spread/smoke developed index when tested in accordance with ASTM E84.

C. Apply label from agency approved by authority having jurisdiction to identify each fire retardant treated material.

PART 2 PRODUCTS

2.1 MATERIALS

A. Lumber Grading Rules: SPIB.

B. Miscellaneous Framing: Southern yellow pine, No. 2 grade or better; 19 percent maximum moisture content after treatment.

C. Plywood: APA rated sheathing; 5/8 inch thickness unless otherwise indicated; square edges; sanded facing.

2.2 ACCESSORIES

A. Fasteners and Anchors:
   1. Fasteners: Hot dipped galvanized steel for high humidity and treated wood locations, unfinished steel elsewhere.
   2. Anchors: Toggle bolt type for anchorage to hollow masonry. Expansion shield and lag bolt type for anchorage to solid masonry or concrete. Bolt or ballistic fastener for anchorages to steel.

2.3 FACTORY WOOD TREATMENT

A. Fire Retardant Treatment: Chemically treated and pressure impregnated, having flame spread of 25 or less when tested in accordance with ASTM E 84 and showing no evidence of significant progressive combustion when test is continued for an additional 20 minute period; Interior Type UCFA and Exterior Type UCFB, as applicable.

B. Moisture Content After Treatment: Kiln dried (KDAT).
   1. Lumber: Maximum 19 percent.
   2. Structural Panels: Maximum 15 percent.

PART 3 EXECUTION

3.1 EXAMINATION

A. Section 01 31 00 - Project Management and Coordination: Verification of existing conditions before starting work.

B. Verify substrate conditions are ready to receive blocking and framing.

3.2 PREPARATION

A. Coordinate placement of blocking and framing items.

B. Coordinate requirements and locations of concealed wood blocking for support of toilet and bath accessories, wall cabinets and similar items.

3.3 INSTALLATION

A. Set members level and plumb, in correct position.

B. Place horizontal members, crown side up.

C. Space framing and furring 16 inches oc.

3.4 SCHEDULES

A. Interior wood blocking, framing and plywood: Fire retardant treated.

END OF SECTION

SECTION 06 41 00

ARCHITECTURAL WOODWORK

PART 1 GENERAL

1.1 SUMMARY

A. Section includes:
   1. Window Sill
      a. Solid Surface tops.
   2. Custom casework.
      a. Opaque-finished casework.
   3. Counter tops.
      a. Solid surface finished counter tops.
   4. Cabinet hardware.
   5. Preparation for installing utilities in cabinets.

B. Related Sections:
   1. Section 06 10 53 - Miscellaneous Rough Carpentry: Grounds and support framing.
   2. Section 09 90 00 - Painting and Coating: Shop finishing of finish carpentry.

1.2 REFERENCES

A. American National Standards Institute:
   1. ANSI A135.4 - Basic Hardboard.
   2. ANSI A156.9 - Cabinet Hardware.
   3. ANSI A208.1 - Mat-Formed Wood Particleboard.

B. APA-The Engineered Wood Association:
   1. APA/EWA PS 1 - Voluntary Product Standard for Construction and Industrial Plywood.

C. Architectural Woodwork Institute, Woodwork Institute, and Architectural Woodwork Manufacturers Association of Canada:
   1. AWS - Architectural Woodwork Standards.

D. ASTM International:
   1. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
   2. ASTM B695 - Standard Specification for Coatings of Zinc Mechanically Deposited on Iron and Steel
   3. ASTM D1037 - Standard Test Methods for Evaluating Properties of Wood Base Fiber and Particle Panel Materials.
   4. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
   5. ASTM F1667 - Standard Specification for Driven Fasteners: Nails, Spikes, and Staples.

E. Forest Stewardship Council:
   1. FSC Guidelines - Forest Stewardship Council Guidelines.

F. Green Seal:
   1. GS-11 - Product Specific Environmental Requirements.
   2. GS-36 - Aerosol Adhesives.

G. Hardwood Plywood and Veneer Association:
   1. HPVA HP-1 - American National Standard for Hardwood and Decorative Plywood.

H. National Electrical Manufacturers Association:
   1. NEMA LD 3 - High Pressure Decorative Laminates.

I. South Coast Air Quality Management District:
   1. SCAQMD Rule 1168 - Adhesive and Sealant Applications.

J. U.S. Department of Commerce National Institute of Standards and Technology:
   1. DOC PS 20 - American Softwood Lumber Standard.

1.3 COORDINATION

A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.

B. Coordinate work with plumbing rough-in, electrical rough-in and installation of associated and adjacent components.

C. Coordinate locations and requirements for blocking and backing for support and attachment of work of this section.

1.4 SUBMITTALS

A. Section 01 33 00 - Submittal Procedures: Submittal procedures.

B. Product Data: Submit data on:
   1. Fire-retardant treatment materials and application instructions
   2. Solid surface materials
   3. Hardware accessories.

C. Shop Drawings: Indicate materials, component profiles and elevations, assembly methods, joint details, fastening methods, accessory listings, hardware location and schedule of finishes.

D. Samples:
   1. Submit two, 8 x 10 inch size samples, illustrating cabinet finishes.
   2. Submit two, 8 x 10 inch size samples, illustrating solid surface finishes.
   3. Submit two samples of hinges and exposed hardware illustrating hardware finishes.

E. Certification: Submit copy of fabricator's AWI Quality Certification Program license and Project specific letters.

1.5 QUALITY ASSURANCE

A. Perform work in accordance with AWS Section 6, Section 10, and Section 11; custom grade.

B. Surface Burning Characteristics: Maximum 75/450 flame spread/smoke developed index when tested in accordance with ASTM E84.

C. Sustainable Design Requirements:
1. Recycled Content Materials: Furnish materials with recycled content.
2. Regional Materials: Furnish materials extracted, processed, and manufactured within 500 miles of Project site.
3. Certified Wood Materials: Furnish wood materials certified in accordance with FSC Guidelines.

1.6 QUALIFICATIONS

A. Fabricator: Licensed by AWI Quality Certification Program with a minimum of three years documented experience.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Section 01 60 00 - Product Requirements: Product storage and handling requirements.

B. Protect units from moisture damage.

1.8 AMBIENT CONDITIONS

A. Section 01 50 00 - Temporary Facilities and Controls: Requirements for ambient conditions control facilities for product storage and installation.

B. Maintain storage space relative humidity within ranges indicated in AWS Section 2.

C. Subsequent Conditions: Maintain same temperature and humidity conditions in building spaces as will occur after occupancy during and after installation of Work of this Section.

1.9 FIELD MEASUREMENTS

A. Verify field measurements prior to fabrication. Indicate field measurements on shop drawings.

PART 2 PRODUCTS

2.1 CUSTOM CASEWORK

A. Opaque-Finished Custom Casework:
1. Frameless construction.
2. Style: Flush overlay.
3. AWS Section 10.
4. Custom grade.
5. Exterior and Interior Exposed Surfaces: Hardwood lumber and medium density overlay.
6. Semi-Exposed Surfaces: Hardwood lumber and medium density overlay.

B. Casework Construction Details:
1. Drawer Side Joinery: Multiple dovetailed.
2. Drawer and Door Edge Profile: Square with thick, applied band.
3. Toe Base Finish: to match cabinet finish, unless otherwise noted.
4. Grain Direction: Horizontal.

C. Solid Surface Finished Counter Tops: AWS Section 11; custom grade.
1. Edge: Square with eased corners.
2. Splash Top Profile: Square with eased corners.
3. Deck at Splash Joint Type: Horizontal butt.
4. Splash Assembly: Field assembled.

2.2 SILL TOPS

A. Synthetic Surfacing: Synthetic marble of polyester resins, with integral color and design, stain resistant to domestic chemicals and cleaners; maximum flame spread / smoke developed rating of 25 / 50 in accordance with ASTM E84.
1. Edge: Square with eased corners.

2.3 MATERIALS

A. Hardwood Lumber : AWI Grade I; maximum moisture content of 5-10 percent

B. Hardwood Plywood: HPVA HP-1; with particleboard core; type of glue recommended for application

C. Particleboard: ANSI A208.1 Grade M2 or better; composed of wood chips or sawdust, medium density, made with water resistant adhesive; sanded faces.

D. Solid Surfacing: Synthetic material consisting of marble and acrylic resins, with integral color and design, stain resistant to domestic chemicals and cleaners; colors as selected.
1. Price Group: Highest.

2.4 ACCESSORIES

A. Fasteners and Anchors:

1. Fasteners: Hot dipped galvanized steel for high humidity and treated wood locations, unfinished steel elsewhere.
2. Nails and Staples: ASTM F1667.

B. Bolts, Nuts, Washers, Lags, Pins, and Screws: Of size and type to suit application.

C. Concealed Joint Fasteners: Threaded steel.

D. Grommets: Plastic material for cut-outs.

E. Shelf Standards and Rests: Formed steel channels and rests, cut for fitted rests spaced at 1 inch centers; satin chrome finish.

F. Shelf Brackets: Formed steel brackets, formed for attachment with lugs; satin chrome finish.

G. Drawer and Door Pulls: "Bar-style" shaped pull, satin chrome finish, 4 inch centers.

H. Cabinet Locks: Keyed cylinder, two keys for each lock, master keyed, satin chrome finish.

I. Drawer Slides: Undermount with soft closing feature. Galvanized steel construction, ball bearings separating tracks, full extension type.

J. Hinges: Concealed 6-way adjustable hinges with soft close feature, satin chrome finish.

K. Bolt-Down Fixed Column: 3 inch diameter leg with modular mounting components, 40 3/4" height, 304 grade brushed stainless steel finish.

2.5 FABRICATION

A. Fabricate interior finish carpentry to AWS Section 6 Custom Grade.

B. Fabricate casework in accordance with AWS Section 10 Custom Grade.

C. Fabricate counter tops in accordance with AWS Section 11 Custom Grade.

D. Shop assemble casework for delivery to site in units easily handled and to permit passage through building openings.

E. Fit exposed plywood edges with matching veneer edging. Use one piece for full length only.

F. Door and Drawer Fronts: 3/4 inch thick; flush overlay on face frame style.

G. When necessary to cut and fit on site, fabricate materials with ample allowance for cutting. Furnish trim for scribing and site cutting.

H. Apply laminate backing sheet to reverse side of plastic and wood laminate finished surfaces.

I. Fabricate cabinets and counter tops with cutouts for plumbing fixtures, inserts, appliances, outlet boxes, fixtures and fittings. Verify locations of cutouts from on-site dimensions. Prime paint cut edges.

2.6 SHOP FINISHING

A. Sand work smooth and set exposed nails and screws.

B. Apply wood filler in exposed nail and screw indentations.

C. On items to receive transparent finishes, use wood filler matching surrounding surfaces and of types recommended for applied finishes.

D. Seal surfaces in contact with cementitious materials.

E. Finish in accordance with Section 09 90 00.

PART 3 EXECUTION

3.1 EXAMINATION

A. Section 01 70 00 - Execution Requirements: Requirements for installation examination.

B. Verify adequacy of backing and support framing.

C. Verify location and sizes of utility rough-in associated with work of this section.

3.2 PREPARATION

A. Section 01 70 00 - Execution Requirements: Requirements for installation preparation.

B. Prime paint surfaces of woodwork items and assemblies to be in contact with cementitious materials.

3.3 INSTALLATION

A. Install interior finish carpentry according to AWS Section 6 Custom Grade.

B. Install casework according to AWI AWS Section 10 Custom Grade.

C. Install casework according to AWI AWS Section 11 Custom Grade.

D. Set and secure casework in place; rigid, plumb, and level.

E. Use fixture attachments in concealed locations for wall mounted components.

F. Use concealed joint fasteners to align and secure adjoining cabinet units and counter tops.

G. Carefully scribe casework abutting other components, with maximum gaps of 1/32 inch. Do not use additional overlay trim for this purpose.

H. Secure cabinet and counter bases to floor using appropriate angles and anchorages.

I. Countersink anchorage devices at exposed locations. Conceal with solid wood plugs of species to match surrounding wood; finish flush with surrounding surfaces.

