GT CRECINE RESIDENCE HALL RENOVATION

900 Hemphill Ave., NW
Atlanta, GA 30318

BOR PROJECT No: BR-30-1707
ARCHITECT'S PROJECT No: 2018003

Issued for Construction Project Manual

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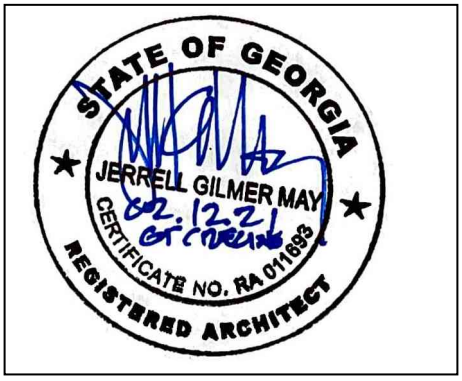

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SECTION 01 1000

SUMMARY OF WORK

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 WORK COVERED BY CONTRACT DOCUMENTS

A. The Work of Project is defined by the Contract Documents and consists of the following:

1. The project consists of a renovation to a dormitory on the Georgia Tech Campus. The Work includes a finish refresh for the Hallways and Common areas, a partial demolition and renovation of the Lounge Spaces on each floor and a new Lounge, Juice Bar, and Gym on the First Floor.

1.03 EXISTING CONDITIONS AND SPECIAL PROJECT CONDITIONS

A. All reasonable efforts have been made by Owner's surveyor to locate and indicate various existing and proposed utilities and other conditions at the site. However, accuracy and completeness of this information is not guaranteed.

B. Prior to beginning actual Work, thoroughly examine Project site, including access, storage, delivery facilities and all existing conditions that may affect Work. Inform Architect of discrepancies that affect completion of Work in compliance with Contract Documents.

C. Replace or repair new and existing site improvements, utilities, streets and curbs which are damaged or disturbed incident to Work performed as part of Contract. Repair construction to be equivalent to or superior to quality and appearance of original construction.

D. Coordinate work of all trades where work is concealed above finish ceilings, below finish floors or within walls, particularly where Contract Drawings are diagrammatic. Coordinate locations of piping, ductwork, conduit, lighting fixtures and similar items.

E. Definitions:
1. For purposes of this Contract reference herein to "Owner" shall mean "Owner or Owner's Project Manager".

1.04 ACCESS TO SITE

A. General: Contractor shall have limited use of Project site for construction operations as indicated on Drawings by the Contract limits and General Notes and as indicated by requirements of this Section.

B. Coordinate use of premises under direction of Owner. Limit use of site for work and for storage to allow:
1. Work by other Contractors.
2. Space for Subcontractors' use.
3. Owner's occupancy.

C. Confine construction operations, including materials and equipment storage, project offices, storage buildings and other construction related operations and activities within designated areas.
   1. Contractor shall move materials, under his control, which interfere with work, when directed and at his expense.
   2. Obtain and pay for use of additional storage and work areas needed.

D. Owner Use of Site: Owner specifically reserves right of entry to completed, and partially completed, areas for performance of other Work under Separate Contracts.

E. Condition of Existing Building: Maintain portions of existing building affected by construction operations in a weathertight condition throughout construction period. Repair damage caused by construction operations.

1.05 NOTICE OF COMMENCEMENT

A. Contractor is required to obtain, and post at the Project Site, a Notice of Commencement, in compliance with the Official Code to Georgia Annotated, Section 44-14-361.5.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01 2500

SUBSTITUTION PROCEDURES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 DEFINITIONS

A. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor after Award of Contract. Substitutions are considered the following:
   1. Changes proposed by Contractor that are required due to changed Project conditions, such as unavailability of product, regulatory changes, or unavailability of required warranty terms.
   2. Changes proposed by Contractor or Owner that are not required in order to meet other Project requirements but may offer advantage to Contractor or Owner.

1.03 SUBSTITUTION PROCEDURE

A. Substitution Requests: Architect will consider formal requests from Contractor for product substitutions during pricing period and within 30 days after execution of Contract. 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 Drawing numbers and titles.
   1. Substitution Request Form: Use facsimile of 01 2501 - Request For Substitution Form.
   2. Documentation: Show compliance with requirements for substitutions and the following, as applicable:
      a. Statement indicating why specified product or fabrication or installation method cannot be provided, if applicable.
      b. Coordination of 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.
   3. Submit separate request for each substitution. Support request with the following:
      a. Product Data, including drawings and descriptions of products and fabrication and installation procedures.
      b. Samples, where applicable or requested.
      c. Certificates and qualification data, where applicable or requested.
      d. List of similar installations for completed projects, with project names and addresses as well as names and addresses of architects and owners, include date of each installation.
      e. Material test reports from a qualified testing agency, indicating and interpreting test results for compliance with requirements indicated.
      f. Research reports evidencing compliance with building code in effect for Project.
      g. Data relating to changes in construction schedule.

h. List of changes required in other Work or products.
i. Designation of required license fees or royalties.
j. Cost information, including a proposal of change, if any, in the Contract Sum.
k. Itemized comparison of proposed substitution with product specified. List significant variations, including costs.
l. Contractor's certification that proposed substitution complies with requirements in the Contract Documents, except 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 produce indicated results.

4. Substitutions will not be considered if they are indicated or implied on Shop Drawings or Project Data submittals without a formal request from Contractor or when acceptance will require substantial revision of Contract Documents.

1.04 CONTRACTOR'S REPRESENTATION

A. Contractor has personally investigated proposed product and has determined that it is equal or superior to that specified and that it shall perform the function for which it is intended.

B. Contractor will provide same warranty, bonds and guarantee for substituted item as for product specified.

C. Contractor will coordinate installation of approved substitution into Work, to include building modifications if necessary, making such changes as may be required for Work to be complete.

D. Contractor certified cost data presented is complete and includes all related costs under this contract, excluding Architect's redesign fees.

E. Contractor waives claims for additional costs related to substitution which subsequently become apparent.

F. 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.

1.05 ARCHITECT'S DUTIES

A. Review Contractor's request for substitution with reasonable timeliness.

B. Notify Contractor of decision for acceptance of request for substitution.

C. Architect reserves the right to require substitute items to comply in color and pattern with specified items to secure design intent.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01 25 01

REQUEST FOR SUBSTITUTION FORM

TO: May Architecture
1175 Peachtree Street NE
Colony Square Building 100, Suite 1800
Atlanta, GA 30361
(404) 614-0700

Project: Georgia Institute of Technology
CRECINE RESIDENCE HALL RENOVATION

Project No: 2020051

FROM: _____
name of company
_____
street address
_____
city and state
_____
contact name and phone number

Specification Title: _____ Description: _____
Section: _____ Page: _____ Article/Paragraph: _____

Proposed Substitution: _____
Manufacturer: _____ Address: _____
Phone: _____ _____
Trade Name: _____ Model No.: _____

Installer: _____ Address: _____
Phone: _____ _____
Description:

History: ☐ New Product ☐ 2-5 years old ☐ 5-10 years old ☐ More than 10 years old
Attach applicable performance and test data
Numbers of applicable reference standards _____
Attach a color chart, if applicable
Attach installation instructions.
Manufacturer's Reputation: Attach the following:
Evidence of reputation for prompt delivery.
Evidence of reputation for efficiency in servicing products.
Evidence of reputation for minimum five years' successful history.
Comparison: Attach an itemized comparison of the proposed substitution with product specified.

Previous Installation: Provide the following information on similar projects on which proposed substitution was used. Projects listed must have begun construction prior to the year _2014_.

	Project:	Address:	Date Installed:	Architect Name and Phone:
1				
2				
3				
4				
5				

Proposed substitution affects other parts of Work: Yes ☐ No ☐
Please explain: _____

Schedule Data: Attach data relating to changes required in other work to permit use of proposed substitution and changes required in construction schedule.
Add _____ Deduct _____ days.

Cost Data: Attach accurate cost data on proposed substitution in comparison with product specified.
Savings to Owner for accepting substitution: _____ ($)

In making request for substitution, Contractor represents that:
1. Contractor has examined the Drawings and Specifications, and has determined that, to the best of his knowledge, the proposed substitution is appropriate for the use intended in the Drawings and Specifications.
2. Contractor will provide the same warranty for substitution as for product or method specified.
3. Contractor will coordinate installation of accepted substitution into Work, making such changes as may be required for Work to be complete in all respects.
4. Contractor waives all claims for additional costs related to substitution which consequently become apparent.
5. Cost data is complete and includes all related costs under Contract.

signature of Contractor _____ date _____ signature of subcontractor or materialman _____ date _____

SECTION 01 2600

CONTRACT MODIFICATION PROCEDURES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

A. Section includes administrative and procedural requirements for handling and processing Contract modifications.

1.03 MINOR CHANGES IN THE WORK

A. Architect will issue supplemental instructions authorizing minor changes in the Work, not involving adjustment to the Contract Sum or the Contract Time, on ~~AIA Document G710~~ ***on Board of Regents forms.***

1.04 PROPOSAL REQUESTS

A. Owner-Initiated Proposal Requests: Architect will issue a detailed description of proposed changes in the Work that may require adjustment to the Contract Sum or the Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications.
   1. Work Change Proposal Requests issued by Architect are not instructions either to stop work in progress or to execute the proposed change.
   2. Within 10 days after receipt of Proposal Request, submit a quotation estimating cost adjustments to the Contract Sum and the Contract Time necessary to execute the change.
      a. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
      b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
      c. Include costs of labor and supervision directly attributable to the change.
      d. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
      e. Quotation Form: Use forms provided by Owner.

B. Contractor-Initiated Proposals: If latent or changed conditions require modifications to the Contract, Contractor may initiate a claim by submitting a request for a change to Architect.
   1. Include a statement outlining reasons for the change and the effect of the change on the Work. Provide a complete description of the proposed change. Indicate the effect of the proposed change on the Contract Sum and the Contract Time.
   2. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.

3. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
4. Include costs of labor and supervision directly attributable to the change.
5. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
6. Comply with requirements in Section 01 2500 - Substitution Procedures if the proposed change requires substitution of one product or system for product or system specified.
7. Proposal Request Form: Use form acceptable to Architect.

1.05 CHANGE ORDER PROCEDURES

A. On Owner's approval of a Work Change Proposal Request, Architect will issue a Change Order for signatures of Owner and Contractor on AIA G701.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 01 2600

SECTION 01 2900

PAYMENT PROCEDURES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

A. Section includes administrative and procedural requirements necessary to prepare and process Applications for Payment.

1.03 DEFINITIONS

A. Schedule of Values: A statement furnished by Contractor allocating portions of the Contract Sum to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.

1.04 SCHEDULE OF VALUES

A. Coordination: Coordinate preparation of the schedule of values with preparation of Contractor's construction schedule.
   1. Coordinate line items in the schedule of values with 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 days before the date scheduled for submittal of initial Applications for Payment.
   3. Subschedules for Separate Elements of Work: Where the Contractor's construction schedule defines separate elements of the Work, provide subschedules showing values coordinated with each element.

B. Format and Content: Use Project Manual table of contents as a guide to establish line items for the schedule of values. Provide at least one line item for each Specification Section.
   1. Identification: Include the following Project identification 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. Provide multiple line items for principal subcontract amounts in excess of five percent of the Contract Sum.

4. 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.
   a. Differentiate between items stored on-site and items stored off-site.
5. Overhead Costs: Include total cost and proportionate share of general overhead and profit for each line item.
6. Overhead Costs: Show cost of temporary facilities and other major cost items that are not direct cost of actual work-in-place as separate line items.
7. Schedule of Values Revisions: Revise the schedule of values when Change Orders or Construction Change Directives result in a change in the Contract Sum. Include at least one separate line item for each Change Order and Construction Change Directive.

1.05 APPLICATIONS FOR PAYMENT

A. Each Application for Payment following the initial Application for Payment shall be consistent with previous applications and payments as certified by Architect and paid for by Owner.

B. Payment Application Times: The date for each progress payment is indicated in the Agreement between Owner and Contractor. The period of construction work covered by each Application for Payment is the period indicated in the Agreement.
   1. Submit draft copy of Application for Payment seven days prior to due date for review by Architect.
   2. If no date or period for Payment Application times is defined in the Agreement between the Owner and Contractor, 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 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 for work completed following previous Application for Payment, whether or not payment has been received. Include only amounts for work completed at time of Application for Payment.
   3. Include amounts of Change Orders and Construction Change Directives issued before last day of construction period covered by application.
   4. Indicate separate amounts for work being carried out under Owner-requested project acceleration.

E. Stored Materials: Include in Application for Payment amounts applied for materials or equipment purchased or fabricated and stored, but not yet installed. Differentiate between items stored on-site and items stored off-site.
   1. Provide certificate of insurance, evidence of transfer of title to Owner, and consent of surety to payment for stored materials.
   2. Provide supporting documentation that verifies amount requested, such as paid invoices. Match amount requested with amounts indicated on documentation; do not include overhead and profit on stored materials.
   3. Provide summary documentation for stored materials indicating the following:
      a. Value of materials previously stored and remaining stored as of date of previous Applications for Payment.
      b. Value of previously stored materials put in place after date of previous Application for Payment and on or before date of current Application for Payment.
      c. Value of materials stored since date of previous Application for Payment and remaining stored as of date of current Application for Payment.
   4. Items stored off-site:
      a. The Agreement between the Owner and Contractor may prohibit application for items stored off-site. Acceptance of materials stored off-site will be at the discretion of the Owner.
      b. Provide certificate of insurance, evidence of transfer of title to Owner, and consent of surety to payment for stored materials.

F. 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.

G. 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 shows completion of an item, submit conditional final or full waivers.
   3. Owner reserves the right to designate which entities involved in the Work must submit waivers.
   4. Submit final Application for Payment with or preceded by conditional final waivers from every entity involved with performance of the Work covered by the application who is lawfully entitled to a lien.
   5. Waiver Forms: Submit executed waivers of lien on forms acceptable to Owner.

H. Initial Application for Payment: Administrative actions and submittals that must precede 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. Combined Contractor's construction schedule (preliminary if not final) incorporating Work of multiple contracts, with indication of acceptance of schedule by each Contractor.
   5. Products list (preliminary if not final).
   6. Sustainable design action plans, including preliminary project materials cost data.
   7. Schedule of unit prices.
   8. Submittal schedule (preliminary if not final).
   9. List of Contractor's staff assignments.
   10. List of Contractor's principal consultants.
   11. Copies of building permits.

12. Copies of authorizations and licenses from authorities having jurisdiction for performance of the Work.
13. Initial progress report.
14. Report of preconstruction conference.
15. Certificates of insurance and insurance policies.
16. Performance and payment bonds.
17. Data needed to acquire Owner's insurance.

I. 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 and a statement showing an accounting of changes to the Contract Sum.
2. This application shall reflect Certificate(s) of Substantial Completion issued previously for Owner occupancy of designated portions of the Work.

J. Final Payment Application: After completing Project closeout 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 closeout requirements.
2. Insurance certificates for products and completed operations where required and proof that taxes, fees, and similar obligations were paid.
3. Updated final statement, accounting for final changes to the Contract Sum.
4. AIA Document G706.
5. AIA Document G706A.
6. AIA Document G707.
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.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01 3100

PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

A. Section includes administrative provisions for coordinating construction operations on Project including, but not limited to, the following:
   1. General coordination procedures.
   2. Coordination drawings.
   3. RFIs.
   4. Digital project management procedures.
   5. Project meetings.

B. Each contractor shall participate in coordination requirements. Certain areas of responsibility are assigned to a specific contractor.

C. Related Requirements:
   1. Section 01 7300 "Execution" for procedures for coordinating general installation and field-engineering services, including establishment of benchmarks and control points.
   2. Section 01 7700 "Closeout Procedures" for coordinating closeout of the Contract.

1.03 DEFINITIONS

A. BIM: Building Information Modeling.

B. RFI: Request for Information. Request from Owner, Construction Manager, Architect, or Contractor seeking information required by or clarifications of the Contract Documents.

1.04 INFORMATIONAL SUBMITTALS (FIO)

A. Subcontract 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, telephone number, and email address 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.

B. Key Personnel Names: Within 15 days of starting construction operations, submit a list of key personnel assignments, including superintendent and other personnel in attendance at Project site. Identify individuals and their duties and responsibilities; list addresses and cellular telephone numbers and e-mail addresses. Provide names, addresses, and telephone numbers of individuals assigned as alternates in the absence of individuals assigned to Project.
   1. Post copies of list in project meeting room, in temporary field office, in web-based Project software directory, and in prominent location in each built facility. Keep list current at all times.

1.05 GENERAL COORDINATION PROCEDURES

A. Coordination: Coordinate construction operations included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations included in different Sections that depend on each other for proper installation, connection, and operation.
   1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
   2. Coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair.
   3. Make adequate provisions to accommodate items scheduled for later installation.

B. Prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and list of attendees at meetings.
   1. Prepare similar memoranda for Owner and separate contractors if coordination of their Work is required.

C. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:
   1. Preparation of Contractor's construction schedule.
   2. Preparation of the schedule of values.
   3. Installation and removal of temporary facilities and controls.
   4. Delivery and processing of submittals.
   5. Progress meetings.
   6. Preinstallation conferences.
   7. Project closeout activities.
   8. Startup and adjustment of systems.

1.06 COORDINATION DRAWINGS

A. Coordination Drawings, General: Prepare coordination drawings according to requirements in individual Sections, and additionally where installation is not completely indicated 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. Use applicable Drawings as a basis for preparation of coordination drawings. Prepare sections, elevations, and details as needed to describe relationship of various systems and components.
      b. Coordinate the addition of trade-specific information to coordination drawings in a sequence that best provides for coordination of the information and resolution of conflicts between installed components before submitting for review.
      c. Indicate functional and spatial relationships of components of architectural, structural, civil, mechanical, and electrical systems.
      d. Indicate space requirements for routine maintenance and for anticipated replacement of components during the life of the installation.
      e. Show location and size of access doors required for access to concealed dampers, valves, and other controls.
      f. Indicate required installation sequences.

g. Indicate dimensions shown on Drawings. Specifically note dimensions that appear to be in conflict with submitted equipment and minimum clearance requirements. Provide alternative sketches to Architect indicating proposed resolution of such conflicts. Minor dimension changes and difficult installations will not be considered changes to the Contract.

B. Coordination Drawing Organization: Organize coordination drawings as follows:
1. Floor Plans and Reflected Ceiling Plans: Show architectural and structural elements, and mechanical, plumbing, fire-protection, fire-alarm, and electrical Work. Show locations of visible ceiling-mounted devices relative to acoustical ceiling grid. Supplement plan drawings with section drawings where required to adequately represent the Work.
2. Plenum Space: Indicate subframing for support of ceiling and wall systems, mechanical and electrical equipment, and related Work. Locate components within plenums to accommodate layout of light fixtures and other components indicated on Drawings. Indicate areas of conflict between light fixtures and other components.
3. Mechanical Rooms: Provide coordination drawings for mechanical rooms showing plans and elevations of mechanical, plumbing, fire-protection, fire-alarm, and electrical equipment.
4. Structural Penetrations: Indicate penetrations and openings required for all disciplines.
5. Slab Edge and Embedded Items: Indicate slab edge locations and sizes and locations of embedded items for metal fabrications, sleeves, anchor bolts, bearing plates, angles, door floor closers, slab depressions for floor finishes, curbs and housekeeping pads, and similar items.
6. Mechanical and Plumbing Work: Show the following:
   a. Sizes and bottom elevations of ductwork, piping, and conduit runs, including insulation, bracing, flanges, and support systems.
   b. Dimensions of major components, such as dampers, valves, diffusers, access doors, cleanouts and electrical distribution equipment.
   c. Fire-rated enclosures around ductwork.
7. Electrical Work: Show the following:
   a. Runs of vertical and horizontal conduit 1-1/4 inches in diameter and larger.
   b. Light fixture, exit light, emergency battery pack, smoke detector, and other fire-alarm locations.
   c. Panel board, switch board, switchgear, transformer, busway, generator, and motor-control center locations.
   d. Location of pull boxes and junction boxes, dimensioned from column center lines.
8. Fire-Protection System: Show the following:
   a. Locations of standpipes, mains piping, branch lines, pipe drops, and sprinkler heads.
9. Review: Architect will review coordination drawings to confirm that in general the Work is being coordinated, but not for the details of the coordination, which are Contractor's responsibility. If Architect determines that coordination drawings are not being prepared in sufficient scope or detail, or are otherwise deficient, Architect will so inform Contractor, who shall make suitable modifications and resubmit.
10. Coordination Drawing Prints: Prepare coordination drawing prints according to requirements in Section 01 3300 "Submittal Procedures."

C. Coordination Digital Data Files: Prepare coordination digital data files according to the following requirements:
1. File Submittal Format: Submit or post coordination drawing files using PDF format.

1.07 REQUEST FOR INFORMATION (RFI)

A. General: Immediately on discovery of the need for additional information, clarification, or interpretation of the Contract Documents, Contractor shall prepare and submit an RFI in the form specified.

1. Architect will return without response those RFIs submitted to Architect by other entities controlled by Contractor.
2. Coordinate and submit RFIs in a prompt manner so as to avoid delays in Contractor's work or work of subcontractors.

B. Content of 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 and 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 suggested resolution 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 necessary to fully describe items needing interpretation.
    a. Include dimensions, thicknesses, structural grid references, and details of affected materials, assemblies, and attachments on attached sketches.

C. RFI Forms: AIA Document G716.
1. Attachments shall be electronic files in PDF format.

D. Architect's Action: Architect will review each RFI, determine action required, and respond. Allow seven working days for Architect's response for each RFI. RFIs received by Architect after 1:00 p.m. will be considered as received the following working day.
1. The following Contractor-generated RFIs will be returned without action:
    a. Requests for approval of submittals.
    b. Requests for approval of substitutions.
    c. Requests for approval of Contractor's means and methods.
    d. Requests for coordination information already indicated in the Contract Documents.
    e. Requests for adjustments in the Contract Time or the Contract Sum.
    f. Requests for interpretation of Architect's actions on submittals.
    g. 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 by Architect 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 Contract Sum, notify Architect in writing within 10 days of receipt of the RFI response and before proceeding with information contained within RFI response.

E. RFI Log: Prepare, maintain, and submit a tabular log of RFIs organized by the RFI number. Submit log at each Owner-Architect-Contractor meeting. Include the following:
1. Project name.
2. Name and address of Contractor.

3. Name and address of Architect.
4. RFI number including RFIs that were returned without action or withdrawn.
5. RFI description.
6. Date the RFI was submitted.
7. Date Architect's response was received.
8. Identification of related Minor Change in the Work, Construction Change Directive, and Proposal Request, as appropriate.
9. Identification of related Field Order, Work Change Directive, and Proposal Request, as appropriate.

F. On receipt of Architect's action, update the RFI log and immediately distribute the RFI response to affected parties. Review response and notify Architect within seven days if Contractor disagrees with response.

1.08 DIGITAL PROJECT MANAGEMENT PROCEDURES

A. Use of Architect's Digital Data Files: Digital data files of Architect's BIM model or CAD drawings will be provided by Architect for Contractor's use during construction.
1. Architect makes no representations as to the accuracy or completeness of digital data files as they relate to Contract Drawings.
2. Digital Drawing Software Program: Contract Drawings are available in AutoDesk Revit format in the version used by Architect at time of drawing preparation.
3. Contractor shall execute a data licensing agreement in the form of AIA Document C106 Digital Data Licensing Agreement.
    a. Subcontractors, and other parties granted access by Contractor to Architect's digital data files shall execute a data licensing agreement in the form of AIA Document C106.

B. Web-Based Project Software: Newforma web-based Project software site for purposes of hosting and managing Project communication and documentation until Final Completion.
1. Web-based Project software site includes, at a minimum, the following features:
    a. Compilation of Project data, including Contractor, subcontractors, Architect, architect's consultants, Owner, and other entities involved in Project. Include names of individuals and contact information.
    b. Access control for each entity for each workflow process, to determine entity's digital rights to create, modify, view, and print documents.
    c. Document workflow planning, allowing customization of workflow between project entities.
    d. Creation, logging, tracking, and notification for Project communications required in other Specification Sections, including, but not limited to, RFIs, submittals, Minor Changes in the Work, Construction Change Directives, and Change Orders.
    e. Track status of each Project communication in real time, and log time and date when responses are provided.
    f. Procedures for handling PDFs or similar file formats, allowing markups by each entity. Provide security features to lock markups against changes once submitted.
    g. Processing and tracking of payment applications.
    h. Processing and tracking of contract modifications.
    i. Creating and distributing meeting minutes.
    j. Document management for Drawings, Specifications, and coordination drawings, including revision control.
    k. Management of construction progress photographs.
2. At completion of Project, provide digital archive in format that is readable by common desktop software applications in format acceptable to Architect. Provide data in locked format to prevent further changes.

C. PDF Document Preparation: Where PDFs are required to be submitted to Architect, prepare as follows:
   1. Assemble complete submittal package into a single indexed file incorporating submittal requirements of a single Specification Section and transmittal form with links enabling navigation to each item.
   2. Name file with submittal number or other unique identifier, including revision identifier.
   3. Certifications: Where digitally submitted certificates and certifications are required, provide a digital signature with digital certificate on where indicated.

1.09 PROJECT MEETINGS

A. General: Schedule and conduct meetings and conferences at Project site unless otherwise indicated.
   1. Attendees: Inform participants and others involved, and individuals whose presence is required, of date and time of each meeting. Notify Owner and Architect of scheduled meeting dates and times a minimum of 10 working days prior to meeting.
   2. Agenda: Prepare the meeting agenda. Distribute the agenda to all invited attendees.
   3. Minutes: Entity responsible for conducting meeting will record significant discussions and agreements achieved. Distribute the meeting minutes to everyone concerned, including Owner and Architect, within 10 days of meeting.

B. Preconstruction Conference: Schedule and conduct a preconstruction conference before starting construction, at a time convenient to Owner and Architect, but no later than 10 days after execution of the Agreement.
   1. Attendees: Authorized representatives of Owner, Owner’s Representative, Architect, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the conference. Participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
   2. Agenda: Discuss items of significance that could affect progress, including the following:
      a. Tentative construction schedule.
      b. Critical work sequencing and long lead items.
      c. Designation of key personnel and their duties.
      d. Lines of communications.
      e. Use of web-based Project software.
      f. Procedures for processing field decisions and Change Orders.
      g. Procedures for RFIs.
      h. Procedures for testing and inspecting.
      i. Procedures for processing Applications for Payment.
      j. Distribution of the Contract Documents.
      k. Submittal procedures.
      l. Preparation of Record Documents.
      m. Use of the premises and existing building.
      n. Work restrictions.
      o. Working hours.
      p. Owner's occupancy requirements.
      q. Responsibility for temporary facilities and controls.
      r. Procedures for moisture and mold control.
      s. Procedures for disruptions and shutdowns.
      t. Construction waste management and recycling.
      u. Office, work, and storage areas.
      v. Equipment deliveries and priorities.
      w. Security.
      x. Progress cleaning.
   3. Minutes: Contractor will record and distribute meeting minutes.

C. Preinstallation Conferences: Conduct a preinstallation conference at Project site before each construction activity when required by other sections and when required for coordination with other construction.
   1. 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 scheduled meeting dates.
   2. Agenda: Review progress of other construction activities and preparations for the particular activity under consideration, including requirements for the following:
      a. Contract Documents.
      b. Options.
      c. Related RFIs.
      d. Related Change Orders.
      e. Purchases.
      f. Deliveries.
      g. Submittals.
      h. Sustainable design requirements.
      i. Review of mockups.
      j. Possible conflicts.
      k. Compatibility requirements.
      l. Time schedules.
      m. Weather limitations.
      n. Manufacturer's written instructions.
      o. Warranty requirements.
      p. Compatibility of materials.
      q. Acceptability of substrates.
      r. Temporary facilities and controls.
      s. Space and access limitations.
      t. Regulations of authorities having jurisdiction.
      u. Testing and inspecting requirements.
      v. Installation procedures.
      w. Coordination with other work.
      x. Required performance results.
      y. Protection of adjacent work.
      z. Protection of construction and personnel.
   3. Record significant conference discussions, agreements, and disagreements, including required corrective measures and actions.
   4. Reporting: Distribute minutes of the meeting to each party present and to other parties requiring information.
   5. 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 earliest feasible date.

D. Project Closeout Conference: Schedule and conduct a project closeout conference, at a time convenient to Owner and Architect, but no later than 90 days prior to the scheduled date of Substantial Completion.
   1. Conduct the conference to review requirements and responsibilities related to Project closeout.
   2. Attendees: Authorized representatives of Owner, Architect, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the meeting. Participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.
   3. Agenda: Discuss items of significance that could affect or delay Project closeout, including the following:
      a. Preparation of Record Documents.

b. Procedures required prior to inspection for Substantial Completion and for final inspection for acceptance.
c. Procedures for completing and archiving web-based Project software site data files.
d. Submittal of written warranties.
e. Requirements for completing sustainable design documentation.
f. Requirements for preparing operations and maintenance data.
g. Requirements for delivery of material samples, attic stock, and spare parts.
h. Requirements for demonstration and training.
i. Preparation of Contractor's punch list.
j. Procedures for processing Applications for Payment at Substantial Completion and for final payment.
k. Submittal procedures.
l. Coordination of separate contracts.
m. Owner's partial occupancy requirements.
n. Installation of Owner's furniture, fixtures, and equipment.
o. Responsibility for removing temporary facilities and controls.

4. Minutes: Contractor will record and distribute meeting minutes.

E. Progress Meetings: Conduct progress meetings at weekly intervals.
1. Coordinate dates of meetings with preparation of payment requests.
2. Attendees: In addition to representatives of Owner and Architect, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.
3. Agenda: Review and correct or approve minutes of previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.
a. Contractor's Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Contractor's construction schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.
1) Review schedule for next period.
b. Review present and future needs of each entity present, including the following:
1) Interface requirements.
2) Sequence of operations.
3) Resolution of BIM component conflicts.
4) Status of submittals.
5) Resolution of BIM component conflicts.
6) Status of sustainable design documentation.
7) Deliveries.
8) Off-site fabrication.
9) Access.
10) Site use.
11) Temporary facilities and controls.
12) Progress cleaning.
13) Quality and work standards.
14) Status of correction of deficient items.
15) Field observations.
16) Status of RFIs.
17) Status of Proposal Requests.
18) Pending changes.
19) Status of Change Orders.

20) Pending claims and disputes.
21) Documentation of information for payment requests.

4. Minutes: Entity responsible for conducting the meeting will record and distribute the meeting minutes to each party present and to parties requiring information.
   a. Schedule Updating: Revise Contractor's construction schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with the report of each meeting.
5. Reporting: Record meeting results and distribute copies to everyone in attendance and to others affected by decisions or actions resulting from each meeting.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01 3233

PHOTOGRAPHIC DOCUMENTATION

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

A. Section Includes administrative and procedural requirements for the following:
   1. Preconstruction photographs.
   2. Periodic construction photographs.

1.03 INFORMATIONAL SUBMITTALS (FIO)

A. Digital Photographs: Submit image files within seven days of taking photographs.
   1. Digital Camera: Minimum sensor resolution of 8 megapixels.
   2. Format: Minimum 3200 by 2400 megapixels, in unaltered original files, with same aspect ratio as the sensor, uncropped, date and time stamped, in folder named by date of photograph, accompanied by key plan file.

PART 2 - PRODUCTS

2.01 PHOTOGRAPHIC MEDIA

A. Digital Images: Provide images in JPG format, produced by a digital camera with minimum sensor size of 8 megapixels, and at an image resolution of not less than 3200 by 2400 pixels.

PART 3 - EXECUTION

3.01 CONSTRUCTION PHOTOGRAPHS

A. General: Take photographs using the maximum range of depth of field, and that are in focus, to clearly show the Work. Photographs with blurry or out-of-focus areas will not be accepted.

B. Digital Images: Submit digital images exactly as originally recorded in the digital camera, without alteration, manipulation, editing, or modifications using image-editing software.
   1. Date and Time: Include date and time in file name for each image.
   2. Field Office Images: Maintain one set of images accessible in the field office at Project site, available at all times for reference. Identify images in the same manner as those submitted to Architect.

C. Preconstruction Photographs: Before commencement of demolition, take photographs of Project site and surrounding properties, including existing items to remain during construction, from different vantage points, as directed by Construction Manager.
   1. Flag excavation areas before taking construction photographs.
   2. Take 20 photographs to show existing conditions adjacent to property before starting the Work.
   3. Take 20 photographs of existing buildings either on or adjoining property to accurately record physical conditions at start of construction.

4. Take additional photographs as required to record settlement or cracking of adjacent structures, pavements, and improvements.

D. Additional Photographs: Architect or Construction Manager may request photographs in addition to periodic photographs specified. Additional photographs will be paid for by Change Order and are not included in the Contract Sum or in the allowance for construction photographs.
   1. Three days' notice will be given, where feasible.
   2. In emergency situations, take additional photographs within 24 hours of request.
   3. Circumstances that could require additional photographs include, but are not limited to, the following:
      a. Special events planned at Project site.
      b. Immediate follow-up when on-site events result in construction damage or losses.
      c. Photographs to be taken at fabrication locations away from Project site. These photographs are not subject to unit prices or unit-cost allowances.
      d. Substantial Completion of a major phase or component of the Work.
      e. Extra record photographs at time of final acceptance.
      f. Owner's request for special publicity photographs.

END OF SECTION

SECTION 01 3300

SUBMITTALS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section. Requirements herein supplement provisions of Paragraph 3.12 of the General Conditions and establish minimum standards for preparation, certification and submission of Shop Drawings, Product Data and Samples and schedules.

B. Terms ‘submittal’ and ‘submittal data’ as used herein and in required certification statements, mean Shop Drawings, Product Data, Manuals, and Samples, either individually or any combination thereof.

C. Prepare and submit to Architect, minimum five calendar days prior to preconstruction meeting, complete and comprehensive schedule, in form and substance acceptable to Architect, listing all submittals anticipated to be made during progress of Work.
   1. Indicate timing for submission and partial of required partial and relation to construction sequence.
      a. Initial Submittal: Submit concurrently with startup construction schedule. Include submittals required during the first 60 days of construction. List those submittals required to maintain orderly progress of the Work and those required early because of long lead time for manufacture or fabrication.
   2. Include listing of each type item for which submittal data, warranties, maintenance manuals, operating instructions and other types of submittals is required. Indicate specification section.
   3. During course of Work, maintain updated submittal schedule showing status of all submittals. Provide copies for Architect’s information at project meetings and at other times when requested.

D. Provide Shop Drawings prepared by persons highly skilled in preparation of architectural and engineering type drawings, charts, schedules and other graphic illustrations and representations. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data.
   1. Reproduction of Contract Documents, or Contract Documents prepared by Architect and his consultants, will not be acceptable as Shop Drawing submittals and will be returned as nonconforming with submittal requirements.
   2. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:
      a. Identification of products.
      b. Schedules.
      c. Compliance with specified standards.
      d. Notation of coordination requirements.
      e. Notation of dimensions established by field measurement.
      f. Relationship and attachment to adjoining construction clearly indicated.
      g. Seal and signature of professional engineer if specified.
   3. Architect and his consultants will provide an electronic file of construction documents during construction to Contractor at the Owner’s direction.

E. Collect Product Data and Samples as prepared by manufacturers, suppliers, and distributors to fully illustrate that portion of Work so represented, including complete engineering and dimensional information when applicable.