3.4 TOLERANCES

A. Section 01 40 00 - Quality Requirements: Requirements for tolerances.

B. Conform to AWS Sections 6 and 10 requirements for the following:
1. Smoothness.
2. Gaps.
3. Flushness.
4. Flatness.
5. Alignment

3.5 ADJUSTING

A. Section 01 70 00 - Execution Requirements: Requirements for starting and adjusting.

B. Adjust moving or operating parts to function smoothly and correctly.

3.6 CLEANING

A. Section 01 70 00 - Execution Requirements: Requirements for cleaning.

B. Clean casework, counters, shelves, hardware, fittings, and fixtures.

END OF SECTION

SECTION 07 90 00

JOINT PROTECTION

PART 1 GENERAL

1.1 SUMMARY

A. Section includes sealants and joint backing, precompressed foam sealers, hollow gaskets, and accessories.

B. Related Sections:
1. Section 08 80 00 - Glazing: Glazing sealants and accessories.

1.2 REFERENCES

A. ASTM C834 - Latex Sealing Compounds.

B. ASTM C919 - Practice for Use of Sealants in Acoustical Applications.

C. ASTM C920 - Elastomeric Joint Sealants.

D. ASTM C1193 - Guide for Use of Joint Sealants.

E. ASTM D1056 - Flexible Cellular Materials - Sponge or Expanded Rubber.

F. ASTM D1565 - Flexible Cellular Materials--Vinyl Chloride Polymers and Copolymers (Open-Cell Foam).

G. ASTM D1667 - Flexible Cellular Materials--Vinyl Chloride Polymers and Copolymers (Closed-Cell Foam).

H. ASTM D2628 - Preformed Polychloroprene Elastomeric Joint Seals for Concrete Pavements.

I. South Coast Air Quality Management District:
1. SCAQMD Rule 1168 - Adhesive and Sealant Applications.

1.3 SUBMITTALS

A. Section 01 33 00 - Submittal Procedures: Submittal procedures.

B. Products Data: Submit data indicating sealant chemical characteristics, performance criteria, substrate preparation, limitations, and color availability.

C. Samples: Submit two actual samples, illustrating sealant colors for selection.

D. Manufacturer's Installation Instructions: Submit special procedures, surface preparation, and perimeter conditions requiring special attention.

E. Warranty: Include coverage for installed sealants and accessories failing to achieve airtight seal, watertight seal, exhibit loss of adhesion or cohesion, and sealants which do not cure.

1.4 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing products specified in this section with documented experience.

B. Applicator: Company specializing in performing Work of this section with documented experience, and approved by manufacturer.

1.5 ENVIRONMENTAL REQUIREMENTS

A. Section 01 60 00 - Products Requirements.

B. Maintain temperature and humidity recommended by sealant manufacturer during and after installation.

1.6 COORDINATION

A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.

B. Coordinate Work with sections referencing this section.

PART 2 PRODUCTS

2.1 JOINT SEALERS

A. Manufacturers:
1. Dow Corning Corporation.
2. EMSEAL Joint Systems.
3. GE Silicones.
4. Pecora Corporation.
5. Sika Corporation.

B. Products Description:
1. Sealant Type S-1: High Performance General Purpose Exterior (Nontraffic) Sealant: Polyurethane; ASTM C920, Grade NS, Class 25, Uses M, G, and A; multi-component.
   a. Color: Colors as selected.
   b. Applications: Use for:
      1) Control, expansion, and soft joints in masonry.
      2) Joints between concrete and other materials.
      3) Joints between metal frames and other materials.
      4) Sealing lap joints in metal flashings.
      5) Other exterior nontraffic joints for which no other sealant is indicated.

2. Sealant Type S-2: General Purpose Traffic Bearing Sealant: Polyurethane; ASTM C920, Grade P, Class 25, Use T; multi- component.
   a. Color: Colors as selected.
   b. Applications: Use for exterior and interior pedestrian and vehicular traffic bearing joints.
   c. Interior Sealants and Sealant Primers: Maximum volatile organic compound content in accordance with SCAQMD Rule 1168.
3. Sealant Type S-3: General Purpose Interior Sealant: Acrylic emulsion latex; ASTM C834, single component, paintable.
   a. Color: Colors as selected.
   b. Applications: Use for interior wall and ceiling control joints, joints between door and window frames and wall surfaces, and other interior joints for which no other type of sealant is indicated.
   c. Interior Sealants and Sealant Primers: Maximum volatile organic compound content in accordance with SCAQMD Rule 1168.
4. Sealant Type S-4: Plumbing Fixture/Tile Sealant: White silicone; ASTM C920, Uses M and A; single component, mildew resistant.
   a. Applications: Use for joints between plumbing fixtures and floor and wall surfaces, and joints between toilet room counter tops and wall surfaces.
   b. Interior Sealants and Sealant Primers: Maximum volatile organic compound content in accordance with SCAQMD Rule 1168.
5. Sealant Type S-5: Acoustical Sealant: Butyl or acrylic sealant; ASTM C920, Grade NS, Class 12-1/2, Uses M and A; single component, solvent release curing, non-skinning.
   a. Applications: Use for concealed locations only at acoustically rated construction.
      1) Provide sealant bead between top stud runner and structure and between bottom stud track and floor.
   b. Interior Sealants and Sealant Primers: Maximum volatile organic compound content in accordance with SCAQMD Rule 1168.
6. Sealant Type S-6: Butyl Sealant: ASTM C920, Grade NS, Class 12-1/2, Use NT; single component, solvent release, non-skinning, non-sagging.
   a. Color: Color as selected.
   b. Applications: Use for concealed sealant beads in sheet metal work and under exterior door thresholds.
   c. Interior Sealants and Sealant Primers: Maximum volatile organic compound content in accordance with SCAQMD Rule 1168.

2.2 ACCESSORIES

A. Primer: Non-staining type, recommended by sealant manufacturer to suit application.

B. Joint Cleaner: Non-corrosive and non-staining type, recommended by sealant manufacturer; compatible with joint forming materials.

C. Joint Backing: Round foam rod compatible with sealant; ASTM D1056, sponge or expanded rubber oversized 30 to 50 percent larger than joint width.

D. Bond Breaker: Pressure sensitive tape recommended by sealant manufacturer to suit application.

PART 3 EXECUTION

3.1 EXAMINATION

A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.

B. Verify substrate surfaces and joint openings are ready to receive work.

C. Verify joint backing and release tapes are compatible with sealant.

3.2 PREPARATION

A. Remove loose materials and foreign matter impairing adhesion of sealant.

B. Clean and prime joints.

C. Perform preparation in accordance with ASTM C1193.

D. Protect elements surrounding Work of this section from damage or disfiguration.

3.3 INSTALLATION

A. Perform installation in accordance with ASTM C1193.

B. Perform acoustical sealant application work in accordance with ASTM C919.

C. Measure joint dimensions and size joint backers to achieve width-to-depth ratio, neck dimension, and surface bond area as recommended by manufacturer, except where specific dimensions are indicated.

D. Install bond breaker where joint backing is not used.

E. Install sealant free of air pockets, foreign embedded matter, ridges, and sags.

F. Apply sealant within recommended application temperature ranges. Consult manufacturer when sealant cannot be applied within these temperature ranges.

G. Tool joints concave.

H. Compression Gaskets: Avoid joints except at ends, corners, and intersections; seal joints with adhesive; install with face 1/8 to 1/4 inch below adjoining surface.

3.4 CLEANING

A. Section 01 70 00 - Execution Requirements: Final cleaning.

B. Clean adjacent soiled surfaces.

3.5 PROTECTION OF INSTALLED CONSTRUCTION

A. Section 01 70 00 - Execution Requirements: Protecting installed construction.

B. Protect sealants until cured.

END OF SECTION

SECTION 08 12 14

STANDARD STEEL FRAMES

PART 1 GENERAL

1.1 SUMMARY

A. Section includes non-rated steel frames.

B. Related Sections:
1. Section 04 20 00 - Unit Masonry Assemblies: Masonry grout fill of metal frames and placement of anchors into masonry wall construction.
2. Section 08 80 00 - Glazing.

1.2 REFERENCES

A. American National Standards Institute:
1. ANSI A250.8 - Recommended Specifications for Standard Steel Doors and Frames.

B. American Society for Testing and Materials:
1. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

C. National Fire Protection Association:
1. NFPA 80 - Standard for Fire Doors, Fire Windows.
2. NFPA 252 - Standard Methods of Fire Tests of Door Assemblies.

D. Underwriters Laboratories Inc.:
1. UL 10B - Fire Tests of Door Assemblies.
2. UL 10C - Positive Pressure Fire Tests of Door Assemblies.
3. UL 1784 - Air Leakage Tests of Door Assemblies.

1.3 SUBMITTALS

A. Section 01 33 00 - Submittal Procedures: Submittal procedures.

B. Shop Drawings: Indicate frame elevations, reinforcement, anchor types and spacing, location of cut-outs for hardware, and finish.

C. Product Data: Submit frame configuration and finishes.

D. Manufacturer's Installation Instructions: Submit special installation instructions.

E. Manufacturer's Certificate: Certify products meet or exceed specified requirements.

1.4 QUALITY ASSURANCE

A. Conform to requirements of ANSI A250.8.

B. Fire Rated Frame Construction: Conform to NFPA 252.

C. Installed Fire Rated Frame Assembly: Conform to NFPA 80 for fire rated class same as fire door.

D. Attach label from agency approved by authority having jurisdiction to identify each fire rated door frame.

1.5 QUALIFICATIONS

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

1.6 DELIVERY, STORAGE, AND HANDLING

A. Section 01 60 00 - Product Requirements: Product storage and handling requirements.

B. Accept frames on site in manufacturer's packaging. Inspect for damage.

C. Break seal on-site to permit ventilation.

1.7 COORDINATION

A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.

B. Coordinate Work with frame opening construction, door, metal louver and hardware installation.

PART 2 PRODUCTS

2.1 STANDARD STEEL FRAMES

A. Manufacturers:
1. Amweld Building Products, Inc.
2. Ceco Door Products.
3. Republic Builders Products.
4. Steelcraft.

B. Product Description: Standard shop fabricated steel frames, fire rated and non-rated types.
1. Interior Frames:
a. Level 2 for Door Model 1, nominal 16 gage/0.053 inch thick material, base metal thickness.

2.2 ACCESSORIES

A. Removable Stops: Rolled steel channel shape, butted corners; prepared for countersink style screws.

B. Primer: ANSI A250.10 rust inhibitive type.

2.3 FABRICATION

A. Fabricate frames as welded unit.

B. Transom Bars for Glazed Lights or Louvers: Fixed type, of same profiles as jamb and head, unless indicated otherwise on drawings.

C. Fabricate frames with hardware reinforcement plates welded in place. Provide mortar guard boxes.

D. Reinforce frames wider than 48 inches with roll formed steel channels fitted tightly into frame head, flush with top.

E. Fabricate frames to suit masonry wall coursing and as indicated on Drawings.

2.4 SHOP FINISHING

A. Steel Sheet: Galvanized to ASTM A653/A653M A60.

B. Primer: Baked.

C. Frames in Masonry: Coat inside of frame profile with bituminous coating to minimum thickness of 1/16 inch.

PART 3 EXECUTION

3.1 EXAMINATION

A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.

B. Verify opening sizes and tolerances are acceptable.

3.2 INSTALLATION

A. Install frames in accordance with ANSI A250.8.

B. Coordinate with masonry, gypsum board and other wall constructions for anchor placement.

C. Coordinate installation of glass and glazing specified in Section 08 80 00.

D. Install roll formed steel reinforcement channels between two abutting frames. Anchor to structure and floor.

3.3 ERECTION TOLERANCES

A. Section 01 40 00 - Quality Requirements: Tolerances.

B. Maximum Diagonal Distortion: 1/8 inch measured with straight edges, crossed corner to corner.

3.4 SCHEDULE

A. Interior Frames: Primed finish.

END OF SECTION

SECTION 08 41 13

ALUMINUM-FRAMED ENTRANCES AND STOREFRONTS

PART 1 GENERAL

1.1 SUMMARY

A. Section includes aluminum-framed storefront and window framing systems including aluminum frames and related hardware.