F. Informational Submittals; (FIO): Submittals required to be submitted "For Architect's Information Only", (FIO) are required to demonstrate that Work complies with performance requirements of Contract Documents.
   1. Calculations, certifications and test reports are submitted for record purposes and Architect's information only and will not be approved by Architect.
      a. Include calculations and required information if not completely covered by load tables and product data.
   2. Informational Submittals will not be returned to Contractor.
   3. Submittals may be rejected for not complying with requirements.

1.02 SUBMITTAL REQUIREMENTS

A. Accompany each submittal with an appropriate transmittal bearing Contractor's name, address and telephone number. Address all transmittal letters to Architect's business office. Include following information:
   1. Project name and location.
   2. Name of subcontractor, manufacturer, supplier or distributor, as applicable.
   3. Brief description of submittal data.
   4. Notification of deviations from Contract Documents.
   5. Date of submittal data.
   6. Mark submittal as an initial submittal or resubmittal.
   7. Whether for review, distribution, or information only.

B. Submittals shall include:
   1. Project name and location.
   2. Date and revision dates.
   3. Names of:
      a. Owner.
      b. Architect.
      c. Contractor.
      d. Consulting Engineer, when applicable.
      e. Subcontractor, supplier, manufacturer, when applicable.
   4. Identification of product or material.
   5. Relation to adjacent structure or materials.
   6. Field-dimensions, clearly identified as such.
   7. Specification Section and Paragraph Numbers.
   8. Number of Submittal. Number Submittals in Following Format:
      a. First six digits to indicate Specification Section.
      b. Second three digits to indicate order in which submittal will be made (i.e., 001 would be first submittal).
      c. Last digit shall indicate number of times particular submittal has been submitted. Typical number would read: 01 33 00-001-2.
   9. Applicable reference standards.
   10. Identification of deviations from Contract Documents.
   11. Contractor's stamp, initialed or signed, certifying to the review of submittal, verification of field measurements and compliance with Contract Documents.
   12. Date of Drawings used to prepare Shop Drawings.

C. Clearly mark all deviations from Contract Documents, at time of submittal.
   1. Submittals bearing Contractor-noted deviations will be reviewed by Architect provided required written notice of such deviations is given.

2. After review, submittals bearing Contractor-noted deviations will be returned for revision and resubmittal unless noted "Approved as Noted".
3. Incomplete submittals and submittals containing excessive errors will not be reviewed by Architect and will be returned for correction and resubmittal.

D. Certifications: Submittals not properly certified by Contractor, and by Manufacturer when so required, will not be reviewed by Architect and will be returned unchecked to Contractor for certification and resubmission.
1. Certification for Samples may be on tags or labels attached to Samples.

1.03 CONTRACTOR'S REVIEW AND CERTIFICATION

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

B. Contractor's Approval: Indicate Contractor's approval for each submittal with indication in web-based Project software. Include name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.
1. Upon completion of review and prior to submission to Architect, hand letter, type or stamp each submittal with certification statement reading:

"I hereby certify this submittal data has been reviewed and approved prior to submission to Architect and the information contained within this submittal has been checked and coordinated with the requirements of the Work and the Contract Documents.

(Contractor’s Name) _____

Signed _____

Position _____

Date _____"

2. Architect will not review submittals received from Contractor that do not have Contractor's review and approval.

1.04 MANUFACTURER’S CERTIFICATION

A. Submittals for particular items of equipment listed in Sections of Division 2 thru Division 49, which require certification by manufacturer as to performance and compliance with requirements of Contract Documents should be certified as herein. Refer to Sections of Division 2 thru Division 49 for items of equipment which require this certification.

B. Manufacturer’s certification shall be signed only by Owner, Partner, Corporate Officer, or person duly authorized to sign for Owner, Partner, or Corporate Officer.
1. Include in submittal data, notarized letter from manufacturer naming person duly authorized to sign for manufacturer, if it is someone other than Owner, Partner, or Corporate Officer.

C. Prior to submission to Contractor, manufacturer shall hand letter, type or stamp each submittal with certification statement reading:

"I hereby certify equipment indicated by this submittal data complies in all respects with requirements of Contract Documents for this Project. I further certify all data shown herein as to performance, dimensions, construction, materials and other pertinent items is true and correct.

(Manufacturer's Name) _____

Signature_____

Position _____

Date _____"

1.05 PRODUCT DATA

A. Collect information into a single submittal for each element of construction and type of product or equipment.
   1. If information must be specially prepared for submittal because standard published data are not suitable for use, submit as Shop Drawings, not as Product Data.
   2. Mark each copy of each submittal to show which products and options are applicable.
   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.
   4. For equipment, include the following in addition to the above; applicable:
      a. Wiring diagrams showing factory-installed wiring.
      b. Printed performance curves.
      c. Operational range diagrams.
      d. Clearances required to other construction, if not indicated on accompanying Shop Drawings.
   5. For equipment, include the following in addition to the above, as applicable:
      a. Wiring diagrams that show factory-installed wiring.
      b. Printed performance curves.
      c. Operational range diagrams.
      d. Clearances required to other construction, if not indicated on accompanying Shop Drawings.
   6. Submit Product Data before Shop Drawings, and before or concurrent with Samples.

1.06 SHOP DRAWINGS

A. For initial submittal, and all required resubmittals, provide electronic copy in PDF file format.

B. Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data. Prepare to largest scale practicable to be clearly legible with sufficient plans, elevations, sections, details, isometrics and schedules to fully illustrate that portion of Work so represented.
   1. Cross reference Shop Drawings to applicable Drawings sheet numbers, detail numbers and Specification Sections insofar as possible. Number sheets consecutively.

2. Do not submit manufacturer's and supplier's standard forms requiring filling-in of blank spaces unless:
   a. all nonapplicable information is eradicated completely or marked out, or
   b. all relevant information is clearly marked, and
   c. standard forms are modified to indicate exact requirements and conditions unique to Project.

C. Properly identify Shop Drawings, as specified in Paragraph 1.02.B herein, by means of title block in lower right-hand corner of each sheet.
   1. Provide adequate space above title block on each sheet for certification stamps and Architect's review stamps.

1.07 SAMPLES

A. Submit Samples for review of kind, color, pattern, and texture for a check of these characteristics with other materials and to illustrate standards by which Work will be judged.
   1. Transmit Samples that contain multiple, related components such as accessories together in one submittal package.
   2. Identification: Permanently attach label on unexposed side of Samples that includes the following:
      a. Project name and submittal number.
      b. Generic description of Sample.
      c. Product name and name of manufacturer.
      d. Sample source.
      e. Number and title of applicable Specification Section.
      f. Specification paragraph number and generic name of each item.
   3. Web-Based Project Software: Prepare PDF transmittal to include digital image file illustrating Sample characteristics, and identification information for record and upload to web-based Project software website. Enter required data in web-based software site to fully identify submittal.
   4. 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.
      a. Samples that may be incorporated into the Work are indicated in individual Specification Sections. Such Samples must be in an undamaged condition at time of use.
      b. Samples not incorporated into the Work, or otherwise designated as Owner's property, are the property of Contractor.
   5. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available.
      a. Number of Samples: Submit one full set(s) of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Architect will return submittal with options selected.
      b. Upon notification of Architect of selections, submit selected Samples as required for initial submittal.
   6. Samples for Verification: Submit full-size units or Samples of size indicated, prepared from same material to be used for the Work, cured and finished in manner specified, and physically identical with material or product proposed for use, and that show full range of color and texture variations expected. Samples include, but are not limited to, the following: partial sections of manufactured or fabricated components; small cuts or containers of materials; complete units of repetitively used materials; swatches showing color, texture, and pattern; color range sets; and components used for independent testing and inspection.

a. Number of Samples: Submit minimum three sets of Samples. Architect will retain one Sample set; remainder will be returned. Mark up and retain one returned Sample set as a project record Sample.
   1) Submit a single Sample where assembly details, workmanship, fabrication techniques, connections, operation, and other similar characteristics are to be demonstrated.
   2) If variation in color, pattern, texture, or other characteristic is inherent in material or product represented by a Sample, submit at least three sets of paired units that show approximate limits of variations.

1.08 INFORMATIONAL SUBMITTALS (FIO)

A. General: Prepare and submit Informational Submittals required by other Specification Sections in PDF electronic file format.
   1. Certificates and Certifications:
      a. Provide a notarized statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity.
   2. Test and Inspection Reports: Comply with requirements in Section 01 4000.

B. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, names and addresses of Architects and Owners, and other information specified.

C. Installer Certificates: Submit written statements on manufacturer's letterhead certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.

D. Manufacturer Certificates: Submit written statements on manufacturer's letterhead certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.

E. Material Certificates: Submit written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.

F. Product Certificates: Submit written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.

G. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements in the Contract Documents. Submit record of Welding Procedure Specification and Procedure Qualification Record on AWS forms. Include names of firms and personnel certified.

H. Compatibility Test Reports: Prepare reports written by a qualified testing agency, on testing agency’s standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for primers and substrate preparation needed for adhesion.

I. Field Test Reports: Prepare reports written by a qualified testing agency, on testing agency’s standard form, indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements.

J. Product Test Reports: Prepare written reports indicating current product produced by manufacturer complies with requirements. Base reports on evaluation of tests performed by manufacturer and witnessed by qualified testing agency, or on comprehensive tests performed by qualified testing agency.

K. Research/Evaluation Reports: Prepare written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with Building Code in effect for Project. Include the following information:
   a. Name of evaluation organization.
   b. Date of evaluation.
   c. Time period when report is in effect.
   d. Product and manufacturers' names.
   e. Description of product.
   f. Test procedures and results.
   g. Limitations of use.

L. Maintenance Data: Prepare written and graphic instructions and procedures for operation and normal maintenance of products and equipment. Comply with requirements in Section 01 77 00.

M. Design Data: Prepare written and graphic information, including, but not limited to, performance and design criteria, list of applicable codes and regulations, and calculations. Include list of assumptions and other performance and design criteria and a summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Include page numbers.

N. Manufacturer's Instructions: Prepare written or published information that documents manufacturer's recommendations, guidelines, and procedures for installing or operating a product or equipment. Include name of product and name, address, and telephone number of manufacturer. Include the following, as applicable:
   1. Preparation of substrates.
   2. Required substrate tolerances.
   3. Sequence of installation or erection.
   4. Required installation tolerances.
   5. Required adjustments.
   6. Recommendations for cleaning and protection.

O. Manufacturer's Field Reports: Prepare written information documenting factory-authorized service representative's tests and inspections. Include the following, as applicable:
   1. Name, address, and telephone number of factory-authorized service representative making report.
   2. Statement on condition of substrates and their acceptability for installation of product.
   3. Statement that products at Project site comply with requirements.
   4. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
   5. Results of operational and other tests and a statement of whether observed performance complies with requirements.
   6. Statement whether conditions, products, and installation will affect warranty.
   7. Other required items indicated in individual Specification Sections.

P. Insurance Certificates and Bonds: Prepare written information indicating current status of insurance or bonding coverage. Include name of entity covered by insurance or bond, limits of coverage, amounts of deductibles, if any, and term of the coverage.

Q. Construction Photographs: Comply with requirements in Section 01 3233.

1.09 CONSTRUCTION SCHEDULE

A. Submit initial construction schedule minimum five calendar days prior to preconstruction meeting. Monthly, resubmit revised and updated schedules accurately depicting progress to first day of each month.
   1. Submit PDF electronic files for Architect's information.
   2. Distribute reviewed schedules to:
      a. Owner.
      b. Architect.
      c. Job site file.
      d. Subcontractors.

B. Prepare complete and comprehensive "Critical Path Method" schedule for all portions of Work.
   1. Provide separate horizontal breakdown of each trade or operation in chronological order of beginning of each item of Work.
   2. Identify each item of Work by specification section number and by logically grouped activities.
   3. Identify first work day of each week on horizontal time scale. Provide adequate spacing on schedule for updating.
   4. Provide complete sequence of construction by activity:
      a. Shop Drawings, Product Data and Samples submittal data and status of each submittal relative to Contractor's submittal schedule.
      b. Decision dates for selection of finishes.
      c. Product procurement and delivery dates, including products furnished by Owner.
      d. Dates for beginning and completion of each element of construction.
   5. Indicate project percentage of completion for each item of Work.
   6. Provide subschedules to define critical portions of Work.

C. Updating:
   1. Show all changes since previous submittal of updated schedule.
   2. Indicate progress of each activity, show completion dates. Include:
      a. Major changes in scope.
      b. Activities modified since previous updating.
      c. Revised projections due to changes.
      d. Other identifiable changes.
   3. Provide narrative report, including:
      a. Discussion of problem areas, including current and anticipated delay factors and their impact.
      b. Corrective action taken, or proposed, and its effect.
      c. Description of revisions:
         1) Effect on schedule to change of scope.
         2) Revisions in duration of activities.
         3) Other changes that may affect schedule.

1.10 SCHEDULE OF VALUES

A. Submit typed schedule on AIA Document G703, Application and Certificate for Payment, Continuation Sheet in compliance AIA Document A201, General Conditions of the Contract for Construction.

B. Include line item for each major item of Work and each subcontracted item of Work indicated on Construction Schedule.

1.11 MONTHLY REPORTS

A. Submit following on a monthly basis along with Application For Payment:
   1. Revised and Updated Progress Schedule.
   2. Projected Progress for next month's progress.
   3. Progress Photos as specified in Section 01 11 00.
   4. Settlement Monitoring Readings as specified in Section 01 71 23.
   5. Current Project Logs:
      a. Submittal Log.
      b. Request for Information Log.
      c. Change Order Proposal Log.

1.12 REVIEW TIME AND CHANGES

A. 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 same manner as initial submittal.
   3. Resubmittal Review: Allow 15 days for review of each resubmittal.
   4. Sequential Review: Where sequential review of submittals by Architect's consultants, Owner, or other parties is indicated, allow 21 days for initial review of each submittal.
   5. Concurrent Consultant Review: Where the Contract Documents indicate that submittals may be transmitted simultaneously to Architect and to Architect's consultants, allow 15 days for review of each submittal. Submittal will be returned to Architect before being returned to Contractor.
      a. Submit one copy of submittal to concurrent reviewer in addition to specified number of copies to Architect.

B. Review: Transmit submittals to Architect sufficiently in advance of time needed to allow reasonable time, exclusive of transmittal time, for review of initial submittal. If resubmittal is required, allow additional reasonable time for each resubmittal.
   1. Delays caused by improperly prepared and incomplete submittal data shall not be an acceptable basis for extension of Contract Time.

C. Changes: If any revisions required by Architect are considered by Contractor to be a change in the Work exceeding that permitted in General Conditions, make such claim as provided in the General Conditions.

D. Informational Submittals; (FIO): 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.

E. Partial submittals prepared for a portion of the Work will be reviewed when use of partial submittals has received prior approval from Architect.

F. Incomplete submittals are unacceptable, will be considered nonresponsive, and will be returned for resubmittal without review.

G. Architect will return without review, submittals received from sources other than Contractor.

H. Submittals not required by the Contract Documents will be returned by Architect without action.

I. 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.

J. 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.

1.13 RESUBMISSION

A. Architect will review submittals for conformance with design concept of Work and information given in Contract Documents only. If required, Architect will note submittals with corrections and comments necessary for compliance with Contract Documents. Architect's stamp will contain following options:
   1. Submittals returned without notes, comments, or corrections will be so noted as "Approved" and require no further resubmittal and are ready for distribution unless revisions are made subsequent to Architect's final review.
   2. Submittals noted as "Approved as Noted" indicates submission is approved subject to corrections indicated. Contractor shall make indicated corrections.
   3. Submittals bearing Architect's notes, comments and corrections required for compliance with Contract Documents and which require resubmittal will be so noted as "Revise and Resubmit".
   4. Submittals returned noted as "Not Approved" require further resubmittal. All submittals must be "Approved" or "Approved as Noted" before issued for field use.
   5. Checking is only for conformity of the design concept of the project and compliance with the information given in the Contract Documents. Contractor is responsible for dimensions to be confirmed and correlated at the job site, for information that pertains solely to the fabrication process or the techniques of construction, and for coordination of the work of all trades.
   6. Architect's approval of submittals shall not relieve Contractor of responsibility for deviation from requirements of Contract Documents unless Contractor has informed Architect in writing of such deviation at time of submission and Architect has given written approval to the specified deviation. Architect's approval shall not relieve Contractor from responsibility for errors or omissions in submittals.
   7. Architect's approval of submittals shall not relieve Contractor of responsibility of obtaining Architect's approval and acceptance of mock-ups prior to releasing manufacturer/fabricator to proceed with fabrication of items.

B. 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.

C. Shop Drawings: Make revisions to Shop Drawings clearly identifying revisions by cloud or other easily recognizable symbols, identify revision number and revision date in transmittal vehicle. Make resubmittals in same manner.

D. Product Data: Remove all nonconforming information and replace with correct information. Identify revision number and revision date on transmittal vehicle. Make resubmittals in same manner.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01 4000

QUALITY REQUIREMENTS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

A. Section includes administrative and procedural requirements for quality assurance and quality control.

B. Testing and inspection services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.
   1. Specific quality-assurance and quality-control requirements for individual work results are specified in their respective Specification Sections. Requirements in individual Sections may also cover production of standard products.
   2. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and quality-control procedures that facilitate compliance with the Contract Document requirements.
   3. Requirements for Contractor to provide quality-assurance and quality-control services required by Architect, Owner, or authorities having jurisdiction are not limited by provisions of this Section.
   4. Specific test and inspection requirements are not specified in this Section.

1.03 DEFINITIONS

A. Experienced: When used with an entity or individual, "experienced" unless otherwise further described means having successfully completed a minimum of five previous projects similar in nature, size, and extent to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.

B. Field Quality-Control Tests: Tests and inspections that are performed on-site for installation of the Work and for completed Work.

C. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, Subcontractor, or Sub-subcontractor, to perform a particular construction operation, including installation, erection, application, assembly, and similar operations.
   1. Use of trade-specific terminology in referring to a trade or entity does not require that certain construction activities be performed by accredited or unionized individuals, or that requirements specified apply exclusively to specific trade(s).

D. Mockups: Full-size physical assemblies that are constructed on-site either as freestanding temporary built elements or as part of permanent construction. Mockups are constructed to verify selections made under Sample submittals; to demonstrate aesthetic effects and qualities of materials and execution; to review coordination, testing, or operation; to show interface between dissimilar materials; and to demonstrate compliance with specified installation tolerances. Mockups are not Samples. Unless otherwise indicated, approved mockups establish the standard by which the Work will be judged.

1. Laboratory Mockups: Full-size physical assemblies constructed and tested at testing facility to verify performance characteristics.
2. Room Mockups: Mockups of typical interior spaces complete with wall, floor, and ceiling finishes; doors; windows; millwork; casework; specialties; furnishings and equipment; and lighting.

E. Preconstruction Testing: Tests and inspections performed specifically for Project before products and materials are incorporated into the Work, to verify performance or compliance with specified criteria.

F. Product Tests: Tests and inspections that are performed by a nationally recognized testing laboratory (NRTL) according to 29 CFR 1910.7, by a testing agency accredited according to NIST's National Voluntary Laboratory Accreditation Program (NVLAP), or by a testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with specified requirements.

G. Source Quality-Control Tests: Tests and inspections that are performed at the source; for example, plant, mill, factory, or shop.

H. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.

I. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.

J. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that actual products incorporated into the Work and completed construction comply with requirements. Contractor's quality-control services do not include contract administration activities performed by Architect or Construction Manager].

1.04 DELEGATED-DESIGN SERVICES

A. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.
1. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to Architect.

1.05 CONFLICTING REQUIREMENTS

A. Conflicting Standards and Other Requirements: If compliance with two or more standards or requirements are specified and the standards or requirements establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer conflicting requirements that are different, but apparently equal, to Architect for direction before proceeding.

B. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to Architect for a decision before proceeding.

1.06 ACTION SUBMITTALS

A. Shop Drawings: For laboratory mockups.
   1. Include plans, sections, and elevations, indicating materials and size of mockup construction.
   2. Indicate manufacturer and model number of individual components.
   3. Provide axonometric drawings for conditions difficult to illustrate in two dimensions.

B. Delegated-Design Services Submittal: In addition to Shop Drawings, Product Data, and other required submittals, submit a statement signed and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional, indicating that the products and systems are in compliance with performance and design criteria indicated. Include list of codes, loads, and other factors used in performing these services.

1.07 INFORMATIONAL SUBMITTALS

A. Contractor's Quality-Control Plan: For quality-assurance and quality-control activities and responsibilities.

B. Qualification Data: For Contractor's quality-control personnel.

C. Contractor's Statement of Responsibility: When required by authorities having jurisdiction, submit copy of written statement of responsibility submitted to authorities having jurisdiction before starting work on the following systems:
   1. Seismic-force-resisting system, designated seismic system, or component listed in the Statement of Special Inspections.
   2. Main wind-force-resisting system or a wind-resisting component listed in the Statement of Special Inspections.

D. Testing Agency Qualifications: For testing agencies specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include proof of qualifications in the form of a recent report on the inspection of the testing agency by a recognized authority.

E. Schedule of Tests and Inspections: Prepare in tabular form and include the following:
   1. Specification Section number and title.
   2. Entity responsible for performing tests and inspections.
   3. Description of test and inspection.
   4. Identification of applicable standards.
   5. Identification of test and inspection methods.
   6. Number of tests and inspections required.
   7. Time schedule or time span for tests and inspections.
   8. Requirements for obtaining samples.
   9. Unique characteristics of each quality-control service.

F. Reports: Prepare and submit certified written reports and documents as specified.

G. Permits, Licenses, and Certificates: For Owner's record, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents established for compliance with standards and regulations bearing on performance of the Work.

1.08 CONTRACTOR'S QUALITY-CONTROL PLAN

A. Quality-Control Plan, General: Submit quality-control plan within 10 days of Notice to Proceed, and not less than five days prior to preconstruction conference. Submit in format acceptable to Architect. Identify personnel, procedures, controls, instructions, tests, records, and forms to be used to carry out Contractor's quality-assurance and quality-control responsibilities. Coordinate with Contractor's Construction Schedule.

B. Quality-Control Personnel Qualifications: Engage qualified personnel trained and experienced in managing and executing quality-assurance and quality-control procedures similar in nature and extent to those required for Project.

C. Submittal Procedure: Describe procedures for ensuring compliance with requirements through review and management of submittal process. Indicate qualifications of personnel responsible for submittal review.

D. Testing and Inspection: In quality-control plan, include a comprehensive schedule of Work requiring testing or inspection, including the following:

1. Contractor-performed tests and inspections including Subcontractor-performed tests and inspections. Include required tests and inspections and Contractor-elected tests and inspections. Distinguish source quality-control tests and inspections from field quality-control tests and inspections.

E. Continuous Inspection of Workmanship: Describe process for continuous inspection during construction to identify and correct deficiencies in workmanship in addition to testing and inspection specified. Indicate types of corrective actions to be required to bring work into compliance with standards of workmanship established by Contract requirements and approved mockups.

F. Monitoring and Documentation: Maintain testing and inspection reports including log of approved and rejected results. Include work Architect has indicated as nonconforming or defective. Indicate corrective actions taken to bring nonconforming work into compliance with requirements. Comply with requirements of authorities having jurisdiction.

1.09 REPORTS AND DOCUMENTS

A. Test and Inspection Reports: Prepare and submit certified written reports specified in other Sections. Include the following:
1. Date of issue.
2. Project title and number.
3. Name, address, telephone number, and email address 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 of temperature and weather conditions at time of sample taking and testing and inspection.
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.

B. Manufacturer's Technical Representative's Field Reports: Prepare written information documenting manufacturer's technical representative's tests and inspections specified in other Sections. Include the following:
   1. Name, address, telephone number, and email address of technical representative making report.
   2. Statement on condition of substrates and their acceptability for installation of product.
   3. Statement that products at Project site comply with requirements.
   4. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
   5. Results of operational and other tests and a statement of whether observed performance complies with requirements.
   6. Statement whether conditions, products, and installation will affect warranty.
   7. Other required items indicated in individual Specification Sections.

C. Factory-Authorized Service Representative's Reports: Prepare written information documenting manufacturer's factory-authorized service representative's tests and inspections specified in other Sections. Include the following:
   1. Name, address, telephone number, and email address of factory-authorized service representative making report.
   2. Statement that equipment complies with requirements.
   3. Results of operational and other tests and a statement of whether observed performance complies with requirements.
   4. Statement whether conditions, products, and installation will affect warranty.
   5. Other required items indicated in individual Specification Sections.

1.10 QUALITY ASSURANCE

A. General: Qualifications paragraphs in this article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.

B. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units. As applicable, procure products from manufacturers able to meet qualification requirements, warranty requirements, and technical or factory-authorized service representative requirements.

C. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

D. Installer Qualifications: A firm or individual experienced in installing, erecting, applying, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.

E. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or product that are similar in material, design, and extent to those indicated for this Project.

F. Specialists: Certain Specification Sections require that specific construction activities shall be performed by entities who are recognized experts in those operations. Specialists shall satisfy qualification requirements indicated and shall be engaged for the activities indicated.
   1. Requirements of authorities having jurisdiction shall supersede requirements for specialists.

G. Testing Agency Qualifications: An NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspection indicated, as documented according to ASTM E 329; and with additional qualifications specified in individual Sections; and, where required by authorities having jurisdiction, that is acceptable to authorities.

H. Manufacturer's Technical Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to observe and inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.

I. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.

J. Mockups: Before installing portions of the Work requiring mockups, build mockups for each form of construction and finish required to comply with the following requirements, using materials indicated for the completed Work:
   1. Build mockups of size indicated.
   2. Build mockups in location indicated or, if not indicated, as directed by Architect.
   3. Notify Architect seven days in advance of dates and times when mockups will be constructed.
   4. Employ supervisory personnel who will oversee mockup construction. Employ workers that will be employed to perform same tasks during the construction at Project.
   5. Demonstrate the proposed range of aesthetic effects and workmanship.
   6. Obtain Architect's approval of mockups before starting corresponding work, fabrication, or construction.
      a. Allow seven days for initial review and each re-review of each mockup.
   7. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.
   8. Demolish and remove mockups when directed unless otherwise indicated.

K. Room Mockups: Construct room mockups according to approved Shop Drawings incorporating required materials and assemblies, finished according to requirements. Provide required lighting and additional lighting where required to enable Architect to evaluate quality of the Work. Comply with requirements in "Mockups" Paragraph.

L. Provide room mockups of following rooms:
   1. Typical Exam Room.

M. Laboratory Mockups: Comply with requirements of preconstruction testing and those specified in individual Specification Sections.

1.11 QUALITY CONTROL

A. Owner Responsibilities: Where quality-control services are indicated as Owner's responsibility, Owner will engage a qualified testing agency to perform these services.
   1. Owner will furnish Contractor with names, addresses, and telephone numbers of testing agencies engaged and a description of types of testing and inspection they are engaged to perform.
   2. Payment for these services will be made from testing and inspection allowances, as authorized by Change Orders.
   3. Costs for retesting and reinspecting construction that replaces or is necessitated by work that failed to comply with the Contract Documents will be charged to Contractor, and the Contract Sum will be adjusted by Change Order.

B. Contractor Responsibilities: Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Perform additional quality-control activities, whether specified or not, to verify and document that the Work complies with requirements.
   1. Unless otherwise indicated, provide quality-control services specified and those required by authorities having jurisdiction. Perform quality-control services required of Contractor by authorities having jurisdiction, whether specified or not.
   2. Engage a qualified testing agency to perform quality-control services.
      a. Contractor shall not employ same entity engaged by Owner, unless agreed to in writing by Owner.
   3. Notify testing agencies at least 24 hours in advance of time when Work that requires testing or inspection will be performed.
   4. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.
   5. Testing and inspection requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
   6. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.

C. Retesting/Reinspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspecting, for construction that replaced Work that failed to comply with the Contract Documents.

D. Testing Agency Responsibilities: Cooperate with Architect and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.
   1. Notify Architect and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
   2. Determine the locations from which test samples will be taken and in which in-situ tests are conducted.
   3. Conduct and interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from requirements.
   4. Submit a certified written report, in duplicate, of each test, inspection, and similar quality-control service through Contractor.
   5. Do not release, revoke, alter, or increase the Contract Document requirements or approve or accept any portion of the Work.
   6. Do not perform duties of Contractor.

E. Manufacturer's Field Services: Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing as specified in Section 01 3300 "Submittal Procedures."

F. Manufacturer's Technical Services: Where indicated, engage a manufacturer's technical representative to observe and inspect the Work. Manufacturer's technical representative's services include participation in preinstallation conferences, examination of substrates and conditions, verification of materials, observation of Installer activities, inspection of completed portions of the Work, and submittal of written reports.

G. Associated Contractor Services: Cooperate with agencies and representatives performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:
   1. Access to the Work.
   2. Incidental labor and facilities necessary to facilitate tests and inspections.
   3. Adequate quantities of representative samples of materials that require testing and inspection. Assist agency in obtaining samples.
   4. Facilities for storage and field curing of test samples.

5. Delivery of samples to testing agencies.
6. Preliminary design mix proposed for use for material mixes that require control by testing agency.
7. Security and protection for samples and for testing and inspection equipment at Project site.

H. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and quality-control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspection.
1. Schedule times for tests, inspections, obtaining samples, and similar activities.

I. Schedule of Tests and Inspections: Prepare a schedule of tests, inspections, and similar quality-control services required by the Contract Documents as a component of Contractor's quality-control plan. Coordinate and submit concurrently with Contractor's Construction Schedule. Update as the Work progresses.
1. Distribution: Distribute schedule to Owner, Architect, testing agencies, and each party involved in performance of portions of the Work where tests and inspections are required.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 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.
1. Submit log at Project closeout as part of Project Record Documents.

3.02 REPAIR AND PROTECTION

A. General: On completion of testing, inspection, sample taking, and similar services, repair damaged construction and restore substrates and finishes.
1. Provide materials and comply with installation requirements specified in other Specification Sections or matching existing substrates and finishes. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible. Comply with the Contract Document requirements for cutting and patching in Section 01 7300 - Execution.

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.

END OF SECTION

SECTION 01 5000

TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 TEMPORARY UTILITIES

A. General: Installation and removal of and use charges for temporary facilities shall be included in the Contract Sum unless otherwise indicated. Allow other entities engaged in the Project to use temporary services and facilities without cost, including, but not limited to, Owner, Architect, testing agencies, and authorities having jurisdiction.

B. Provide electrical energy, construction water, drinking water and telephone service required for construction purposes and pay charges and fees incurred until Date of Material Completion.

1. Provide temporary electrical power and lighting lines required for operation of power tools and for illumination of work. Provide following minimum light levels for construction purposes:

a. General Construction and Safety Lighting: Five footcandles.

b. Finishing Work and Testing: 25 footcandles.

C. When temporary utilities are no longer required, remove temporary lines, mains and equipment.

D. Obtain water for construction purposes, in reasonable quantities, from Owner’s present facility or local utility. Contractor shall be responsible for obtaining temporary water and for extending lines from source and for making connections.

E. Water and Sewer Service from Existing System: Water from Owner's existing water system is available for use. Provide connections and extensions of services as required for construction operations.

F. Electric Power Service from Existing System: Electric power from Owner's existing system is available for use. Provide connections and extensions of services as required for construction operations.

SECTION 01 5000

TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

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E. Water and Sewer Service from Existing System: Water from Owner's existing water system is available for use. Provide connections and extensions of services as required for construction operations.

F. Electric Power Service from Existing System: Electric power from Owner's existing system is available for use. Provide connections and extensions of services as required for construction operations.

1.03 TEMPORARY HEATING, COOLING AND VENTILATING

A. Provide temporary heating and cooling required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of low temperatures or high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed.

1. Maintain interior temperatures within allowable ranges required in various Specification Sections. Repair or replace, at no additional cost to Owner, materials and Work damaged by dampness, insufficient or abnormal temperature range.

2. Provide temporary heat in enclosed spaces to provide minimum temperature of 40° F. until time finishing work begins.

3. Provide temporary dehumidification systems when required to reduce ambient and substrate moisture levels to level required to allow installation or application of finishes and their proper curing or drying.

4. After building is enclosed and installation of finishes begins, maintain spaces in temperature range of 60° F. to 80° F. at all times, except as may otherwise be required by product manufacturers for proper product installation and performance. Maintain until Date of Substantial Completion.

B. After permanent heating, ventilating and cooling systems are installed and inspected by proper authorities, with specific approval of Architect, systems may be utilized for temperature and humidity control.

1. When permanent systems are used assume full responsibility for placing systems in like-new operational status, including replacement of worn parts and cleaning or replacement of pumps, traps, screens and filters before offering Work for acceptance.

2. Provide temporary dehumidification systems when required to reduce ambient and substrate moisture levels to level required to allow installation or application of finishes and their proper curing or drying.

3. Maintain relative humidity in a range of 50% to 65% in enclosed spaces after building is enclosed and installation of finishes begins; except as may otherwise be required by product manufacturers for proper product installation and performance. Maintain until Date of Substantial Completion.

4. Provide ventilation to prevent accumulation of dust, fumes or gases and to cure materials and disperse humidity.

C. Isolation of Work Areas in Occupied Facilities: Prevent dust, fumes, and odors from entering occupied areas.

1. Prior to commencing work, isolate the HVAC system in area where work is to be performed.

a. Disconnect supply and return ductwork in work area from HVAC systems servicing occupied areas.

b. Maintain negative air pressure within work area using HEPA-equipped air-filtration units, starting with commencement of temporary partition construction, and continuing until removal of temporary partitions is complete.

2. Maintain dust partitions during the Work. Use vacuum collection attachments on dust-producing equipment. Isolate limited work within occupied areas using portable dust-containment devices.

3. Perform daily construction cleanup and final cleanup using approved, HEPA-filter-equipped vacuum equipment.

1.04 DEWATERING FACILITIES AND DRAINS

A. Do not conduct water onto adjacent properties. Dispose of water in compliance with City and County regulations and local ordinances that will not result in flooding Project or adjoining properties or endanger permanent Work or temporary facilities.

1.05 STORAGE AND STAGING

A. Confine construction related activities, including materials storage, employee and workmen's parking, offices, storage sheds and similar facilities to areas designated by Owner.

B. Do not encumber other portions of Project site with materials or equipment without written authorization from Architect and Owner.

1. Do not use adjacent properties, either public domain or private property, without written consent of persons or authorities having proper jurisdiction.

1.06 SANITARY FACILITIES

A. Provide ample temporary toilets, wash facilities, and drinking water for convenience of workmen and employees. Comply with requirements of authorities having jurisdiction for type, number, location, operation, and maintenance of fixtures and facilities. Enforce proper usage by workmen and employees.

1. Maintain temporary toilets in clean, neat and sanitary condition. Upon completion of Work, remove temporary sanitary facilities from Project site. Permanent new, or existing facilities, may not be used by workmen and employees.

2.

1.07 CLEANING UP

A. Remove debris and rubbish from construction areas and Project site on weekly basis.

1. Provide sufficient trash bins and containers to hold daily accumulation of debris, rubbish, scrap and waste materials.

2. Require workmen of all trades to utilize trash bins and containers. Empty bins and containers on daily basis or as filled, whichever occurs earlier.