B. Related Sections:
1. Section 07 27 26 - Weather Barriers: Perimeter vapor seal between storefront system and adjacent construction.
2. Section 07 90 00 - Joint Protection: Standard for perimeter sealants.
3. Section 08 80 00 - Glazing.

1.2 REFERENCES

A. Aluminum Association:
1. AA ADM 1 - Aluminum Design Manual.

B. American Architectural Manufacturers Association:
1. AAMA/WDMA 101/I.S.2 - Specification for Windows, Doors and Unit Skylights.
2. AAMA 502 - Voluntary Specification for Field Testing of Windows and Sliding Glass Doors.
3. AAMA 503 - Voluntary Specification for Field Testing of Metal Storefronts. Curtain Wall and Sloped Glazing Systems.
4. AAMA 611 - Voluntary Specification for Anodized Architectural Aluminum.
5. AAMA 1503 - Voluntary Test Method for Thermal Transmittance and Condensation Resistance of Windows, Doors and Glazed Wall Sections.
6. AAMA 2603 - Voluntary Specification, Performance Requirements and Test Procedures for Pigmented Organic Coatings on Aluminum Extrusions and Panels.
7. AAMA 2604 - Voluntary specification, Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels.
8. AAMA 2605 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels.
9. AAMA CW-10 - Care and Handling of Architectural Aluminum from Shop to Site.
10. AAMA MCWM-1 - Metal Curtain Wall Manual.
11. AAMA SFM-1 - Aluminum Store Front and Entrance Manual.

C. American Society of Civil Engineers:
1. ASCE 7 - Minimum Design Loads for Buildings and Other Structures.

D. American Society for Testing and Materials:

1. ASTM A36/A36M - Standard Specification for Carbon Structural Steel.
2. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
3. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
4. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
5. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
6. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
7. ASTM E330 - Standard Test Method for Structural Performance of Exterior Windows, Curtain Walls, and Doors By Uniform Static Air ASTM E331 - Standard Test Method for Water Penetration of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference.
8. ASTM E547 - Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Cyclic Static Air Pressure Differential.
9. ASTM E1105 - Standard Test Method for Field Determination of Water Penetration of Installed Exterior Windows, Curtain Walls, and Doors by Uniform or Cyclic Static Air Pressure Difference.
10. ASTM E1886 - Standard Test Method for Performance of Exterior Windows, Curtain Walls, Doors, and Impact Protective Systems Impacted by Missile(s) and Exposed to Cyclic Pressure Differentials.
11. ASTM E1996 - Standard Specification for Performance of Exterior Windows, Curtain Walls, Doors and Impact Protective Systems Impacted by Windborne Debris in Hurricanes.
12. Pressure Difference.

E. Green Seal:
   1. GC-03 - Anti-Corrosive Paints.

F. National Fenestration Rating Council Incorporated:
   1. NFRC 100 - Procedures for Determining Fenestration Product U-Factors.

G. SSPC: The Society for Protective Coatings:
   1. SSPC Paint 20 - Zinc-Rich Primers (Type I - Inorganic and Type II - Organic).
   2. SSPC Paint 25 - Red Iron Oxide, Zinc Oxide, Raw Linseed Oil, and Alkyd Primer.

1.3 PERFORMANCE REQUIREMENTS

A. System Design: Design and size components to withstand dead and live loads caused by positive and negative wind pressure acting normal to plane of wall, including building corners.
   1. As calculated in accordance with applicable code, as measured in accordance with ASTM E330.

B. Deflection: Limit mullion deflection to 1/175 of span; with full recovery of glazing materials.

C. System Assembly: Accommodate movement within system, movement between system and peripheral construction, dynamic loading and release of loads, and deflection of structural support framing without damage to components or deterioration of seals movement.

D. Air Infiltration: Limit air leakage through assembly to 0.06 cfm/min/sq ft of wall area, measured at reference differential pressure across assembly of 1.57 psf as measured in accordance with AAMA 501.

E. Air and Vapor Seal: Maintain continuous air barrier and vapor retarder throughout assembly, primarily in line with inside pane of glass and inner sheet of infill panel and heel bead of glazing compound.

F. Water Leakage: None, when measured in accordance with AAMA/WDMA 101/I.S.2 with test pressure difference of 20 percent of design pressure, with minimum differential of 2.86 lbf/sq ft and maximum of 12.00 lbf/sq ft.

G. Thermal and Solar Heat Transmittance of Assembly (U Value and SHGC): Comply with ICC IEEC for climate zone in which project is located.

H. Expansion / Contraction: Provide for expansion and contraction within system components caused by cycling temperature range of 170 degrees F over 12 hour period without causing detrimental effect to system components and anchorage.

I. System Internal Drainage: Drain water entering joints, condensation occurring in glazing channels, or migrating moisture occurring within system, to exterior by weep drainage network

1.4 SUBMITTALS

A. Section 01 33 00 - Submittal Procedures: Submittal procedures.

B. Shop Drawings: Indicate system dimensions, framed opening requirements and tolerances, affected related Work and expansion and contraction joint location and details.

C. Color Charts: Three copies of charts of aluminum finish colors available.

D. Samples: Two samples of each color finish selected by Architect on actual metal to be used.

E. Design Data: Indicate framing member structural and physical characteristics, calculations, dimensional limitations

F. Certification: Written certification that system being provided is designed in accordance with applicable wind force loading and requirements of this specification.

1.5 QUALITY ASSURANCE

A. Perform Work in accordance with AAMA SFM-1 and AAMA MCWM-1 - Metal Curtain Wall, Window, Store Front and Entrance - Guide Specifications Manual.

1.6 QUALIFICATIONS

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

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

C. Design structural support framing components under direct supervision of Professional Engineer experienced in design of this Work and licensed in State of Virginia.

1.7 DELIVERY, STORAGE, AND PROTECTION

A. Section 01 60 00 - Product Requirements: Product storage and handling requirements.

B. Protect finished aluminum surfaces with strippable coating. Do not use adhesive papers or sprayed coatings that bond when exposed to sunlight or weather.

1.8 ENVIRONMENTAL REQUIREMENTS

A. Section 01 60 00 - Product Requirements.

B. Do not install sealants nor glazing materials when ambient temperature is less than 40 degrees F during and 48 hours after installation.

1.9 COORDINATION

A. Section 01 31 00 - Project Management & Coordination: Coordination and project conditions.

B. Coordinate the Work with installation of firestopping, air barrier, vapor retarder, and automatic entrance doors components or materials.

1.10 WARRANTY

A. Section 01 70 00 - Execution Requirements: Product warranties and product bonds.

B. Furnish ten-year manufacturer warranty for insulated glass units from seal failure, interpane dusting or misting, and replacement of same.

C. Warranty: Include coverage for degradation of color finish.

PART 2 PRODUCTS

2.1 ALUMINUM-FRAMED STOREFRONTS

A. Manufacturers:
1. EFCO Corp.
2. Kawneer
3. YKK AP America, Inc.

B. Product Description:
1. Aluminum Framing Systems: 2” x 6-1/2” nominal frame size; flush glazing stops; drainage holes; internal weep drainage system; center glazed, screw spline fabrication.
a. Exterior locations; Thermally broken to accept 1" insulated glazing.
2. Mullions: Profile of extruded aluminum cladding with internal reinforcement of aluminum or shaped steel structural section.
3. Special Shape Trim and Sill Flashing Members: Extruded aluminum shapes indicated on Drawings.

2.2 COMPONENTS

A. Extruded Aluminum: ASTM B221; 6063 alloy, T6 temper for extruded structural members.

B. Sheet Aluminum: ASTM B209, 5005 alloy, H15 or H34 temper.

C. Sheet Steel: ASTM A653/A653M; galvanized to minimum G90 (Z275).

D. Steel Sections: ASTM A36/A36M; shaped to suit mullion sections, galvanized to G60.

E. Glass: Specified in Section 08 80 00.

F. Glazing Materials: Storefront manufacturer’s standard types to suit application and to achieve weather, moisture, and air infiltration requirements.

G. Thermal Barrier
1. All exterior aluminum shall be separated from interior aluminum by a rigid, structural thermal barrier. For purposes of this specification, a structural thermal barrier is defined as a system that shall transfer shear during bending and, therefore, promote composite action between the exterior and interior extrusions.
2. Barrier material shall be poured-in-place, two-part polyurethane. A nonstructural thermal barrier is unacceptable

H. Closures, Trim and Flashings: Minimum 0.125 inch thick aluminum; finish to match mullion sections where exposed.
1. Secure with concealed fastening method.

I. Sealant and Backing Materials:

1. Sealant Used Within System (Not Used for Glazing): Manufacturer's standard materials to achieve weather, moisture, and air infiltration requirements.
2. Perimeter Sealant: Same as specified in Section 07 90 00.

J. Weather Barrier: Specified in Section 07 27 26.

K. Fasteners: Stainless steel.

2.3 FABRICATION

A. Fabricate components with minimum clearances and shim spacing around perimeter of assembly, yet enabling installation and dynamic movement of perimeter seal.

B. Accurately fit and secure joints and corners. Make joints flush, hairline in size, and uniform in width.

C. Prepare components to receive anchor devices. Fabricate anchors.

D. Arrange fasteners and attachments to conceal from view.

E. Reinforce framing members for imposed loads.

2.4 SHOP FINISHING

A. Painted Aluminum Surfaces: AA-M12C12R1x non-specular as fabricated mechanical finish, chemically cleaned, and prepared for applied coating; with organic coating.
1. High Performance Organic Coating: Fluoropolymer coating system complying with AAMA 2604 or 2605 minimum two-coat, with minimum 70 percent polyvinylidene fluoride resin.
2. Color: to be selected from manufacturer's full range to match existing conditions.

B. Concealed Steel Items: Galvanized to ASTM A123/A123M; minimum 2.0 oz/sq ft coating thickness; galvanize after fabrication.

C. Apply bituminous paint to concealed aluminum and steel surfaces in contact with cementitious or dissimilar materials.

D. Shop and Touch-Up Primer for Steel Components: SSPC Paint 25 red oxide.

E. Touch-Up Primer for Galvanized Steel Surfaces: SSPC Paint 20 zinc rich.

F. Extent of Finish:
1. Apply factory coating to surfaces exposed at completed assemblies.
2. Apply finish to surfaces cut during fabrication so no natural aluminum is visible in completed assemblies, including joint edges.
3. Apply touch-up materials recommended by coating manufacturer for field application to cut ends and minor damage to factory applied finish.

PART 3 EXECUTION

3.1 EXAMINATION

A. Section 01 31 00 - Project Management & Coordination: Coordination and project conditions.

B. Verify dimensions, tolerances, and method of attachment with other Work.

C. Verify wall openings and adjoining air and vapor seal materials are ready to receive Work of this Section.

3.2 INSTALLATION

A. Install wall system in accordance with AAMA MCWM-1 - Metal Curtain Wall, Window, Store Front and Entrance - Guide Specifications Manual.

B. Attach to structure to permit sufficient adjustment to accommodate construction tolerances and other irregularities.

C. Provide alignment attachments and shims to permanently fasten system to building structure.

D. Align assembly plumb and level, free of warp or twist. Maintain assembly dimensional tolerances, aligning with adjacent Work.