B. Clean mud and construction related debris from roadways and walkways outside construction limits on daily basis.

C. Upon completion of Work, completely remove excess materials, tools, equipment, temporary construction, remaining trash, rubbish and foreign materials and leave Work clean and neat, ready for occupancy and operations of Owner.

1.08 BARRICADES, BARRIERS AND FENCES

A. Provide and maintain appropriate barriers around entire Project site and as necessary to enclose construction areas, on-site materials storage areas, to protect public from danger and to safeguard employees and Work.

B. Special Protection Requirements:

1. Protect buildings and building components from damage, staining or defacing due to the Work. Correct or replace damaged materials or finishes to Owner's satisfaction.

2. Provide protection against overspray of cleaning materials or paint contacting persons or vehicles in drives or parking areas. Do not block drives to extent of restricting vehicular access. Keep parking area restrictions to a minimum. Barriers and restrictions must be approved in advance by Owner. Do not work with materials subject to being blown during times of high winds.

3. Protect surfaces of freshly coated products from damage or discoloration due to dust or physical damage. Replace damaged or defaced materials which cannot be restored to Owner's satisfaction.

4. Protect building from rain or water leakage during course of Work. Do not open joints to extent that openings cannot be protected from inclement weather. Do not leave openings unprotected overnight.

1.09 SECURITY AND 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.

1. Where access to adjacent properties is required in order to affect protection of existing facilities, obtain written permission from adjacent property owner to access property for that purpose.

B. Watchmen: Determine when and provide watchmen necessary for protection of Work on Project site.

1. Neither providing watchmen nor failure to provide watchmen relieves Contractor of responsibility in event of injury to person, theft of materials, or damage to property.

C. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction as required to comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.

1. Comply with work restrictions specified in Section 01 1000 – Summary of Work.

D. Pest Control: Engage pest-control service to recommend practices to minimize attraction and harboring of rodents, roaches, and other pests and to perform extermination and control procedures at regular intervals so Project will be free of pests and their residues at Substantial Completion. Perform control operations lawfully, using materials approved by authorities having jurisdiction.

E. Temporary Egress: Maintain temporary egress from existing occupied facilities as indicated and as required by authorities having jurisdiction.

F. Temporary Partitions: Provide floor-to-ceiling dustproof partitions to limit dust and dirt migration and to separate areas occupied by Owner from fumes and noise.

1. Construct dustproof partitions with gypsum wallboard with joints taped on occupied side, and fire-retardant-treated plywood on construction operations side.

2. Construct dustproof partitions with two layers of 6-mil polyethylene sheet on each side. Cover floor with two layers of 6-mil polyethylene sheet, extending sheets 18 inches up the sidewalls. Overlap and tape full length of joints. Cover floor with fire-retardant-treated plywood.

   a. Construct vestibule and airlock at each entrance through temporary partition with not less than 48 inches between doors. Maintain water-dampened foot mats in vestibule.

3. Where fire-resistance-rated temporary partitions are indicated or are required by authorities having jurisdiction, construct partitions according to the rated assemblies.

4. Insulate partitions to control noise transmission to occupied areas.

5. Seal joints and perimeter. Equip partitions with gasketed dustproof doors and security locks where openings are required.

6. Protect air-handling equipment.

7. Provide walk-off mats at each entrance through temporary partition.

1.10 ACCESS TO PROJECT SITE

A. Make necessary arrangements and obtain required permits for temporary access to Project site from public roads. Provide and maintain temporary all-weather access to Project site.

1.11 PROJECT SIGNS

A. Provide a Project Sign in location and form acceptable to Owner.

B. Unless specifically authorized otherwise by Owner, do not erect signs other than Owner construction or Design Firm for advertising within Project site limits. Unauthorized signs are not permitted.

1.12 PROJECT OFFICES

A. Provide suitable temporary office facilities for conduct of Work. Locate temporary office within Project site limits in location acceptable to Owner. Make Contractor project office space and phone available for use by Owner.

1. Maintain on File in Temporary Office: Copies of Contractor Documents, Supplementary Drawings, Change Proposals, Change Orders and Modifications, correspondence, Shop Drawings, Product Data and Samples, and other records pertinent to Project.

2. Do not use temporary office for storage of tools, materials, construction supplies and equipment.

3. Provide adequate lighting, heating, air conditioning and telephone services.

1.13 TEMPORARY FIRE PREVENTION

A. Install and maintain temporary fire-protection facilities of types needed to protect against reasonably predictable and controllable fire losses and/or smoke damage. Comply with NFPA 241; manage fire-prevention program.

1. Prohibit smoking. Comply with additional limits on smoking specified in other Sections.

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.

4. Provide temporary standpipes and hoses for fire protection. Hang hoses with a warning sign stating that hoses are for fire-protection purposes only and are not to be removed. Match hose size with outlet size and equip with suitable nozzles.

5. Provide fire extinguishers in readily accessible locations.

6. Periodically inspect fire extinguishers; remove discharged extinguishers immediately and replace with new or recharged extinguishers.

1.14 TRAFFIC CONTROL

A. Comply with requirements of authorities having jurisdiction.

B. Employ qualified personnel to direct traffic on streets at accesses to site for construction during peak traffic hours.

C. Maintain flow of traffic on streets without delaying construction deliveries.

D. Protect existing site improvements to remain including curbs, pavement, and utilities.

E. Maintain access for fire-fighting equipment and access to fire hydrants.

1.15 OPERATION, TERMINATION AND REMOVAL

A. Maintain temporary facilities as long as needed for safe and proper completion of Work.

B. Termination and Removal: Unless Architect requests that it be maintained longer, remove each temporary facility when need has ended, or when replaced by authority use of permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with temporary facility. Repair damaged Work, clean exposed surfaces and replace construction that cannot be satisfactory repaired.

C. Supervision: Enforce strict discipline in use of temporary facilities. To minimize waste and abuse, limit availability of temporary facilities to essential and intended uses.

D. Maintenance: Maintain facilities in good operating condition until removal.

1. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.

E. Temporary Facility Changeover: Do not change over from using temporary security and protection facilities to permanent facilities until Substantial Completion.

F. Termination and Removal: Remove each temporary facility when need for its service has ended, when it has been replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.

1. Materials and facilities that constitute temporary facilities are property of Contractor. Owner reserves right to take possession of Project identification signs.

2. At Material Completion, repair, renovate, and clean permanent facilities used during construction period. Comply with final cleaning requirements specified in Section 01 7700 - Closeout Procedures and including and not necessary limited to:

a. Replace air filters and clean inside of ductwork and housings.

b. Replace significantly worn parts and parts that have been subject to unusual operating conditions.

c. Replace lamps that are burned out or noticeably dimmed by substantial hours of use.

1.16 QUALITY ASSURANCE

A. Electric Service: Comply with NECA, NEMA, and UL standards and regulations for temporary electric service. Install service to comply with NFPA 70.

B. Tests and Inspections: Arrange for authorities having jurisdiction to test and inspect each temporary utility before use. Obtain required certifications and permits.

1.17 PROJECT CONDITIONS

A. Temporary Use of Permanent Facilities: Engage Installer of each permanent service to assume responsibility for operation, maintenance, and protection of each permanent service during its use as a construction facility before Owner's acceptance, regardless of previously assigned responsibilities.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 01 5000

SECTION 01 6000

PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

A. Section includes administrative and procedural requirements for selection of products for use in Project; product delivery, storage, and handling; manufacturers' standard warranties on products; special warranties; and comparable products.

1.03 DEFINITIONS

A. Definitions used in this Article are not intended to change the meaning of other terms used in Contract Documents, such as “accessories”, “finishes”, “structure”, “specialties”, “systems”, and similar terms. Terms that are self-explanatory and have well recognized meanings in the construction industry.
   1. “Products” items obtained for incorporating into the Work, whether purchased for Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.
   2. “Named Products” items identified by manufacturer's product name, including make or model number or other designation shown or listed in manufacturer's published product literature that is current as of date of the Contract Documents.
   3. “Materials” are products that are substantially shaped, cut, worked, mixed, finished, refined or otherwise fabricated, processed, or installed to form part of the Work.
   4. “Equipment” is a product with operational parts, whether motorized or manually operated, that requires service connections such as wiring, piping,
   5. Comparable Product: Product that is demonstrated and approved by Architect through submittal process to have the indicated qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified product.

B. Basis-of-Design Product Specification: A specification in which a single manufacturer's product is named and accompanied by the words "basis-of-design product," including make or model number or other designation. In addition to the basis-of-design product description, product attributes and characteristics may be listed to establish the significant qualities related to type, function, in-service performance and physical properties, weight, dimension, durability, visual characteristics, and other special features and requirements for purposes of evaluating comparable products of additional manufacturers named in the specification.

C. Subject to Compliance with Requirements: Where the phrase "Subject to compliance with requirements" introduces a product selection procedure in an individual Specification Section, provide products qualified under the specified product procedure. In the event that a named product or product by a named manufacturer does not meet the other requirements of the specifications, select another named product or product from another named manufacturer that does meet the requirements of the specifications. Submit a comparable product request, if applicable.

1.04 SUBMITTALS

A. Basis-of-Design Product Specification Submittal: In compliance with requirements in Section 01 3300 Submittal Procedures. Show compliance with requirements.

B. Comparable Product Request Submittal: Submit request for consideration of each comparable product. Identify basis-of-design product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.
   1. Include data to indicate compliance with the requirements specified in "Comparable Products" Article.
   2. Architect's Action: If necessary, Architect will request additional information or documentation for evaluation within ten days of receipt of a comparable product request. Architect will notify Contractor of approval or rejection of proposed comparable product request within 15 days of receipt of request, or seven days of receipt of additional information or documentation, whichever is later.
      a. Form of Architect's Approval of Submittal: As specified in Section 01 3300 Submittal Procedures.
      b. Use product specified if Architect does not issue a decision on use of a comparable product request within time allocated.

1.05 QUALITY ASSURANCE

A. Compatibility of Options: If Contractor is given option of selecting between two or more products for use on Project, select product compatible with products previously selected, even if previously selected products were also options.
   1. Each contractor is responsible for providing products and construction methods compatible with products and construction methods of other contractors.
   2. If a dispute arises between contractors over concurrently selectable but incompatible products, Architect will determine which products shall be used.

B. Identification of Products: Except for required labels and operating data, do not attach or imprint manufacturer or product names or trademarks on exposed surfaces of products or equipment that will be exposed to view in occupied spaces or on the exterior.
   1. Labels: Locate required product labels and stamps on a concealed surface, or, where required for observation following installation, on a visually accessible surface that is not conspicuous.
   2. Equipment Nameplates: Provide a permanent nameplate on each item of service-connected or power-operated equipment. Locate on a visually accessible but inconspicuous surface. Include information essential for operation, including the following:
      a. Name of product and manufacturer.
      b. Model and serial number.
      c. Capacity.
      d. Speed.
      e. Ratings.
   3. See individual identification sections in Divisions 21, 22, 23, and 26 for additional identification requirements.

C. Mock-ups: Mock-ups, as described in individual Specification Sections, must be installed and approved/accepted by Architect prior to beginning manufacture/fabrication of items. Architect’s approval of submittals shall not relieve Contractor and manufacturer/fabricator of responsibility of obtaining Architect’s approval and acceptance of mock-ups prior to manufacture/fabricator proceeding with fabrication of items.

1.06 DELIVERY, STORAGE, AND HANDLING

A. General: Requirements specified herein are general in nature. Refer to individual Specification Sections for specific requirements.

B. Deliver, store, and handle products in compliance with manufacturer's recommendation and written instructions. Using means and methods that will prevent damage, deterioration, and loss, including theft and vandalism.

C. Delivery and Handling:
1. Schedule delivery to minimize long-term storage at Project site and to prevent overcrowding of construction spaces.
2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
3. Deliver products to Project site in an undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
4. Inspect products on delivery to determine compliance with the Contract Documents and to determine that products are undamaged and properly protected.
5. Prevent corrosion, soiling or breakage of materials or contact with deleterious materials.
6. Deliver finish materials only after spaces are enclosed and adequate indoor storage facilities are available. Deliver items such as millwork only after spaces approximate completed conditions.
7. Handle materials and equipment to prevent damage, deterioration or contamination. Install no materials which are physically damaged or stained prior to time for installation.

D. Storage:
1. Store products to allow for inspection and measurement of quantity or counting of units.
2. Store materials in a manner that will not endanger Project structure.
3. Store products that are subject to damage by the elements, under cover in a weathertight enclosure above ground a minimum of 6-inches, with ventilation adequate to prevent condensation. Maintain temperature and humidity within range required by manufacturer’s recommendations.
4. Protect foam plastic from exposure to sunlight, except to extent necessary for period of installation and concealment.
5. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.
6. Protect stored products from damage and liquids from freezing.
7. Provide a secure location and enclosure at Project site for storage of materials and equipment by Owner's construction forces. Coordinate location with Owner.
8. Store no construction material or equipment within drip line of trees indicated to remain.
9. Store and handle paints and products subject to spillage in areas where spills will not deface finished surfaces or other work.

E. Flammable or Hazardous Materials:
1. Store minimum quantities in protected areas.
2. Provide appropriate type fire extinguishers near storage areas.
3. Observe manufacturer’s precautions and applicable ordinances and regulations.
4. Comply with manufacturer’s instructions and recommendations for product storage and handling.
5. Comply with manufacturer’s product data in all aspects of basic material usage, handling, installation and substrate preparation, except where more stringent requirements are specified.

1.07 PRODUCT WARRANTIES

A. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.
   1. Manufacturer's Warranty: Written warranty furnished by individual manufacturer for a particular product and specifically endorsed by manufacturer to Owner.
   2. Special Warranty: Written warranty required by the Contract Documents to provide specific rights for Owner.

B. Special Warranties: Prepare a written document that contains appropriate terms and identification, ready for execution.
   1. Manufacturer's Standard Form: Modified to include Project-specific information and properly executed.
   2. Specified Form: When specified forms are included with the Specifications, prepare a written document using indicated form properly executed.
   3. See other Sections for specific content requirements and particular requirements for submitting special warranties.

C. Submittal Time: Comply with requirements in Section 01 7700 Closeout Procedures.

PART 2 - PRODUCTS

2.01 PRODUCT/MATERIAL SELECTION PROCEDURES

A. General Product Requirements: Provide products that comply with the Contract Documents, are new and of quality suited to use intended, suitable for function intended, undamaged and plainly labeled and delivered to Project site in original unopened containers when nature of materials is suitable for containers.
   1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.
   2. Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.
   3. Owner reserves the right to limit selection to products with warranties meeting requirements of the Contract Documents.
   4. Where products are accompanied by the term "as selected," Architect will make selection.
   5. Descriptive, performance, and reference standard requirements in the Specifications establish salient characteristics of products.
   6. Or Equal: For products specified by name and accompanied by the term "or equal," or "or approved equal," or "or approved," comply with requirements in "Comparable Products" Article to obtain approval for use of an unnamed product.
      a. Submit additional documentation required by Architect in order to establish equivalency of proposed products. Evaluation of "or equal" product status is by the Architect; whose determination is final.

B. The Architect has endeavored to specify materials, products and assemblies which are free of asbestos, polychlorinated biphenyl (PCB) or other similar materials believed to endanger the health and safety of construction workers and future building occupants. However, manufacturer’s information and other data normally furnished to the Architect by producers of building material products and systems do not always contain accurate, complete or appropriate information for the Architect to properly evaluate each product.

C. It shall therefore be a requirement of these Contract Documents that neither the Contractor, nor his material suppliers, nor his Subcontractors install or otherwise incorporate any materials containing asbestos, PCB or other hazardous materials within the boundaries of the Project. No soil found on site, or transported to the site from remote locations, which is contaminated with material containing asbestos, PCB, Radon, gasoline, fuel oil, diesel fuel or other similar fossil fuels shall be used for fill, backfill or landscape topsoil.

D. The Contractor shall require that each of his Subcontractors and material suppliers warrants to Owner and Architect, that all materials, products and assemblies incorporated, or submitted for incorporation into this Project, are free of asbestos, PCB, or other such hazardous materials. This warranty shall include all materials, products and assemblies specified and otherwise required in the Contract Documents. This warranty shall also include materials, components, and accessories not specifically enumerated or detailed in these Contract Documents, but which are required by performance specifications or recommended by manufacturers for complete installation of materials, products and assemblies. If the Contractor or his Subcontractors or material suppliers have knowledge that, or believe that an item, component, material or accessory within a product or assembly may contain asbestos, PCB or other such hazardous material, it is the Contractor's sole responsibility to secure a written certification from the manufacturer of any suspected material stating this material is free of asbestos, PCB or other hazardous materials.

E. Products that are specified by reference standards or in descriptive manner without a manufacturer's name, model number or trade name, shall be selected by the Contractor, shall comply with all specified requirements, and shall not contain asbestos, PCB or other hazardous materials in any form. The Contractor shall be responsible for determining that materials requested for substitution are free of asbestos, PCB or other similar materials known to endanger the health and safety of construction workers and future building occupants. F. Compliance with Standards, Codes and Regulations: Where Specifications only require compliance with an imposed code, standard or regulation, select product that complies with standards, codes or regulations specified.

F. Compliance with Standards, Codes and Regulations: Where Specifications only require compliance with an imposed code, standard or regulation, select product that complies with standards, codes or regulations specified.

G. Product Selection Procedures:
   1. Sole Product: Where Specifications name a single manufacturer and product, provide the named product that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.
      a. Sole product may be indicated by the phrase: "Subject to compliance with requirements, provide the following: …"
   2. Sole Manufacturer/Source: Where Specifications name a single manufacturer or source, provide a product by the named manufacturer or source that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.
      a. Sole manufacturer/source may be indicated by the phrase: "Subject to compliance with requirements, provide products by the following: …"
   3. Limited List of Products: Where Specifications include a list of names of both manufacturers and products, provide one of the products listed that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered unless otherwise indicated.
      a. Limited list of products may be indicated by the phrase: "Subject to compliance with requirements, provide one of the following: …"
   4. Non-Limited List of Products: Where Specifications include a list of names of both available manufacturers and products, provide one of the products listed, or an unnamed product, which complies with requirements.

a. Non-limited list of products is indicated by the phrase: "Subject to compliance with requirements, available products that may be incorporated in the Work include, but are not limited to, the following: …"

5. Limited List of Manufacturers: Where Specifications include a list of manufacturers' names, provide a product by one of the manufacturers listed that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered unless otherwise indicated.
   a. Limited list of manufacturers is indicated by the phrase: "Subject to compliance with requirements, provide products by one of the following: …"
6. Non-Limited List of Manufacturers: Where Specifications include a list of available manufacturers, provide a product by one of the manufacturers listed, or a product by an unnamed manufacturer, which complies with requirements.
   a. Non-limited list of manufacturers is indicated by the phrase: "Subject to compliance with requirements, available manufacturers whose products may be incorporated in the Work include, but are not limited to, the following: …"
7. Basis-of-Design Product: Where Specifications name a product, or refer to a product indicated on Drawings, and include a list of manufacturers, provide the specified or indicated product or a comparable product by one of the other named manufacturers. Drawings and Specifications indicate sizes, profiles, dimensions, and other characteristics that are based on the product named. Comply with requirements in "Comparable Products" Article for consideration of an unnamed product by one of the other named manufacturers.
   a. For approval of products by unnamed manufacturers, comply with requirements in Section 01 2500 - Substitution Procedures for substitutions for convenience.

H. Visual Matching Specification: Where Specifications require "match Architect's sample," provide a product that complies with requirements and matches Architect's sample. Architect's decision will be final on whether a proposed product matches.
   1. If no product available within specified category matches and complies with other specified requirements, comply with requirements in Section 01 2500 - Substitution Procedures for proposal of product.

I. Visual Selection Specification: Where Specifications include the phrase "as selected by Architect from manufacturer's full range" or similar phrase, select a product that complies with requirements. Architect will select color, gloss, pattern, density, or texture from manufacturer's product line that includes both standard and premium items.

2.02 CONTRACTOR'S OPTIONS

A. For products specified only by reference standard or description, provide any product meeting specifications.

B. For products specified by naming one or more products or manufacturers, no substitutions will be permitted, provide one of named products.

C. Where particular items of materials, products, equipment, assemblies, and mechanical or electrical equipment are specified in Division 2 thru Division 49 as products of certain named manufacturers, products of only those named manufacturers are acceptable. Certain specified construction and equipment details may not be regularly included as part of every named manufacturer's standard catalog equipment, materials, products, or assemblies, but shall be provided by the manufacturer as required for the proper functioning of the equipment. The Contractor shall assume full responsibility to assure that the selected manufacturer provides equipment conforming to indicated and specified requirements. Reasonable minor variations in equipment due to manufacturing methods are expected and will be acceptable; however, indicated and specified performance and material requirements are minimum and all deviations are to be brought to Architect's attention prior to submission, fabrication, and beginning of installation of products, materials, or assemblies. The Architect reserves the right to determine equality of equipment that deviates from any of the indicated and specified requirements.

D. Naming any manufacturer does not imply approval of that manufacturer's nonconforming products.

E. The Contractor shall include in the Work; the materials, products and equipment named in the Contract Documents by trade name, proprietary name or manufacturer's catalog numbers, including all specified modifications thereto unless proposed substitutions are approved in writing by the Architect prior to award of the Contract. After execution of the Contract, the Contractor shall provide only those materials, products and equipment named in the Contract Documents and approved substitutions therefor for inclusion in the Work, except as provided herein.

2.03 COMPARABLE PRODUCTS

A. Conditions for Consideration of Comparable Products: Architect will consider Contractor's request for comparable product when the following conditions are satisfied. If the following conditions are not satisfied, Architect may return requests without action, except to record noncompliance with these requirements:
   1. Evidence that proposed product does not require revisions to the Contract Documents, is consistent with the Contract Documents, will produce the indicated results, and is compatible with other portions of the Work. Detailed comparison of significant qualities of proposed product with those named in the Specifications. Significant product qualities include attributes such as type, function, in-service performance and physical properties, weight, dimension, durability, visual characteristics, and other specific features and requirements.
   2. Evidence that proposed product provides specified warranty.
   3. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners, if requested.
   4. Samples, if requested.

B. Submittal Requirements: Approval by the Architect of Contractor's request for use of comparable product is not intended to satisfy other submittal requirements. Comply with specified submittal requirements.

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01 7300

EXECUTION

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

A. Section includes general administrative and procedural requirements governing execution of the Work including, but not limited to, the following:
   1. Construction layout.
   2. Field engineering and surveying.
   3. Installation of Work.
   4. Cutting and patching.
   5. Coordination of Owner-installed products.
   6. Progress cleaning.
   7. Starting and adjusting.
   8. Protection of installed construction.
   9. Correction of Work.

B. Related Requirements:
   1. Section 01 1000 Summary of Work for limits on use of Project site.
   2. Section 01 3300 Submittal Procedures for submitting surveys.
   3. Section 01 7700 Closeout Procedures for submitting final property survey with Project Record Documents, recording of Owner-accepted deviations from indicated lines and levels, replacing defective work, and final cleaning.
   4. Section 02 4119 Selective Demolition for demolition and removal of selected portions of the building.
   5. Section 07 8400 Fire and Smoke Protection for patching penetrations in fire-rated construction.

1.03 DEFINITIONS

A. Cutting: Removal of in-place construction necessary to permit installation or performance of subsequent work.

B. Patching: Fitting and repair work required to restore construction to original conditions after installation of subsequent work.

1.04 PREINSTALLATION MEETINGS

A. Cutting and Patching Conference: Conduct conference at Project site.
   1. Prior to commencing work requiring cutting and patching, review extent of cutting and patching anticipated and examine procedures for ensuring satisfactory result from cutting and patching work. Require representatives of each entity directly concerned with cutting and patching to attend, including the following:
      a. Contractor's superintendent.
      b. Trade supervisor responsible for cutting operations.
      c. Trade supervisor(s) responsible for patching of each type of substrate.

d. Mechanical, electrical, and utilities subcontractors' supervisors, to the extent each trade is affecting by cutting and patching operations.

2. Review areas of potential interference and conflict. Coordinate procedures and resolve potential conflicts before proceeding.

1.05 SUBMITTALS

A. General: In compliance with Section 01 3300 and as specified herein.

B. Qualification Data: For professional engineer.

C. Certificates: Submit certificate signed by professional engineer certifying that location and elevation of improvements comply with requirements.

D. Cutting and Patching Plan: Submit plan describing procedures at least 10 days prior to the time cutting and patching will be performed. Include the following information:
1. Extent: Describe reason for and extent of each occurrence of cutting and patching.
2. Changes to In-Place Construction: Describe anticipated results. Include changes to structural elements and operating components as well as changes in building appearance and other significant visual elements.
3. Products: List products to be used for patching and firms or entities that will perform patching work.
4. Dates: Indicate when cutting and patching will be performed.
5. Utilities and Mechanical and Electrical Systems: List services and systems that cutting and patching procedures will disturb or affect. List services and systems that will be relocated and those that will be temporarily out of service. Indicate length of time permanent services and systems will be disrupted.
a. Include description of provisions for temporary services and systems during interruption of permanent services and systems.

E. Landfill Receipts: Submit copy of receipts issued by a landfill facility, licensed to accept hazardous materials, for hazardous waste disposal.

F. Certified Surveys: Submit two copies signed by professional engineer.

G. Final Property Survey: Submit 10 copies showing the Work performed and record survey data.

1.06 QUALITY ASSURANCE

A. Land Surveyor Qualifications: A professional land surveyor who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing land-surveying services of the kind indicated.

B. Cutting and Patching: Comply with requirements for and limitations on cutting and patching of construction elements.
1. Structural Elements: When cutting and patching structural elements, notify Architect of locations and details of cutting and await directions from Architect before proceeding. Shore, brace, and support structural elements during cutting and patching. Do not cut and patch structural elements in a manner that could change their load-carrying capacity or increase deflection.
2. Operational Elements: Do not cut and patch operating elements and related components in a manner that results in reducing their capacity to perform as intended or that results in increased maintenance or decreased operational life or safety. Operational elements include but are not limited to the following:
a. Primary operational systems and equipment.

b. Fire separation assemblies.
c. Air or smoke barriers.
d. Fire-suppression systems.
e. Plumbing piping systems.
f. Mechanical systems piping and ducts.
g. Control systems.
h. Communication systems.
i. Fire-detection and -alarm systems.
j. Conveying systems.
k. Electrical wiring systems.
l. Operating systems of special construction.

3. Other Construction Elements: Do not cut and patch other construction elements or components in a manner that could change their load-carrying capacity, that results in reducing their capacity to perform as intended, or that results in increased maintenance or decreased operational life or safety. Other construction elements include but are not limited to the following:
   a. Water, moisture, or vapor barriers.
   b. Membranes and flashings.
   c. Exterior curtain-wall construction.
   d. Sprayed fire-resistive material.
   e. Equipment supports.
   f. Piping, ductwork, vessels, and equipment.
   g. Noise- and vibration-control elements and systems.

4. Visual Elements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch exposed construction in a manner that would, in Architect's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.

C. Manufacturer's Installation Instructions: Obtain and maintain on-site manufacturer's written recommendations and instructions for installation of products and equipment.

PART 2 - PRODUCTS

2.01 MATERIALS

A. General: Comply with requirements specified in other Sections.
   1. For projects requiring compliance with sustainable design and construction practices and procedures, use products for patching that comply with sustainable design requirements.

B. In-Place Materials: Use materials for patching identical to in-place materials. For exposed surfaces, use materials that visually match in-place adjacent surfaces to the fullest extent possible.
   1. If identical materials are unavailable or cannot be used, use materials that, when installed, will provide a match acceptable to Architect for the visual and functional performance of in-place materials.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Existing Conditions: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning sitework, investigate

and verify the existence and location of underground utilities, mechanical and electrical systems, and other construction affecting the Work.

1. Before construction, verify the location and invert elevation at points of connection of sanitary sewer, storm sewer, and water-service piping; underground electrical services; and other utilities.
2. Furnish location data for work related to Project that must be performed by public utilities serving Project site.

B. Examination and Acceptance of Conditions: Before proceeding with each component of the Work, examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.

1. Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.
2. Examine walls, floors, and roofs for suitable conditions where products and systems are to be installed.
3. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.

C. Written Report: Where a written report listing conditions detrimental to performance of the Work is required by other Sections, include the following:

1. Description of the Work.
2. List of detrimental conditions, including substrates.
3. List of unacceptable installation tolerances.
4. Recommended corrections.

D. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

3.02 PREPARATION

A. Existing Utility Information: Furnish information to Owner that is necessary to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction. Coordinate with authorities having jurisdiction.

B. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

C. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.

D. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents caused by differing field conditions outside the control of Contractor, submit a request for information to Architect according to requirements in Section 01 3100 "Project Management and Coordination."

3.03 CONSTRUCTION LAYOUT

A. Verification: Before proceeding to lay out the Work, verify layout information shown on Drawings, in relation to the property survey and existing benchmarks. If discrepancies are discovered, notify Architect promptly.

B. General: Engage a professional engineer to lay out the Work using accepted surveying practices.
   1. Establish benchmarks and control points to set lines and levels at each story of construction and elsewhere as needed to locate each element of Project.
   2. Establish limits on use of Project site.
   3. Establish dimensions within tolerances indicated. Do not scale Drawings to obtain required dimensions.
   4. Inform installers of lines and levels to which they must comply.
   5. Check the location, level and plumb, of every major element as the Work progresses.
   6. Notify Architect when deviations from required lines and levels exceed allowable tolerances.
   7. Close site surveys with an error of closure equal to or less than the standard established by authorities having jurisdiction.

C. Site Improvements: Locate and lay out site improvements, including pavements, grading, fill and topsoil placement, utility slopes, and rim and invert elevations.

D. Building Lines and Levels: Locate and lay out control lines and levels for structures, building foundations, column grids, and floor levels, including those required for mechanical and electrical work. Transfer survey markings and elevations for use with control lines and levels. Level foundations and piers from two or more locations.

E. Record Log: Maintain a log of layout control work. Record deviations from required lines and levels. Include beginning and ending dates and times of surveys, weather conditions, name and duty of each survey party member, and types of instruments and tapes used. Make the log available for reference by Architect.
   1. Remove temporary reference points when no longer needed. Restore marked construction to its original condition.

3.04 INSTALLATION

A. General: Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.
   1. Make vertical work plumb and make horizontal work level.
   2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.
   3. Conceal pipes, ducts, and wiring in finished areas unless otherwise indicated.
   4. Maintain minimum headroom clearance of 96 inches in occupied spaces and 90 inches in unoccupied spaces.

B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.

C. Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Substantial Completion.

D. Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.

E. Sequence the Work and allow adequate clearances to accommodate movement of construction items on site and placement in permanent locations.

F. Tools and Equipment: Where possible, select tools or equipment that minimize production of excessive noise levels.

G. Templates: Obtain and distribute to the parties involved templates for work specified to be factory prepared and field installed. Check Shop Drawings of other portions of the Work to confirm that adequate provisions are made for locating and installing products to comply with indicated requirements.

H. Attachment: Provide blocking and attachment plates and anchors and fasteners of adequate size and number to securely anchor each component in place, accurately located and aligned with other portions of the Work. Where size and type of attachments are not indicated, verify size and type required for load conditions.
   1. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by Architect.
   2. Allow for building movement, including thermal expansion and contraction.
   3. Coordinate installation of anchorages. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

I. Joints: Make joints of uniform width. Where joint locations in exposed work are not indicated, arrange joints for the best visual effect. Fit exposed connections together to form hairline joints.

J. Repair or remove and replace damaged, defective, or nonconforming Work.
   1. Comply with Section 01 7700 "Closeout Procedures" for repairing or removing and replacing defective Work.

3.05 CUTTING AND PATCHING

A. Cutting and Patching, General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.
   1. Cut in-place construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.

B. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during installation or cutting and patching operations, by methods and with materials so as not to void existing warranties.

C. Temporary Support: Provide temporary support of work to be cut.

D. Protection: Protect in-place construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.

E. Adjacent Occupied Areas: Where interference with use of adjoining areas or interruption of free passage to adjoining areas is unavoidable, coordinate cutting and patching according to requirements in Section 01 1000 - Summary of Work.

F. Existing Utility Services and Mechanical/Electrical Systems: Where existing services/systems are required to be removed, relocated, or abandoned, bypass such services/systems before cutting to prevent interruption to occupied areas.

G. Cutting: Cut in-place construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.

1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots neatly to minimum size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
2. Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
3. Concrete: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.
4. Mechanical and Electrical Services: Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after cutting.
5. Proceed with patching after construction operations requiring cutting are complete.

H. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other work. Patch with durable seams that are as invisible as practicable. Provide materials and comply with installation requirements specified in other Sections, where applicable.
1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate physical integrity of installation.
2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will minimize evidence of patching and refinishing.
a. Clean piping, conduit, and similar features before applying paint or other finishing materials.
b. Restore damaged pipe covering to its original condition.
3. Floors and Walls: Where walls or partitions that are removed extend one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform finish, color, texture, and appearance. Remove in-place floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.
a. Where patching occurs in a painted surface, prepare substrate and apply primer and intermediate paint coats appropriate for substrate over the patch, and apply final paint coat over entire unbroken surface containing the patch. Provide additional coats until patch blends with adjacent surfaces.
4. Ceilings: Patch, repair, or rehang in-place ceilings as necessary to provide an even-plane surface of uniform appearance.
5. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weathertight condition and ensures thermal and moisture integrity of building enclosure.

I. Cleaning: Clean areas and spaces where cutting and patching are performed. Remove paint, mortar, oils, putty, and similar materials from adjacent finished surfaces.

3.06 OWNER-INSTALLED PRODUCTS

A. Site Access: Provide access to Project site for Owner's construction personnel.

B. Coordination: Coordinate construction and operations of the Work with work performed by Owner's construction personnel.
1. Construction Schedule: Inform Owner of Contractor's preferred construction schedule for Owner's portion of the Work. Adjust construction schedule based on a mutually agreeable timetable. Notify Owner if changes to schedule are required due to differences in actual construction progress.
2. Preinstallation Conferences: Include Owner's construction personnel at preinstallation conferences covering portions of the Work that are to receive Owner's work. Attend preinstallation conferences conducted by Owner's construction personnel if portions of the Work depend on Owner's construction.

3.07 PROGRESS CLEANING

A. General: Clean Project site and work areas daily, including common areas. Enforce requirements strictly. Dispose of materials lawfully.
   1. Comply with requirements in NFPA 241 for removal of combustible waste materials and debris.
   2. Do not hold waste materials more than seven days during normal weather or three days if the temperature is expected to rise above 80 deg F.
   3. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.
      a. Use containers intended for holding waste materials of type to be stored.
   4. Coordinate progress cleaning for joint-use areas where Contractor and other contractors are working concurrently.

B. Site: Maintain Project site free of waste materials and debris.

C. Work Areas: Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the Work.
   1. Remove liquid spills promptly.
   2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.

D. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.

E. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.

F. Exposed Surfaces in Finished Areas: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.

G. Waste Disposal: Do not bury or burn waste materials on-site. Do not wash waste materials down sewers or into waterways. Comply with waste disposal requirements in Section 01 7419 - Final Cleaning.

H. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.

I. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.

J. Limiting Exposures: Supervise construction operations to ensure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

3.08 STARTING AND ADJUSTING

A. Start equipment and operating components to confirm proper operation. Remove malfunctioning units, replace with new units, and retest.

B. Adjust equipment for proper operation. Adjust operating components for proper operation without binding.

C. Test each piece of equipment to verify proper operation. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

D. Manufacturer's Field Service: Comply with qualification requirements in Section 01 4000 Quality Requirements.

3.09 PROTECTION OF INSTALLED CONSTRUCTION

A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.

B. Protection of Existing Items: Provide protection and ensure that existing items to remain undisturbed by construction are maintained in condition that existed at commencement of the Work.

C. Comply with manufacturer's written instructions for temperature and relative humidity.

END OF SECTION

SECTION 01 7419

CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 PERFORMANCE REQUIREMENTS

A. General: Achieve end-of-Project rates for salvage/recycling of 50 percent by weight of total non-hazardous solid waste generated by the Work. Practice efficient waste management in the use of materials in the course of the Work. Use all reasonable means to divert construction and demolition waste from landfills and incinerators. Facilitate recycling and salvage of materials.

1.03 QUALITY ASSURANCE

A. Waste Management Coordinator Qualifications: Experienced firm, with a record of successful waste management coordination of projects with similar requirements.

B. Refrigerant Recovery Technician Qualifications: Certified by EPA-approved certification program.

C. Regulatory Requirements: Comply with hauling and disposal regulations of authorities having jurisdiction.

1.04 WASTE MANAGEMENT PLAN

A. General: Develop a waste management plan according to ASTM E 1609 and requirements in this Section. Plan shall consist of waste identification, waste reduction work plan, and cost/revenue analysis. Distinguish between demolition and construction waste. Indicate quantities by weight or volume, but use same units of measure throughout waste management plan.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 PLAN IMPLEMENTATION

A. General: Implement approved waste management plan. Provide handling, containers, storage, signage, transportation, and other items as required to implement waste management plan during the entire duration of the Contract.
   1. Comply with operation, termination, and removal requirements in Section 01 5000 "Temporary Facilities and Controls."

3.02 SALVAGING DEMOLITION WASTE

A. Salvaged Items for Reuse in the Work: Salvage items for reuse and handle as follows:
   1. Clean salvaged items.

2. Pack or crate items after cleaning. Identify contents of containers with label indicating elements, date of removal, quantity, and location where removed.
3. Store items in a secure area until installation.
4. Protect items from damage during transport and storage.
5. Install salvaged items to comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make items functional for use indicated.

B. Salvaged Items for Sale and Donation: Not permitted on Project site.

C. Salvaged Items for Owner's Use: Salvage items for Owner's use and handle as follows:
1. Clean salvaged items.
2. Pack or crate items after cleaning. Identify contents of containers with label indicating elements, date of removal, quantity, and location where removed.
3. Store items in a secure area until delivery to Owner.
4. Transport items to Owner's storage area designated by Owner.
5. Protect items from damage during transport and storage.

D. Doors and Hardware: Brace open end of door frames. Except for removing door closers, leave door hardware attached to doors.

E. Equipment: Drain tanks, piping, and fixtures. Seal openings with caps or plugs. Protect equipment from exposure to weather.

F. Plumbing Fixtures: Separate by type and size.

G. Lighting Fixtures: Separate lamps by type and protect from breakage.

H. Electrical Devices: Separate switches, receptacles, switchgear, transformers, meters, panelboards, circuit breakers, and other devices by type.

3.03 RECYCLING DEMOLITION AND CONSTRUCTION WASTE, GENERAL

A. General: Recycle paper and beverage containers used by on-site workers.

B. Preparation of Waste: Prepare and maintain recyclable waste materials according to recycling or reuse facility requirements. Maintain materials free of dirt, adhesives, solvents, petroleum contamination, and other substances deleterious to the recycling process.

C. Procedures: Separate recyclable waste from other waste materials, trash, and debris. Separate recyclable waste by type at Project site to the maximum extent practical according to approved construction waste management plan.
1. Provide appropriately marked containers or bins for controlling recyclable waste until removed from Project site. Include list of acceptable and unacceptable materials at each container and bin.
   a. Inspect containers and bins for contamination and remove contaminated materials if found.
2. Stockpile processed materials on-site without intermixing with other materials. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.
3. Stockpile materials away from construction area. Do not store within drip line of remaining trees.
4. Store components off the ground and protect from the weather.
5. Remove recyclable waste from Owner's property and transport to recycling receiver or processor.

3.04 DISPOSAL OF WASTE

A. General: Except for items or materials to be salvaged, recycled, or otherwise reused, remove waste materials from Project site and legally dispose of them in a landfill or incinerator acceptable to authorities having jurisdiction.

1. Except as otherwise specified, do not allow waste materials that are to be disposed of accumulate on-site.
2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.

B. Burning: Do not burn waste materials.

C. Disposal: Remove waste materials from Owner's property and legally dispose of them.

END OF SECTION

SECTION 01 7700

CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUBMITTALS

A. General: In compliance with Section 01 3300 and as specified herein.

B. Product Data: For each type of cleaning agent.

C. Contractor's List of Incomplete Items: Initial submittal at Substantial Completion.

D. Certified List of Incomplete Items: Final submittal at final completion.

1.03 CLOSEOUT SUBMITTALS

A. Certificates of Release: From authorities having jurisdiction.

B. Certificate of Insurance: For continuing coverage.

C. Field Report: For pest control inspection.

1.04 MAINTENANCE MATERIAL SUBMITTALS

A. Schedule of Maintenance Material Items: For maintenance material submittal items specified in other Sections.

1.05 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 and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
   2. Submit closeout submittals specified in other Division 01 Sections, including project record documents, operation and maintenance manuals, 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.
    a. Schedule of Maintenance Material Items: Prepare and submit schedule of maintenance material submittal items, including name and quantity of each item and name and number of related Specification Section. Obtain Owner's signature for receipt of submittals.
5. Submit testing, adjusting, and balancing records.
6. Submit sustainable design submittals not previously submitted.
7. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.

C. Procedures 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. Advise Owner of pending insurance changeover requirements.
2. Make final changeover of permanent locks and deliver keys to Owner. Advise Owner's personnel of changeover in security provisions.
3. Complete startup and testing of systems and equipment.
4. Perform preventive maintenance on equipment used prior to Substantial Completion.
5. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems. Submit demonstration and training video recordings specified in Section 01 7900 "Demonstration and Training."
6. Advise Owner of changeover in utility services.
7. Participate with Owner in conducting inspection and walkthrough with local emergency responders.
8. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
9. Complete final cleaning requirements.
10. Touch up paint and otherwise repair and restore marred exposed finishes to eliminate visual defects.

D. 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 certificate will be issued.
1. Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.
2. Results of completed inspection will form the basis of requirements for final completion.

1.06 FINAL COMPLETION PROCEDURES

A. Submittals Prior to Final Completion: Before requesting final inspection for determining final completion, complete the following:
1. Submit a final Application for Payment according to Section 01 2900 "Payment Procedures."
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. Submit pest-control final inspection report.
5. Submit final completion photographic documentation.

B. Inspection: Submit a written request for final inspection to determine acceptance 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 a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.
   1. Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

1.07 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.
   1. Organize list of spaces in sequential order.
   2. Organize items applying to each space by major element, including categories for ceiling, individual walls, floors, equipment, and building systems.
   3. Include the following information at the top of each page:
      a. Project name.
      b. Date.
      c. Name of Architect.
      d. Name of Contractor.
      e. Page number.
   4. Submit list of incomplete items in the following format:
      a. MS Excel electronic file. Architect will return annotated file.
      b. PDF electronic file. Architect will return annotated file.
      c. Web-based project software upload. Utilize software feature for creating and updating list of incomplete items (punch list).
      d. Three paper copies. Architect will return two copies.

1.08 SUBMITTAL OF PROJECT WARRANTIES

A. Time of Submittal: Submit written warranties on request of Architect for designated portions of the Work where warranties are indicated to commence on dates other than date of Substantial Completion, or when delay in submittal of warranties might limit Owner's rights under warranty.

B. Partial Occupancy: Submit properly executed warranties within 15 days of completion of designated portions of the Work that are completed and occupied or used by Owner during construction period by separate agreement with Contractor.

C. Organize warranty documents into an orderly sequence based on the table of contents of Project Manual.

D. Warranty Electronic File: Provide warranties and bonds in PDF format. Assemble complete warranty and bond submittal package into a single electronic PDF file with bookmarks enabling navigation to each item. Provide bookmarked table of contents at beginning of document.
   1. Submit on digital media acceptable to Architect.

E. Warranties in Paper Form:
   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 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.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.
   1. Use cleaning products that comply with Green Seal's GS-37, or if GS-37 is not applicable, use products that comply with the California Code of Regulations maximum allowable VOC levels.

PART 3 - EXECUTION

3.01 FINAL CLEANING

A. General: Perform final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.

B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.
   1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a designated portion of Project:
      a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
      b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
      c. Rake grounds that are not planted, mulched, or paved to a smooth, even-textured surface.
      d. Remove tools, construction equipment, machinery, and surplus material from Project site.
      e. Remove snow and ice to provide safe access to building.
      f. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
      g. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
      h. Sweep concrete floors broom clean in unoccupied spaces.
      i. Vacuum carpet and similar soft surfaces, removing debris and excess nap; clean according to manufacturer's recommendations if visible soil or stains remain.
      j. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Polish mirrors and glass, taking care not to scratch surfaces.
      k. Remove labels that are not permanent.
      l. Wipe surfaces of mechanical and electrical equipment and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.

m. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.
n. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.
o. Clean ducts, blowers, and coils if units were operated without filters during construction or that display contamination with particulate matter on inspection.
1) Clean HVAC system in compliance with Section 23 7000 Air Distribution Provide written report on completion of cleaning.
p. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency.
q. Leave Project clean and ready for occupancy.

C. Pest Control: Comply with pest control requirements in Section 01 5000 "Temporary Facilities and Controls." Prepare written report.

D. Construction Waste Disposal: Comply with waste disposal requirements in Section 01 7419.

3.02 REPAIR OF THE WORK

A. Complete repair and restoration operations before requesting inspection for determination of Substantial Completion.

B. Repair, or remove and replace, defective construction. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment. Where damaged or worn items cannot be repaired or restored, provide replacements. Remove and replace operating components that cannot be repaired. Restore damaged construction and permanent facilities used during construction to specified condition.
1. Remove and replace chipped, scratched, and broken glass, reflective surfaces, and other damaged transparent materials.
2. Touch up and otherwise repair and restore marred or exposed finishes and surfaces. Replace finishes and surfaces that that already show evidence of repair or restoration.
a. Do not paint over "UL" and other required labels and identification, including mechanical and electrical nameplates. Remove paint applied to required labels and identification.
3. Replace parts subject to operating conditions during construction that may impede operation or reduce longevity.
4. Replace burned-out bulbs, bulbs noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.

END OF SECTION

SECTION 01 7823

OPERATION AND MAINTENANCE DATA

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 DEFINITIONS

A. System: An organized collection of parts, equipment, or subsystems united by regular interaction.

B. Subsystem: A portion of a system with characteristics similar to a system.

1.03 CLOSEOUT SUBMITTALS

A. Submit operation and maintenance manuals indicated. Provide content for each manual as specified in individual Specification Sections, and as reviewed and approved at the time of Section submittals. Submit reviewed manual content formatted and organized as required by this Section.
   1. Architect will comment on whether content of operation and maintenance submittals is acceptable.
   2. Where applicable, clarify and update reviewed manual content to correspond to revisions and field conditions.

B. Format: Submit operation and maintenance manuals in the following format:
   1. Submit by uploading to web-based project software site. Enable reviewer comments on draft submittals.

C. Initial Manual Submittal: Submit draft copy of each manual at least 30 days before commencing demonstration and training. Architect will comment on whether general scope and content of manual are acceptable.

D. Final Manual Submittal: Submit each manual in final form prior to requesting inspection for Substantial Completion and at least 15 days before commencing demonstration and training. Architect will return copy with comments.
   1. Correct or revise each manual to comply with Architect's comments. Submit copies of each corrected manual within 15 days of receipt of Architect's comments and prior to commencing demonstration and training.

E. Comply with Section 01 7700 Closeout Procedures for schedule for submitting operation and maintenance documentation.

1.04 FORMAT OF OPERATION AND MAINTENANCE MANUALS

A. Manuals, Electronic Files: Submit manuals in the form of a multiple file composite electronic PDF file for each manual type required.
   1. Electronic Files: Use electronic files prepared by manufacturer where available. Where scanning of paper documents is required, configure scanned file for minimum readable file size.

2. File Names and Bookmarks: Bookmark individual documents based on file names. Name document files to correspond to system, subsystem, and equipment names used in manual directory and table of contents. Group documents for each system and subsystem into individual composite bookmarked files, then create composite manual, so that resulting bookmarks reflect the system, subsystem, and equipment names in a readily navigated file tree. Configure electronic manual to display bookmark panel on opening file.

1.05 REQUIREMENTS FOR EMERGENCY, OPERATION, AND MAINTENANCE MANUALS

A. Organization of Manuals: Unless otherwise indicated, organize each manual into a separate section for each system and subsystem, and a separate section for each piece of equipment not part of a system. Each manual shall contain the following materials, in the order listed:
1. Title page.
2. Table of contents.
3. Manual contents.

B. Title Page: Include the following information:
1. Subject matter included in manual.
2. Name and address of Project.
3. Name and address of Owner.
4. Date of submittal.
5. Name and contact information for Contractor.
6. Name and contact information for Construction Manager.
7. Name and contact information for Architect.
8. Name and contact information for Commissioning Authority.
9. Names and contact information for major consultants to the Architect that designed the systems contained in the manuals.
10. Cross-reference to related systems in other operation and maintenance manuals.

C. Table of Contents: List each product included in manual, identified by product name, indexed to the content of the volume, and cross-referenced to Specification Section number in Project Manual.
1. If operation or maintenance documentation requires more than one volume to accommodate data, include comprehensive table of contents for all volumes in each volume of the set.

D. Manual Contents: Organize into sets of manageable size. Arrange contents alphabetically by system, subsystem, and equipment. If possible, assemble instructions for subsystems, equipment, and components of one system into a single binder.

E. Identification: In the documentation directory and in each operation and maintenance manual, identify each system, subsystem, and piece of equipment with same designation used in the Contract Documents. If no designation exists, assign a designation according to ASHRAE Guideline 4, "Preparation of Operating and Maintenance Documentation for Building Systems."

1.06 OPERATION AND MAINTENANCE DOCUMENTATION DIRECTORY MANUAL

A. Operation and Maintenance Documentation Directory: Prepare a separate manual that provides an organized reference to emergency, operation, and maintenance manuals. List items and their location to facilitate ready access to desired information. Include the following:
1. List of Systems and Subsystems: List systems alphabetically. Include references to operation and maintenance manuals that contain information about each system.

2. List of Equipment: List equipment for each system, organized alphabetically by system. For pieces of equipment not part of system, list alphabetically in separate list.
3. Tables of Contents: Include a table of contents for each emergency, operation, and maintenance manual.

1.07 EMERGENCY MANUALS

A. Emergency Manual: Assemble a complete set of emergency information indicating procedures for use by emergency personnel and by Owner's operating personnel for types of emergencies indicated.

B. Content: Organize manual into a separate section for each of the following:
1. Type of emergency.
2. Emergency instructions.
3. Emergency procedures.

C. Type of Emergency: Where applicable for each type of emergency indicated below, include instructions and procedures for each system, subsystem, piece of equipment, and component:
1. Fire.
2. Flood.
3. Gas leak.
4. Water leak.
5. Power failure.
6. Water outage.
7. System, subsystem, or equipment failure.
8. Chemical release or spill.

D. Emergency Instructions: Describe and explain warnings, trouble indications, error messages, and similar codes and signals. Include responsibilities of Owner's operating personnel for notification of Installer, supplier, and manufacturer to maintain warranties.

E. Emergency Procedures: Include the following, as applicable:
1. Instructions on stopping.
2. Shutdown instructions for each type of emergency.
3. Operating instructions for conditions outside normal operating limits.
4. Required sequences for electric or electronic systems.
5. Special operating instructions and procedures.

1.08 SYSTEMS AND EQUIPMENT OPERATION MANUALS

A. Systems and Equipment Operation Manual: Assemble a complete set of data indicating operation of each system, subsystem, and piece of equipment not part of a system. Include information required for daily operation and management, operating standards, and routine and special operating procedures.
   1. Engage a factory-authorized service representative to assemble and prepare information for each system, subsystem, and piece of equipment not part of a system.
   2. Prepare a separate manual for each system and subsystem, in the form of an instructional manual for use by Owner's operating personnel.

B. Content: In addition to requirements in this Section, include operation data required in individual Specification Sections and the following information:
   1. System, subsystem, and equipment descriptions. Use designations for systems and equipment indicated on Contract Documents.
   2. Performance and design criteria if Contractor has delegated design responsibility.
   3. Operating standards.
   4. Operating procedures.
   5. Operating logs.
   6. Wiring diagrams.
   7. Control diagrams.
   8. Piped system diagrams.
   9. Precautions against improper use.
   10. License requirements including inspection and renewal dates.

C. Descriptions: Include the following:
   1. Product name and model number. Use designations for products indicated on Contract Documents.
   2. Manufacturer's name.
   3. Equipment identification with serial number of each component.
   4. Equipment function.
   5. Operating characteristics.
   6. Limiting conditions.
   7. Performance curves.
   8. Engineering data and tests.
   9. Complete nomenclature and number of replacement parts.

D. Operating Procedures: Include the following, as applicable:
   1. Startup procedures.
   2. Equipment or system break-in procedures.
   3. Routine and normal operating instructions.
   4. Regulation and control procedures.
   5. Instructions on stopping.
   6. Normal shutdown instructions.
   7. Seasonal and weekend operating instructions.
   8. Required sequences for electric or electronic systems.
   9. Special operating instructions and procedures.

E. Systems and Equipment Controls: Describe the sequence of operation, and diagram controls as installed.

F. Piped Systems: Diagram piping as installed, and identify color coding where required for identification.

1.09 SYSTEMS AND EQUIPMENT MAINTENANCE MANUALS

A. Systems and Equipment Maintenance Manuals: Assemble a complete set of data indicating maintenance of each system, subsystem, and piece of equipment not part of a system. Include manufacturers' maintenance documentation, preventive maintenance procedures and frequency, repair procedures, wiring and systems diagrams, lists of spare parts, and warranty information.
   1. Engage a factory-authorized service representative to assemble and prepare information for each system, subsystem, and piece of equipment not part of a system.
   2. Prepare a separate manual for each system and subsystem, in the form of an instructional manual for use by Owner's operating personnel.

B. Content: For each system, subsystem, and piece of equipment not part of a system, include source information, manufacturers' maintenance documentation, maintenance procedures, maintenance and service schedules, spare parts list and source information, maintenance service contracts, and warranties and bonds as described below.

C. Source Information: List each system, subsystem, and piece of equipment included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual and drawing or schedule designation or identifier where applicable.

D. Manufacturers' Maintenance Documentation: Include the following information for each component part or piece of equipment:
   1. Standard maintenance instructions and bulletins; include only sheets pertinent to product or component installed. Mark each sheet to identify each product or component incorporated into the Work. If data include more than one item in a tabular format, identify each item using appropriate references from the Contract Documents. Identify data applicable to the Work and delete references to information not applicable.
      a. Prepare supplementary text if manufacturers' standard printed data are not available and where the information is necessary for proper operation and maintenance of equipment or systems.
   2. Drawings, diagrams, and instructions required for maintenance, including disassembly and component removal, replacement, and assembly.
   3. Identification and nomenclature of parts and components.
   4. List of items recommended to be stocked as spare parts.

E. Maintenance Procedures: Include the following information and items that detail essential maintenance procedures:
   1. Test and inspection instructions.
   2. Troubleshooting guide.
   3. Precautions against improper maintenance.
   4. Disassembly; component removal, repair, and replacement; and reassembly instructions.
   5. Aligning, adjusting, and checking instructions.
   6. Demonstration and training video recording, if available.

F. Maintenance and Service Schedules: Include service and lubrication requirements, list of required lubricants for equipment, and separate schedules for preventive and routine maintenance and service with standard time allotment.
   1. Scheduled Maintenance and Service: Tabulate actions for daily, weekly, monthly, quarterly, semiannual, and annual frequencies.
   2. Maintenance and Service Record: Include manufacturers' forms for recording maintenance.

G. Spare Parts List and Source Information: Include lists of replacement and repair parts, with parts identified and cross-referenced to manufacturers' maintenance documentation and local sources of maintenance materials and related services.

H. Maintenance Service Contracts: Include copies of maintenance agreements with name and telephone number of service agent.

I. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.
   1. Include procedures to follow and required notifications for warranty claims.

J. Drawings: Prepare drawings supplementing manufacturers' printed data to illustrate the relationship of component parts of equipment and systems and to illustrate control sequence and flow diagrams. Coordinate these drawings with information contained in record Drawings to ensure correct illustration of completed installation.
   1. Do not use original project record documents as part of maintenance manuals.

1.10 PRODUCT MAINTENANCE MANUALS

A. Product Maintenance Manual: Assemble a complete set of maintenance data indicating care and maintenance of each product, material, and finish incorporated into the Work.

B. Content: Organize manual into a separate section for each product, material, and finish. Include source information, product information, maintenance procedures, repair materials and sources, and warranties and bonds, as described below.

C. Source Information: List each product included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual and drawing or schedule designation or identifier where applicable.

D. Product Information: Include the following, as applicable:
   1. Product name and model number.
   2. Manufacturer's name.
   3. Color, pattern, and texture.
   4. Material and chemical composition.
   5. Reordering information for specially manufactured products.

E. Maintenance Procedures: Include manufacturer's written recommendations and the following:
   1. Inspection procedures.
   2. Types of cleaning agents to be used and methods of cleaning.
   3. List of cleaning agents and methods of cleaning detrimental to product.
   4. Schedule for routine cleaning and maintenance.
   5. Repair instructions.

F. Repair Materials and Sources: Include lists of materials and local sources of materials and related services.

G. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.
   1. Include procedures to follow and required notifications for warranty claims.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01 7839

PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 CLOSEOUT SUBMITTALS

A. Record Drawings: Comply with the following:
   1. Number of Copies: Submit one set(s) of marked-up record prints.
   2. Number of Copies: Submit copies of record Drawings as follows:
      a. Initial Submittal:
         1) Submit PDF electronic files of scanned record prints and one of file prints.
         2) Submit record digital data files and one set(s) of plots.
         3) Architect will indicate whether general scope of changes, additional information recorded, and quality of drafting are acceptable.
      b. Final Submittal:
         1) Submit PDF electronic files of scanned record prints and three set(s) of prints.
         2) Print each drawing, whether or not changes and additional information were recorded.
      c. Final Submittal:
         1) Submit record digital data files and three set(s) of record digital data file plots.
         2) Plot each drawing file, whether or not changes and additional information were recorded.

B. Record Specifications: Submit annotated PDF electronic files of Project's Specifications, including addenda and contract modifications.

C. Record Product Data: Submit annotated PDF electronic files and directories of each submittal.
   1. Where record Product Data are required as part of operation and maintenance manuals, submit duplicate marked-up Product Data as a component of manual.

D. Miscellaneous Record Submittals: See other Specification Sections for miscellaneous record-keeping requirements and submittals in connection with various construction activities. Submit annotated PDF electronic files and directories of each submittal.

E. Reports: Submit written report weekly indicating items incorporated into project record documents concurrent with progress of the Work, including revisions, concealed conditions, field changes, product selections, and other notations incorporated.

1.03 RECORD DRAWINGS

A. Record Prints: Maintain one set of marked-up paper copies of the Contract Drawings and Shop Drawings, incorporating new and revised drawings as modifications are issued.
   1. Preparation: Mark record prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether

individual or entity is Installer, subcontractor, or similar entity, to provide information for preparation of corresponding marked-up record prints.
   a. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
   b. Accurately record information in an acceptable drawing technique.
   c. Record data as soon as possible after obtaining it.
   d. Record and check the markup before enclosing concealed installations.
   e. Cross-reference record prints to corresponding photographic documentation.
2. Content: Types of items requiring marking include, but are not limited to, the following:
   a. Dimensional changes to Drawings.
   b. Revisions to details shown on Drawings.
   c. Depths of foundations.
   d. Locations and depths of underground utilities.
   e. Revisions to routing of piping and conduits.
   f. Revisions to electrical circuitry.
   g. Actual equipment locations.
   h. Duct size and routing.
   i. Locations of concealed internal utilities.
   j. Changes made by Change Order or Construction Change Directive.
   k. Changes made following Architect's written orders.
   l. Details not on the original Contract Drawings.
   m. Field records for variable and concealed conditions.
   n. Record information on the Work that is shown only schematically.
3. Mark the Contract Drawings and Shop Drawings completely and accurately. Use personnel proficient at recording graphic information in production of marked-up record prints.
4. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at same location.
5. Mark important additional information that was either shown schematically or omitted from original Drawings.
6. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.

B. Record Digital Data Files: Immediately before inspection for Certificate of Substantial Completion, review marked-up record prints with Architect. When authorized, prepare a full set of corrected digital data files of the Contract Drawings, as follows:
1. Format: Annotated PDF electronic file with comment function enabled.
2. Incorporate changes and additional information previously marked on record prints. Delete, redraw, and add details and notations where applicable.
3. Refer instances of uncertainty to Architect for resolution.
4. Architect will furnish Contractor with one set of digital data files of the Contract Drawings for use in recording information.
   a. See Section 01 3100 - Project Management and Coordination for requirements related to use of Architect's digital data files.
   b. Architect will provide data file layer information. Record markups in separate layers.

C. Format: Identify and date each record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.
1. Record Prints: Organize record prints into manageable sets. Bind each set with durable paper cover sheets. Include identification on cover sheets.
2. Format: Annotated PDF electronic file with comment function enabled.
3. Record Digital Data Files: Organize digital data information into separate electronic files that correspond to each sheet of the Contract Drawings. Name each file with the sheet identification. Include identification in each digital data file.
4. Identification: As follows:

a. Project name.
b. Date.
c. Designation "PROJECT RECORD DRAWINGS."
d. Name of Architect.
e. Name of Contractor.

1.04 RECORD SPECIFICATIONS

A. Preparation: Mark Field Record Specifications to indicate the actual product installation where installation varies from that indicated in Specifications, addenda, and contract modifications.
1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
2. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
3. Record the name of manufacturer, supplier, Installer, and other information necessary to provide a record of selections made.
4. For each principal product, indicate whether record Product Data has been submitted in operation and maintenance manuals instead of submitted as record Product Data.
5. Note related Change Orders, record Product Data, and record Drawings where applicable.

B. Format: Submit record Specifications as annotated PDF electronic file.

1.05 RECORD PRODUCT DATA

A. Recording: Maintain one copy of each submittal during the construction period for project record document purposes. Post changes and revisions to project record documents as they occur; do not wait until end of Project.

B. Preparation: Mark Product Data to indicate the actual product installation where installation varies substantially from that indicated in Product Data submittal.
1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
2. Include significant changes in the product delivered to Project site and changes in manufacturer's written instructions for installation.
3. Note related Change Orders, record Specifications, and record Drawings where applicable.

C. Format: Submit record Product Data as annotated PDF electronic file.
1. Include record Product Data directory organized by Specification Section number and title, electronically linked to each item of record Product Data.

1.06 MISCELLANEOUS RECORD SUBMITTALS

A. Assemble miscellaneous records required by other Specification Sections for miscellaneous record keeping and submittal in connection with actual performance of the Work. Bind or file miscellaneous records and identify each, ready for continued use and reference.

B. Format: Submit miscellaneous record submittals as PDF electronic file(s) of marked-up miscellaneous record submittals.
1. Include miscellaneous record submittals directory organized by Specification Section number and title, electronically linked to each item of miscellaneous record submittals.

1.07 MAINTENANCE OF RECORD DOCUMENTS

A. Maintenance of Record Documents: Store record documents in the field office apart from the Contract Documents used for construction. Do not use project record documents for construction purposes. Maintain record documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to project record documents for Architect's reference during normal working hours.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01 8113

SUSTAINABLE DESIGN REQUIREMENTS, GEORGIA PEACH

PART 1 - GENERAL

1.01 PERFORMANCE REQUIREMENTS

A. Energy Efficiency and Sustainable Construction Standards for State Buildings, Georgia Peach Green Building Rating System, In accordance with the Energy Efficiency and Sustainable Construction Act of 2008 (O.C.G.A. §50-8-18), July 1, 2009.

1.02 ADMINISTRATIVE REQUIREMENTS

A. Respond to questions and requests from Architect regarding sustainability requirements that are the responsibility of the Contractor, that depend on product selection or product qualities, or that depend on Contractor's procedures. Provide document responses as submittals.

1.03 SUBMITTALS

A. General: Submit additional sustainability submittals required by other Specification Sections.

B. Sustainability submittals are in addition to other submittals. If submitted item is identical to that submitted to comply with other requirements, submit duplicate copies as a separate submittal to verify compliance with indicated sustainability requirements.

C. Sustainability documentation submittals:

1. Worksheets: Submit completed applicable Worksheets from the Georgia Peach Green Building Rating System.
2. Georgia Based Materials and Products: Submit product data indicating location and distance from Project of material manufacturer and point of extraction, harvest, or recovery for each raw material.
3. Certified wood: Submit product data and chain-of-custody certificates for products containing certified wood.

PART 2 - PRODUCTS

2.01 MATERIALS, GENERAL

A. Provide products and procedures necessary to achieve sustainable design and construction practices for the project.

2.02 ENERGY EFFICIENCY AND SUSTAINABLE CONSTRUCTION

A. Provide Energy Efficiency and Sustainable Construction practices meeting requirements of Georgia Peach Green Building Rating System, and as specified in individual specification sections.

2.03 GEORGIA BASED MATERIALS AND PRODUCTS

A. Provide materials and products meeting requirements of Georgia Peach Green Building Rating System, and as specified in individual specification sections.

2.04 FOREST PRODUCTS

A. Forest products used in the work of this project shall be grown, manufactured, and certified under the Sustainable Forestry Initiative, the American Tree Farm System or the Forest

Stewardship Council.

B. Forest products include, but are not limited to, the following materials when made from wood, engineered wood products, or wood-based panel products:

1. Rough carpentry.
2. Miscellaneous carpentry.
3. Architectural woodwork.
4. Wood cabinets.

PART 3 - EXECUTION

3.01 Non-Smoking Building

A. Smoking is not permitted withing the building or within 25 feet of entrances, operable windows, or outdoor-air intakes.

END OF SECTION

SECTION 02 4119

SELECTIVE DEMOLITION

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 MATERIALS OWNERSHIP

A. Unless otherwise indicated, demolition waste becomes property of Contractor.

B. Historic items, relics, antiques, and similar objects including, but not limited to, cornerstones and their contents, commemorative plaques and tablets, and other items of interest or value to Owner that may be uncovered during demolition remain the property of Owner.
   1. Carefully salvage in a manner to prevent damage and promptly return to Owner.

1.03 PREINSTALLATION MEETINGS

A. Predemolition Conference: Conduct conference at Project site.
   1. Inspect and discuss condition of construction to be selectively demolished.
   2. Review structural load limitations of existing structure.
   3. Review and finalize selective demolition schedule and verify availability of materials, demolition personnel, equipment, and facilities needed to make progress and avoid delays.
   4. Review requirements of work performed by other trades that rely on substrates exposed by selective demolition operations.
   5. Review areas where existing construction is to remain and requires protection.

1.04 INFORMATIONAL SUBMITTALS

A. Predemolition Photographs or Video: Show existing conditions of adjoining construction, including finish surfaces, that might be misconstrued as damage caused by demolition operations. Comply with Section 01 3233. Submit before Work begins.

1.05 SUBMITTALS

A. Sustainable Construction Submittals:

   1. Indicate compliance with the Georgia Energy Efficiency and Sustainability Construction Standards for State Buildings dated July 1, 2009. Submit completed Section 6.3-Georgia based Materials and Products document. Refer to the requirements of Section 01 8113 – Sustainable Design Requirements, Georgia Peach Program.

1.06 CLOSEOUT SUBMITTALS

A. Inventory: Submit a list of items that have been removed and salvaged.

1.07 PROJECT CONDITIONS

A. Owner will occupy portions of building immediately adjacent to selective demolition area. Conduct selective demolition so Owner's operations will not be disrupted.

B. Building to remain operational during phases of construction. Coordinate with owner to provide for ongoing operational access and for approved staging areas. Sequence Work to provide minimum disruption to Owner.

C. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.

D. Notify Architect of discrepancies between existing conditions and Drawings before proceeding with selective demolition.

E. Hazardous Materials: It is not expected that hazardous materials will be encountered in the Work.
   1. Hazardous materials will be removed by Owner before start of the Work.
   2. If suspected hazardous materials are encountered, do not disturb; immediately notify Architect and Owner. Hazardous materials will be removed by Owner under a separate contract.

F. Storage or sale of removed items or materials on-site is not permitted.

G. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.
   1. Maintain fire-protection facilities in service during selective demolition operations.

1.08 COORDINATION

A. Arrange selective demolition schedule so as not to interfere with Owner's operations.

PART 2 - PRODUCTS

2.01 PERFORMANCE REQUIREMENTS

A. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.

B. Standards: Comply with ASSE A10.6 and NFPA 241.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify that utilities have been disconnected and capped before starting selective demolition operations.

B. Review Project Record Documents of existing construction or other existing condition and hazardous material information provided by Owner. Owner does not guarantee that existing conditions are same as those indicated in Project Record Documents.

C. Perform an engineering survey of condition of building to determine whether removing any element might result in structural deficiency or unplanned collapse of any portion of structure or adjacent structures during selective building demolition operations.
   1. Perform surveys as the Work progresses to detect hazards resulting from selective demolition activities.

D. Steel Tendons: Locate tensioned steel tendons and include recommendations for de-tensioning.
   1. Where existing slab must be cored for new electrical or plumbing or other utilities, contractor is to engage a testing company to image slab in area of coring to identify reinforcing steel, pre- or post-tensioned tendons, electrical conduit, and other similar items potentially embedded in slab.
   2. Costs of imaging shall be paid by contractor as part of base construction cost.

E. Verify that hazardous materials have been remediated before proceeding with building demolition operations.

F. Survey of Existing Conditions: Record existing conditions by use of measured drawings.
   1. Comply with requirements specified in Section 01 3233 Photographic Documentation.
   2. Inventory and record the condition of items to be removed and salvaged. Provide photographs or video of conditions that might be misconstrued as damage caused by salvage operations.
   3. Before selective demolition or removal of existing building elements that will be reproduced or duplicated in final Work, make permanent record of measurements, materials, and construction details required to make exact reproduction.

3.02 PREPARATION

A. Refrigerant: Before starting demolition, remove refrigerant from mechanical equipment according to 40 CFR 82 and regulations of authorities having jurisdiction.