E. Provide thermal isolation where components penetrate or disrupt building insulation.

F. Install sill flashings. Turn up ends and edges; seal to adjacent Work to form water tight dam.

G. Pack fibrous insulation in shim spaces at perimeter of assembly to maintain continuity of thermal barrier.

H. Install integral flashings and integral joint sealers.

I. Set thresholds in bed of mastic and secure.

J. Coordinate installation of glass with Section 08 80 00; separate glass from metal surfaces.

K. Install perimeter sealants in accordance with performance standards of Section 07 90 00.

3.3 ERECTION TOLERANCES

A. Section 01 40 00 - Quality Requirements: Tolerances.

B. Maximum Variation from Plumb: 0.06 inches every 3 ft non-cumulative or 1/16 inches per 10 ft, whichever is less.

C. Maximum Misalignment of Two Adjoining Members Abutting in Plane: 1/32 inch.

3.4 ADJUSTING

A. Section 01 70 00 - Execution Requirements: Testing, adjusting and balancing.

B. Adjust operating hardware for smooth operation.

3.5 CLEANING

A. Section 01 70 00 - Execution Requirements: Final cleaning.

B. Remove protective material from pre-finished aluminum surfaces.

C. Wash down surfaces with solution of mild detergent in warm water, applied with soft, clean wiping cloths. Take care to remove dirt from corners. Wipe surfaces clean.

D. Remove excess sealant by method acceptable to sealant manufacturer.

3.6 PROTECTION OF INSTALLED CONSTRUCTION

A. Section 01 70 00 - Execution Requirements: Protecting installed construction.

B. Protect finished Work from damage.

END OF SECTION

SECTION 08 80 00

GLAZING

PART 1 GENERAL

1.1 SUMMARY

A. Section includes:
1. Glass glazing for metal frames and windows.
2. Glazing accessories and sealant.

B. Related Sections:
1. Section 07 90 00 - Joint Protection: Sealant & back-up material other than glazing sealants.
2. Section 08 12 14 - Standard Steel Frames: Glazed openings.
3. Section 08 41 13 - Aluminum-Framed Entrances and Storefronts.

1.2 REFERENCES

A. American National Standards Institute:
1. ANSI Z97.1 - Safety Glazing Materials Used in Buildings Safety.

B. American Society of Civil Engineers:
1. ASCE 7 - Minimum Design Loads for Buildings and Other Structures.

C. ASTM International:
1. ASTM C509 - Standard Specification for Elastomeric Cellular Preformed Gasket and Sealing Material.
2. ASTM C864 - Standard Specification for Dense Elastomeric Compression Seal Gaskets, Setting Blocks, and Spacers.
3. ASTM C920 - Standard Specification for Elastomeric Joint Sealants.
4. ASTM C1036 - Standard Specification for Flat Glass.
5. ASTM C1048 – Standard Specification for Heat-Strengthened and Fully Tempered Flat Glass.
6. ASTM C1172 - Standard Specification for Laminated Architectural Flat Glass.
7. ASTM C1376 - Standard Specification for Pyrolytic and Vacuum Deposition Coatings on Flat Glass.
8. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
9. ASTM E90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements.
10. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials.
11. ASTM E1300 - Standard Practice for Determining Load Resistance of Glass in Buildings.
12. ASTM E2190 - Standard Specification for Insulating Glass Unit Performance and Evaluation.

13. ASTM E1886 - Standard Test Method for Performance of Exterior Windows, Curtain Walls, Doors, and Impact Protective Systems Impacted by Missile(s) and Exposed to Cyclic Pressure Differentials.
14. ASTM E1996 - Standard Specification for Performance of Exterior Windows, Curtain Walls, Doors and Impact Protective Systems Impacted by Windborne Debris in Hurricanes.

D. Consumer Products Safety Commission:
1. CPSC 16 CFR 1201 - Safety Standard for Architectural Glazing.

E. Glass Association of North America:
1. GANA - Sealant Manual.
2. GANA - Glazing Manual.
3. GANA - Laminated Glass Design Guide.

F. National Fenestration Rating Council Incorporated:
1. NFRC 100 - Procedures for Determining Fenestration Product U-Factors.
2. NFRC 200 - Procedure for Determining Fenestration Product Solar Heat Gain Coefficient and Visible Transmittance at Normal Incidence.
3. NFRC 300 - Test Method for Determining the Solar Optical Properties of Glazing Materials and Systems.

G. National Fire Protection Association:
1. NFPA 80 - Standard for Fire Doors, Fire Windows.
2. NFPA 252 - Standard Methods of Fire Tests of Door Assemblies.
3. NFPA 257 - Standard on Fire Test for Window and Glass Block Assemblies.

H. South Coast Air Quality Management District:
1. SCAQMD Rule 1168 - Adhesive and Sealant Applications.

I. Underwriters Laboratories Inc.:
1. UL 10C - Positive Pressure Fire Tests of Door Assemblies.
2. UL - Building Materials Directory.

1.3 PERFORMANCE REQUIREMENTS

A. Size glass to withstand dead loads and positive and negative live loads acting normal to plane of glass as calculated in accordance with applicable code. Thicknesses indicate are minimums to be confirmed by glass supplier/installer.

B. Limit glass deflection to 1/200 or flexure limit of glass with full recovery of glazing materials, whichever is less.

C. Performance Criteria for Exterior Insulated Glass Units:
1. Shading Coefficient 0.41
2. Solar Heat Gain Coefficient 0.36
3. U-Values (English):
   a. Winter Nighttime: 0.24
   b. Summer Daytime: 0.22
4. Light to Solar Gain: 1.64

5. Visible Light Transmittance: 59%

1.4 SUBMITTALS

A. Section 01 33 00 - Submittal Procedures: Submittal procedures.

B. Product Data:
1. Provide structural, physical and environmental characteristics, size limitations, special handling or installation requirements.
2. Glazing Sealants, Compounds and Accessories: Provide chemical, functional, and environmental characteristics, limitations, special application requirements. Identify available colors where exposed.

C. Samples:
1. Submit two samples 12 x 12 inch in size, illustrating each glass unit, coloration and design.
2. Glazing Materials: Submit 4 inch long bead of glazing sealant and, color as selected.

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

1.5 QUALITY ASSURANCE

A. Perform Work in accordance with GANA Glazing Manual, GANA Sealant Manual, and SIGMA for glazing installation methods.
1. Maintain one copy of each document on site.

B. Labeling:
1. Apply label from agency approved by authority having jusrisdiction (AHJ) to identify each glass lite.
2. Label each safety-glass lite.

1.6 QUALIFICATIONS

A. Installer: Company specializing in performing Work of this section with minimum three years experience.

1.7 ENVIRONMENTAL REQUIREMENTS

A. Section 01 60 00 - Product Requirements.

B. Do not install glazing when ambient temperature is less than 50 degrees F.

C. Maintain minimum ambient temperature before, during and 24 hours after installation of glazing compounds.

1.8 WARRANTY

A. Section 01 70 00 - Execution Requirements: Product warranties and product bonds.

B. Furnish ten-year warranty to include coverage for sealed glass units from seal failure, interpane dusting or misting, and replacement of same.

C. Furnish ten-year warranty to include coverage for delamination of laminated glass and replacement of same.

PART 2 PRODUCTS

2.1 GLASS MANUFACTURERS

A. Acceptable Manufactures:
1. AGC.
2. Guardian.
3. PPG.

2.2 COMPONENTS

A. Flat Glass: Minimum 1/4 inch unless otherwise indicated.
1. Annealed Glass: ASTM C1036, Type 1 transparent flat, Class 1 clear, Quality q3 glazing select.
2. Heat Strengthened Glass: ASTM C1048, Kind HS, heat strengthened, Condition A uncoated, Type 1 transparent flat, Class 1 clear, Quality q3 glazing select.

B. Safety Glass: Conform to CPSC 16 CFR 1201, minimum thickness 1/4 inch unless otherwise indicated.
1. Clear Tempered Glass: ASTM C1048, Kind FT Fully tempered, Condition A, uncoated, Type 1 transparent flat, Class 1 clear, Quality q3 glazing select.

C. Insulated Glass Units: Total unit thickness 1 inch.
1. Double Pane Insulated Glass Units: ASTM E774 and E773; purge interpane space with dry hermetic air.
a. Outer Pane: Tinted or Clear, as indicated.
b. Inner Pane:
1) Tinted or tinted with Low E coating on the No. 3 surface, as indicated.
2) Clear or clear with Low E coating on the No. 3 surface, as indicated.
3) Clear with elastomeric coating on the No. 4 surface.

2.3 ACCESSORIES

A. Elastomeric Glazing Sealants: Materials compatible with adjacent materials including glass, insulating glass seals, and glazing channels.

B. Glazing Splines: ASTM C864 Option, resilient neoprene extruded shape to suit glazing channel retaining slot.
1. Color: Black.

C. Pre-Formed Glazing Tape: Size to suit application.
   1. Preformed butyl compound with integral resilient tube spacing device; 10 to 15 Shore A durometer hardness; coiled on release paper; black color.
      a. Butyl Corner Sealant: ASTM C920 single component non-skinning butyl compatible with glazing tape; color to match tape.

D. Glazing Compounds:
   1. Glazing Putty: ASTM C570, Type II, oil and resin base caulking compound for building construction; knife grade consistency; manufacturer's standard white color.

E. Setting Blocks: ASTM C864, Neoprene or EPDM, 80 to 90 Shore A durometer hardness, length of 0.1 inch for each square foot of glazing or minimum 4 inch x width of glazing rabbet space minus 1/16 inch x height to suit glazing method and pane weight and area.

F. Spacer Shims: ASTM C864 Option, Neoprene, 50 to 60 Shore A durometer hardness, minimum 3 inch long x one half the height of glazing stop x thickness to suit application, self adhesive on one face.

PART 3 EXECUTION

3.1 EXAMINATION

A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.

B. Verify openings for glazing are correctly sized and within acceptable tolerance.

C. Verify surfaces of glazing channels or recesses are clean, free of obstructions impeding moisture movement, weeps are clear, and ready to receive glazing.

3.2 PREPARATION

A. Clean contact surfaces with solvent and wipe dry.

B. Seal porous glazing channels or recesses with substrate compatible primer or sealer.

C. Prime surfaces scheduled to receive sealant.

3.3 INSTALLATION - GLAZING

A. Perform installation in accordance with GANA Glazing Manual.
   1. Glazing Sealants: Comply with ASTM C1193.
   2. Fire Rated Openings: Comply with NFPA 80

B. Exterior Dry Method (Tape and Gasket Spline Glazing):
   1. Cut glazing tape to length; install on glazing pane. Seal corners by butting tape and sealing junctions with compatible butyl sealant.

2. Place setting blocks at 1/4 points with edge block no more than 6 inches from corners.
3. Rest glazing on setting blocks and push against fixed stop with sufficient pressure to attain full contact.
4. Install removable stops without displacing glazing spline. Exert pressure for full continuous contact.
5. Trim protruding tape edge.

C. Interior Dry Method (Tape and Tape) Installation:
1. Cut glazing tape to length and set against permanent stops, projecting 1/16 inch above sight line.
2. Place setting blocks at 1/4 points with edge block no more than 6 inches from corners.
3. Rest glazing on setting blocks and push against tape for full contact at perimeter of pane or unit.
4. Place glazing tape on free perimeter of glazing in same manner described above.
5. Install removable stop without displacement of tape. Exert pressure on tape for full continuous contact.
6. Knife trim protruding tape.

D. Interior Wet Method (Compound and Compound) Installation:
1. Install glazing resting on setting blocks. Install applied stop and center pane by use of spacer shims at 24 inch centers, kept 1/4 inch below sight line.
2. Locate and secure glazing pane using glazers' clips.
3. Fill gaps between glazing and stops with glazing compound until flush with sight line. Tool surface to straight line.

E. Install in vision panels in fire-rated doors to requirements of NFPA 80.

3.4 CLEANING

A. Section 01 70 00 - Execution Requirements: Final cleaning.

B. Remove glazing materials from finish surfaces.

C. Remove labels after Work is complete.

D. Clean glass and adjacent surfaces.

3.5 PROTECTION OF INSTALLED CONSTRUCTION

A. Section 01 70 00 - Execution Requirements: Protecting installed construction.

B. After installation, mark pane with an 'X' by using removable plastic tape or paste.

3.6 SCHEDULE

A. Type G1: Interior locations.
1. 1/4" thickness, clear, single glass units.

2. Tempered safety glass in lites in doors; adjacent to doors and floors; and other building code required locations.
3. Heat strengthened glass where required by building code.