3.03 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS

A. Existing Services/Systems to Remain: Maintain services/systems indicated to remain and protect them against damage.

B. Existing Services/Systems to Be Removed, Relocated, or Abandoned: Locate, identify, disconnect, and seal or cap off utility services and mechanical/electrical systems serving areas to be selectively demolished.
   1. Owner will arrange to shut off indicated services/systems when requested by Contractor.
   2. Arrange to shut off utilities with utility companies.
   3. If services/systems are required to be removed, relocated, or abandoned, provide temporary services/systems that bypass area of selective demolition and that maintain continuity of services/systems to other parts of building.
   4. Disconnect, demolish, and remove fire-suppression systems, plumbing, and HVAC systems, equipment, and components indicated on Drawings to be removed.
      a. Piping to Be Removed: Remove portion of piping indicated to be removed and cap or plug remaining piping with same or compatible piping material.
      b. Piping to Be Abandoned in Place: Drain piping and cap or plug piping with same or compatible piping material and leave in place.
      c. Equipment to Be Removed: Disconnect and cap services and remove equipment.
      d. Equipment to Be Removed and Reinstalled: Disconnect and cap services and remove, clean, and store equipment; when appropriate, reinstall, reconnect, and make equipment operational.
      e. Equipment to Be Removed and Salvaged: Disconnect and cap services and remove equipment and deliver to Owner.

f. Ducts to Be Removed: Remove portion of ducts indicated to be removed and plug remaining ducts with same or compatible ductwork material.
g. Ducts to Be Abandoned in Place: Cap or plug ducts with same or compatible ductwork material and leave in place.

3.04 PROTECTION

A. Temporary Protection: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.
1. Provide protection to ensure safe passage of people around selective demolition area and to and from occupied portions of building.
2. Provide temporary weather protection, during interval between selective demolition of existing construction on exterior surfaces and new construction, to prevent water leakage and damage to structure and interior areas.
3. Protect walls, ceilings, floors, and other existing finish work that are to remain or that are exposed during selective demolition operations.
4. Cover and protect furniture, furnishings, and equipment that have not been removed.
5. Comply with requirements for temporary enclosures, dust control, heating, and cooling specified in Section 01 5000 Temporary Facilities and Controls.

B. Temporary Shoring: Design, provide, and maintain shoring, bracing, and structural supports as required to preserve stability and prevent movement, settlement, or collapse of construction and finishes to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.
1. Strengthen or add new supports when required during progress of selective demolition.

C. Remove temporary barricades and protections where hazards no longer exist.

3.05 SELECTIVE DEMOLITION, GENERAL

A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:
1. Proceed with selective demolition systematically, from higher to lower level. Complete selective demolition operations above each floor or tier before disturbing supporting members on the next lower level.
2. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping. Temporarily cover openings to remain.
3. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
4. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain portable fire-suppression devices during flame-cutting operations.
5. Maintain fire watch during and for at least 2 hours after flame-cutting operations.
6. Maintain adequate ventilation when using cutting torches.
7. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.
8. Remove structural framing members and lower to ground by method suitable to avoid free fall and to prevent ground impact or dust generation.
9. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.

10. Dispose of demolished items and materials promptly. Comply with requirements in Section 01 7419 Construction Waste Management and Disposal.
11. Cut finish surfaces such as concrete, masonry, tile, plaster or metals, by methods to terminate surfaces in a straight line at a natural point of division.
12. Where new work joins existing construction, ensure that jointing is weather tight, sound and even in appearance.
13. Fixtures and outlets to be removed shall have their utility lines capped within walls or floors. Utility lines encountered in work are to be capped, extended or reworked as necessary for completion of alterations.

B. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.

C. Removed and Salvaged Items:
1. Clean salvaged items.
2. Pack or crate items after cleaning. Identify contents of containers.
3. Store items in a secure area until delivery to Owner.
4. Transport items to Owner's storage area designated by Owner.
5. Protect items from damage during transport and storage.

D. Removed and Reinstalled Items:
1. Clean and repair items to functional condition adequate for intended reuse.
2. Pack or crate items after cleaning and repairing. Identify contents of containers.
3. Protect items from damage during transport and storage.
4. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.

E. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by Architect, items may be removed to a suitable, protected storage location during selective demolition and cleaned and reinstalled in their original locations after selective demolition operations are complete.

3.06 SELECTIVE DEMOLITION PROCEDURES FOR SPECIFIC MATERIALS

A. Concrete: Demolish in sections. Cut concrete full depth at junctures with construction to remain and at regular intervals using power-driven saw, and then remove concrete between saw cuts.

B. Resilient Floor Coverings: Remove floor coverings and adhesive according to recommendations in RFCI's "Recommended Work Practices for the Removal of Resilient Floor Coverings." Do not use methods requiring solvent-based adhesive strippers.

3.07 DISPOSAL OF DEMOLISHED MATERIALS

A. Remove demolition waste materials from Project site and recycle or dispose of them according to Section 01 7419.
1. Do not allow demolished materials to accumulate on-site.
2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
3. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.

B. Burning: Do not burn demolished materials.

3.08 CLEANING

A. Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

END OF SECTION

SECTION 03 5413

GYPSUM CEMENT UNDERLAYMENT

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 REFERENCE STANDARDS

A. American Society of Testing and Materials (ASTM):

1.	C 109	Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in Cube Specimens).
2.	C 219	Standard Terminology Relating to Hydraulic Cement.
3.	E 90	Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements.
4.	E 119	Test Methods for Fire Tests of Building Construction and Materials.
5.	E 413	Classification for Rating Sound Insulation.
6.	E 492	Test Method for Laboratory Measurement of Impact Sound Transmission Through Floor-Ceiling Assemblies Using the Tapping Machine.
7.	E 989	Classification for Determination of Single-Number Metrics for Impact Noise.
8.	F 1869	Test Method for Measuring Moisture Vapor.

1.03 ACTION SUBMITTALS

A. General: In compliance with Section 01 3300 and as specified herein.

B. Product Data: For each type of product.

C. Shop Drawings: Include plans indicating substrates, locations, and average depths of underlayment based on survey of substrate conditions.

D. Sustainable Construction Submittals:

1. Indicate compliance with the Georgia Energy Efficiency and Sustainability Construction Standards for State Buildings dated July 1, 2009. Submit completed Section 6.3-Georgia based Materials and Products document. Refer to the requirements of Section 01 8113 – Sustainable Design Requirements, Georgia Peach Program.

1.04 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

1.05 QUALITY ASSURANCE

A. Installer Qualifications: Installer who is approved by manufacturer for application of underlayment products required for this Project.

1.06 PROJECT CONDITIONS

A. Environmental Limitations: Comply with manufacturer's written instructions for substrate temperature, ventilation, ambient temperature and humidity, and other conditions affecting underlayment performance.
   1. Place gypsum cement underlayments only when ambient temperature and temperature of substrates are between 50 and 95 deg F.

PART 2 - PRODUCTS

2.01 PERFORMANCE REQUIREMENTS

A. Fire-Resistance Ratings: Comply with ASTM E 119; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
   1. Indicate design designations from UL's "Fire Resistance Directory" or from the listings of another qualified testing agency.

2.02 GYPSUM CEMENT UNDERLAYMENTS

A. Gypsum Cement Underlayment: Self-leveling, gypsum cement product that can be applied in minimum uniform thickness of 1/4-inch and that can be feathered at edges to match adjacent floor elevations. Subject to compliance with requirements, provide products by one of the following:
   1. Acceptable Manufacturers:
      a. Custom Building Products.
      b. Euclid Chemicals Company; an RPM Company.
      c. Laticrete International, Inc.
      d. Maxxon Corporation
      e. Schonox, HPS North America, Inc.
      f. USG Corp.
   2. Cement Binder: Gypsum or blended gypsum cement as defined by ASTM C 219.
   3. Compressive Strength: 2500 psi at 24 hours, 5000 psi at 28 days, 6000 psi at 56 days, when tested according to ASTM C 1708.
   4. Underlayment Additive: Resilient-emulsion product of underlayment manufacturer, formulated for use with underlayment when applied to substrate and conditions indicated.

B. Aggregate: Well-graded, washed gravel, 1/8 to 1/4 inch; or coarse sand as recommended by underlayment manufacturer.
   1. Provide aggregate when recommended in writing by underlayment manufacturer for underlayment thickness required.

C. Water: Potable and at a temperature of not more than 70 deg F.

D. Primer: Product of underlayment manufacturer recommended in writing for substrate, conditions, and application indicated.

E. Corrosion-Resistant Coating: Recommended in writing by underlayment manufacturer for metal substrates.

F. Surface Sealer: Designed to reduce porosity as recommended by manufacturer for type of floor covering to be applied to underlayment.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine substrates, with Installer present, for conditions affecting performance of the Work.

B. Proceed with application only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. General: Prepare and clean substrate according to manufacturer's written instructions.
   1. Treat nonmoving substrate cracks according to manufacturer's written instructions to prevent cracks from telegraphing (reflecting) through underlayment.
   2. Fill substrate voids to prevent underlayment from leaking.

B. Concrete Substrates: Mechanically remove, according to manufacturer's written instructions, laitance, glaze, efflorescence, curing compounds, form-release agents, dust, dirt, grease, oil, and other contaminants that might impair underlayment bond.
   1. Moisture Testing: Perform anhydrous calcium chloride test, ASTM F 1869. Proceed with installation only after substrates do not exceed a maximum moisture-vapor-emission rate in compliance with the floor covering manufacturers' limits.

C. Adhesion Tests: After substrate preparation, test substrate for adhesion with underlayment according to manufacturer's written instructions.

3.03 APPLICATION

A. General: Mix and apply underlayment components according to manufacturer's written instructions.
   1. Close areas to traffic during underlayment application and for time period after application recommended in writing by manufacturer.
   2. Coordinate application of components to provide optimum adhesion to substrate and between coats.
   3. At substrate expansion, isolation, and other moving joints, allow joint of same width to continue through underlayment.

B. Apply primer over prepared substrate at manufacturer's recommended spreading rate.

C. Apply underlayment to produce uniform, level surface.
   1. Apply a final layer without aggregate to product surface.
   2. Feather edges to match adjacent floor elevations.

D. Cure underlayment according to manufacturer's written instructions. Prevent contamination during application and curing processes.

E. Do not install floor coverings over underlayment until after time period recommended in writing by underlayment manufacturer.

F. Apply surface sealer at rate recommended by manufacturer.

G. Remove and replace underlayment areas that evidence lack of bond with substrate, including areas that emit a "hollow" sound when tapped.

3.04 PROTECTION

A. Protect underlayment from concentrated and rolling loads for remainder of construction period.

END OF SECTION

SECTION 05 5000

METAL FABRICATIONS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 REFERENCE STANDARDS

A. American Architectural Manufacturers Association (AAMA):
1. 611 Voluntary Standards for Anodized Architectural Aluminum.

B. American Society of Mechanical Engineers (ASME):
1. B18.2.1 Square, Hex, Heavy Hex, And Askew Head Bolts and Hex, Heavy Hex, Hex Flange, Lobed Head, And Lag Screws (Inch Series).

C. American Institute of Steel Construction (ANSI/AISC):
1. 360 Specifications for Structural Steel Buildings.

D. American National Standards Institute (ANSI):
1. A14.3 American National Standard for Ladders-Fixed-Safety Requirements.

E. American Society for Testing and Materials (ASTM):
1. A36 Carbon Structural Steel.
2. A153 Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
3. A307 Carbon Steel Bolts, Studs and Threaded Rod 60 000 PSI Tensile Strength.
4. A563 Carbon and Alloy Steel Nuts.
5. A780 Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings.
6. A786 Hot-Rolled Carbon, Low-Alloy, High-Strength Low-Alloy, and Alloy Steel Floor Plates.
7. A793 Rolled Floor Plate, Stainless Steel.
8. A1008 Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Solution Hardened, and Bake Hardenable.
9. B26 Aluminum-Alloy Sand Castings.
10. B209 Aluminum and Aluminum-Alloy Sheet and Plate.
11. B221 Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
12. B632 Aluminum-Alloy Rolled Tread Plate.
13. C1107 Packaged Dry, Hydraulic-Cement Grout (Nonshrink).
14. E894 Test Method for Anchorage of Permanent Metal Railing Systems and Rails for Buildings.
15. E935 Test Methods for Performance of Permanent Metal Railing Systems and Rails for Buildings.
16. F3125 High Strength Structural Bolts, Steel and Alloy Steel, Heat Treated, 120 ksi (830 MPa) and 150 ksi (1040 MPa) Minimum Tensile Strength, Inch and Metric Dimensions.

F. American Welding Society (AWS):
1. D1.1/D1.1M Structural Welding Code - Steel (ANSI).
2. D1.2/D1.2M Structural Welding Code - Aluminum (ANSI).
3. D1.6/D1.6M Structural Welding Code - Stainless Steel (ANSI).

G. National Association of Architectural Metal Manufacturers (NAAMM):
1. Metal Finishes Manual for Architectural and Metal Products.

H. National Fire Protection Association (NFPA):
1. 255 Method of Test of Surface Burning Characteristics of Building Materials.

I. Underwriters Laboratories Inc. (UL):
1. 723 Safety Test for Surface Burning Characteristics of Building Materials.
2. 2079 Tests for Fire Resistance of Building Joint Systems.

1.03 COORDINATION

A. Coordinate selection of shop primers with topcoats to be applied over them. Comply with paint and coating manufacturers' written recommendations to ensure that shop primers and topcoats are compatible with one another.

1.04 SUBMITTALS

A. General: In compliance with Section 01 3300 and as specified herein.

B. Product Data: Specifications, installation instructions, details and finish selection data for manufactured products.
1. Paint products.
2. Grout.

C. Shop Drawings: Show fabrication and installation details. Include plans, elevations, sections, and details of metal fabrications and their connections. Show anchorage and accessory items. Provide Shop Drawings for the following:
1. Steel framing and supports for countertops.
2. Steel framing and supports for mechanical and electrical equipment.
3. Steel framing and supports for applications where framing and supports are not specified in other Sections.

D. Sustainable Construction Submittals:

1. Indicate compliance with the Georgia Energy Efficiency and Sustainability Construction Standards for State Buildings dated July 1, 2009. Submit completed Section 6.3-Georgia based Materials and Products document. Refer to the requirements of Section 01 8113 – Sustainable Design Requirements, Georgia Peach Program.

1.05 INFORMATIONAL SUBMITTALS (FIO)

A. Qualification Data: For professional engineer.

B. Calculations: For installed products indicated to comply with design loads, include structural computations, materials properties, and other information needed for structural analysis, signed and sealed by qualified professional engineer licensed in State of Georgia.

C. Product Tests Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for stairs and railings.
   1. Test railings according ASTM E894 and ASTM E935.

D. Mill Certificates: Signed by stainless-steel manufacturers, certifying that products furnished comply with requirements.

E. Welding certificates.

F. Paint Compatibility Certificates: From manufacturers of topcoats applied over shop primers, certifying that shop primers are compatible with topcoats.

G. Research/Evaluation Reports: For post-installed anchors, from ICC-ES.

1.06 QUALITY ASSURANCE

A. Welding Qualifications: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."

B. Welding Qualifications: Qualify procedures and personnel according to the following:
   1. AWS D1.1/D1.1M, "Structural Welding Code - Steel."
   2. AWS D1.2/D1.2M, "Structural Welding Code - Aluminum."
   3. AWS D1.6/D1.6M, "Structural Welding Code - Stainless Steel."

1.07 PROJECT CONDITIONS

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

PART 2 - PRODUCTS

2.01 PERFORMANCE REQUIREMENTS

A. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes acting on exterior metal fabrications by preventing buckling, opening of joints, overstressing of components, failure of connections, and other detrimental effects.

2.02 MATERIALS

A. Metal Surfaces, General: Provide materials with smooth, flat surfaces unless otherwise indicated. For metal fabrications exposed to view in the completed Work, provide materials without seam marks, roller marks, rolled trade names, or blemishes.

B. Steel: ASTM A36, unless noted otherwise.
   1. Wide Flanges and Channels: American Standard rolled sections.
   2. Tees: Cut from American Standard beams.
   3. Angles: Equal and unequal leg rolled sections.
   4. Plates and Bars: Flat rolled universal mill or sheared plate.

C. Aluminum Plate and Sheet: ASTM B209, Alloy 6061-T6.

D. Aluminum Extrusions: ASTM B221, Alloy 6063-T6.

E. Aluminum-Alloy Rolled Tread Plate: ASTM B632, Alloy 6061-T6.

F. Aluminum Castings: ASTM B26, Alloy 443.0-F.

G. Fasteners: Provide anchors, bolts, expansion devices, and miscellaneous accessory items necessary for complete and finished installation. Provide fasteners exposed to exterior with zinc coating in compliance with ASTM A153.
1. Bolts: ASTM A307, F3125 as required.
2. Concrete Wedge Anchors: Wedge anchors, Hilti "KWIK-Bolt", or similar anchors, with maximum 2400 lb. pull-out for 1/4-inch machine bolts.
3. Nuts: ASTM A563, grade suitable for bolts.
4. Gypsum Board: Flat head spring toggle bolts, sheet metal screws or hollow wall anchors.
5. Hanger Rods:
   a. Material: ASTM A36.
   b. Threads: ASTM A307.
6. Wood: Lag bolts; ASME B18.2.1.

H. Electrodes: AWS A5.1, low hydrogen arc-welding electrodes, E70XX.

I. Anchoring Cement: ASTM C1107, quick setting, self leveling, pourable cement base; waterproof, non shrink exterior erosion-resistant anchoring cement.
1. Adhesives Technology “Hard-Rok”.
2. BASF, “MasterFlow 110 AN”.
3. ProSpec “High Strength Precision Grout”.
4. Five Star Products, Inc., "Five-Star Grout".

J. Nonshrink, Nonmetallic Grout; Corps of Engineers CRD C-621and ASTM C1107:
1. BASF "Masterflow 928".
2. BASF “MasterFlow 100".
3. U. S. Grout Corp. "Five-Star Grout".
4. W. R. Bonsal Company "Bonsal F-77 Construction Grout".

K. Shop Primer Paint:
1. For Surfaces to Receive Finish Painting: Compatible with required finish coats of paint. Coordinate selection of metal primer with finish paint specified in Section 09 90 00.
2. For Items Not Receiving Finish Painting: Sherwin-Williams “Zinc-Clad IV", SSPC Paint-20, organic zinc-rich primer.
   a. Apply shop primer to uncoated surfaces of metal fabrications, except those with galvanized finishes and those to be embedded in concrete, sprayed-on fireproofing, or masonry, unless otherwise indicated.

L. Galvanize Touch Up Paint: ASTM A780; brush apply only; two coats.
1. PPG Industries “Aguapon Zinc Rich Primer”
2. Sherwin-Williams "Zinc-Clad 5 Organic B69A45".
3. ZRC Worldwide "Z.R.C. Cold Galvanizing Compound".

M. Sheet Metal Backup: ASTM A1008, 18 gauge sheet metal, Class 1, sized 12-inches high x width to span two studs.
1. Install 18 gauge sheet metal reinforcing to studs for thru wall supported items such as toilet accessories. Secure reinforcing with minimum of two sheet metal screws.
2. Reinforcement shall be located by trade furnishing item.
3. At location of stair handrails attached to metal framed wallboard partitions, set reinforcement at handrail height and rise for handrail bracket attachment. Attach to metal framing, full length of handrail.

N. Bituminous Coating: Required for items to be embedded in concrete, provide alkali-resistant bituminous coating.

2.03 FABRICATION, GENERAL

A. Shop Assembly: Preassemble items in the shop to greatest extent possible. Disassemble units only as necessary for shipping and handling limitations. Use connections that maintain structural value of joined pieces. Clearly mark units for reassembly and coordinated installation.

B. Cut, drill, and punch metals cleanly and accurately. Remove burrs and ease edges to a radius of approximately 1/32 inch unless otherwise indicated. Remove sharp or rough areas on exposed surfaces.

C. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing work.

D. Form exposed work with accurate angles and surfaces and straight edges.

E. Weld corners and seams continuously to comply with the following:
   1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
   2. Obtain fusion without undercut or overlap.
   3. Remove welding flux immediately.
   4. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing.

F. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners or welds where possible. Where exposed fasteners are required, use Phillips flat-head (countersunk) fasteners unless otherwise indicated. Locate joints where least conspicuous.

G. Fabricate seams and other connections that are exposed to weather in a manner to exclude water. Provide weep holes where water may accumulate.

H. Cut, reinforce, drill, and tap metal fabrications as indicated to receive finish hardware, screws, and similar items.

I. Provide for anchorage of type indicated; coordinate with supporting structure. Space anchoring devices to secure metal fabrications rigidly in place and to support indicated loads.

2.04 MISCELLANEOUS FRAMING AND SUPPORTS

A. General: Provide steel framing and supports not specified in other Sections as needed to complete the Work.

B. Fabricate units from steel shapes, plates, and bars of welded construction unless otherwise indicated. Fabricate to sizes, shapes, and profiles indicated and as necessary to receive adjacent construction.
   1. Fabricate units from slotted channel framing where indicated.
   2. Furnish inserts for units installed after concrete is placed.

C. Galvanize miscellaneous framing and supports where indicated.

D. Prime miscellaneous framing and supports with zinc-rich primer where indicated.

2.05 ALUMINUM FINISHES

A. As-Fabricated Finish: AA-M12.

B. Clear Anodic Finish: AAMA 611, Class I, AA-M12C22A41.

PART 3 - EXECUTION

3.01 INSTALLATION, GENERAL

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

B. Fit exposed connections accurately together to form hairline joints. Weld connections that are not to be left as exposed joints but cannot be shop welded because of shipping size limitations. Do not weld, cut, or abrade surfaces of exterior units that have been hot-dip galvanized after fabrication and are for bolted or screwed field connections.

C. Field Welding: Comply with the following requirements:
1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
2. Obtain fusion without undercut or overlap.
3. Remove welding flux immediately.
4. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.

D. Fastening to In-Place Construction: Provide anchorage devices and fasteners where metal fabrications are required to be fastened to in-place construction. Provide threaded fasteners for use with concrete and masonry inserts, toggle bolts, through bolts, lag screws, wood screws, and other connectors.

E. Provide temporary bracing or anchors in formwork for items that are to be built into concrete, masonry, or similar construction.

F. Corrosion Protection: Coat concealed surfaces of aluminum that come into contact with grout, concrete, masonry, wood, or dissimilar metals with the following:
1. Cast Aluminum: Heavy coat of bituminous paint.
2. Extruded Aluminum: Two coats of clear lacquer.

3.02 SCHEDULE OF ITEMS

A. Supply and install metal fabrications listed herein, complete with anchorage and attachments necessary for installation.

B. Schedule of metal fabrications. Items include, but are not limited to:
1. Framing, bracing and supports for sliding glass entrance doors.
2. Angle and channel frames for doors and wall openings.
3. Miscellaneous angles, clip angles and braces; galvanized finish for all exterior locations.
4. Overhead Support and Bracing For:
   a. Lighting.
   b. Wood doors and wood framed glass doors.
   c. Window treatments.
5. Perforated sheet metal blank-off plates between air slot diffusers; painted flat black.
6. Sheet metal backup for support of toilet accessories at gypsum board partitions.
7. Framing, bracing and support for countertops.
8. Miscellaneous studs for ceiling support system.

C. Fabricate miscellaneous metal items for bracing and supports specified in other Sections in compliance with this Section.

3.03 FIELD QUALITY CONTROL

A. Concealed Surfaces: No improvements from mill finish required except preparation for galvanizing and priming.

B. Exposed Surfaces: Wire brush, grind and sand to remove imperfections. No defects may show after painting.

C. Welds: Conceal by placing on interior where possible. Where exposed, grind to small radius. When painted, welds to be undetectable. Cross section area of weld to exceed that of smallest member joined.

D. Bolts: Only flat or oval countersunk where exposed to view.

E. Straightness: No distortions visible to eye at 10 feet.

F. Joint Fit: Grind to tight fit. Fill gaps and grind smooth.

3.04 ADJUSTING AND CLEANING

A. Touchup Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas. Paint uncoated and abraded areas with the same material as used for shop painting to comply with SSPC-PA 1 for touching up shop-painted surfaces.
1. Apply by brush or spray to provide a minimum 2.0-mil dry film thickness.

B. Touchup Painting: Cleaning and touchup painting of field welds, bolted connections, and abraded areas of shop paint are specified in Section 09 9900 " Paints and Coatings."

C. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing to comply with ASTM A 780.

END OF SECTION

SECTION 06 1000

ROUGH CARPENTRY

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 REFERENCE STANDARDS

A. American Plywood Association (APA):
1. PRP-108 Performance Standards and Qualification Policy for Wood Structural-Panels, Form E445.
2. E30K APA Engineered Wood Construction Guide - Residential & Commercial.

B. American Society for Testing and Materials (ASTM):
1. A 653 Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
2. E 84 Test Method for Surface-Burning Characteristics of Building Materials.
3. D 2898 Practice for Accelerated Weathering of Fire-Retardant-Treated Wood for Fire Testing.
4. D 3201 Test Method for Hygroscopic Properties of Fire-Retardant Wood and Wood-Based Products.
5. D 3498 Adhesives for Field-Gluing Wood Structural Panels (Plywood or Oriented Strand Board) to Wood Based Floor System Framing.
6. D 5664 Test Method for Evaluating the Effects of Fire-Retardant Treatments and Elevated Temperatures on Strength Properties of Fire-Retardant Treated Lumber.

C. American Wood Protection Association (AWPA):
1. U1 Use Category System: User Specification for Treated Wood.

D. National Institute of Standards and Technology (NIST):
1. PS 1 Structural Plywood.
2. PS 20 American Softwood Lumber Standards.

E. Southern Pine Inspection Bureau (SPIB):
1. Standard Grading Rules for Southern Pine Lumber.

F. Western Wood Products Association (WWPA):
1. Western Lumber Grading Rules.

1.03 SUBMITTALS

A. General: In compliance with Section 01 3300 and as specified herein.

B. Product Data: For each type of process and factory-fabricated product. Indicate component materials and dimensions and include construction and application details.
   1. Include data for wood-preservative treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements. Indicate type of preservative used and net amount of preservative retained.
   2. Include data for fire-retardant treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements. Include physical properties of treated materials based on testing by a qualified independent testing agency.
   3. For fire-retardant treatments, include physical properties of treated lumber both before and after exposure to elevated temperatures, based on testing by a qualified independent testing agency according to ASTM D 5664.
   4. For products receiving a waterborne treatment, include statement that moisture content of treated materials was reduced to levels specified before shipment to Project site.

1.04 INFORMATIONAL SUBMITTALS (FIO)

A. Material Certificates: For dimension lumber specified to comply with minimum allowable unit stresses. Indicate species and grade selected for each use and design values approved by the ALSC Board of Review.

B. Evaluation Reports: For the following, from ICC-ES:
   1. Wood-preservative-treated wood.
   2. Fire-retardant-treated wood.
   3. Engineered wood products.
   4. Shear panels.
   5. Power-driven fasteners.
   6. Post-installed anchors.
   7. Metal framing anchors.

1.05 QUALITY ASSURANCE

A. Forest Certification: Provide interior architectural woodwork produced from wood obtained from forests certified by an FSC-accredited certification body to comply with FSC STD-01-001, "FSC Principles and Criteria for Forest Stewardship."

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

1.06 DELIVERY, STORAGE, AND HANDLING

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

PART 2 - PRODUCTS

2.01 WOOD PRODUCTS, GENERAL

A. Source Quality Control: Factory-mark each piece of lumber and plywood with type, grade mark, mill identification mark, and trade mark of SPIB, APA, and other associations having jurisdiction.

B. Lumber:
   1. Standard yard dimension lumber graded and sized in compliance with NIST DOC PS 20 and applicable rules of grading agencies indicated. If no grading agency is indicated, comply with the applicable rules of any rules-writing agency certified by the ALSC Board of Review. Grade lumber by an agency certified by the ALSC Board of Review to inspect and grade lumber under the rules indicated.
      a. Provide dressed lumber, S4S, unless otherwise indicated.
      b. Provide seasoned lumber with maximum 19% moisture content, “S-Dry” or “KD-19”, unless otherwise indicated.
   2. General Utility Purposes; Plates, Blocking, Bracing, Nailers, and Grounds: Utility Grade or No. 3 Boards, Southern Pine, pressure treated.
   3. Framing: Southern Pine, graded under SPIB rules in the grades following:
      a. General Light Framing: No. 2 Dimension, 1200 psi “I” or Standards Grade.
      b. Exposed Framing Lumber: Select Structural Grade.
      c. Paint Finish Exposed Boards: No. 1 Grade.

C. Plywood: Group 1, fir plywood, graded and sized in compliance with NIST PS 1 and APA PRP-108. Provide seasoned plywood with maximum 15% moisture content.
   1. Exposed Plywood, with exterior glue.
   2. Concealed Plywood:
      a. Exterior: APA C-C Plugged EXT.
      b. Interior: APA C-D Plugged INT, with exterior glue. Provide exterior type plywood, APA C-C Plugged EXT, with exterior glue for interior areas exposed to high humidity or moisture.
   3. Plywood Backing Panels: APA C-D Plugged Exposure I, fire-retardant treated panels, in thickness indicated, or minimum 3/4-inch thick when not indicated.
      a. For mounting electrical and telephone equipment.

2.02 WOOD TREATMENT AND ACCESSORY MATERIALS

A. Preservative Treatment by Pressure Process: AWPA U1; Use Category UC2 for interior construction not in contact with ground, Use Category UC3b for exterior construction not in contact with ground, and Use Category UC4a for items in contact with ground.
   1. Preservative Chemicals: Acceptable to authorities having jurisdiction and containing no arsenic or chromium.
   2. For exposed items indicated to receive a stained or natural finish, chemical formulations shall not require incising, contain colorants, bleed through, or otherwise adversely affect finishes.

B. Kiln-dry lumber after treatment to a maximum moisture content of 19 percent. Do not use material that is warped or that does not comply with requirements for untreated material.

C. Fire-Retardant-Treated Lumber and Plywood by Pressure Process: Products with a flame-spread index of 25 or less when tested according to ASTM E 84, and with no evidence of significant progressive combustion when the test is extended an additional 20 minutes, and with the flame front not extending more than 10.5 feet beyond the centerline of the burners at any time during the test.
   1. Treatment shall not promote corrosion of metal fasteners.
   2. Exterior and High Humidity Use: Treated materials shall comply with requirements specified above for fire-retardant-treated lumber and plywood by pressure process after being subjected to accelerated weathering according to ASTM D 2898. Use for exterior locations and where indicated.
   3. Interior Type A: Treated materials shall have a moisture content of 28 percent or less when tested according to ASTM D 3201 at 92 percent relative humidity. Use where exterior type is not indicated.

D. Rough Hardware: Fasteners shall be of size and type indicated and shall comply with requirements specified in this article for material and manufacture.
   1. Finish: Galvanized finish for exterior and interior work exposed to moisture and high humidity. Brite basic (uncoated) finish for interior work not exposed to moisture and high humidity. Type 316L or galvanized in compliance with ASTM A653 G185 designation for connectors and hot dipped zinc coated galvanized steel fasteners complying with IBC Section 2304.9.5 finish for all hardware used in preservative and fire-retardant treated materials.

E. Wall Bracing: T-shaped bracing made for letting into studs in saw kerf, 1-1/8 inches wide by 9/16 inch deep by 0.034 inch thick with hemmed edges.

F. Adhesives for Gluing Furring to Concrete or Masonry: Formulation complying with ASTM D 3498 that is approved for use indicated by adhesive manufacturer.

G. Water-Repellent Preservative: NWWDA-tested and -accepted formulation containing 3-iodo-2-propynyl butyl carbamate, combined with an insecticide containing chloropyrifos as its active ingredient.

PART 3 - EXECUTION

3.01 WOOD TREATMENT

A. Heavily brush coat, with appropriate treatment, field cut, bored and drilled surfaces prior to incorporation into Work. Properly mark treated wood for positive identification. Handle and install in compliance with AWPA U1.

B. Provide preservative treated wood for all framing, blocking, furring, and nailing strips built into exterior masonry walls, where in contact with concrete, where exposed to moisture and high humidity, and where specifically indicated.

C. Provide fire-retardant treated wood where wood will not be painted, such as concealed above ceilings, incorporated into walls, wood blocking within walls, wood permanently incorporated and concealed in the Work and exposed to, or in contact with, moisture and high humidity, wood permanently incorporated into roofing and flashing construction, and where specifically indicated.

3.02 INSTALLATION

A. Set work accurately to required lines and levels, members plumb and true and accurately cut and fitted with intersection to required angles.
   1. Cut out and replace crooked, warped, bowed and otherwise defective material, even if material is within specified grade limits.

B. Securely attach wood to steel with carriage bolts or countersunk machine bolts; to concrete with anchor bolts or Kwik-Bolts; to hollow masonry with toggle bolts; to wood with nails, spikes, screws and bolts as applicable.
   1. Secure wood to concrete and concrete masonry maximum 1’-4" on center and into center of mortar joints.
   2. Provide standard washers for bolt heads and nuts bearing upon wood.
   3. Provide fasteners of size not to penetrate members where opposite side will be exposed to view or will receive finish materials. Predrill as required; install fasteners without splitting wood.

C. Provide wood strips, furring, nailers, grounds, blocking for toilet accessories and handrails, and framing of thicknesses, sizes and shapes required for gypsum board, roofing, flashing, countertop framing, wood trim, and other related work.
   1. Erect true-to-lines and levels. Do not deviate from true alignment more than 1/8-inch in 10’-0".
   2. Space members 1’-4" on center, unless indicated otherwise.

D. Construct members of continuous pieces of longest possible lengths to prevent splicing.

3.03 SCHEDULE

A. Rough Carpentry Work: Includes but is not limited to following:
   1. Miscellaneous framing, grounds, blockings, sleepers, and nailers.
   2. Preservative and fire-retardant treatment of wood members where required.
   3. Miscellaneous furring and stripping for wall finishes.
   4. Behind wall wood blocking for support of toilet accessories.
   5. Behind wall wood blocking for support of wall mounted equipment.
   6. Behind wall wood blocking for support of wood molding, chair rails, trim and artwork.
   7. Above-ceiling blocking for partitions and window coverings.

END OF SECTION

SECTION 06 4116

ARCHITECTURAL CABINETRY

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

A. Section Includes:
1. Specially fabricated cabinet units.
2. Countertops.
3. Millwork slat walls.
4. Cabinet hardware.
5. Preparation for installing utilities.

B. Related Requirements:
1. Section 06 1000 "Rough Carpentry" for wood furring, blocking, shims, and hanging strips required for installing cabinets that are concealed within other construction before cabinet installation.

1.03 REFERENCE STANDARDS

A. American National Standards Institute (ANSI):
1. A 156.9 Cabinet Hardware.
2. A 208.2 Medium Density Fiberboard (APA).

B. American Plywood Association (APA):
1. PRP-108 Performance Standards and Policies for Structural-Use Panels, Form No. E445M.
2. Form No. E30K APA Design/Construction Guide – Residential & Commercial.

C. American Society for Testing and Materials (ASTM):
1. D 2559 Adhesives for Bonded Structural Wood Products for Use Under Exterior Exposure Conditions.

D. Architectural Woodwork Institute (AWI):
1. Architectural Woodwork Standards, 2nd Edition.

E. National Electrical Manufacturers Association (NEMA):
1. LD 3 High Pressure Decorative Laminates.

F. National Institute of Standards and Technology (NIST):
1. PS 1 Structural Plywood.
2. PS 20 American Softwood Lumber Standards.

G. Hardwood Plywood and Veneer Association (HPVA):
1. HP-1 Hardwood and Decorative Plywood.

H. Southern Pine Inspection Bureau (SPIB):
1. Standard Grading Rules for Southern Pine Lumber.

1.04 COORDINATION

A. Coordinate sizes and locations of framing, blocking, furring, reinforcements, and other related units of Work specified in other Sections to support loads imposed by installed and fully loaded cabinets.

B. Hardware Coordination: Distribute copies of approved hardware schedule specified in Section 08 7100 - Door Hardware to fabricator of architectural cabinets; coordinate Shop Drawings and fabrication with hardware requirements.

1.05 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site on same day as a regularly scheduled project meeting.

1.06 SUBMITTALS

A. General: In compliance with Section 01 3300 and as specified herein.

B. Product Data: For each type of product.
1. Include data for fire-retardant treatment from chemical-treatment manufacturer and certification by treating plant that treated materials comply with requirements.

C. Shop Drawings: Indicate materials, component profiles, fastening methods, jointing details, assembly methods, joint details, fastening methods, accessory listings, hardware location and schedule of finishes.
1. Include plans, elevations, sections, and attachment details at a minimum scale of 3/8-inch=1’-0”.
2. Show large-scale details at a minimum scale of 1-1/2 inch to 1 foot (1:8).
3. Show locations and sizes of furring, blocking, and hanging strips, including concealed blocking and reinforcement specified in other Sections.
4. Show locations and sizes of cutouts and holes for plumbing fixtures, faucets, soap dispensers, power outlets and other items installed in architectural cabinets.
5. Apply AWI Quality Certification Program label to Shop Drawings.
6. Indicate field verified dimensions and conditions on Shop Drawings.
7. Indicate joints in veneer and high pressure decorative laminate work.
8. Indicate matching of veneers and direction of grain.

D. Samples: For each exposed product and for each color and texture specified, in manufacturer's or fabricator's standard size.
1. Plastic Laminates: 8 by 10 inches, for each type, color, pattern, and surface finish required.
   a. Provide one sample applied to core material with specified edge material applied to two edges, including one corner where edges intersect.
2. Thermoset Decorative Panels: 8 by 10 inches, for each color, pattern, and surface finish.
   a. Provide edge banding on one edge.
3. Corner Pieces:
   a. Cabinet-front frame joints between stiles and rails and at exposed end pieces, 18 inches high by 18 inches wide by 6 inches deep.
   b. Miter joints for standing trim.
4. Hardware: Submit one actual sample item for each type and finish of proposed pulls, hinges, shelf standards, and drawer slides, demonstrating hardware design, quality, and finish.

E. Sustainable Construction Submittals:

1. Indicate compliance with the Georgia Energy Efficiency and Sustainability Construction Standards for State Buildings dated July 1, 2009. Submit completed Section 6.3-Georgia based Materials and Products document. Refer to the requirements of Section 01 8113 – Sustainable Design Requirements, Georgia Peach Program.

1.07 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing products specified herein with minimum five years of documented experience.
   1. All millwork shall comply with Architectural Woodwork Institute Quality Standards 2nd Edition, 2014.

B. Millwork Fabricator and Installer Qualifications: Company specializing in fabricating and installing products specified herein with minimum five years of documented experience.
   1. Company with at least one project in past 5 years with value of woodwork within 20 percent of cost of woodwork for this Project.
   2. All millwork shall comply with Architectural Woodwork Institute Quality Standards 2nd Edition, 2014.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Do not deliver cabinets until painting and similar finish operations that might damage architectural cabinets have been completed in installation areas. Store cabinets in installation areas or in areas where environmental conditions comply with requirements specified in "Field Conditions" Article.

B. Package and ready materials in compliance with manufacturer's recommendations.

C. Store products protected from light, heat and moisture. Do not store in contact with floor or outside wall surfaces. Do not expose to continuous direct sunlight.

D. Store horizontally, face-to-face and back-to-back with top sheet turned face down.

E. Handle sheets by sliding when possible.

F. Provide protective coverings of suitable material. Take special precautions at corners.

1.09 PROJECT CONDITIONS

A. During and after installation of custom cabinets, maintain temperature and humidity conditions in building spaces at occupancy levels.

B. Prior to installation, verify that blocking or reinforcement is present and sufficient to adequately support anticipated final loads. Where not present, provide and install such blocking or reinforcement as to adequately support millwork and anticipated final loads.

C. Coordinate sizes and locations of framing, blocking, furring, reinforcements, and other related units of Work to ensure that millwork can be supported as required and installed as indicated.

D. Field Measurements: Verify dimensions of other construction by field measurements before fabrication and indicate measurements on Shop Drawings.
   1. Locate concealed framing, blocking, and reinforcements that support woodwork by field measurements, and indicate measurements on Shop Drawings.

E. Established Dimensions: Where paneling is indicated to fit to other construction, establish dimensions for areas where woodwork is to fit. Provide allowance for trimming at site, and coordinate construction to ensure that actual dimensions correspond to established dimensions.

F. Coordinate locations of items from other trades, such as switches, power outlets, appliances (Owner furnished and otherwise), light fixtures, and other similar items with shop drawings, fabrication, and installation.

1.10 WARRANTY:

A. Submit manufacturer's standard 3-year warranty covering defects in material and workmanship.

PART 2 - PRODUCTS

2.01 PLASTIC-LAMINATE-FACED ARCHITECTURAL CABINETS

A. Quality Standard: Unless otherwise indicated, comply with the "Architectural Woodwork Standards" for grades of cabinets indicated for construction, finishes, installation, and other requirements.
   1. Contract Documents contain requirements that are more stringent than the referenced quality standard. Comply with requirements of Contract Documents in addition to those of the referenced quality standard.

B. Grade: Custom.

2.02 WOOD MATERIALS

A. Wood Products: Provide materials that comply with requirements of referenced quality standard for each type of architectural cabinet and quality grade specified unless otherwise indicated.
   1. Softwood Lumber: NIST PS 20; Graded in compliance with AWI/AWMAC Architectural Woodwork Quality Standards Illustrated, Grade II/Custom; average moisture content of 5-10 percent; species as required to provide for a suitable substrate for material covering lumber.
   2. Hardwood Lumber: NHLA; Graded in compliance with AWI/AWMAC Architectural Woodwork Quality Standards Illustrated, Grade II/Custom; average moisture content of 5-10 percent; species as required to provide for a suitable substrate for material covering lumber.

B. Composite Wood and Agrifiber Products: Provide materials that comply with requirements of referenced quality standard for each type of architectural cabinet and quality grade specified unless otherwise indicated.
   1. Medium-Density Fiberboard (MDF): ANSI A208.2, Grade 130
   2. Softwood Plywood: DOC PS 1, medium-density overlay.
   3. Thermoset Decorative Panels: Particleboard or MDF finished with thermally fused, melamine-impregnated decorative paper and complying with requirements of NEMA LD 3, Grade VGL, for Test Methods 3.3, 3.4, 3.6, 3.8, and 3.10.

C. Plywood: Provide as substrate/core material for millwork and plastic laminate construction, unless noted otherwise, and as substrate for countertops where required by countertop manufacturer: NIST PS 1, core of wood plies from listed species unless otherwise indicated, balanced construction with faces, thickness, and moisture content to produce a warp-free panel suitable for its intended uses, as indicated and as required by application. Thickness to be 3/4-inches unless noted otherwise.
   1. Concealed Surfaces: PS 1; APA B-B Grade, rotary cut face veneer of species as appropriate for application.
   2. Provide Type I waterproof adhesive plywood panels for base cabinet millwork (floor mounted cabinets) with or without sinks, and other millwork unless specified otherwise.
   3. Provide Type II interior water-resistant adhesive plywood panels for wall cabinet millwork (upper cabinets).

D. Marine Grade Plywood: APA B-B Grade.

2.03 FIRE-RETARDANT-TREATED MATERIALS

A. Fire-Retardant-Treated Materials, General: Where fire-retardant-treated materials are indicated, use materials that are acceptable to authorities having jurisdiction and with fire-test-response characteristics specified as determined by testing identical products per test method indicated by a qualified testing agency.
   1. Use treated materials that comply with requirements of referenced quality standard. Do not use materials that are warped, discolored, or otherwise defective.
   2. Use fire-retardant-treatment formulations that do not bleed through or otherwise adversely affect finishes. Do not use colorants to distinguish treated materials from untreated materials.
   3. Identify fire-retardant-treated materials with appropriate classification marking of qualified testing agency in the form of removable paper label or imprint on surfaces that will be concealed from view after installation.

B. Fire-Retardant Fiberboard: MDF panels complying with ANSI A208.2, made from softwood fibers, synthetic resins, and fire-retardant chemicals mixed together at time of panel manufacture to achieve flame-spread index of 25 or less and smoke-developed index of 200 or less per ASTM E 84.

2.04 LAMINATE MATERIALS

A. Basis-of-Design Manufacturers: As indicated in Finish Legend.
   1. Other acceptable manufacturers:
      a. Wilsonart, LLC
      b. Abet Laminati, Inc.
      c. Formica Corporation.
      d. Panolam Industries International, Inc.

B. High Pressure Decorative Laminate (HPDL): NEMA LD 3, types as recommended for specific applications and required by woodwork quality standard.
   1. Provide specific types as follows:
      a. Horizontal Surfaces: HGS, 0.048 inch (1.22 mm) nominal thickness, through color, colors as scheduled, finish as scheduled.
      b. Vertical Surfaces: VGS, 0.028 inch (0.71 mm) nominal thickness, through color, colors as scheduled, finish as scheduled.
      c. Post-Formed Vertical Surfaces: VGP, 0.028 inch (0.71 mm) nominal thickness, through color, colors as scheduled, finish as scheduled.
      d. Cabinet Liner: CLS, 0.020 inch (0.51 mm) nominal thickness, through color, colors as scheduled, finish as scheduled.
      e. Laminate Backer: BKL, 0.020 inch (0.51 mm) nominal thickness, undecorated; for application to concealed backside of panels faced with high pressure decorative laminate.
      f. Edges: VGS, of same type and requirements as for faces.

2.05 PLASTIC-LAMINATE-FACED ARCHITECTURAL CABINETS ACCESSORIES

A. Adhesive: Type recommended by AWI/AWMAC to suit application and as recommended by laminate manufacturer.

B. Sealant: Premier Building Solutions “XtraBond 150-RTV Silicone Sealant”. Standard mildew-resistant, FDA-compliant, NSF 51-compliant (food zone - any type), UL-listed silicone sealant in colors matching components.
   1. Color: To be selected by Architect.

C. Fasteners: Size and type to suit application.

D. Bolts, Nuts, Washers, Lags, Pins, and Screws: Of size and type to suit application; stainless steel finish in concealed and exposed locations.

E. Stainless Steel Trim Molding: 430 stainless steel #4 brushed trim moldings in flat profile, 18 gauge, 4-inch high.

F. Millwork Reveal Trim: Extruded accessories of profiles and dimensions indicated. Basis-of-Design Manufacturer: Fry Reglet.
1. TS-1: “MWR5050” 1/2” x 1/2".
2. TS-2: “MWROSC75” 3/4".
3. TS-6: “DRMZ-625-50” 5/8” x 1/2”.
4. Aluminum: Alloy and temper with not less than the strength and durability properties of ASTM B221 (ASTM B221M), Alloy 6063-T5.
5. Finish: Clear anodized.

G. Concealed Joint Fasteners: Threaded steel.

H. Furring, Blocking, Shims, and Hanging Strips: Provide fire retardant lumber as specified in 06 1000, kiln dried to less than 15 percent moisture content.

A. Dust Panels: 1/4-inch plywood or tempered hardboard above compartments and drawers unless located directly under tops.

B. Concealed Backs of Panels with Exposed Plastic-Laminate Surfaces: High-pressure decorative laminate, NEMA LD 3, Grade BKL.

C. Drawer Construction: Fabricate with exposed fronts fastened to subfront with mounting screws from interior of body.
1. Join subfronts, backs, and sides with glued rabbeted joints supplemented by mechanical fasteners or glued dovetail joints.

2.06 HARDWARE

A. Hardware: BHMA A156.9, types as indicated for quality grade specified.

B. Adjustable Shelf Supports: Standard side-mounted system using multiple holes for pin supports and coordinated shelf rests for nominal 1-inch (25 mm) spacing adjustments.
1. Finish: Vinyl coated steel.
2. Basis-of-Design Manufacturer and Type:
   a. Knape & Vogt; www.kv.com; Product: 348 Series Vinyl Coated Steel Shelf Support.

C. Drawer and Door Pulls:
   a. Finger pulls as indicated on drawings.

D. Catches: Magnetic catches, ANSI/BHMA A156.9, B03141.

E. Drawer Slides:
1. Basis-of-Design Manufacturers and Type: Accuride International, Inc; Product Full Extension Heavy Duty Slide Model 4032: www.accuride.com.
2. Other Acceptable Manufactures:
   a. Grass America Inc: www.grassusa.com.
   b. Knape & Vogt Manufacturing Company: www.knapeandvogt.com.

3. Type: Full extension.
4. Static Load Capacity: Heavy Duty grade, minimum 150 lb. load capacity.
5. Mounting: Side mounted.
6. Stops: Integral type.
7. Ball Bearings: Steel.

F. Undermount Drawer Slides: BHMA A156.9, Grade 1.
1. Basis-of-Design Manufacturer: Grass America Inc. “Dynapro”. Full extension, 110 lb load capacity.
2. Other Acceptable Manufacturers:
a. Blum, Inc.
b. Hafele.

G. Hinges: European style concealed self-closing type, steel with satin finish. BHMA A156.9, grade 2, B01602.
1. Basis-of-Design Manufacturers and Type: Grass America Inc; “Tiomos 110”. 110 degrees of opening.
2. Basis-of-Design Manufacturers and Type: Grass America Inc; “Tiomos 95”: 95 degrees of opening for end panels adjacent to barriers such as walls.
3. Other Acceptable Manufactures
a. Blum, Julius & Co., Inc.
b. Hafele.

H. Silencers: Provide self-adhering clear silencers at top and bottom of each cabinet door and at each side of each drawer.

I. Door Locks: BHMA A156.11, E07121.
1. Provide where indicated on drawings.
2. Coordinate keying with Owner’s requirements.
3. Provide recessed mounted strike plates.

J. Drawer Locks: BHMA A156.11, E07041.
1. Provide where indicated on drawings.
2. Coordinate keying with Owner’s requirements.

K. Locker Locks: High Security Keyless Combination Lock. Manufacturer: Real Model #RL-9046.
1. Provide where indicated on drawings.
2. Coordinate keying with Owner’s requirements.

L. Grommets for Cable Passage: 2-inch OD, metal grommets and matching metal caps with slot for wire passage.
1. Color: Powder coated matched to adjacent wall color.

M. Grommets for Trash Disposal: 8-inch OD, metal grommet.
1. Color: Clear anodized.

2.07 FABRICATION

A. Cabinetry:
1. Fabricate architectural cabinets to dimensions, profiles, and details indicated.
2. Measurements: Before proceeding with fabrication to be fitted to other construction, obtain field measurements and verify dimensions of Shop Drawing details.
3. Complete fabrication, including assembly and hardware application, to maximum extent possible before shipment to Project site. Disassemble components only as necessary for

shipment and installation. Where necessary for fitting at site, provide ample allowance for scribing, trimming, and fitting.

4. Notify Architect seven days in advance of dates and times architectural cabinet fabrication will be complete.
5. Trial fit assemblies at fabrication shop that cannot be shipped completely assembled. Install dowels, screws, bolted connectors, and other fastening devices that can be removed after trial fitting. Verify that various parts fit as intended and check measurements of assemblies against field measurements before disassembling for shipment.
6. Shop-cut openings to maximum extent possible to receive hardware, appliances, electrical work, and similar items. Locate openings accurately and use templates or roughing-in diagrams to produce accurately sized and shaped openings. Sand edges of cutouts to remove splinters and burrs.
7. Perform “Premium Grade” Work in compliance with recommendations of applicable Section 10 of Architectural Woodwork Institute Quality Standards.
8. Fabricate casework to flush overlay construction.
9. Tops and/or bottoms on fillers and open corner panels are required when surfaces are defined herein as ‘exposed’. Finish to match veneers of exposed surfaces.
10. Treat edges as ‘exposed’ when any part is visible through gap greater than 1/8-inch with doors/drawers closed. Finish to match veneers of exposed surfaces.

B. High Pressure Decorative Laminate Work:

1. Apply high pressure decorative laminate finish in full uninterrupted sheets; with hairline corners and joints. Laminate to core material under pressure with hydraulic presses and cold setting adhesive.
2. Cap exposed edges with material of same finish and pattern.
3. Locate counter butt joints minimum 2’-0” from sink cutouts.
4. Mechanically fasten backsplash to countertop 16-inches on center.
5. Make cutouts for lavatories, plumbing fixtures, and toilet accessories using templates or physical samples of items.
6. Conceal all edges of high pressure decorative laminate with matching solid color core high pressure decorative laminate..

PART 3 - EXECUTION

3.01 PREPARATION

A. Before installation, condition cabinets to humidity conditions in installation areas for not less than 72 hours.

3.02 EXAMINATION

A. Verify adequacy of backing and support framing.

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

3.03 INSTALLATION

A. Grade: Install cabinets to comply with quality standard grade of item to be installed.

B. Assemble cabinets and complete fabrication at Project site to extent that it was not completed in shop.

C. Anchor cabinets to anchors or blocking built in or directly attached to substrates. Secure with wafer-head cabinet installation screws.

D. Install cabinets level, plumb, and true in line to a tolerance of 1/8 inch in 96 inches using concealed shims.
   1. Scribe and cut cabinets to fit adjoining work with minimum gaps of 1/32-inch. Do not use additional overlay trim for this purpose. Refinish cut surfaces, and repair damaged finish at cuts.
   2. Install cabinets without distortion so doors and drawers fit openings and are accurately aligned. Adjust hardware to center doors and drawers in openings and to provide unencumbered operation. Complete installation of hardware and accessory items as indicated.
   3. Fasten wall cabinets through back, near top and bottom, and at ends not more than 16 inches o.c. with toggle bolts through metal backing or metal framing behind wall finish.

E. Secure cabinets to floor using appropriate angles and anchorages.

F. Countersink anchorage devices at exposed locations. Conceal with plugs of same adjacent material; finish flush with surrounding surfaces.

G. Seal transitions between adjacent materials and at backsplash with sealant as specified herein.

3.04 ADJUSTING AND CLEANING

A. Repair damaged and defective cabinets, where possible, to eliminate functional and visual defects. Where not possible to repair, replace architectural cabinets. Adjust joinery for uniform appearance.

B. Clean, lubricate, and adjust hardware.

C. Clean cabinets on exposed and semiexposed surfaces.

D. Clean panels upon completion of installation to remove dust or foreign materials from the fabric, using a dry brush, a vacuum, or both.

E. Maintain conditions that ensures fabric covered tack board panels are without damage or deterioration at time of Substantial Completion.

F. Replace panels that cannot be cleaned and repaired, in a manner acceptable to Architect, prior to the time of Substantial Completion.

3.05 PROTECTION

A. Protect completed work and all finished surfaces from damage until acceptance of installation by Owner.

B. Touch up marred finishes, or replace cabinetry, and millwork items that cannot be restored to new appearance. Use only materials and procedures recommended or furnished by laminate manufacturer.

END OF SECTION

SECTION 07 8400

FIRE AND SMOKE PROTECTION

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 REFERENCE STANDARDS

A. American Society for Testing and Materials (ASTM):
1. E84 Surface Burning Characteristics of Building Materials.
2. E119 Fire Tests of Building Construction and Materials.
3. E814 Fire Tests of Through-Penetration Fire Stops.
4. E1966 Test for Fire Resistance of Building Joint Systems.
5. E2307 Test for Fire Resistance of Perimeter Edge Firestop Systems.

B. National Fire Protection Association (NFPA):
1. 101 Code for Safety to Life from Fire in Buildings and Structures.

C. Underwriters Laboratories Inc. (UL):
1. JAN Fire Resistance Directory.
2. AN Building Materials Directory.
3. 263 Standard Fire Test of Building Construction and Materials.
4. 1479 Fire Tests of Through Penetration Firestops.
5. 2079 Tests for Fire Resistance of Building Joint Systems.

1.03 DEFINITIONS

A. Firestopping: Material or combination of materials used to seal openings and joints in fire-resistance rated wall and/or floor assemblies.

B. Fire-Resistant Joint System: The use of specific firestop material or combination of materials in conjunction with a specific wall or floor construction type and specific penetrant(s), constitutes a “System”. Assembly of specific materials or products that are designed, tested, and fire-resistance rated in accordance with UL 2079 or ASTM E1966 to resist for a prescribed period of time the passage of fire through joints made in or between fire-resistance-rated assemblies.

C. Through-penetration: An opening that passes through an entire assembly.

D. Membrane-penetration: An opening made through one side (wall, floor or ceiling membrane) of an assembly.

E. Construction Gaps: Any gap, joint, or opening, whether static or dynamic, where the top of a wall may meet a floor; wall-to-wall applications; edge-to-edge floor configurations; floor-to-exterior wall; or any linear breach in a rated barrier. Where movement is required, the firestopping system must comply with UL 2079 or ASTM E1966 for dynamic joints.

F. Joint: Linear opening in or between adjacent fire-resistance-rated assemblies that is designed to allow independent movement of the building in any plane caused by thermal, seismic, wind, or any other loading.
   1. Static (non-movement).
   2. Dynamic (movement): Silicone products have greater movement capability than acrylic products.

G. F-Rating: A rating expressed in hours indicating a specific length of time that a fire-resistive barrier can withstand fire before being consumed or before permitting the passage of flame through an opening in the assembly when tested in compliance with ASTM E814 or UL 1479.

H. T-Rating: A rating expressed in hours indicating the length of time that the temperature on the non-fire side of a fire-rated assembly does not exceed 325F above ambient temperature when tested in compliance with ASTM E814.

I. Integrity Rating: One of two hourly ratings for perimeter fire-containment systems. Integrity rating is a measure of the perimeter fire containment system's ability to withstand the fire exposure test without permitting the passage of flame through openings or the occurrence of flaming on any element of the unexposed surface of the fill material or floor or on the interior surface of the curtain wall above the fill material tested in compliance with ASTM E2307 or ASTM E119.

J. Insulation Rating: One of two hourly ratings for perimeter fire-containment systems. Insulation rating is a measure of the perimeter fire containment system's resistance to both flame passage and heat transfer and requires the maximum temperature rise on the unexposed surface of the fill material or on the interior surface of the curtain wall one-inch above the fill material not to exceed 325 deg. F. above the starting temperature. For perimeter fire containment systems having a clearance distance of 6-inches or greater between the curtain wall and edge of slab, the insulation rating also requires the average temperature rise on the unexposed surface of the fill material not to exceed 250 deg. F. above the starting temperature.

1.04 ACTION SUBMITTALS

A. General: In compliance with Section 01 3300 and as specified herein.

B. Product Data: Submit product data and installation instructions for each type installation. Include installation details and manufacturer's certification that each type of firestopping materials meets specified requirements.

C. Shop Drawings: For each through-penetration firestop system, show each kind of construction condition penetrated, relationships to adjoining construction, and kind of penetrating item. Include firestop design designation of testing and inspecting agency acceptable to authorities having jurisdiction that evidences compliance with requirements for each condition indicated.
   1. Submit documentation, including illustrations, from a qualified testing and inspecting agency that is applicable to each through-penetration firestop system configuration for construction and penetrating items.
   2. Submit manufacturer's "engineering judgment" drawings for nonstandard installations where no UL tested system exists.

D. Qualification Data (FIO): Submit Contractor qualifications as described in "Quality Assurance" Article. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.

E. Product Schedule: For each firestopping system. Include location, illustration of firestopping system, and design designation of qualified testing and inspecting agency.

F. Sustainable Construction Submittals:

1. Indicate compliance with the Georgia Energy Efficiency and Sustainability Construction Standards for State Buildings dated July 1, 2009. Submit completed Section 6.3-Georgia based Materials and Products document. Refer to the requirements of Section 01 8113 – Sustainable Design Requirements, Georgia Peach Program.

1.05 INFORMATIONAL SUBMITTALS

A. Qualification Data; (FIO): For Installer.

B. Quality Assurance/Control Submittals; (FIO):
1. Product Certificates: Signed by firestopping manufacturers certifying their products comply with specified requirements and that materials were installed in compliance with manufacturer's installation instructions and details.
   a. Certificate, or other documentation, from selected specified manufacturers stating Installer has been trained in proper installation and is recognized as qualified to install such manufacturers products.
2. Product Test Reports: From a qualified testing agency indicating through-penetration firestop system complies with requirements, based on comprehensive testing of current products.

C. Product Test Reports; (FIO): For each penetration firestopping system, for tests performed by a qualified testing agency.

1.06 CLOSEOUT SUBMITTALS

A. Installer Certificates: From Installer indicating that penetration firestopping systems have been installed in compliance with requirements and manufacturer's written instructions.

1.07 QUALITY ASSURANCE

A. Installer Qualifications: A firm that has been approved by FM Global according to FM Global 4991, "Approval of Firestop Contractors," or been evaluated by UL and found to comply with its "Qualified Firestop Contractor Program Requirements."

B. Single Source Responsibility: Obtain through-penetration and fire-resistant joint firestop systems for each kind of penetration and construction indicated from a single manufacturer.

C. Fire-Resistive Joint Sealants: Provide joint sealants with fire-resistive ratings indicated, as determined per ASTM 1966 or UL 2079, but not less than that equaling or exceeding fire-resistance rating of construction in which joint occurs.

D. Firestopping materials and systems must be capable of closing or filling through-openings created by 1) burning or melting of combustible pipes, cable jacketing, or pipe insulation materials, or 2) deflection of sheet metal due to thermal expansion (electrical and mechanical duct work).

E. Firestopping material must be asbestos and lead free and shall not incorporate nor require use of hazardous solvents.

F. Firestopping sealants must be flexible, allowing for normal pipe movement.

G. Firestopping materials shall not shrink upon drying as evidenced by cracking or pulling back from contact surfaces.

H. Firestopping materials shall be moisture resistant and not dissolve in water after curing.

I. For applications where combustible penetrants are involved, i.e., insulated and plastic pipe, install suitable intumescent material.

J. Age Testing Compliance: Provide written verification from UL of the firestop products passing the “Aging and Environmental Exposure” portion of UL 1479 test.

K. Perimeter Edge Firestop Joint Sealants: Provide joint sealants with fire-resistant ratings indicated as determined per ASTM E119 or ASTM E2307, but not less than the required rating of the rated floor assembly.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Deliver firestopping materials to Project site in original, unopened containers or packages with intact and legible manufacturers’ labels identifying product and manufacturer; date of manufacture; lot number; shelf life, if applicable; qualified testing and inspecting agency’s classification marking applicable to Project; curing time and mixing instructions for multi-component materials.

B. Store and handle firestopping materials to prevent their deterioration and damage due to moisture, temperature changes, contaminants, or other causes.

C. Install all firestop materials prior to expiration of shelf life.

1.09 PROJECT CONDITIONS

A. Environmental Limitations: Do not install penetration firestopping system when ambient or substrate temperatures are outside limits permitted by penetration firestopping system manufacturers or when substrates are wet because of rain, frost, condensation, or other causes.

B. Install and cure penetration firestopping materials per manufacturer's written instructions using natural means of ventilations or, where this is inadequate, forced-air circulation.

C. Verify conditions of substrate before beginning work.

D. Do not contaminate adjacent surfaces while installing firestopping materials.

1.10 COORDINATION

A. Coordinate construction of openings and penetrating items to ensure that penetration firestopping systems can be installed according to specified firestopping system design.

B. Coordinate sizing of sleeves, openings, core-drilled holes, or cut openings to accommodate penetration firestopping systems.

C. Have firestopping system inspected if required by Authorities Having Jurisdiction after installation and before concealing.

D. Firestopping shall precede gypsum board finishing.

PART 2 - PRODUCTS

2.01 PERFORMANCE REQUIREMENTS

A. Fire-Test-Response Characteristics:
   1. Perform firestopping system tests by a qualified testing agency acceptable to Authorities Having Jurisdiction.
   2. Test per testing standards referenced in "Penetration Firestopping Systems" Article. Provide rated systems complying with the following requirements:
      a. Penetration firestopping systems shall bear classification marking of a qualified testing agency.
         1) UL in its "Fire Resistance Directory."
         2) Intertek Group in its "Directory of Listed Building Products."
         3) FM Global in its "Building Materials Approval Guide."

2.02 FORMING MATERIALS

A. Fire Safing Insulation; Manufacturer and Type: Minimum 4 pcf density bonded, compressible, semi-rigid mineral fiber blanket, foil faces and unfaced, noncombustible in compliance with ASTM E84.
   1. Johns Mansville, Industrial Insulation Group. “MinWool-1200"
   2. Rockwool Manufacturing Company Inc. “Roxul Safe”.
   3. Thermafiber "Thermafiber Safing".

B. Penetration Firestopping Systems: Systems that resist spread of fire, passage of smoke and other gases, and maintain original fire-resistance rating of construction penetrated. Penetration firestopping systems shall be compatible with one another, with the substrates forming openings, and with penetrating items if any.
   1. Acceptable Manufacturers:
      a. 3M Fire Protection Products.
      b. Hilti, Inc.
      c. RectorSeal.
      d. Specified Technologies, Inc.
      e. Tremco, Inc.

C. Penetrations in Fire-Resistance-Rated Walls: Penetration firestopping systems with ratings determined per ASTM E 814 or UL 1479, based on testing at a positive pressure differential of 0.01-inch wg.
   1. F-Rating: Not less than the fire-resistance rating of constructions penetrated.

D. Penetrations in Horizontal Assemblies: Penetration firestopping systems with ratings determined per ASTM E 814 or UL 1479, based on testing at a positive pressure differential of 0.01-inch wg.
   1. F-Rating: At least one hour, but not less than the fire-resistance rating of constructions penetrated.
   2. T-Rating: At least one hour, but not less than the fire-resistance rating of constructions penetrated except for floor penetrations within the cavity of a wall.
   3. W-Rating: Provide penetration firestopping systems showing no evidence of water leakage when tested according to UL 1479.

E. Penetrations in Smoke Barriers: Penetration firestopping systems with ratings determined per UL 1479, based on testing at a positive pressure differential of 0.30-inch wg.
   1. L-Rating: Not exceeding 5.0 cfm/sq. ft. of penetration opening at and no more than 50-cfm cumulative total for any 100 sq. ft. at both ambient and elevated temperatures.

F. Exposed Penetration Firestopping Systems: Flame-spread and smoke-developed indexes of less than 25 and 450, respectively, per ASTM E 84.

G. Accessories: Provide components for each penetration firestopping system that are needed to install fill materials and to maintain ratings required. Use only those components specified by penetration firestopping system manufacturer and approved by qualified testing and inspecting agency for conditions indicated.
1. Permanent forming/damming/backing materials.
2. Substrate primers.
3. Collars.
4. Steel sleeves.

2.03 FILL, VOID, OR CAVITY MATERIALS

A. Mortars Firestop Manufacturer and Type: Prepackaged dry mixes consisting of a blend of inorganic binders, hydraulic cement, fillers and lightweight aggregate formulated for mixing with water at Project site to form a nonshrinking, homogeneous mortar, single component, noncombustible void seal in compliance with ASTM E814, UL Listed to include UL 1479.
1. Proportions: Mix cementitious materials with water in compliance with safing manufacturer's instructions.
2. Damming Material: Fiberglass or mineral wool.
3. Acceptable Manufacturers:
   a. Hilti "CP637 Firestop Compound",
   b. Nelson Firestop Products, Inc. "CMP Firestop Compound",
   c. The RectorSeal Corporation "Metacaulk Fire Stop Mortar",
   d. The RectorSeal Corporation "K-10+ Firestop Mortar",
   e. Specified Technologies, Inc. "SpecSeal SSM Firestop Mortar", or
   f. Tremco, Inc. "TremStop M".

B. Cast-in-Place Firestop Devices: Factory-assembled devices for use in cast-in-place concrete floors and consisting of an outer sleeve lined with an intumescent strip, a flange attached to one end of the sleeve for fastening to concrete formwork, and a neoprene gasket.

C. Latex Sealants: Single-component latex formulations that do not re-emulsify after cure during exposure to moisture.

D. Firestop Devices: Factory-assembled collars formed from galvanized steel and lined with intumescent material sized to fit specific diameter of penetrant.

E. Intumescent Firestop Sealants Manufacturer and Type: One-part noncombustible intumescent void seal in compliance with ASTM E814 and UL listed to include UL 1479.
1. Caulk; Gun Grade:
   a. Hilti "FS One Max".
   b. The RectorSeal Corporation "Metacaulk 1000 Firestopping Sealant".
   c. Specified Technologies, Inc. "SpecSeal "LCI Intumescent Sealant".
   d. 3M "Fire Barrier Caulk CP25WB+" and "Fire Barrier Caulk IC15WB".
   e. Tremco Commercial Sealants & Waterproofing "IA".
   f. BioFireshield "Biostop 500+ Firestop Sealant".
2. Putty; Knife Grade: Nonhardening, water-resistant, intumescent putties containing no solvents or inorganic fibers.
   a. Hilti, Inc. "CP618 Firestop Putty Stick".
   b. Nelson Firestop Products, Inc. "FSP".
   c. The RectorSeal Corporation "Metacaulk Fire Rated Putty".
   d. Specified Technologies, Inc. "SpecSeal SSP Putty".
   e. 3M "Fire Barrier Moldable Putty".

f. Bio Fireshield by RectorSeal Corporation “Biostop Fire Rated Intumescent Putty”.
g. Tremco Commercial Sealants & Waterproofing "TremStop FP".

F. Intumescent Pillows/Bags Manufacturer and Type: Reusable heat-expanding pillows/bags consisting of glass-fiber cloth cases filled with a combination of mineral-fiber, water-insoluble expansion agents, and fire-retardant additives. Where exposed, cover openings with steel-reinforcing wire mesh to protect pillows/bags from being easily removed.
1. The RectorSeal Corporation, "Biostop Firestop Pillows".
2. Hilti, Inc. “CFS-BL Firestop Block”.
3. The RectorSeal Corporation, “Metacaulk Firestop Pillows”.
4. Specified Technologies, Inc. "SpecSeal SSB Intumescent Pillows".
5. 3M “Fire Barrier Pillow Systems”.
6. Tremco Commercial Sealants & Waterproofing "TremStop PS".

2.04 ACCESSORY AND AUXILIARY COMPONENTS

A. Intumescent Composite Sheets: Rigid panels consisting of aluminum-foil-faced intumescent elastomeric sheet bonded to galvanized-steel sheet.

B. Intumescent Wrap Strips: Single-component intumescent elastomeric sheets with aluminum foil on one side.

C. Silicone Foams: Multicomponent, silicone-based liquid elastomers that, when mixed, expand and cure in place to produce a flexible, nonshrinking foam.

D. Silicone Sealants: Single-component, silicone-based, neutral-curing elastomeric sealants.

E. Damming Material: Mineral wool

2.05 MIXING

A. Penetration Firestopping Materials: For those products requiring mixing before application, comply with penetration firestopping system manufacturer's written instructions for accurate proportioning of materials, water (if required), type of mixing equipment, selection of mixer speeds, mixing containers, mixing time, and other items or procedures needed to produce products of uniform quality with optimum performance characteristics for application indicated.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine substrates and conditions, with Installer present, for compliance with requirements for opening configurations, penetrating items, substrates, and other conditions affecting performance of the Work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Surface Cleaning: Before installing penetration firestopping systems, clean out openings immediately to comply with manufacturer's written instructions and with the following requirements:
   1. Remove from surfaces of opening substrates and from penetrating items foreign materials that could interfere with adhesion of penetration firestopping materials.
   2. Clean opening substrates and penetrating items to produce clean, sound surfaces capable of developing optimum bond with penetration firestopping materials. Remove loose particles remaining from cleaning operation.
   3. Remove laitance and form-release agents from concrete.