B. Type G2 (Insulated Glass): Exterior windows and doors.
1. 1" hermetically sealed clear insulating glass units.
2. Inboard lite: 1/4" clear glass with Low-E coating on the No. 3 surface.
3. Outboard lite: 1/4" tinted glass.
4. Tempered safety glass in lites in doors; adjacent to doors and floors; and other building code required locations.
5. Heat strengthened glass in other locations.

END OF SECTION

SECTION 09 21 16

GYPSUM BOARD ASSEMBLIES

PART 1 GENERAL

1.1 SUMMARY

A. Section includes:
1. Nonstructural metal stud wall framing.
2. Metal channel ceiling framing.
3. Gypsum board and joint treatment.

B. Related Sections:
1. Section 06 10 53 - Miscellaneous Rough Carpentry: Wood blocking.
2. Section 07 95 00 – Expansion Control: Expansion joint assemblies.

1.2 REFERENCES

A. American Society for Testing and Materials:
1. ASTM C475/C475M - Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board.
2. ASTM C514 - Standard Specification for Nails for the Application of Gypsum Board.
3. ASTM C553 - Standard Specification for Mineral Fiber Blanket Thermal Insulation for Commercial and Industrial Applications.
4. ASTM C557 - Standard Specification for Adhesives for Fastening Gypsum Wallboard to Wood Framing.
5. ASTM C645 - Standard Specification for Nonstructural Steel Framing Members.
6. ASTM C665 - Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing.
7. ASTM C754 - Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products.
8. ASTM C840 - Standard Specification for Application and Finishing of Gypsum Board.
9. ASTM C954 - Standard Specification for Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Steel Studs from 0.033 in. to 0.112 in. in Thickness.
10. ASTM C1007 - Standard Specification for Installation of Load Bearing (Transverse and Axial) Steel Studs and Related Accessories.
11. ASTM C1178/C1178M - Standard Specification for Coated Glass Mat Water-Resistant Gypsum Backing Panel.
12. ASTM C1280 - Standard Specification for Application of Gypsum Sheathing.
13. ASTM C1288 - Standard Specification for Discrete Non-Asbestos Fiber-Cement Interior Substrate Sheets.
14. ASTM C1325 - Standard Specification for Non-Asbestos Fiber-Mat Reinforced Cement Substrate Sheets.
15. ASTM C1396/C1396M - Standard Specification for Gypsum Board.

16. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
17. ASTM E90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements.
18. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials.
19. ASTM F1667 - Standard Specification for Driven Fasteners: Nails, Spikes, and Staples.

B. American Society of Civil Engineers:
1. ASCE 7 - Minimum Design Loads for Buildings and Other Structures.

C. Gypsum Association:
1. GA 214 - Recommended Levels of Gypsum Board Finish.
2. GA 216 - Application and Finishing of Gypsum Board.
3. GA-253 - Application of Gypsum Sheathing.
4. GA 600 - Fire Resistance Design Manual Sound Control.

D. Intertek Testing Services (Warnock Hersey Listed):
1. WH - Certification Listings.

E. Metal Lath/Steel Framing Association:
1. ML/SFA 540 - Lightweight Steel Framing Manual.
2. ML/SFA 920 - Guide Specifications For Metal Furring and Lathing.

F. National Fire Protection Association:
1. NFPA 265 - Standard Methods of Fire Tests for Evaluating Room Fire Growth Contribution of Textile Coverings on Full Height Panels and Walls, Method B.
2. NFPA 286 - Standard Methods of Fire Tests for Evaluating Room Fire Growth Contribution of Wall and Ceiling Interior Finish.

G. South Coast Air Quality Management District:
1. SCAQMD Rule 1168 - Adhesive and Sealant Applications.

H. Underwriters Laboratories Inc.:
1. UL - Fire Resistance Directory.

1.3 SUBMITTALS

A. Section 01 33 00 - Submittal Procedures: Submittal procedures.

B. Product Data: Submit data on metal framing, gypsum board, joint tape, decorative finishes and acoustic accessories.

1.4 QUALITY ASSURANCE

A. Perform Work in accordance with ASTM C840, ASTM C1280, GA-214, GA-216, GA-600, ML/SFA 540, ML/SFA 920, as applicable.

1.5 QUALIFICATIONS

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

B. Installer: Company specializing in performing Work of this section with minimum three years documented experience.

PART 2 PRODUCTS

2.1 GYPSUM BOARD ASSEMBLIES

A. Performance / Design Criteria:
   1. Select stud thickness to resist minimum 5 psf uniform load and maximum 1/360 deflection.
      a. Stud size, thickness and spacing indicated on Drawings are minimum requirements.
   2. Conform to applicable code for fire rated assemblies indicated.

2.2 COMPONENTS

A. Framing Materials:
   1. Studs and Tracks: ASTM C645; galvanized sheet steel, 20 gauge minimum, C shape, with knurled faces.
   2. Furring, Framing, and Accessories: ASTM C645.
   3. Fasteners: ASTM C1002.
   4. Anchorage to Substrate: Tie wire, screws, and other metal supports, of type and size to suit application; to rigidly secure materials in place.
   5. Adhesive: ASTM C557.
      a. Interior Adhesives: Maximum volatile organic compound content in accordance with SCAQMD Rule 1168

B. Gypsum Board Materials:
   1. Standard Gypsum Board: ASTM C36; 5/8 inch thick, maximum available length in place; ends square cut, tapered edges.
   2. Abuse Resistant Board (ARB): ASTM C1278; fiber reinforced, paperless gypsum panels, 5/8” thick, maximum available size in place; tapered edges, ends square cut.
      a. Abrasion: Level 1
      b. Indentation: Level 1
      c. Soft Body Impact: Level 2
      d. Hard Body Impact: Level 1

2.3 ACCESSORIES

A. Acoustic Sealant: Non-hardening, non-skinning, for use in conjunction with gypsum board.
   1. Interior Sealants and Sealant Primers: Maximum volatile organic compound content in accordance with SCAQMD Rule 1168.

B. Corner Beads, Edge Trim and Expansion Joints: Metal.

C. Edge Trim: GA-216; Type LC bead and Type L bead as applicable.

D. Joint Materials: ASTM C475; reinforcing tape, joint compound, adhesive, and water.

E. Fasteners: ASTM C954; length to suit application.

F. Anchorage: Tie wire, nails, and other metal supports, of type and size to suit application; to rigidly secure materials in place, galvanized.

G. Tie Wire: Annealed galvanized steel.

H. Deflection Track: Top runner designed to allow partition heads to expand and contract with movement of structure above while maintaining continuity of the assembly. Comply with the requirements of ASTM C 645.

PART 3 EXECUTION

3.1 EXAMINATION

A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for installation examination.

B. Verify site conditions are ready to receive work and opening dimensions are as instructed by manufacturer.

3.2 INSTALLATION

A. Metal Stud Installation:
   1. Install studs in accordance with ASTM C754, ASTM C1007, GA-216 and GA-600.
   2. Metal Stud Spacing: 16 inches on center.
   3. Refer to Drawings for indication of partitions extending stud framing through ceiling to structure above. Maintain clearance under structural building members to avoid deflection transfer to studs.
      a. Provide slip or cushion type joint between partition and structure as recommended by stud manufacturer to prevent transfer of structural loads or movements to partitions, and to provide lateral support.
      b. Provide deflection track.
   4. Backer Plates and Blocking: Install backer plates or wood blocking for support of plumbing fixtures, toilet partitions, wall cabinets, toilet accessories, hardware, and similar items.

B. Wall Furring Installation:
   1. Erect wall furring for direct attachment to concrete masonry and concrete walls.

2. Erect furring channels vertically; space maximum 16 inches oc, not more than 2 inches from floor and ceiling lines or abutting walls. Secure in place on alternate channel flanges at maximum 16 inches on center.
3. Install thermal insulation in conjunction with Section 07 21 13 and hold in place with Z-furring channels spaced maximum 16 inches on center.
4. Erect metal stud framing tight to concrete and concrete masonry walls, attached by adjustable furring brackets.

C. Ceiling Framing Installation:
1. Install in accordance with ASTM C754.
2. Coordinate location of hangers with other work.
3. Install ceiling framing independent of walls, columns, and above ceiling work.
4. Reinforce openings in ceiling suspension system which interrupt main carrying channels or furring channels, with lateral channel bracing. Extend bracing minimum 24 inches past each end of openings.
5. Laterally brace entire suspension system.

D. Gypsum Board Installation:
1. Install gypsum board in accordance with ASTM C840, GA-216 and GA-600.
2. Erect single layer standard gypsum board in most economical direction, with ends and edges occurring over firm bearing.
3. Use screws when fastening gypsum board to metal furring or framing.
4. Treat cut edges and holes in moisture resistant gypsum board and exterior gypsum soffit board with sealant.
5. Install reveal moldings where indicated in accordance with manufacturer’s instructions.
6. Place control joints in accordance with referenced standards, consistent with lines of building spaces and as follows:
    a. Install control joints at junction of gypsum board partitions with walls or partitions of other finish material.
    b. Install control joints within long runs of partitions, ceilings or soffits at approximately 30'-0" on center or as indicated.
    c. Where gypsum board is vertically continuous, provide horizontal control joints at each floor level
7. Place corner beads at external corners. Use longest practical length. Place edge trim where gypsum board abuts dissimilar materials.
8. Install cementitious backing board over metal studs.
9. Apply gypsum board to curved walls in accordance with GA-216.

E. Joint Treatment:
1. Finish in accordance with GA-214 in accordance with schedule below.
2. Feather coats on to adjoining surfaces so that camber is maximum 1/32 inch.

3.3 ERECTION TOLERANCES

A. Section 01 40 00 - Quality Requirements: Tolerances.

B. Exposed Surfaces of Finished Gypsum Board:

1. Flat Surfaces: 1/8 inch in 10 feet maximum variation from flat surface.

C. Concealed Surfaces of Finished Gypsum Board Behind Wall Coverings:
1. Flat Surfaces: 1/16 inch in 10 feet maximum variation from flat surface.

D. Provide metal straightedges for determination of compliance with required tolerances.

3.4 SCHEDULES

A. Locations:
1. Interior Wall Partitions – Abuse Resistant Board (ARB)
2. Interior Gypsum Ceilings – Standard Gypsum Board.

B. Finishes in accordance with GA-214 Level:
1. Level 1: Above finished ceilings concealed from view.
2. Level 4: Walls and ceilings exposed to view.
3. Level 4: Walls above floating cloud ceilings.

END OF SECTION

SECTION 09 51 13

ACOUSTICAL PANEL CEILINGS

PART 1 GENERAL

1.1 SUMMARY

A. Section includes:
   1. Acoustic panels.
   2. Suspended metal grid ceiling system.

B. Related Sections:
   1. Division 23: Air diffusion devices in ceiling system.
   2. Division 26: Light fixtures in ceiling system.

1.2 REFERENCES

A. American Society for Testing and Materials:
   1. ASTM C635 - Standard Specification for the Manufacture, Performance, and Testing of Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings.
   2. ASTM C636 - Standard Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-In Panels.
   3. ASTM E84 – Standard Test Method for Surface Burning Characteristics of Building Materials.
   4. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials.
   5. ASTM E1264 - Standard Classification for Acoustical Ceiling Products.

B. Ceilings and Interior Systems Construction Association:
   1. CISCA - Acoustical Ceilings: Use and Practice.

C. Green Seal:
   1. GS-11 - Product Specific Environmental Requirements.

D. Underwriters Laboratories Inc.:
   1. UL - Fire Resistance Directory.

1.3 SUBMITTALS

A. Section 01 33 00 - Submittal Procedures: Submittal procedures.

B. Product Data: Submit data on metal grid system components, acoustic units and accessories.

C. Shop Drawings:

1. Indicate grid layout and related dimensioning, junctions with other work or ceiling finishes and interrelation of mechanical and electrical items related to system. Indicate method of suspension where interference exists.