B. Prime substrates where recommended in writing by manufacturer using that manufacturer's recommended products and methods. Confine primers to areas of bond; do not allow spillage and migration onto exposed surfaces.

3.03 INSTALLATION

A. General: Install penetration firestopping systems to comply with manufacturer's written installation instructions and published drawings for products and applications.

B. Install forming materials and other accessories of types required to support fill materials during their application and in the position needed to produce cross-sectional shapes and depths required to achieve fire ratings.
   1. After installing fill materials and allowing them to fully cure, remove combustible forming materials and other accessories not forming permanent components of firestopping.

C. Install fill materials by proven techniques to produce the following results:
   1. Fill voids and cavities formed by openings, forming materials, accessories and penetrating items to achieve required fire-resistance ratings.
   2. Apply materials so they contact and adhere to substrates formed by openings and penetrating items.
   3. For fill materials that will remain exposed after completing the Work, finish to produce smooth, uniform surfaces that are flush with adjoining finishes.

3.04 IDENTIFICATION

A. Wall Identification: Permanently label walls containing penetration firestopping systems with the words "FIRE AND/OR SMOKE BARRIER - PROTECT ALL OPENINGS," using lettering not less than 3 inches high and with minimum 0.375-inch strokes.
   1. Locate in accessible concealed floor, floor-ceiling, or attic space at 15 feet from end of wall and at intervals not exceeding 30 feet.

B. Penetration Identification: Identify each penetration firestopping system with legible metal or plastic labels. Attach labels permanently to surfaces adjacent to and within 6 inches of penetration firestopping system edge so labels are visible to anyone seeking to remove penetrating items or firestopping systems. Use mechanical fasteners or self-adhering-type labels with adhesives capable of permanently bonding labels to surfaces on which labels are placed. Include the following information on labels:
   1. The words "Warning - Penetration Firestopping - Do Not Disturb. Notify Building Management of Any Damage."
   2. Contractor's name, address, and phone number.
   3. Designation of applicable testing and inspecting agency.
   4. Date of installation.

5. Manufacturer's name.
6. Installer's name.

3.05 FIELD QUALITY CONTROL

A. Owner will engage a qualified testing agency to perform tests and inspections according to ASTM E 2174.

B. Where deficiencies are found or firestopping system is damaged or removed because of testing, repair or replace penetration firestopping system to comply with requirements.

C. Proceed with enclosing firestopping systems with other construction only after inspection reports are issued and installations comply with requirements.

3.06 CLEANING AND PROTECTION

A. Clean off excess fill materials adjacent to openings as the Work progresses by methods and with cleaning materials that are approved in writing by penetration firestopping system manufacturers and that do not damage materials in which openings occur.

B. Provide final protection and maintain conditions during and after installation that ensure that penetration firestopping systems are without damage or deterioration at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, immediately cut out and remove damaged or deteriorated penetration firestopping material and install new materials to produce systems complying with specified requirements.

END OF SECTION

SECTION 07 9200

CAULKING AND SEALANTS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 REFERENCE STANDARDS

A. American Society for Testing and Materials (ASTM):

1.	C 794	Test Method for Adhesion-in-Peel of Elastomeric Joint Sealants.
2.	C 834	Latex Sealants.
3.	C 920	Elastomeric Joint Sealants.
4.	C 1021	Practice for Laboratories Engaged in Testing of Building Sealants.
5.	C 1087	Test Method for Determining Compatibility of Liquid-Applied Sealants with Accessories Used in Structural Glazing Systems.
6.	C 1193	Guide for Use of Joint Sealants.
7.	C 1247	Test Method for Durability of Sealants Exposed to Continuous Immersion in Liquids.
8.	C 1248	Test Method for Staining of Porous Substrate by Joint Sealants.
9.	C 1311	Solvent Release Sealants.
10.	C 1330	Cylindrical Sealant Backing for Use with Cold Liquid Applied Sealants.
11.	C 1521	Practice for Evaluating Adhesion of Installed Weatherproofing Sealant Joints.

1.03 SUBMITTALS

A. General: In compliance with Section 01 3300 and as specified herein.

B. Product Data: Specifications, installation instructions, and general requirements of manufacturer of each type of sealant and associated miscellaneous materials required.

C. Samples: Manufacturer's color charts consisting of strips of cured sealants showing the full range of colors available for each product exposed to view. Three, 1’-0” long samples of each color required for each type of sealant. Samples will be reviewed by Architect for color and texture only. Compliance with all other requirements is Contractor’s responsibility.

D. Qualification Data; (FIO): For qualified testing agency.

E. Compatibility and Adhesion Test Reports; (FIO): Submit test reports from each kind of joint sealant manufacturer, for Architect’s information, for tests performed by manufacturer and witnessed by a qualified testing agency indicating materials forming joint substrates and joint sealant backings have been tested in compliance with ASTM C719 for compatibility and adhesion with joint sealants. Indicate requirements for primers and special substrate preparation to meet adhesion requirements.

F. Certificates; (FIO): Sealant manufacturer’s certification that:
1. Installer is approved by sealant manufacturer.
2. On-site inspection was conducted, and sealants have been furnished and installed in compliance with this Section and are suitable for use intended.

G. Sample Warranties; (FIO): For special warranties.

H. Sustainable Construction Submittals:

1. Indicate compliance with the Georgia Energy Efficiency and Sustainability Construction Standards for State Buildings dated July 1, 2009. Submit completed Section 6.3-Georgia based Materials and Products document. Refer to the requirements of Section 01 8113 – Sustainable Design Requirements, Georgia Peach Program.

1.04 QUALITY ASSURANCE

A. Single Source Responsibility for Joint Sealer Materials: Obtain joint sealer materials for single manufacturer for each different product required for duration of Project.

B. Installer Qualifications: An authorized representative who is trained and approved by manufacturer.

C. Product Testing: Test joint sealants using a qualified testing agency.
1. Testing Agency Qualifications: Qualified according to ASTM C 1021 to conduct the testing indicated.
2. Submit samples of all materials that will contact or affect joint sealer to joint sealer manufacturers for compatibility and adhesion testing, as indicated below:

D. Preconstruction Laboratory Testing: Submit to joint-sealant manufacturers, for testing indicated below, samples of materials that will contact or affect joint sealants.
1. Compatibility Testing: Use ASTM C 1087 to determine sealant compatibility when in contact with glazing and gasket materials.
2. Submit manufacturer's recommended number of pieces of each type of material, including joint substrates, joint-sealant backings, and miscellaneous materials.
3. Schedule sufficient time for testing and analyzing results to prevent delaying the Work.
4. For materials failing tests, obtain joint-sealant manufacturer's written instructions for corrective measures, including use of specially formulated primers.
5. Testing will not be required if joint-sealant manufacturers submit data that are based on previous testing, not older than 24 months, of sealant products for adhesion to, staining of, and compatibility with joint substrates and other materials matching those submitted.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Deliver and store materials in original, unopened containers.

B. Store and handle materials to prevent contamination, water damage, and breakage of containers.

1.06 PROJECT CONDITIONS

A. Do not proceed with installation of joint sealants under the following conditions:
1. When ambient and substrate temperature conditions are outside limits permitted by joint-sealant manufacturer or are below 40 deg F.
2. When joint substrates are wet.
3. Where joint widths are less than those allowed by joint-sealant manufacturer for applications indicated.
4. Where contaminants capable of interfering with adhesion have not yet been removed from joint substrates.
5. Do not install caulking compound until building has been enclosed, is weathertight, and temperature is maintained at 40 deg F minimum.

6. Complete caulking Work before final painting begins.

1.07 WARRANTY

A. Special Installer's Warranty: Installer agrees to repair or replace joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.
   1. Warranty Period: Two years from date of Substantial Completion.

B. Special Manufacturer's Warranty: Manufacturer agrees to furnish joint sealants to repair or replace those joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.
   1. Warranty Period: Five years from date of Substantial Completion.

C. Provide Owner written warranty that caulking and sealants will be free from faults and defects in materials and workmanship for period of two years for Date of Substantial Completion and that all defects occurring within said period shall be promptly corrected at no additional cost to Owner.

PART 2 - PRODUCTS

2.01 JOINT SEALANTS, GENERAL

A. Materials, General:
   1. Colors of Exposed Joint Sealants: Selected by Architect form manufacturer’s full range to match adjoining surfaces.
   2. Modulus of Elasticity: For joints subject to movement, either thermal expansion or dynamic movement, provide elastomeric sealants which have lowest modulus of elasticity which is consistent with exposure to abrasion and vandalism. Horizontal joints subject to traffic require sealants with high modulus of elasticity.
   3. Compatibility: Before purchase of each specified sealant, investigate compatibility with joint system. Provide joint sealants, backings, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by joint-sealant manufacturer, based on testing and field experience.

2.02 JOINT SEALANTS

A. Sealant for Use in Building Expansion Joints:
   1. Single-component, neutral-curing silicone sealant, ASTM C 920, Type S; Grade NS; Class 50; for Use NT.
      a. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
         1) Dow Corning Corp. “Dowsil 756 SMS”.
         2) GE Construction Sealants; Momentive Performance Materials Inc.
         3) Pecora Corporation.
         4) Sika Corporation.
         5) Tremco Inc. “Spectrem 2”.

B. Sealant for Use in Interior Joints in Ceramic Tile and Other Hard Surfaces in Toilet Rooms and around Plumbing Fixtures:
   1. Single-component, mildew-resistant silicone sealant, ASTM C 920, Type S; Grade NS; Class 25; for Use NT; formulated with fungicide.
      a. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1) Dow Corning Corp. “Dowsil 786”.
2) GE Silicones “SilPruf LM SCS2700”.
3) Laticrete “Latasil”.
4) Mapei “Mapesil”
5) Tremco Incorporated “Tremsil 200 Sanitary”.

C. Sealant for Interior Use at Perimeters of Door and Window Frames:
1. Acrylic latex or siliconized acrylic latex, ASTM C 834, Type OP, Grade NF.
a. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1) Pecora Corporation “AC-20 + Silicone”.
2) Tremco Inc. “Tremflex 834”.
3) USG “Sheetrock Brand”.

D. Acoustical Sealant for Exposed and Concealed Joints:
1. Nonsag, paintable, nonstaining latex sealant complying with ASTM C 834 that effectively reduces airborne sound transmission as demonstrated by testing according to ASTM E 90.
a. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1) Everkem Diversified Products, Inc “SoundSeal 90 Draft, Smoke and Acoustical Sound”.
2) GE Silicones “RCS20 Acoustical Sealant”.
3) Tremco Inc. “Tremco Acoustical Sealant”.
4) USG Corporation “Sheetrock Brand Acoustical”.
2. Exposed Joint Sealant: Flame-spread and smoke-developed indexes of less than 5 and zero, respectively, as determined per ASTM E84.
3. VOC Content: 20 g/L or less.
4. Colors of Exposed Acoustical Joint Sealants: As selected by Architect from manufacturer's full range of colors.

2.03 JOINT-SEALANT BACKING

A. Sealant Backing Material, General: ASTM C 1330. Nonstaining; compatible with joint substrates, sealants, primers, and other joint fillers; and approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
a. Alcot Plastic Ltd.
b. BASF Corporation.
c. Construction Foam Products; a division of Nomaco, Inc.

B. Cylindrical Sealant Backings: Type O (open-cell material).

C. Fire-Resistant Sealant Backings:
1. Backer Rod Mfg. Inc. ”Ultra Block”.
2. Tremco “Tremco FS Blanket”.
3. Williams Products, Inc. “Everlastic Dynashield Ceramic Fiber”.

D. Bond-Breaker Tape: Polyethylene tape or other plastic tape recommended by sealant manufacturer for preventing sealant from adhering to rigid, inflexible joint-filler materials or joint surfaces at back of joint. Provide self-adhesive tape where applicable.

2.04 MISCELLANEOUS MATERIALS

A. Primer: Material recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.

B. Joint Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials, free of oily residues or other substances capable of staining or harming joint substrates and adjacent nonporous surfaces in any way, and formulated to promote optimum adhesion of sealants to joint substrates.

C. Masking Tape: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine joints indicated to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting performance of the Work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions and the following requirements:
   1. Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant, including dust, paints (except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by sealant manufacturer), old joint sealants, oil, grease, waterproofing, water repellents, water, surface dirt, and frost.
   2. Clean porous joint substrate surfaces by brushing, grinding, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealants. Remove loose particles remaining after cleaning operations above by vacuuming or blowing out joints with oil-free compressed air. Porous joint substrates include the following:
      a. Concrete.
      b. Masonry.
      c. Unglazed surfaces of ceramic tile.
   3. Remove laitance and form-release agents from concrete.
   4. Clean nonporous joint substrate surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants. Nonporous joint substrates include the following:
      a. Metal.
      b. Glass.
      c. Porcelain enamel.
      d. Glazed surfaces of ceramic tile.

B. Joint Priming: Prime joint substrates where recommended by joint-sealant manufacturer or as indicated by preconstruction joint-sealant-substrate tests or prior experience. Apply primer to comply with joint-sealant manufacturer's written instructions. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.

C. Masking Tape: Use masking tape where required to prevent contact of sealant or primer with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

3.03 INSTALLATION OF JOINT SEALANTS

A. General: Comply with joint-sealant manufacturer's written installation instructions for products and applications indicated, unless more stringent requirements apply.

B. Sealant Installation Standard: Comply with recommendations in ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.

C. Install sealant backings of kind indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.
1. Do not leave gaps between ends of sealant backings.
2. Do not stretch, twist, puncture, or tear sealant backings.
3. Remove absorbent sealant backings that have become wet before sealant application, and replace them with dry materials.

D. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and backs of joints.

E. Install sealants using proven techniques that comply with the following and at the same time backings are installed:
1. Place sealants so they directly contact and fully wet joint substrates.
2. Completely fill recesses in each joint configuration.
3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.

F. Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified in subparagraphs below to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.
1. Remove excess sealant from surfaces adjacent to joints.
2. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces. Use masking tape to protect surfaces adjacent to recessed tooled joints.

3.04 CLEANING

A. Clean off excess sealant or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved in writing by manufacturers of joint sealants and of products in which joints occur.

3.05 PROTECTION

A. Protect joint sealants during and after curing period from contact with contaminating substances and from damage resulting from construction operations or other causes so sealants are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out, remove, and repair damaged or deteriorated joint sealants immediately so installations with repaired areas are indistinguishable from original work.

3.06 SCHEDULE

A. Seal all exterior non-traffic-bearing joints with one-part, low modulus silicone sealant. Seal following joints and elsewhere as indicated:

B. Caulk following nonmoving joints and elsewhere as indicated:
1. Control joints and isolation joints between structure and other elements.
2. Sound sealed and air sealed joints.
3. Joints at penetrations of walls, decks, and floors by piping and other services and equipment.
4. Joints at window and exterior door framing.
5. Joints between concrete or masonry and other materials.
6. Under thresholds.
7. Between door frames and walls.
8. Where partitions terminate at metal members.
9. Each layer of multi-layer partitions.
10. Interior joint in conjunction with vanities, fixtures, and tile finishes.
11. Top of base where wallcovering terminates.

END OF SECTION

SECTION 08 1113

HOLLOW METAL FRAMES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 REFERENCE STANDARDS

A. American Society for Testing and Materials (ASTM):
1. A653/A653M Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Zinc- Coated (Galvannealed) by the Hot-Dip Process.
2. A780 Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings.
3. A1008 Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability.

B. National Fire Protection Association (NFPA):
1. 252 Fire Tests of Door Assemblies.
2. 257 Fire Tests for Window and Glass Block Assemblies.

1.03 COORDINATION

A. Coordinate anchorage installation for hollow-metal frames. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors. Deliver such items to Project site in time for installation.

B. Coordinate requirements for installation of door hardware, electrified door hardware, and access control and security systems.

1.04 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.05 ACTION SUBMITTALS

A. General: In compliance with Section 01 3300 and as specified herein.

B. Product Data: For each type of product.
1. Include construction details, material descriptions, core descriptions, fire-resistance ratings, temperature-rise ratings, and finishes.

C. Shop Drawings: Include the following:
1. Frame details for each frame type, including dimensioned profiles and metal thicknesses.
2. Locations of reinforcement and preparations for hardware.
3. Details of each different wall opening condition.
4. Details of electrical raceway and preparation for electrified hardware, access control systems, and security systems.
5. Details of anchorages, joints, field splices, and connections.
6. Details of accessories.

7. Details of moldings, removable stops, and glazing.

D. Product Schedule: For hollow-metal frames, prepared by or under the supervision of supplier, using same reference numbers for details and openings as those on Drawings. Coordinate with final door hardware schedule.

1.06 INFORMATIONAL SUBMITTALS

A. Product Test Reports: For each type of fire-rated hollow-metal frame assembly, fire-rated borrowed-lite assembly for tests performed by a qualified testing agency indicating compliance with performance requirements.

B. Field quality control reports.

1.07 CLOSEOUT SUBMITTALS

A. Record Documents: For fire-rated doors, list of door numbers and applicable room name and number to which door accesses.

1.08 QUALITY ASSURANCE

A. Steel Frame Standard: Comply with ANSI A 250.8, unless more stringent requirements are indicated.

1.09 DELIVERY, STORAGE, AND HANDLING

A. Deliver hollow-metal frames palletized, packaged, or crated to provide protection during transit and Project-site storage. Do not use nonvented plastic.
1. Provide additional protection to prevent damage to factory-finished units.

B. Deliver welded frames with two removable spreader bars across bottom of frames, tack welded to jambs and mullions.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. Products, meeting specified quality and design standards for hollow metal frames, of following named manufacturers will be acceptable:
1. Mesker Door Company.
2. Republic Doors and Frames.
3. Steelcraft, an Allegion Company.

B. Source Limitations: Obtain hollow-metal work from single source from single manufacturer.

2.02 MATERIALS

A. Frames: ASTM A1008, commercial quality cold-rolled steel; 16 gauge for interior and 14 gauge for acoustical doors.

B. Reinforcements: Internally reinforce frames:
1. Hinges: 7 gauge.
2. Floor Checking Hinges and Pivots: 7 gauge.
3. Locks, Closers, Push Plates, Pulls, Surface-Applied Hardware: 14 gauge.
4. Mortar Guards over Lock Strikes and Hinge Reinforcements: 26 gauge.

C. Mineral-Fiber Insulation: ASTM C665, Type I (blankets without membrane facing); consisting of fibers manufactured from slag or rock wool; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively; passing ASTM E136 for combustion characteristics.

D. Glazing: Comply with requirements in Section 08 8000 "Glazing."

2.03 FRAME FABRICATION

A. Door Astragals: Provide overlapping astragal on one leaf of pairs of doors where required by NFPA 80 for fire-performance rating or where indicated. Extend minimum 3/4 inch beyond edge of door on which astragal is mounted or as required to comply with published listing of qualified testing agency.

B. Hollow-Metal Frames: Fabricate from 16 gauge pressed sheet steel section for interior frames, of all welded construction to indicated sizes, profiles and details. Miter corners and fully weld. Grind exposed welds smooth and invisible. in one piece except where handling and shipping limitations require multiple sections. Where frames are fabricated in sections, provide alignment plates or angles at each joint, fabricated of metal of same or greater thickness as frames.
1. Frames in Gypsum Board Construction, Except Fire Rated Frames and Frames Over 7'-6" in height: 16 gauge metal knock-down type gypsum wallboard frame with mitered, reinforced, interlocking head and jamb members.
2. Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners unless otherwise indicated.
3. Door Silencers: Except on weather-stripped frames, drill stops to receive door silencers as follows. Keep holes clear during construction.
    a. Single-Door Frames: Drill stop in strike jamb to receive three door silencers.
    b. Double-Door Frames: Drill stop in head jamb to receive two door silencers.

C. Hardware Preparation: Factory prepare hollow-metal frames to receive templated mortised hardware, and electrical wiring; include cutouts, reinforcement, mortising, drilling, and tapping according to ANSI/SDI A250.6, the Door Hardware Schedule, and templates.
1. Reinforce frames to receive nontemplated, mortised, and surface-mounted door hardware.
2. Comply with BHMA A156.115 for preparing hollow-metal frames for hardware.

D. Jamb Anchors:
1. Masonry Walls: Adjustable, flat, corrugated or perforated T-shaped or stirrup-and-strap or wire type anchors; minimum 16 gauge steel or 0.156-inch diameter steel wire. Stirrup strap minimum 2-inches x 10-inches in size.
    a. Frames to 7'-6" High: 3 anchors.
    b. Frames 7'-6" to 8 Feet High: 4 anchors.
    c. Frames Over 8 Feet High: One anchor per every 2 feet of frame height.
2. Stud Partitions: Minimum 16 gauge thickness steel anchors of suitable design securely welded inside each jamb.
    a. Frames to 7'-6" High: 4 anchors.
    b. Frames 7'-6" to 8 Feet High: 5 anchors.
    c. Frames Over 8 Feet High: 5 anchors plus one additional for each 2 feet over 8 feet.
3. In-Place Masonry or Concrete: 3/8-inch countersunk, flat head, stove bolts in expansion shields, spaced 6-inches maximum from top and bottom of frame and at 2 feet on center maximum between.

E. Floor Anchors: Provide floor anchors for each jamb and mullion that extends to floor.

F. Floor Anchors for Concrete Slabs with Underlayment: Adjustable-type anchors with extension clips, allowing not less than 2-inch height adjustment. Terminate bottom of frames at top of underlayment.

G. Material: ASTM A879/A879M, Commercial Steel (CS), 04Z coating designation; mill phosphatized.

H. Spot or tack weld removable spreaders to bottom of each door jamb to hold frames in true alignment during handling and installation.

I. After fabrication, thoroughly clean and phosphatize frames. Apply one shop coat of manufacturer's standard rust-inhibiting primer paint to inside and outside frame surfaces.

2.04 STEEL FINISHES

A. Prime Finish: Clean, pretreat, and apply manufacturer's standard primer.
1. Shop Primer: Manufacturer's standard, fast-curing, lead- and chromate-free primer complying with ANSI/SDI A250.10; recommended by primer manufacturer for substrate; compatible with substrate and field-applied coatings despite prolonged exposure.

PART 3 - EXECUTION

3.01 PREPARATION

A. Remove welded-in shipping spreaders installed at factory. Restore exposed finish by grinding, filling, and dressing, as required to make repaired area smooth, flush, and invisible on exposed faces. Touch up factory-applied finishes where spreaders are removed.

B. Drill and tap frames to receive nontemplated, mortised, and surface-mounted door hardware.

3.02 INSTALLATION

A. Install hollow-metal frames plumb, rigid, properly aligned, and securely fastened in place. Comply with approved Shop Drawings and with manufacturer's written instructions.

B. Hollow-Metal Frames: Comply with ANSI/SDI A250.11.
1. Set frames accurately in position; plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is complete, remove temporary braces without damage to completed Work.
   a. Where frames are fabricated in sections, field splice at approved locations by welding face joint continuously; grind, fill, dress, and make splice smooth, flush, and invisible on exposed faces. Touch-up finishes.
   b. Install frames with removable stops located on secure side of opening.
2. Fire-Rated Openings: Install frames according to NFPA 80.
3. Floor Anchors: Secure with postinstalled expansion anchors.
   a. Floor anchors may be set with power-actuated fasteners instead of postinstalled expansion anchors if so indicated and approved on Shop Drawings.
4. Solidly pack mineral-fiber insulation inside frames.
5. Masonry Walls: Coordinate installation of frames to allow for solidly filling space between frames and masonry with grout or mortar.
6. In-Place Concrete or Masonry Construction: Secure frames in place with postinstalled expansion anchors. Countersink anchors, and fill and make smooth, flush, and invisible on exposed faces.
7. Installation Tolerances: Adjust hollow-metal frames to the following tolerances:

a. Squareness: Plus or minus 1/16 inch, measured at door rabbet on a line 90 degrees from jamb perpendicular to frame head.
b. Alignment: Plus or minus 1/16 inch, measured at jambs on a horizontal line parallel to plane of wall.
c. Twist: Plus or minus 1/16 inch, measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of wall.

C. Glazing: Comply with installation requirements in Section 08 8000 and with hollow-metal manufacturer's written instructions.

3.03 REPAIR

A. Prime-Coat Touchup: Immediately after erection, sand smooth rusted or damaged areas of prime coat and apply touchup of compatible air-drying, rust-inhibitive primer.

B. Touchup Painting: Cleaning and touchup painting of abraded areas of paint are specified in painting Sections.

END OF SECTION

SECTION 08 1416

FLUSH WOOD DOORS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 REFERENCE STANDARDS

A. American National Standards Institute (ANSI):
1. A135.4 Basic Hardboard.
2. A208.1 Particleboard.

B. Door and Hardware Institute (DHI):
1. DHI-WDHS-3 Recommended Hardware Locations for Wood Flush Doors.

C. National Electrical Manufacturers Association (NEMA):
1. LD 3 High Pressure Decorative Laminates.

D. National Fire Protection Association (NFPA):
1. 80 Fire Doors and Other Opening Protectives.
2. 105 Installation of Smoke Door Assemblies and Other Opening Protectives.
3. 252 Fire Tests of Door Assemblies.

E. Underwriters Laboratories Inc.(UL):
1. 10C Positive Pressure Fire Tests of Door Assemblies.
2. 1784 Air Leakage Tests of Door Assemblies.

1.03 SUBMITTALS

A. General: In compliance with Section 01 3300 and as specified herein.

B. Product Data: For each type of door and finish.
1. Include details of core and edge construction.
2. Fire rated doors.
3. Include factory-finishing specifications.

C. Shop Drawings: Indicate location, size, and hand of each door; elevation of each kind of door; construction details not covered in Product Data; and the following:
1. Dimensions and locations of blocking.
2. Dimensions and locations of mortises and holes for hardware.
3. Dimensions and locations of cutouts.
4. Undercuts.
5. Requirements for veneer matching.
6. Doors to be factory finished and finish requirements.
7. Fire-protection ratings for fire-rated doors.

D. Samples: Factory finishes applied to actual door face materials, approximately 8 by 10 inches, for each material and finish. For each wood species and transparent finish, provide set of three Samples showing typical range of color and grain to be expected in finished Work.

E. Sustainable Construction Submittals:

1. Indicate compliance with the Georgia Energy Efficiency and Sustainability Construction Standards for State Buildings dated July 1, 2009. Submit completed Section 6.3-Georgia based Materials and Products document. Refer to the requirements of Section 01 8113 – Sustainable Design Requirements, Georgia Peach Program.

1.04 INFORMATIONAL SUBMITTALS (FIO)

A. Sample Warranty; (FIO): For special warranty.

B. Quality Standard Compliance Certificates; (FIO): AWI Quality Certification Program certificates.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Certified for chain of custody by an FSC-accredited certification body.

B. Vendor Qualifications: Certified for chain of custody by an FSC-accredited body.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Comply with requirements of referenced standard and manufacturer's written instructions.

B. Package doors individually in plastic bags or cardboard cartons or cardboard cartons and wrap bundles of doors in plastic sheeting.

C. Mark each door on top and bottom rail with opening number used on Shop Drawings.

1.07 PROJECT CONDITIONS

A. Environmental Limitations: Do not deliver or install doors until spaces are enclosed and weathertight, wet work in spaces is complete and dry, and HVAC system is operating and maintaining ambient temperature and humidity conditions at occupancy levels during remainder of construction period.

1.08 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace doors that fail in materials or workmanship within specified warranty period.
1. Failures include, but are not limited to, the following:
a. Warping (bow, cup, or twist) more than 1/4 inch in a 42-by-84-inch section.
b. Telegraphing of core construction in face veneers exceeding 0.01 inch in a 3-inch span.
2. Warranty shall also include installation and finishing that may be required due to repair or replacement of defective doors.
3. Warranty Period for Solid-Core Interior Doors: Life of installation.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Basis-of-Design Manufacturer: Marshfield-Algoma by Masonite Architectural are specified to indicate requirements for quality and appearance.

B. Other Acceptable Manufacturers:
   1. Eggers Industries.
   2. Masonite.
   3. Oshkosh Door Company.

C. Source Limitations: Obtain flush wood doors from single manufacturer.

2.02 FLUSH WOOD DOORS, GENERAL

A. Quality Standard: In addition to requirements specified, comply with WDMA I.S.1-A, "Architectural Wood Flush Doors."
   1. Provide AWI Quality Certification Labels indicating that doors comply with requirements of grades specified.

B. WDMA I.S.1-A Performance Grade:
   1. Extra Heavy Duty unless otherwise indicated.

C. Fire-Rated Wood Doors: Doors complying with NFPA 80 that are listed and labeled by a qualified testing agency, for fire-protection ratings indicated, based on testing at positive pressure according to NFPA 252 or UL 10C.
   1. Temperature-Rise Limit: At vertical exit enclosures and exit passageways, provide doors that have a maximum transmitted temperature end point of not more than 450 deg F (250 deg C) above ambient after 30 minutes of standard fire-test exposure.
   2. Cores: Provide core specified or mineral core as needed to provide fire-protection rating indicated.
   3. Edge Construction: Provide edge construction with intumescent seals concealed by outer stile. Comply with specified requirements for exposed edges.
   4. Pairs: Provide fire-retardant stiles that are listed and labeled for applications indicated without formed-steel edges and astragals. Provide stiles with concealed intumescent seals. Comply with specified requirements for exposed edges.

D. Smoke- and Draft-Control Door Assemblies: Listed and labeled for smoke and draft control, based on testing according to UL 1784.
   1. Screw-Holding Capability: 550 lbf per WDMA T.M.-10.

2.03 VENEER-FACED DOORS FOR TRANSPARENT FINISH

A. Interior Solid-Core Doors:
   1. Grade: Premium, with Grade AA faces.
   2. Species: Select white birch.
   3. Cut: Rotary sliced.
   4. Match between Veneer Leaves: Book match.
   5. Assembly of Veneer Leaves on Door Faces: Center-Balance match.
   6. Pair and Set Match: Provide for doors hung in same opening or separated only by mullions.
   7. Room Match: Match door faces within each separate room or area of building. Corridor-door faces do not need to match where they are separated by 10 feet or more.
   8. Room Match: Provide door faces of compatible color and grain within each separate room or area of building.
   9. Transom Match: Continuous match.
   10. Exposed Vertical and Top Edges: Same species as faces or a compatible species - edge Type A.
   11. Core: Structural composite lumber.
   12. Construction: Five plies. Stiles and rails are bonded to core, then entire unit is abrasive planed before veneering.

13. WDMA I.S.1-A Performance Grade: Extra Heavy Duty.

2.04 FABRICATION

A. Factory fit doors to suit frame-opening sizes indicated. Comply with clearance requirements of referenced quality standard for fitting unless otherwise indicated.
   1. Comply with NFPA 80 requirements for fire-rated doors.

B. Factory machine doors for hardware that is not surface applied. Locate hardware to comply with DHI-WDHS-3. Comply with final hardware schedules, door frame Shop Drawings, BHMA-156.115-W, and hardware templates.
   1. Coordinate with hardware mortises in metal frames to verify dimensions and alignment before factory machining.
   2. Metal Astragals: Factory machine astragals and formed-steel edges for hardware for pairs of fire-rated doors.

C. Side Panels: Fabricate matching panels with same construction, exposed surfaces, and finish as specified for associated doors. Finish bottom edges of transoms and top edges of rabbeted doors same as door stiles.
   1. Fabricate door and transom panels with full-width, solid-lumber meeting rails. Provide factory-installed spring bolts for concealed attachment into jambs of metal door frames.

D. Openings: Factory cut and trim openings through doors.
   1. Light Openings: Trim openings with moldings of material and profile indicated.

E. Surface Mounted Barn Doors: Provide square edged doors for installation in surface applied sliding door hardware.

2.05 FACTORY FINISHING

A. General: Comply with referenced quality standard for factory finishing. Complete fabrication, including fitting doors for openings and machining for hardware that is not surface applied, before finishing.
   1. Finish faces, all four edges, edges of cutouts, and mortises. Stains and fillers may be omitted on top and bottom edges, edges of cutouts, and mortises.

B. Factory finish doors where indicated in schedules or on Drawings as factory finished.

C. Transparent Finish:
   1. Grade: Premium.
   2. Finish: AWI's, AWMAC's, and WI's "Architectural Woodwork Standards" System 9, UV curable, acrylated epoxy, polyester, or urethane or System 11, catalyzed polyurethane.
   3. Staining: Match Architect's sample.
   4. Sheen: Satin.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine doors and installed door frames, with Installer present, before hanging doors.
   1. Verify that installed frames comply with indicated requirements for type, size, location, and swing characteristics and have been installed with level heads and plumb jambs.
   2. Reject doors with defects.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION

A. Hardware: For installation, see Section 08 7100 Door Hardware.

B. Installation Instructions: Install doors to comply with manufacturer's written instructions and referenced quality standard, and as indicated.
   1. Install fire-rated doors according to NFPA 80.
   2. Install smoke- and draft-control doors according to NFPA 105.

C. Job-Fitted Doors: Align and fit doors in frames with uniform clearances and bevels as indicated below; do not trim stiles and rails in excess of limits set by manufacturer or permitted for fire-rated doors. Machine doors for hardware. Seal edges of doors, edges of cutouts, and mortises after fitting and machining with two coats of clear shellac.
   1. Clearances: Provide 1/8 inch at heads, jambs, and between pairs of doors. Provide 1/8-inch from bottom of door to top of decorative floor finish or covering unless otherwise indicated. Where threshold is shown or scheduled, provide1/4-inch from bottom of door to top of threshold unless otherwise indicated.
      a. Comply with NFPA 80 for fire-rated doors.
      b. Bevel non-fire-rated doors 1/8-inch in 2 inches at lock and hinge edges.
   2. Bevel fire-rated doors 1/8-inch in 2 inches at lock edge; trim stiles and rails only to extent permitted by labeling agency.

3.03 ADJUSTING

A. Operation: Install doors in properly prepared frames with all surfaces in true alignment and plumb in all directions. Do not install doors in improperly prepared or improperly installed frames.

B. Finished Doors: Replace doors that are damaged or that do not comply with requirements. Doors may be repaired or refinished if Work complies with requirements and shows no evidence of repair or refinishing to satisfaction of Architect.

END OF SECTION

SECTION 08 3113

ACCESS DOORS AND FRAMES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 REFERENCE STANDARDS

A. American Architectural Manufacturers Association (AAMA):
1. AAMA 611-1998: Voluntary Specification for Anodized Architectural Aluminum.

B. American National Standards Institute (ANSI):
1. H35.2/ H 35.2M Dimensional Tolerances for Aluminum Mill Products.

C. American Society for Testing and Materials (ASTM):

1.	A 36	Carbon Structural Steel.
2.	A153	Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
3.	A653	Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
4.	A666	Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar.
5.	A879	Steel Sheet, Zinc Coated by the Electrolytic Process for Applications Requiring Designation of the Coating Mass on Each Surface.
6.	A1008	Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Solution Hardened, and Bake Hardenable.
7.	B209	Aluminum and Aluminum-Alloy Sheet and Plate.
8.	B221	Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
9.	F2329	Zinc Coating, Hot-Dip, Requirements for Application to Carbon and Alloy Steel Bolts, Screws, Washers, Nuts, and Special Threaded Fasteners.