D. Samples: Submit one sample 6” x 6” inch in size illustrating material and finish of each type of acoustic unit.

E. Samples: Submit one sample each, 6” inches long, of suspension system main runner, cross runner, perimeter molding, and specially fabricated members.

1.4 QUALITY ASSURANCE

A. Conform to CISCA requirements.

B. Surface Burning Characteristics: Maximum 25/450 flame spread/smoke developed index when tested in accordance with ASTM E84.

1.5 QUALIFICATIONS

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

B. Installer: Company specializing in performing work of this section with minimum three years documented experience approved by manufacturer.

1.6 ENVIRONMENTAL REQUIREMENTS

A. Section 01 60 00 - Product Requirements.

B. Maintain uniform temperature of minimum 60 degrees F, and maximum humidity of 40 percent prior to, during, and after acoustic unit installation.

1.7 SEQUENCING

A. Section 01 10 00 - Summary: Work sequence.

B. Sequence Work to ensure acoustic ceilings are not installed until building is enclosed, sufficient heat is provided, dust generating activities have terminated, and overhead work is completed, tested, and approved.

C. Install acoustic units after interior wet work is dry.

1.8 EXTRA MATERIALS

A. Section 01 70 00 - Execution and Closeout Requirements: Spare parts and maintenance products.

B. Furnish one box or carton of extra ceiling panels of each type to Owner.

C. Extra materials shall be turned over to the Owner prior to installation to insure the availability of goods as extra material.

PART 2 PRODUCTS

2.1 GENERAL

A. Performance / Design Criteria:
1. Suspension System: Rigidly secure acoustic ceiling system including integral mechanical and electrical components with maximum deflection of 1/240 of span.

2.2 SUSPENDED ACOUSTICAL CEILINGS (ACP-1)

A. Acoustical Ceiling Panel Type 1 (ACP-1): Type III per ASTM E1264, mineral fiber panels conforming to the following:
1. Size: 24 x 24 inches.
2. Thickness: 5/8 inches.
3. Fire Hazard Classification: Class A.
4. Light Reflectance: 81 percent.
5. NRC: 0.55.
6. CAC: 33.
7. Edge: Rabbeted (tegular).
8. Surface Color: White.
9. Surface Finish: Non-directional fissured and perforated.
10. Product Availability: Manufacturer’s 10-year Guarantee.

B. Grid Type 1 (G1):
1. Non-fire Rated Grid: ASTM C635, heavy duty; exposed T; components die cut and interlocking.
2. Grid Materials: Commercial quality cold rolled steel with hot dipped galvanized coating.
3. Exposed Grid Surface Width: 15/16 inch.
4. Grid Finish: Prefinished paint finish; colors as selected to match panels.
5. Accessories: Stabilizer bars, clips, splices, perimeter moldings, hold down clips, required for suspended grid system.
6. Support Channels and Hangers: Galvanized steel; size and type to suit application, and ceiling system flatness requirement specified.

2.3 ACCESSORIES

A. Perimeter Molding Gasket: Closed cell, compressible gasket tape.

B. Touch-up Paint: Type and color to match acoustic and grid units.

C. Hold Down Clips: Manufacturer’s standard.

PART 3 EXECUTION

3.1 EXAMINATION

A. Section 01 31 00 - Project Management and Coordination: Coordination and project conditions.

B. Verify layout of hangers will not interfere with other work.

3.2 INSTALLATION

A. Lay-In Grid Suspension System:
1. Install suspension system in accordance with ASTM C636 and as supplemented in this section.
2. Install system capable of supporting imposed loads to deflection of 1/240 of span maximum.
3. Locate system on room axis according to reflected plan.
4. Install after major above ceiling work is complete. Coordinate location of hangers with other work.
5. Hang suspension system independent of walls, columns, ducts, pipes and conduit. Where carrying members are spliced, avoid visible displacement of face plane of adjacent members.
6. Where ducts or other equipment prevent regular spacing of hangers, reinforce nearest affected hangers and related carrying channels to span extra distance.
7. Do not support components on main runners or cross runners when weight causes total dead load to exceed deflection capability. Support fixture loads by supplementary hangers located within 6 inches of each corner; or support components independently.
8. Do not eccentrically load system, or produce rotation of runners.
9. Perimeter Molding:
   a. Install edge molding at intersection of ceiling and vertical surfaces with continuous gasket.
   b. Use longest practical lengths.
   c. Miter corners.
   d. Install at junctions with other interruptions.
10. Install perimeter edge trim in accordance with manufacturer’s instructions.

B. Acoustic Units:
1. Fit acoustic units in place, free from damaged edges or other defects detrimental to appearance and function.
2. Lay directional patterned units one way with pattern parallel to longest shortest room axis in basket weave pattern. Fit border trim neatly against abutting surfaces.
3. Install units after above ceiling work is complete.
4. Install acoustic units level, in uniform plane, and free from twist, warp, and dents.
5. Cutting Acoustic Units:
   a. Cut to fit irregular grid and perimeter edge trim.
   b. Double cut and field paint exposed edges of tegular units.

6. Install hold-down clips to retain panels tight to grid system within 5 ft of exterior doors.

C. Perimeter Conditions: In spaces where the location of ceiling grid result in a ceiling panel less than 4-inches wide along the perimeter, omit the last grid piece and provide a matching 24 x 48 ceiling panel cut to fit. Ceiling panel size shall not exceed 24 x 28 inches.

3.3 ERECTION TOLERANCES

A. Section 01 40 00 - Quality Requirements: Tolerances:
1. Maximum Variation from Flat and Level Surface: 1/8 inch in 10 feet.
2. Maximum Variation from Plumb of Grid Members Caused by Eccentric Loads: 2 degrees.

END OF SECTION

SECTION 09 65 00

RESILIENT FLOORING

PART 1 GENERAL

1.1 SUMMARY

A. Section includes luxury vinyl tile and accessories; transition strips; and resilient base.

1.2 REFERENCES

A. American Society for Testing and Materials:
   1. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
   2. ASTM E662 - Standard Test Method for Specific Optical Density of Smoke Generated by Solid Materials.
   3. ASTM F1066 - Standard Specification for Vinyl Composition Floor Tile.
   4. ASTM F1861 - Standard Specification for Resilient Wall Base.

B. Federal Specification Unit:
   1. FS RR-T-650 - Treads, Metallic and Nonmetallic, Skid Resistant.

C. National Fire Protection Association:
   1. NFPA 253 - Standard Method of Test for Critical Radiant Flux for Floor Covering Systems Using a Radiant Heat Energy Source.

D. Scientific Certification Systems:
   1. SCS EC10.2 - Environmental Certification Program Indoor Air Quality Performance.

E. South Coast Air Quality Management District:
   1. SCAQMD Rule 1113 - Architectural Coatings.
   2. SCAQMD Rule 1168 - Adhesive and Sealant Applications.

1.3 SUBMITTALS

A. Section 01 33 00 - Submittal Procedures: Submittal procedures.

B. Shop Drawings: Indicate seaming plan, custom patterns and inlay designs.

C. Product Data: Submit data describing physical and performance characteristics; including sizes, patterns and colors available; and installation instructions.
   1. Include data on adhesive and other accessory materials and manufacturer's certificates indicating approval for the proposed application.

D. Samples:
   1. Submit manufacturer's complete set of color samples for initial selection.
   2. Submit two samples, 12 x 12 inch in size illustrating color and pattern for each resilient flooring product specified.

E. Submit evidence from the manufacturer of approval of the Installer.

F. Submit manufacturer's standard warranty.

1.4 CLOSEOUT SUBMITTALS

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

B. Operation and Maintenance Data: Submit maintenance procedures, recommended maintenance materials, and suggested schedule for cleaning, stripping, and re-waxing.

1.5 QUALITY ASSURANCE

A. Conform to applicable code for fire performance ratings as follows:
   1. Flooring, flame spread: Maximum 75, per ASTM E84.
   2. Flooring, smoke developed: Maximum 450, per ASTM E662.
   3. Wall base, flame spread: Maximum 75, per ASTM E84.
   4. Wall base, smoke developed: Maximum 450, per ASTM E662.

1.6 QUALIFICATIONS

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

B. Installer: Company specializing in performing Work of this section with minimum three years experience.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Section 01 60 00 - Product Requirements: Product storage and handling requirements.

B. Deliver materials in an undamaged condition and in the original containers with unbroken seals and labels intact.

C. Store in a maintained environment in accordance with manufacturer's recommendations.

D. Protect roll materials from damage by storing on end.

1.8 ENVIRONMENTAL REQUIREMENTS

A. Section 01 60 00 - Product Requirements.

B. Maintain temperature in storage area between 55 degrees F and 90 degrees F.

C. Store materials for not less than 48 hours prior to installation in area of installation at temperature of 70 degrees F to achieve temperature stability. Thereafter, maintain conditions above 55 degrees F.

D. Flooring should not be installed before the concrete subfloor has cured for a minimum of thirty (30) days.

E. Moisture content of the concrete slab must not exceed 3 lbs. per 1000 sq. ft. in 24 hours when using the calcium chloride test.

1.9 EXTRA MATERIALS

A. Section 01 70 00 - Execution and Closeout Requirements: Spare parts and maintenance products.

B. Furnish 75 sq ft of flooring and 25 lineal feet of base of each type and color specified.

PART 2 PRODUCTS

2.1 COMPONENTS

A. Luxury Vinyl Tile (LVT-1, 2, 3, 4):
1. Provide products in accordance with the Finish Schedule, or approved equivalent.

B. Resilient Base (RB-1):
1. Provide products in accordance with the Finish Schedule, or approved equivalent.

2.2 ACCESSORIES

A. Subfloor Filler: Premix latex, type recommended by adhesive material manufacturer.

B. Primers and Adhesives: Waterproof; types recommended by flooring manufacturer.

C. Resilient Moldings and Edge Strips: Same material as flooring.

PART 3 EXECUTION

3.1 EXAMINATION

A. Section 01 30 00 – Administrative Requirements: Verification of existing conditions before starting Work.

B. Verify concrete floors are dry to maximum moisture content as recommended by manufacturer, and exhibit negative alkalinity, carbonization, and dusting.

C. Verify floor and lower wall surfaces are free of substances capable of impairing adhesion of new adhesive and finish materials.

D. Do not proceed with work until defects have been corrected. Starting of work implies acceptance of area to receive flooring and base.

3.2 PREPARATION

A. Remove sub-floor ridges and bumps. Fill minor low spots, cracks, joints, holes, and other defects with sub-floor filler to achieve smooth, flat, hard surface.
   1. Trowel patching compound on sub-base in layers not to exceed l/8 inch and feather edge out to obtain level and smooth surface.

B. Prohibit traffic until filler is cured.

C. Clean substrate.

3.3 INSTALLATION - TILE FLOORING

A. Mix tile from containers to ensure shade variations are consistent when tile is placed.

B. Lay flooring with joints and seams parallel to building lines or at 45 degrees as indicated to produce symmetrical tile pattern.

C. Install tile to pattern with accent colors as indicated. Allow minimum 1/3 full size tile width at room or area perimeter.

D. Scribe flooring to walls, columns, cabinets, floor outlets, and other appurtenances to produce tight joints.

E. Where floor finishes are different on opposite sides of door, terminate flooring under centerline of door.

F. Install resilient edge strips at unprotected or exposed edges, where flooring terminates, and where indicated. Install flooring in recessed floor access covers. Maintain floor pattern.

3.4 INSTALLATION - BASE

A. Fit joints tightly and make vertical. Maintain minimum dimension of 18 inches between joints.

B. Miter internal corners. At external corners, 'V' cut back of base strip to 2/3 of its thickness and fold. At exposed ends, use premolded units.

C. Install base on solid backing. Bond tightly to wall and floor surfaces.

D. Scribe and fit to door frames and other interruptions.

E. Base to be installed from continuous rolls without corner pieces for coved style.

3.5 CLEANING

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

B. Remove excess adhesive from floor, base, and wall surfaces without damage.

C. Clean and maintain resilient flooring products.

3.6 PROTECTION OF INSTALLED CONSTRUCTION

A. Section 01 70 00 - Execution and Closeout Requirements: Protecting installed construction.

B. Prohibit traffic on resilient flooring for 48 hours after installation.

END OF SECTION

SECTION 09 67 00

FLUID APPLIED FLOORING

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes fluid-applied flooring and integral formed base; divider strips and accessories

1.2 REFERENCE STANDARDS

A. ASTM International:
1. ASTM D570 - Standard Test Method for Water Absorption of Plastics.
2. ASTM D638 - Standard Test Method for Tensile Properties of Plastics.
3. ASTM D695 - Standard Test Method for Compressive Properties of Rigid Plastics.
4. ASTM D905 - Standard Test Method for Strength Properties of Adhesive Bonds in Shear by Compression Loading.
5. ASTM D1044 - Standard Test Method for Resistance of Transparent Plastics to Surface Abrasion.
6. ASTM D1360 - Standard Test Method for Fire Retardancy of Paints (Cabinet Method).
7. ASTM E96/E96M - Standard Test Methods for Water Vapor Transmission of Materials.

B. National Fire Protection Association:
1. NFPA 253 - Standard Method of Test for Critical Radiant Flux for Floor Covering Systems Using a Radiant Heat Energy Source.

1.3 SUBMITTALS

A. Section 01 33 00 - Submittal Procedures: Requirements for submittals.

B. Product Data: Submit data on specified products, describing physical and performance characteristics; sizes, patterns, colors available, and method of installation.

C. Shop Drawings: Shop Drawings shall be furnished showing installation of cove base and termination details, and details at floor material transitions and where adjoining equipment.

D. Color Chart: Indicating range of standard color chip options

E. Samples:
1. Submit two samples, 6 x 6 inch, in size illustrating color and pattern for each floor material for each color specified.

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

G. Manufacturer's Installation Instructions: Submit special procedures, perimeter conditions requiring special attention and descriptive data.

1.4 CLOSEOUT SUBMITTALS

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

B. Operation and Maintenance Data: Submit maintenance procedures, recommended maintenance materials, procedures for stain removal, repairing surface and suggested schedule for cleaning.

1.5 QUALITY ASSURANCE

A. Surface Burning Characteristics:
1. Floor Finishes: Class I, minimum 0.45 watts/sq cm when tested in accordance with NFPA 253.

1.6 QUALIFICATIONS

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

B. Installer: Company specializing in performing work of this section with minimum three years documented experience approved by manufacturer.

1.7 AMBIENT CONDITIONS

A. Section 01 60 00 - Product Requirements: Product storage and handling requirements.

B. Store resin materials in dry, secure area.

C. Store materials for three days prior to installation in area of installation to achieve temperature stability.

D. Illumination: Apply flooring system only where a minimum of 30 foot-candles exist when measured from 3 feet from surface.

E. Advise other trades of fixtures and fittings not to be installed until flooring is cured and protected.

1.8 PROTECTION

A. Protect adjacent surfaces not scheduled to receive the flooring by masking, or by other means, to maintain these surfaces free of the flooring material.

PART 2 PRODUCTS

2.1 COMPONENTS

A. Basis of Design: (SC-1) Sherwin Williams High Performance Flooring - Resuflor Deco / H&C Shield-Crete.
   1. Fluid-Applied Flooring: Epoxy, two component, for a slip resistant, cleanable textured finish.
   2. Flexible Membrane for crack treatment: 100% solids flexible epoxy
   3. Aggregates:
      a. Blended quartz sand for base.
   4. Color coated quarz with a minimum Mohs.. hardness of 6.
   5. Matrix: Matrix-epoxy /aggregate composition
   6. Grout and Topcoats: Clear two component UV Light resistant epoxy.
   7. Integral coved base: 4 inch.
   8. Color: as selected by Architect from manufacturer's standard patterns.

B. Basis of Design: (SC-3) Sherwin Williams H&C Colortop
   1. High solids concrete sealer with decorative stain.
   2. Color: as selected by Architect from manufacturer’s standard colors.

2.2 ACCESSORIES

A. Sub-Floor Filler: Type recommended by flooring material manufacturer for field conditions.

B. Primers and Adhesives: Waterproof; types recommended by flooring manufacturer.

C. Cleaner and Degreaser: types recommended by flooring manufacturer.

PART 3 EXECUTION

3.1 EXAMINATION

A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.

B. Verify previous floor system has been satisfactorily prepared and surfaces are sufficiently uniform for application of new floor system.

C. Verify floor and lower wall surfaces are free of substances capable of impairing adhesion of adhesive and finish materials.

3.2 PREPARATION

A. Prepare surfaces as required by manufacturer.

B. Remove sub-floor ridges and bumps. Fill minor or local low spots, cracks, joints, holes, and other defects with sub-floor filler.

C. Apply, trowel, and float filler to achieve smooth, flat, hard surface. Grind irregularities above surface level. Prohibit traffic until filler is cured.

D. Clean substrate.

E. Apply primer as required to prevent "bleed-thru" or interference with adhesion by substances that cannot be removed.

3.3 INSTALLATION

A. Install in strict conformance with manufacturer's instructions.

B. Prepare existing floor surface to receive new finish.

C. Route out all cracks and fill with crack filler approved by Manufacturer of floor materials.

D. Prime entire surface with recommended primer or moisture vapor control treatment, apply prior to installation of crack isolation membrane and also use to fill cracks.

E. Apply epoxy binder and broadcast decorative aggregate in two applications to achieve a minimum thickness of 1/8 inch.

F. Apply UV light resistant epoxy grout coat and topcoats to provide a uniform, dense surface.

G. Integral Cove Base: Provide cove trim strip at top of base as recommended by flooring manufacturer and trowel material up wall to form smooth, integral transition and base 4 inches high.

3.4 PROTECTION OF INSTALLED CONSTRUCTION

A. Section 01 70 00 - Execution and Closeout Requirements: Protecting installed construction.

B. Prohibit traffic on floor finish for 48 hours after installation or until cured.

C. Barricade area to protect flooring until cured.

END OF SECTION

SECTION 09 90 00

PAINTING AND COATING

PART 1 GENERAL

1.1 SUMMARY

A. Section includes all materials, labor, tools, equipment and supervision necessary for surface preparation, priming, and complete field painting of all items indicated on the Drawings and herein specified. This Work shall include, but not be limited to, the following:
   1. Surface preparation and field application of paints, stains, sealers and other coatings.
   2. Surfaces include existing and new applications.
   3. Miscellaneous existing and new trim, grills and accessories not factory finished.
   4. Removal, preparation and painting of existing trims, grills and miscellaneous items.

B. Work Not Included, or Specified Elsewhere:
   1. Shop Priming: Unless otherwise specified, shop priming of ferrous metal items is included under various sections for structural steel, miscellaneous metal, hollow metal work, and similar items.
   2. Pre-Finished Items: Unless otherwise indicated, do not include painting when factory-finishing or installer-finishing is specified for such items as (but not limited to) metal toilet enclosures, prefinished partition systems, acoustic materials architectural woodwork and casework, finished mechanical and electrical equipment including light fixtures, switchgear and distribution cabinets, (except in finished areas).
   3. Concealed Surfaces: Unless otherwise indicated, painting is not required on surfaces such as walls or ceilings in concealed areas and generally inaccessible areas, foundation spaces, furred areas, utility tunnels, pipe spaces, duct shafts and elevator shafts.
   4. Finished Metal Surfaces: Metal surfaces of anodized aluminum, stainless steel, chromium plate, copper, bronze and similar finished materials will not require finish painting, unless otherwise indicated.
   5. Operating Parts: Moving parts of operating units, mechanical and electrical parts, such as valve and damper operators, linkages, sensing devices, motor and fan shafts will not require finish painting, unless otherwise indicated.

C. Related Sections:
   1. Section 04 20 00 – Unit Masonry Assemblies: Masonry surfaces.
   2. Section 05 12 00 – Structural Steel: Shop-primed items.
   3. Section 09 16 00 – Gypsum Board Assemblies

1.2 REFERENCES

A. American Society for Testing and Materials:

1. ASTM D16 - Standard Terminology Relating to Paint, Varnish, Lacquer, and Related Products.
2. ASTM D4442 - Standard Test Methods for Direct Moisture Content Measurement of Wood and Wood-Base Materials.
3. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.

B. Painting and Decorating Contractors of America:
1. PDCA - Architectural Painting Specification Manual.

C. South Coast Air Quality Management District:
1. SCAQMD Rule 1113 - Architectural Coatings.

D. SSPC: The Society for Protective Coatings:
1. SSPC - Steel Structures Painting Manual.

1.3 DEFINITIONS

A. Conform to ASTM D16 for interpretation of terms used in this section.

1.4 SUBMITTALS

A. Section 01 33 00 - Submittal Procedures: Submittal procedures.

B. Product Data: Submit data on finishing products.
1. Material List: Provide an inclusive list of required coating materials. Indicate each material and cross-reference specific coating, finish system, and application. Identify each material by manufacturer's catalog number and general classification.

C. Samples:
1. Initial Submittal: Submit two sets of manufacturer’s paper chip samples, illustrating range of colors and textures available for each surface finishing product scheduled.
2. Final Submittal: Submit three painted samples, illustrating selected colors and textures for each color and system selected with specified coats cascaded. Submit on heavy cardstock, 8-1/2 x 11 inch in size.

D. Manufacturer's Installation Instructions: Submit special surface preparation procedures and substrate conditions requiring special attention.

1.5 CLOSEOUT SUBMITTALS

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

B. Operation and Maintenance Data: Submit data on cleaning, touch-up, and repair of painted and coated surfaces.

1.6 MAINTENANCE MATERIAL SUBMITTALS

A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for maintenance materials.

B. Extra Stock Materials:
1. Furnish 1 unopened gallon of each color and finish as provided for Project.
2. Label each container with manufacturer's label, color no., type, texture and date.
3. Store where directed by Owner.

1.7 QUALIFICATIONS

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

B. Applicator: Company specializing in performing work of this section with minimum 3 years experience approved by manufacturer.

C. Source Limitations: Obtain block fillers, primers, and undercoat materials for each coating system from the same manufacturer as the finish coats.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Section 01 60 00 - Product Requirements: Product storage and handling requirements.

B. Deliver products to site in sealed and labeled containers; inspect to verify acceptability.

C. Container Label: Include manufacturer's name, type of paint, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.

D. Paint Materials: Store at minimum ambient temperature of 45 degrees F and maximum of 90 degrees F, in ventilated area, and as required by manufacturer's instructions.

1.9 ENVIRONMENTAL REQUIREMENTS

A. Section 01 60 00 - Product Requirements.

B. Do not apply materials when surface and ambient temperatures are outside temperature ranges required by paint product manufacturer.

C. Do not apply exterior coatings during rain or snow when relative humidity is outside humidity ranges, or moisture content of surfaces exceed those required by paint product manufacturer.

D. Minimum Application Temperatures for Latex Paints: 45 degrees F for interiors; 50 degrees F for exterior; unless required otherwise by manufacturer's instructions.

E. Provide lighting level of 80 ft candle measured mid-height at substrate surface.

1.10 SEQUENCING

A. Section 01 10 00 - Summary: Work sequence.

B. Sequence application to the following:
   1. Do not apply finish coats until paintable sealant is applied.

PART 2 PRODUCTS

2.1 PAINTS AND COATINGS

A. Product Quality Standard:
   1. Paints, Stains, Primer Sealers and Block Fillers: The Sherwin-Williams Company.
   2. Special Coatings: Tnemec
      a. Prime Coat: Tnemec Series 135 Chembuild
      b. Finish Coat: Tnemec Series N69 Epoxoline

B. Provide the **best** quality grade of the various types of coatings as regularly manufactured by paint manufacturer approved by the Architect. Materials not displaying the manufacturer's identification as a best-grade product will not be acceptable.

C. Material Compatibility: Provide block fillers, primers, undercoats and finish coat materials that are compatible with one another and the substrates indicated under conditions of service and application, as demonstrated by manufacturer based on testing and field experience.

D. Colors: Provide color selections made by the Architect from the manufacturers standard color ranges for each product.

2.2 COMPONENTS

A. Coatings: Ready mixed, except field catalyzed coatings. Prepare coatings:
   1. To soft paste consistency, capable of being readily and uniformly dispersed to homogeneous coating.
   2. For good flow and brushing properties.
   3. Capable of drying or curing free of streaks or sags.

B. Accessory Materials: Linseed oil, shellac, turpentine, paint thinners and other materials not specifically indicated but required to achieve finishes specified; commercial quality.

C. Patching Materials: Latex filler.

D. Fastener Head Cover Materials: Latex filler.

PART 3 EXECUTION

3.1 EXAMINATION

A. Section 01 31 00 - Project Management and Coordination: Coordination and project conditions.

B. Verify surfaces are ready to receive Work as instructed by product manufacturer.

C. Examine surfaces scheduled to be finished prior to commencement of work. Report conditions capable of affecting proper application.
   1. The Applicator shall be wholly responsible for the finish of the work, and shall not commence any part of it until surfaces are in proper condition.

D. Test shop applied primer for compatibility with subsequent cover materials.

E. Measure moisture content of surfaces using electronic moisture meter. Do not apply finishes unless moisture content of surfaces are below the following maximums:
   1. Plaster and Gypsum Wallboard: 12 percent.
   2. Masonry, Concrete, and Concrete Unit Masonry: 12 percent.
   3. Concrete Floors: 8 percent.

3.2 PREPARATION

A. Surface Appurtenances: Remove electrical plates, hardware, light fixture trim, escutcheons, and fittings prior to preparing surfaces or finishing.

B. Surfaces: Correct defects and clean surfaces capable of affecting work of this section.

C. Marks: Seal with shellac those which may bleed through surface finishes.

D. Impervious Surfaces: Remove mildew by scrubbing with solution of tri-sodium phosphate and bleach. Rinse with clean water and allow surface to dry.

E. Gypsum Board Surfaces: Fill minor defects with filler compound. Spot prime defects after repair.

F. Galvanized Surfaces: Remove surface contamination and oils and wash with solvent. Apply coat of etching primer.

G. Concrete and Unit Masonry Surfaces Scheduled to Receive Paint Finish: Remove dirt, loose mortar, scale, salt or alkali powder, and other foreign matter. Remove oil and grease with solution of tri-sodium phosphate; rinse well and allow to dry. Remove stains caused by weathering of corroding metals with solution of sodium metasilicate after thoroughly wetting with water. Allow to dry.

H. Shop Primed Steel Surfaces: Sand and scrape to remove loose primer and rust. Feather edges to make touch-up patches inconspicuous. Clean surfaces with solvent. Prime bare steel surfaces. Prime metal items including shop primed items.

I. Metal Doors Scheduled for Painting: Prime metal door top and bottom edge surfaces.

3.3 APPLICATION

A. Do not apply finishes to surfaces that are not dry. Allow applied coats to dry before next coat is applied.

B. The number of coats specified are minimum requirements. Additional coats shall be applied until a uniform finish surface and appearance is achieved.
1. Apply coats at coverage rates to achieve the manufacturer's recommended dry film thickness, minimum.
2. Use tinted primer for medium and deep base colors.

C. Apply each coat to uniform appearance. Apply each coat of paint slightly darker than preceding coat unless specified otherwise.

D. Sand wood and metal surfaces lightly between coats to achieve required finish.

E. Vacuum clean surfaces of loose particles. Use tack cloth to remove dust and particles just prior to applying next coat.

F. Touching up, after initial painting, shall be blended as not to be visible after touch up. If a smooth transition from original paint, to the touch up paint can not be achieved with small area painting, touch up shall extend to the end of a wall or a corner and from floor to ceiling. Touch up shall not reflect brush strokes.

G. Properly mask materials adjacent to materials to receive initial and touch up applications.

H. Finishing Mechanical And Electrical Equipment:
1. Paint shop finished items occurring at interior areas.
2. Remove unfinished louvers, grilles, covers, and access panels on mechanical and electrical components and paint separately.
3. Prime and paint insulated and exposed pipes, conduit, boxes, insulated and exposed ducts, hangers, brackets, collars and supports, and similar items except where items are shop finished.
4. Paint interior surfaces of air ducts visible through grilles and louvers with one coat of flat black paint to visible surfaces. Paint dampers exposed behind louvers, grilles, to match face panels.
5. Paint exposed conduit and electrical equipment occurring in finished areas.
6. Paint both sides and edges of plywood backboards for electrical and telephone equipment before installing equipment.

7. Color code equipment, piping, conduit, and exposed duct work in accordance with requirements indicated. Color band and identify with flow arrows, names, and numbering.
8. Remove and reinstall electrical cover plates, hardware, light fixture trim, escutcheons, and fittings for initial & touch up painting.

I. Existing Ceramic Tile: Uniformly scarified surface with heavy grit sandpaper to de-gloss and profile the substrate. Surface shall be clean, dry and free of contaminants before applying the Prime and Finish Coats.

3.4 CLEANING

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

B. Collect waste material which may constitute fire hazard, place in closed metal containers, and remove daily from site.

C. Protect work of other trades against damage by painting and finishing work. Correct any damage by cleaning, repairing or replacing, and repainting as acceptable to Architect.

D. Provide "Wet Paint" signs as required to protect newly-painted finishes. Remove protective wrappings provided by others for protection of their work, after completion of painting operations.

E. At the completion of work of other trades, touch-up paint and restore all damaged or defaced painted surfaces.

3.5 SCHEDULE - EXTERIOR SURFACES

A. Concrete Block:
1. One coat of latex acrylic primer.
2. One coat of acrylic elastomeric block filler.
3. One coat of acrylic elastomeric coating.

B. Steel / Unprimed:
1. One coat of acrylic waterborne, corrosion resistant, industrial primer coating.
2. Two coats of acrylic waterborne, corrosion resistant, industrial coating, semi-gloss.

C. Steel / Shop Primed:
1. One coat of acrylic waterborne, corrosion resistant, industrial primer coating.
2. Two coats of acrylic waterborne, corrosion resistant, industrial coating, semi-gloss.

D. Steel / Galvanized:
1. One coat of acrylic waterborne, corrosion resistant, industrial primer coating.

2. Two coats of acrylic waterborne, corrosion resistant, industrial coating, semi-gloss.

E. Aluminum / Mill Finish:
1. One coat of acrylic waterborne, corrosion resistant, industrial primer coating.
2. Two coats of acrylic waterborne, corrosion resistant, industrial coating, semi-gloss.

3.6 SCHEDULE - INTERIOR SURFACES

A. Concrete Block:
1. One coat of block filler.
2. Two coats of latex acrylic, eggshell, unless otherwise indicated.

B. Steel - Unprimed:
1. One coat of latex acrylic metal primer.
2. Two coats of acrylic-modified alkyd industrial enamel, semi-gloss.

C. Steel - Primed:
1. One coat of latex acrylic metal primer.
2. Two coats of acrylic-modified alkyd industrial enamel, semi-gloss.

D. Steel - Galvanized:
1. One coat of latex acrylic metal primer.
2. Two coats of acrylic-modified alkyd industrial enamel, semi-gloss.

E. Aluminum - Mill Finish:
1. One coat of latex acrylic metal primer.
2. Two coats of acrylic-modified alkyd industrial enamel, semi-gloss.

F. Gypsum Board Walls:
1. One coat of latex acrylic primer sealer.
2. Two coats of latex acrylic, eggshell.

G. Gypsum Board Ceilings:
1. One coat of latex acrylic primer sealer.
2. Two coats of latex acrylic, flat.

H. Exposed Structure, Ductwork, Piping, Conduits and Similar Items**:**
1. Two coats of spray-applied, dry-fog type, latex acrylic, flat.

I. Existing Ceramic Wall Tile:
1. 3-4 dry mils primer.
2. 3-4 mils dry topcoat.

END OF SECTION

SECTION 10 28 00

TOILET, BATH AND LAUNDRY ACCESSORIES

PART 1 GENERAL

1.1 SUMMARY

A. Section includes toilet and bath accessories as indicated on the Drawings.

1.2 REFERENCES

A. ASTM International:
1. ASTM A123 - Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
2. ASTM A269 - Seamless and Welded Austenitic Stainless Steel Tubing for General Service.
3. ASTM A653 - Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
4. ASTM A666 - Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar.
5. ASTM B456 - Electrodeposited Coatings of Copper Plus Nickel Plus Chromium and Nickel Plus Chromium.
6. ASTM C1036 - Flat Glass.

1.3 SUBMITTALS

A. Section 01 33 00 - Submittal Procedures: Submittal procedures.

B. Product Data: Submit data on accessories describing size, finish, details of function, attachment methods.

1.4 QUALITY ASSURANCE

A. Perform Work in accordance with requirements for physically handicapped.

1.5 COORDINATION

A. Section 01 31 00 - Project Management & Coordination: Coordination and project conditions.

B. Coordinate the Work with placement of internal wall reinforcement and reinforcement of toilet partitions to receive anchor attachments.

PART 2 PRODUCTS

2.1 TOILET AND BATH ACCESSORIES

A. Manufacturers:
1. Bobrick Washroom Accessories.

2. Bradley Corp.
3. American Specialties.

B. Design grab bars and attachments to resist minimum 250 lb concentrated load applied at any point in any direction or forces as required by applicable codes.

C. General: Shop assembled, free of dents and scratches and packaged complete with anchors and fittings, steel anchor plates, adapters, and anchor components for installation.
1. Grind welded joints smooth.
2. Fabricate units made of metal sheet of seamless sheets, with flat surfaces.

D. Keys: Furnish three keys for each accessory to Owner; master key accessories.

E. Stainless Steel Sheet: ASTM A666, Type 304.

F. Stainless Steel Tubing: ASTM A269, stainless steel.

G. Galvanized Sheet Steel: ASTM A653, G60.

H. Adhesive:
1. Two-component epoxy type, waterproof.
2. Maximum volatile organic compound content in accordance with SCAQMD Rule 1168.

I. Fasteners, Screws, and Bolts: Hot dip galvanized , tamper-proof.

J. Expansion Shields: Fiber, lead, or rubber as recommended by accessory manufacturer for component and substrate.

K. Factory Finishing:
1. Stainless Steel: No. 4 satin brushed finish, unless otherwise noted.
2. Chrome/Nickel Plating: ASTM B456, Type SC 2, satin finish, unless otherwise noted.
3. Baked Enamel: Pretreat to clean condition, apply one coat primer and minimum two coats baked enamel.
4. Galvanizing for Items other than Sheet: ASTM A123 to 1.25 oz/sq yd. Galvanize ferrous metal and fastening devices.
5. Back-paint components where contact is made with building finishes to prevent electrolysis.

2.2 TOILET ACCESSORIES

A. Types of accessories required are listed in schedule located on Drawings.

B. Manufacturer's name or model numbers as listed serve as a basis of design for product features, functions, and general appearance.

PART 3 EXECUTION

3.1 EXAMINATION

A. Section 01 31 00 - Project Management & Coordination: Coordination and project conditions.

B. Verify exact location of accessories for installation.

C. Verify field measurements are as indicated on product data.

D. Verify proper installation of blocking, reinforcing plates, concealed anchors and other supports in walls and ceilings.

3.2 PREPARATION

A. Deliver inserts and rough-in frames to site for timely installation.

B. Provide templates and rough-in measurements as required.

3.3 INSTALLATION

A. Install plumb and level, securely and rigidly anchored to substrate.

B. Mounting Heights and Locations: As required by accessibility regulations and as indicated on Drawings.

3.4 SCHEDULES

1. Provide products as indicated in the Toilet Accessory Schedule included in the Drawings.

END OF SECTION