D. National Fire Protection Association (NFPA):

1.	80	Fire Doors and Other Opening Protectives.
2.	252	Standard Method of Fire Tests of Door Assemblies.
3.	288	Standard Methods of Fire Tests of Floor Fire Door Assemblies Installed Horizontally in Fire Resistance-Rated Floor Systems.

E. Underwriters Laboratories Inc. (UL):

1.	10B	Fire Tests of Door Assemblies.

1.03 ALLOWANCES

A. Access doors and frames are part of an access door and frame allowance.

1.04 SUBMITTALS

A. General: In compliance with Section 01 3300 and as specified herein.

B. Product Data: For each type of product.
   1. Include construction details, fire ratings, material descriptions, dimensions of individual components and profiles, and finishes.
   2. Manufacturer's technical data and installation instructions for each type access door.

C. Samples: For each type of access door and frame and for each finish specified delivered to Project Site for Architect's approval, complete assembly minimum 6 by 6 inches in size. Provide samples when installed in public area locations, approved samples may be incorporated into Project.

D. Sustainable Construction Submittals:

   1. Indicate compliance with the Georgia Energy Efficiency and Sustainability Construction Standards for State Buildings dated July 1, 2009. Submit completed Section 6.3-Georgia based Materials and Products document. Refer to the requirements of Section 01 8113 – Sustainable Design Requirements, Georgia Peach Program

1.05 QUALITY ASSURANCE

A. Size Variation: Obtain Architect's acceptance of manufacturer's standard size units which may vary slightly from sizes indicated.

B. Fire-Resistance Ratings: Wherever fire-resistance rating is required for construction in which access panels are to be installed, provide assembly of type and manufacturer listed by Underwriter's Laboratories, "Classified Building Materials Index". Provide UL label on each fire-resistance rated access panel assembly.

C. Affected trades are to purchase and install access doors and frames into material where access door and panel is to be located. Review locations with Architect prior to installation.
   1. Finish: Selected by Architect to match adjacent finish materials.

PART 2 - PRODUCTS

2.01 PERFORMANCE REQUIREMENTS

A. Fire-Rated Access Doors and Frames: Assemblies complying with NFPA 80 that are listed and labeled by a qualified testing agency, for fire-protection and temperature-rise limit ratings indicated, according to NFPA 252 or UL 10B.

2.02 ACCESS DOORS AND FRAMES

A. Recessed Access Doors with Concealed Flanges: Basis-of-Design: Bauco "BP-58 Bauco Plus II", with touch latch.
   1. Acudor Product Inc. "DW- 5058".
   2. Babcock-Davis "BRGB".
   3. Nystrom, Inc. "RGB".
   4. Description: Door face recessed 1/2 inch for gypsum board infill; with concealed flange for gypsum board or no bead for acoustical tile installation and concealed hinge.

2.03 FIRE-RATED ACCESS DOORS AND FRAMES

A. Fire-Rated, Flush Access Doors with Concealed Flanges:
   1. Acudor Products, Inc. "FW-5050-DW".
   2. Babcock-Davis "IWK".
   3. J.L Industries, Inc. "FDW".

4. Nystrom, Inc. “IWK”
5. Description: Door face flush with frame, with a core of mineral-fiber insulation enclosed in sheet metal uninsulated; with exposed flange for gypsum board installation, self-closing door, and continuous piano hinge.

2.04 MATERIALS

A. Steel Plates, Shapes, and Bars: ASTM A 36/A 36M.

B. Steel Sheet: Uncoated or electrolytic zinc coated, ASTM A 879/A 879M, with cold-rolled steel sheet substrate complying with ASTM A 1008/A 1008M, Commercial Steel (CS), exposed.

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

D. Stainless-Steel Sheet, Strip, Plate, and Flat Bars: ASTM A 666, Type 304. Remove tool and die marks and stretch lines, or blend into finish.

E. Aluminum Extrusions: ASTM B 221, Alloy 6063.

F. Aluminum Sheet: ASTM B 209, alloy and temper recommended by aluminum producer and finisher for type of use and finish indicated.

G. Frame Anchors: Same material as door face.

H. Inserts, Bolts, and Anchor Fasteners: Hot-dip galvanized steel according to ASTM A 153/A 153M or ASTM F 2329.

2.05 FABRICATION

A. General:
1. Provide access door and frame assemblies manufactured as integral units complete with frames, door panels, hardware and anchors, ready for installation.
2. Fabricate units of continuously welded steel construction unless indicated otherwise in Drawings. Grind exposed welds smooth and flush with adjacent surfaces.
3. Provide attachment devices, anchors and fasteners of type and sizes required to secure access doors to types of supporting construction.
4. Provide sleeved and grommeted screwdriver operated cam locks in nonpublic areas and provide key operated flush cylinder locks for doors in public areas. Key all locks alike and furnish two keys per lock. Provide interior latch release on all doors used for man-access. Quantity: Furnish number of latches and locks required to hold doors tightly closed.

B. Metal Surfaces: For metal surfaces exposed to view in the completed Work, provide materials with smooth, flat surfaces without blemishes. Do not use materials with exposed pitting, seam marks, roller marks, rolled trade names, or roughness.

C. Doors and Frames:
1. For concealed flanges with drywall bead, provide edge trim for gypsum panels securely attached to perimeter of frames.
2. For concealed flanges with plaster bead for full-bed plaster applications, provide zinc-coated expanded-metal lath and exposed casing bead welded to perimeter of frames.

D. Recessed Access Doors: Form face of panel to provide recess for application of applied finish. Reinforce panel as required to prevent buckling. Provide access sleeves for each latch operator and install in holes cut through finish.
   1. For recessed doors with plaster infill, provide self-furring expanded-metal lath attached to door panel.

E. Aluminum: After fabrication, apply manufacturer's standard protective coating on aluminum that will come in contact with concrete.

2.06 FINISHES

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

B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

C. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

D. Painted Finishes: Comply with coating manufacturer's written instructions for cleaning, conversion coating, and applying and baking finish.
   1. Factory Primed: Apply manufacturer's standard, lead- and chromate-free, universal primer immediately after surface preparation and pretreatment.
   2. Factory Finished: Apply manufacturer's standard baked-enamel or powder-coat finish immediately after cleaning and pretreating, with minimum dry-film thickness of 1 mil for topcoat.
      a. Color: As selected by Architect from full range of industry colors.

E. Stainless-Steel Finishes:
   1. Surface Preparation: Remove tool and die marks and stretch lines, or blend into finish.
   2. Polished Finish: No. 4 finish. Grind and polish surfaces to produce uniform finish, free of cross scratches.
      a. Run grain of directional finishes with long dimension of each piece.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine substrates for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION

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

3.03 ADJUSTING

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

END OF SECTION

SECTION 08 4126

INTERIOR ALL-GLASS ENTRANCES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.03 ACTION SUBMITTALS

A. General: In compliance with Section 01 3300 and as specified herein.

B. Product Data: For each type of product.
   1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for all-glass system.

C. Shop Drawings: For interior all-glass entrance systems.
   1. Include plans, elevations, and sections.
   2. Include details of fittings and glazing, including isometric drawings of fittings.
   3. Include door hardware locations, mounting heights, and installation requirements.

D. Samples for Initial Selection: For each type of exposed finish indicated to match existing aluminum window frame.

E. Samples for Verification: For each type of exposed finish indicated, prepared on Samples of sizes indicated below:
   1. Metal Finishes: 6-inch-long sections of fittings, and other items.
   2. Glass: 6 inches square, showing exposed-edge finish.
   3. Door Hardware: For exposed door hardware of each type, in specified finish, full size.

F. Fabrication Sample: Continuous rail fitting at bottom, made from 12-inch lengths of full-size components and showing details of the following:
   1. Joinery.
   2. Anchorage.
   3. Glazing.

G. Door Hardware Schedule: Prepared by or under supervision of supplier, detailing fabrication and assembly of door hardware, as well as procedures and diagrams. Coordinate final door hardware schedule with door components, assemblies, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.

1.04 INFORMATIONAL SUBMITTALS

A. Sample Warranty: For special warranty.

1.05 CLOSEOUT SUBMITTALS

A. Maintenance Data: For interior all-glass entrance systems to include in maintenance manuals. Furnish a complete set of specialized tools and maintenance instructions as required for Owner's continued adjustment, maintenance, and removal and replacement of door hardware.

1.06 QUALITY ASSURANCE

A. Installer Qualifications: An authorized representative who is trained and approved by manufacturer for installation of units required for this Project.

B. Product Options: Information on Drawings and in Specifications establishes requirements for aesthetic effects and performance characteristics of assemblies. Aesthetic effects are indicated by dimensions, arrangements, alignment, and profiles of components and assemblies as they relate to sightlines, to one another, and to adjoining construction.
   1. Do not change intended aesthetic effects, as judged solely by Architect, except with Architect's approval. If changes are proposed, submit comprehensive explanatory data to Architect for review.

1.07 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace components of interior all-glass entrance systems that do not comply with requirements or that fail in materials or workmanship within specified warranty period.
   1. Failures include, but are not limited to, the following:
      a. Deterioration of metals, metal finishes, and other materials beyond normal use.
      b. Failure of operating components.
   2. Warranty Period: Two years from date of Substantial Completion for assembly and components unless otherwise indicated.
      a. Concealed Floor Closers: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Source Limitations: Obtain all components of interior all-glass entrance systems, including accessories, from single manufacturer.

2.02 INTERIOR, MANUAL-SWINGING, ALL-GLASS ENTRANCE SYSTEMS

A. Acceptable Manufacturers: Interior tempered-glass frameless entrance assembly, with rail fitting mountings and supports, door pivots, closers, locks, and accessories for a full entrance system.
   1. Avanti Systems, Inc.
   2. C.R. Laurence Co., Inc.
   3. Trulite Glass & Aluminum.
   4. Virginia Glass Products Corp.

B. Fitting Configurations:
   1. Rail Fittings: Head and sill.
   2. Single and Double Door: Size as scheduled, single-action.
   3. Door Fittings: Continuous rail fitting at top and bottom (P-Style).
   4. Sidelight Fittings: Continuous rail fitting at top and bottom.
   5. Header Tube: Sized for and in material required for installation requirements.
   6. Header Cover: Flat, matching material and color of rail fittings.

C. Fitting Material: Aluminum as specified herein.

D. Rail Fittings: For full width rail bottom and top.
1. Height:
a. Top Rail: 4-1/4 inches.
b. Bottom Rail: 4-1/4 inches.
2. Profile: Tapered.
3. End Caps: Manufacturer's standard precision-fit end caps for rail fittings.

E. Accessory Fittings:
1. Overhead doorstop.
2. Center-housing lock.
3. U-channel.

F. Anchors and Fastenings: Concealed.

G. Door Hardware: In sizes, quantities, and types recommended by manufacturer for interior all-glass entrance systems indicated. For exposed parts, match metal and finish of fittings.
1. Concealed Floor Closers and Top Pivots: Center hung; ANSI/BHMA A156.4, Grade 1; including cases, bottom arms, top walking beam pivots, plates, and accessories required for complete installation.
2. Swing: Single acting.
a. Positive Dead Stop: Coordinated with hold-open angle if any, or at angle selected.
3. Hold Open: Automatic, at angle selected.
4. Opening-Force Requirements:
a. Accessible Interior (Swinging) Doors: Not more than 5 lbf to fully open door.
5. Concealed Overhead Holder: ANSI/BHMA A156.8, Grade 1, with dead-stop setting coordinated with concealed floor closer.
6. Push-Pull Set: As specified in Section 08 7100.
7. Single-Door Locksets: Bottom-fitting or bottom-rail deadbolt.
8. Inactive-Leaf Locksets: Bottom-fitting or bottom-rail deadbolt.
9. Deadbolt operated by key outside and thumbturn inside.
10. Dust proof strike for locking ladder pull.
11. Cylinders: As specified in Section 08 7100.

2.03 GLASS

A. Glass: ASTM C1048, Kind FT (fully tempered), Condition A (uncoated surfaces), Type I (transparent), Quality-Q3, tested for surface and edge compression in accordance with ASTM C1048 and for impact strength in accordance with 16 CFR 1201 for Category II materials.
1. Class 1: Clear monolithic.
a. Thickness: 19 mm.
b. Locations: As indicated.
2. Exposed Edges: Machine ground and flat polished.
3. Butt Edges: Flat ground.

2.04 MATERIALS

A. Aluminum: ASTM B221 with strength and durability characteristics of not less than Alloy 6063-T5 for extruded bars, rods, profiles, and tubes. ASTM B209 for sheet and plate.
1. Color Anodic Finish: AAMA 611, AA-M12C22A42/A44, Class I, 0.018 mm or thicker.
a. Color: Match Architect's sample.

B. Structural Shapes, Plates, and Bars: ASTM A36/A36M.

2.05 FABRICATION

A. Provide holes and cutouts in glass to receive hardware, fittings, and accessory fittings before tempering glass. Do not cut, drill, or make other alterations to glass after tempering.
   1. Fully temper glass using horizontal (roller-hearth) process, and fabricate so that when glass is installed, roll-wave distortion is parallel with bottom edge of door or lite.

B. Factory assemble components and factory install hardware and fittings to greatest extent possible.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine areas and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION, GENERAL

A. Install all-glass entrance systems and associated components in accordance with manufacturer's written instructions.

B. Set units level, plumb, and true to line, with uniform joints.

C. Maintain uniform clearances between adjacent components.

D. Lubricate hardware and other moving parts in accordance with manufacturer's written instructions.

E. Set, seal, and grout floor closer cases as required to suit hardware and substrate indicated.

3.03 FIELD QUALITY CONTROL

A. All-glass entrance systems will be considered defective if they do not pass tests and inspections.

B. Prepare test and inspection reports.

3.04 ADJUSTING AND CLEANING

A. Adjust all-glass doors and hardware to produce smooth operation and tight fit at contact points.
   1. For all-glass, swinging entrance doors accessible to people with disabilities, adjust closers to provide a three-second closer sweep period for doors to move from a 70-degree open position to 3 inches from the latch measured to the leading door edge.

B. Remove excess sealant and glazing compounds and dirt from surfaces.

END OF SECTION

SECTION 08 7100

DOOR HARDWARE

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.02 SUMMARY

A. This Section includes items known commercially as finish or door hardware that are required for swing, sliding, and folding doors, except special types of unique hardware specified in the same sections as the doors and door frames on which they are installed.

B. This Section includes the following:
1. Hinges
2. Push/Pull units
3. Closers
4. Miscellaneous door control devices
5. Door trim units
6. Protection plates

C. Related Sections: The following Sections contain requirements that relate to this Section:
1. Section 07 9200: Joint Sealants
2. Section 08 1400: Wood Doors
3. Section 08 4113: Aluminum-Framed Entrances and Storefronts

D. Products furnished but not installed under this Section to include:
1. Cylinders for locks on entrance doors.
2. Final replacement cores and keys to be installed by Owner.

1.03 REFERENCES

A. Standards of the following as referenced:
1. American National Standards Institute (ANSI)
2. Door and Hardware Institute (DHI)
3. Factory Mutual (FM)
4. National Fire Protection Association (NFPA)
5. Underwriters' Laboratories, Inc. (UL)
   a. UL 10C - Fire Tests Door Assemblies
6. Warnock Hersey

B. Regulatory standards of the following as referenced:
1. Department of Justice, Office of the Attorney General, *Americans with Disabilities Act*, Public Law 101-336 (ADA).
2. CABO/ANSI A117.1: *Providing Accessibility and Usability for Physically Handicap People*, 1992 edition.

1.04 SUBMITTALS

A. General: Submit the following in accordance with Conditions of Contract and Division 1 Specification sections.

B. Product data including manufacturers' technical product data for each item of door hardware, installation instructions, maintenance of operating parts and finish, and other information necessary to show compliance with requirements. For items other than those scheduled in the Headings of Section 3, provide catalog information for the specified items and for those submitted.

C. Final hardware schedule coordinated with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.
   1. Final Hardware Schedule Content: Based on hardware indicated, organize schedule into vertical format "hardware sets" indicating complete designations of every item required for each door or opening. Use specification Heading numbers with any variations suffixed a, b, etc. Include the following information:
      a. Type, style, function, size, and finish of each hardware item.
      b. Name and manufacturer of each item.
      c. Fastenings and other pertinent information.
      d. Location of each hardware set cross-referenced to indications on Drawings both on floor plans and in door and frame schedule.
      e. Explanation of all abbreviations, symbols, and codes contained in schedule.
      f. Mounting locations for hardware.
      g. Door and frame sizes and materials.
      h. Keying information.
      i. Cross-reference numbers used within schedule deviating from those specified.
         1) Column 1: State specified item and manufacturer.
         2) Column 2: State prior approved substituted item and its manufacturer.
   2. Submittal Sequence: Submit final schedule at earliest possible date particularly where acceptance of hardware schedule must precede fabrication of other work that is critical in the Project construction schedule. Include with schedule the product data, samples, shop drawings of other work affected by door hardware, and other information essential to the coordinated review of schedule.
   3. Keying Schedule: Submit separate detailed schedule indicating clearly how the Owner's final instructions on keying of locks has been fulfilled.

D. Samples of each type of exposed hardware unit in finish indicated and tagged with full description for coordination with schedule. Submit samples prior to submission of final hardware schedule.
   1. Samples will be returned to the supplier. Units that are acceptable and remain undamaged through submittal, review, and field comparison process may, after final check of operation, be incorporated in the Work, within limitations of keying coordination requirements.

E. Templates for doors, frames, and other work specified to be factory prepared for the installation of door hardware. Check shop drawings of other work to confirm that adequate provisions are made for locating and installing door hardware to comply with indicated requirements.

F. Contract closeout submittals:
   1. Operation and maintenance data: Complete information for installed door hardware.
   2. Warranty: Completed and executed warranty forms.

1.05 QUALITY ASSURANCE

A. Single Source Responsibility: Obtain each type of hardware (latch and locksets, hinges, closers, etc.) from a single manufacturer.

B. Supplier Qualifications: A recognized architectural door hardware supplier, with warehousing facilities in the Project's vicinity, that has a record of successful in-service performance for supplying door hardware similar in quantity, type, and quality to that indicated for this Project and that employs an experienced detailer who is available to Owner, Architect, and Contractor, at reasonable times during the course of the Work, for consultation.
   1. Require supplier to meet with Owner to finalize keying requirements and to obtain final instructions in writing.
   2. Require supplier to meet with installer prior to beginning of installation of door hardware.

C. Fire-Rated Openings: Provide door hardware for fire-rated openings that complies with NFPA Standard No. 80 requirements of authorities having jurisdiction. Provide only items of door hardware that are listed and tested by UL or Warnock Hersey for given type/size opening and degree of label. Provide proper latching hardware, door closers, approved-bearing hinges and seals whether listed in the Hardware Schedule or not. All hardware shall comply with standards UBC 7-2 (1997) and UL 10C.
   1. Where emergency exit devices are required on fire-rated doors, (with supplementary marking on doors UL labels indicating Fire Door to be equipped with Fire Exit Hardware) provide UL label on exit devices indicating Fire Exit Hardware.

1.06 PRODUCT HANDLING

A. Tag each item or package separately with identification related to final hardware schedule, and include basic installation instructions with each item or package.

B. Packaging of door hardware is responsibility of supplier. As material is received by hardware supplier from various manufacturers, sort and repackage in containers clearly marked with appropriate hardware set number to match set numbers of approved hardware schedule. Two or more identical sets may be packed in same container.

C. Inventory door hardware jointly with representatives of hardware supplier and hardware installer until each is satisfied that count is correct.

D. Deliver individually packaged door hardware items promptly to place of installation (shop or Project site).

E. Provide secure lock-up for door hardware delivered to the Project, but not yet installed. Control handling and installation of hardware items that are not immediately replaceable so that completion of the Work will not be delayed by hardware losses both before and after installation.

1.07 WARRANTY

A. Special warranties:
   1. Hinges: Lifetime
   2. Door Closers: Ten year period

1.08 MAINTENANCE

A. Maintenance Tools and Instructions: Furnish a complete set of specialized tools and maintenance instructions as needed for Owner's continued adjustment, maintenance, and removal and replacement of door hardware.

B. Parts kits: Furnish manufacturers' standard parts kits for locksets, exit devices, and door closers.

PART 2 - PRODUCTS

2.01 MANUFACTURED UNITS

(* Denotes manufacturer referenced in the Hardware Headings)

A. Hinges:
   1. Acceptable manufacturers:
      a. Bommer
      b. Hager Hinge Company
      c. PBB*
   2. Characteristics:
      a. Templates: Provide only template-produced units.
      b. Screws: Provide Phillips flat-head screws complying with the following requirements:
         1) For metal doors and frames install machine screws into drilled and tapped holes.
         2) For wood doors and frames install threaded-to-the-head wood screws.
         3) For fire-rated wood doors install #12 x 1-1/4 inch, threaded-to-the-head steel wood screws.
         4) Finish screw heads to match surface of hinges or pivots.
      c. Hinge pins: Except as otherwise indicated, provide hinge pins as follows:
         1) Out-Swing Exterior Doors: Non-removable pins.
         2) Out-Swing Corridor Doors with Locks: Non-removable pins.
         3) Interior Doors: Non-rising pins.
         4) Tips: Flat button and matching plug. Finished to match leafs.
      d. Size: Size hinges in accordance with specified manufacturer’s published recommendations.
      e. Quantity: Furnish one pair of hinges for all doors up to 5'0" high. Furnish one hinge for each additional 2-1/2 feet or fraction thereof.

B. Continuous Hinges:
   1. Acceptable manufacturers:
      a. Bommer
      b. PBB
      c. Select Products*
   2. Characteristics:

a. Continuous gear hinges to be manufactured of extruded 6063-T6 aluminum alloy with anodized finish, or factory painted finish as scheduled.
b. All hinges are to be manufactured to template. Uncut hinges shall be non-handed and shall be a pinless assembly of three interlocking extrusions applied to the full height of the door and frame without mortising.
c. Vertical door loads shall be carried on chemically lubricated polyacetal thrust bearings. The door and frame leaves shall be continually geared together for the entire hinge length and secured with a full cover channel. Hinge to operate to a full 180°.
d. Hinges to be milled, anodized and assembled in matching pairs. Fasteners supplied shall be 410 stainless steel, plated and hardened.
e. Provide UL listed continuous hinges at fire doors. Continuous hinges at fire doors (suffix -FR) shall meet the required ratings without the use of auxiliary fused pins or studs.

C. Cylinders:
1. Acceptable manufacturers:
a. Best Access Systems* Patented Keying
2. Characteristics:
a. Existing System: Grand master key the locks to the Owner's existing Patented system, with a new master key for the Project. Cylinders for custodial, data, mechanical and electrical rooms to accept Best standard cores.
b. Furnish final cores and keys for installation by Owner. Construction cores are furnished and installed as part of the Contract.
c. Comply with Owner's instructions for master keying and, except as otherwise indicated, provide individual change key for each lock that is not designated to be keyed alike with a group of related locks. Coordinate and document a meeting with the Best Access Systems representative, the Georgia Tech Facilities Lockshop to coordinate a final keying schedule. Prepare the final keying schedule based on that meeting to clearly indicate how Owner's final instructions on keying of locks has been fulfilled and submit it as part of the hardware submittal process.
1) Permanently inscribe each key with number of lock that identifies cylinder manufacturer's key symbol, and notation, "DO NOT DUPLICATE."
d. Provide construction keying for use during construction period. After Date of Substantial Completion, void construction keying with Owner’s permanent keying.
e. Key Material: Provide keys of nickel silver only.
f. Key Quantity: Furnish 3 change keys for each lock.
g. Deliver to Owner a “Certificate and Receipt” worded as follows:

CERTIFICATE AND RECEIPT

This will certify (a) that the permanent cores for the doors designated in the contract documents for Project No. _____ on the campus of _____ were

delivered to the comptroller of the said Institution on _____, 20__; that (b) all keys for permanent cores called for in the aforesaid contract documents were delivered to the aforesaid comptroller on the same date; and that (c) by reason of the fact that the cost of the aforesaid permanent cores and the aforesaid keys for the aforesaid permanent cores were included in the cost of the Best mortise cylinders (consisting of cylinder housing and construction core), no additional charge has been made or will be made by Best Access Systems against the Contractor, any subcontractor, the Owner, or the Institution for the aforesaid permanent cores or the aforesaid keys for the aforesaid permanent cores. This certificate is furnished in consideration of $1.00 and other good and valueable consideration the receipt of which is hereby acknowledged.

This _____ day of _____, 20__.

Best Access Systems

BY: _____
Factory Representative

This receipt, made on behalf of the _____ will acknowledge receipt of the permanent cores and the keys to the said permananent cores as referred to in the above certificate of BEST ACCESS SYSTEMS.

_____
Comptroller, _____

D. Locksets, Latchsets, Deadbolts:
   1. Acceptable manufacturers:
      a. Best 45H Series*
      b. Sargent 8200 Series
      c. Schlage L9000 Series
   2. Mortise locksets and latchsets:
      a. Chassis: cold-rolled steel, handing field-changeable without disassembly.
      b. Latchbolts: 3/4-inch throw stainless steel antifriction type.
      c. Lever Trim: through-bolted, accessible design, cast or solid rod lever as scheduled. Tactile warning on levers into hazardous spaces.
      d. Spindles: independent breakaway.
      e. Deadbolts: stainless steel 1-inch throw.
      f. Electric operation: Manufacturer-installed continuous duty solenoid.
      g. Strikes: 16 gage curved steel, bronze or brass with 1" deep box construction, lips of sufficient length to clear trim and protect clothing.
      h. Plastic thumbturns are prohibited.
      i. Lock Series and Design: Best 45H Series, 12H design.
      j. Certifications:
         1) ANSI A156.13, 1994, Series 1000, Grade 1 Operational, Grade 2 Security.
         2) UL listed for A label single doors up to 4 ft x 8 ft.

E. Closers and Door Control Devices:

1. Acceptable manufacturers:
   a. Dorma 8900 Series
   b. LCN Closers 4040XP Series*
   c. Ryobi D-3550 or D3551 Series
2. Characteristics:
   a. Door closers shall be mounted and installed with thru bolts according to manufacturer instructions.
   b. Closers for fire-rated doors shall be provided with temperature stabilizing fluid that complies with standards UBC 7-2 (1997) and UL 10C.
   c. Spring power shall be continuously adjustable over the full range of closer sizes, and allow for reduced opening force for the physically handicapped. Hydraulic regulation shall be by tamper-proof, non-critical valves. Closers shall have separate adjustment for latch speed, general speed and back check.
   d. Closers shall have solid forged steel main arms (and forearms for parallel arm closers) and where specified shall have a cast-in solid stop on the closer shoe ("CNS"). Where door travel on out-swing doors must be limited, use "CNS or S-CNS" type closers. Auxiliary stops are not required when cush type closers are used.
   e. Surface closers shall be certified to exceed ten million (10,000,000) full load cycles by a recognized independent testing laboratory. All closers (overhead, surface and concealed) shall be of one manufacturer and carry manufacturer's ten year warranty (electric closers to have two year warranty).
   f. Access-Free Manual Closers: Where manual closers are indicated for doors required to be accessible to the physically handicapped. Provide adjustable units complying with ADA and ANSI A-117.1 provisions for door opening force.
   g. Closers to be installed to allow door swing as shown on plans. Doors swinging into exit corridors shall provide for corridor clear width as required by code. Where possible, mount closers inside rooms.
   h. Powder coating finish to be certified to exceed 100 hours salt spray testing by ETL, an independent testing laboratory used by BHMA for ANSI certification.

F. Floor Stops and Wall Bumpers:
1. Acceptable manufacturers:
   a. Burns*
   b. Ives
   c. Rockwood Manufacturing
2. Characteristics: Refer to Hardware Headings.

G. Push Pull Sets:
1. Acceptable manufacturers:
   a. Burns*
   b. Ives
   c. Rockwood Manufacturing
2. Characteristics:
   a. Provide mounting systems as shown in hardware sets.
   b. Material to be stainless steel.
   c. Provide Push/Pull sets sized as shown in Hardware Headings.

H. Security Hardware:
1. Acceptable manufacturers:

a. Dynalock
b. Schlage*
c. Security Door Controls*

2. Characteristics: Refer to Hardware Headings.

I. Silencers:
1. Acceptable manufacturers:
a. Burns*
b. Ives
c. Rockwood Manufacturing
2. Three for each single doors; four for pairs of doors.

2.02 MATERIALS AND FABRICATION

A. Base Metals: Produce hardware units of basic metal and forming method indicated, using manufacturer's standard metal alloy, composition, temper, and hardness, but in no case of lesser (commercially recognized) quality than specified for applicable hardware units by applicable ANSI/BHMA A156 series standards for each type of hardware item and with ANSI/BHMA A156.18 for finish designations indicated. Do not furnish "optional" materials or forming methods for those indicated, except as otherwise specified.

B. Fasteners: Provide hardware manufactured to conform to published templates, generally prepared for machine screw installation.
1. Do not provide hardware that has been prepared for self-tapping sheet metal screws, except as specifically indicated. Self-tapping screws are not an acceptable installation method.
2. Furnish screws for installation with each hardware item. Provide Phillips flat-head screws except as otherwise indicated. Finish exposed (exposed under any condition) screws to match hardware finish or, if exposed in surfaces of other work, to match finish of this other work as closely as possible including "prepared for paint" surfaces to receive painted finish.
3. Coordinate with wood doors and metal doors and frames where thru-bolts are used as a means of reinforcing the work, provide sleeves for each thru-bolt fastener.

2.03 HARDWARE FINISHES

A. Match items to the manufacturer’s standard color and texture finish for the latch and lock sets (or push-pull units if no latch or lock sets).

B. Provide finishes that match those established by ANSI or, if none established, match the Architect’s sample.

C. Provide quality of finish, including thickness of plating or coating (if any), composition, hardness, and other qualities complying with manufacturer’s standards, but in no case less than specified by referenced standards for the applicable units of hardware.

D. Provide protective lacquer coating on all exposed hardware finishes of brass, bronze, and aluminum, except as otherwise indicated. The suffix "-NL" is used with standard finish designations to indicate "no lacquer."

E. The designations used to indicate hardware finishes are those listed in ANSI/BHMA A156.18, "Materials and Finishes," including coordination with the traditional U.S. finishes shown by certain manufacturers for their products.

1. Hinges (Interior doors): 652 (US26D) Satin Chrome Plated Steel
2. Door Closers: Powder Coat to match adjacent hardware
3. Door Stops: 626 (US26D) Satin Chrome Plated Brass/Bronze

PART 3 - EXECUTION

3.01 INSTALLATION

A. Mount hardware units at heights indicated in following applicable publications, except as specifically indicated or required to comply with governing regulations and except as otherwise directed by Architect.
   1. "Recommended Locations for Builders Hardware for Standard Steel Doors and Frames" by the Door and Hardware Institute.

B. Install each hardware item in compliance with the manufacturer's instructions and recommendations. Where cutting and fitting is required to install hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation or application of surface protection with finishing work specified in the Division 9 Sections. Do not install surface-mounted items until finishes have been completed on the substrates involved.

C. Set units level, plumb, and true to line and location. Adjust and reinforce the attachment substrate as necessary for proper installation and operation.

D. Drill and countersink units that are not factory prepared for anchorage fasteners. Space fasteners and anchors in accordance with industry standards.

E. Where both floor stops and wall stops are specified in headings, select the proper stop based upon conditions at each opening in that heading. Use a floor stop only when conditions would prohibit using a wall stop.

F. Set thresholds for exterior doors in full bed of butyl-rubber or polyisobutylene mastic sealant complying with requirements specified in Section 07 9200 Joint Sealers.

G. Weatherstripping and Seals: Comply with manufacturer's instructions and recommendations to the extent installation requirements are not otherwise indicated.

3.02 ADJUSTING, CLEANING, AND DEMONSTRATING

A. Adjust and check each operating item of hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate freely and smoothly or as intended for the application made.
   1. Where door hardware is installed more than one month prior to acceptance or occupancy of a space or area, return to the installation during the week prior to acceptance or occupancy and make final check and adjustment of all hardware items in such space or area. Clean operating items as necessary to restore proper function and finish of hardware and doors. Adjust door control devices to function properly with final operation of heating and ventilating equipment.

B. Clean adjacent surfaces soiled by hardware installation.

C. Door Hardware Supplier's Field Service
   1. Inspect door hardware items for correct installation and adjustment after complete installation of door hardware.

2. Instruct Owner's personnel in the proper adjustment and maintenance of door hardware and hardware finishes.
3. File written report of this inspection to Architect.

D. Prior to project completion, representatives of the lock, exit device and overhead closer manufacturers shall inspect and adjust all units and certify that all units are installed in accordance with the manufacturer's instructions, and are regulated properly and functioning correctly. A written report shall be provided to the Architect as to the inspection and shall include appropriate certificates.

3.03 HARDWARE SCHEDULE

HEADING #1

EACH DOOR TO HAVE:

1	SET PIVOTS AND CLOSER	BY DOOR MANUFACTURER
1	SET PULLS	VP8400-16 X VP8400-16 X TYPE 10

HEADING #2

EACH PAIR TO HAVE:

2	SETS PIVOTS AND CLOSERS	BY DOOR MANUFACTURER
2	SETS PULLS	VP8400-16 X VP8400-16 X TYPE 10
1	MAGLOCK	1512DB
1	MOTION SENSOR	MD-31
1	REQUEST TO EXIT	423M
1	ACCESS CONTROL	BY OWNER

NOTE: COORDINATE INSTALLATION OF SECURITY HARDWARE WITH ELECTRICAL, FIRE AND SECURITY SYSTEMS

HEADING #3

EACH DOOR TO HAVE:

1	SET PIVOTS AND CLOSER	BY DOOR MANUFACTURER
1	SET PULLS	VP8400-16 X VP8400-16 X TYPE 10
1	MAGLOCK	1511DB
1	MOTION SENSOR	MD-31
1	REQUEST TO EXIT	423M
1	ACCESS CONTROL	BY OWNER

NOTE: COORDINATE INSTALLATION OF SECURITY HARDWARE WITH ELECTRICAL, FIRE AND SECURITY SYSTEMS

HEADING #4

EACH PAIR TO HAVE:

2	CONTINUOUS HINGES	SL-24D
1	SET FLUSHBOLTS	590 X 545
1	ACCESS CONTROL LOCK	NDE (BY OWNER)
1	ACCESS POINT	PIM400-1501 X MERCURY EP1501
2	CLOSERS	4041-CUSH
2	DOOR POSITION SWITCHES	MC-4M

HEADING #5

EACH DOOR TO HAVE:

3	HINGES	BB81
1	LOCKSET	45H7A
1	DOOR STOP	575

END OF SECTION

SECTION 08 8000

GLASS AND GLAZING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 REFERENCE STANDARDS

A. American National Standards Institute (ANSI):
   1. Z97.1 Glazing Materials Used in Buildings, Safety Performance Specifications and Methods of Test.

B. American Society of Civil Engineers/Structural Engineering Institute (ASCE/SEI):
   1. 7 Minimum Design Loads for Buildings and Other Structures.

C. American Society for Testing and Materials (ASTM):
   1. C 1036 Flat Glass.
   2. C 1048 Heat-Treated Flat Glass - Kind HS, Kind FT Coated and Uncoated Glass.
   3. C 1172 Laminated Architectural Flat Glass.
   4. C 1376 Pyrolytic and Vacuum Deposition Coatings on Flat Glass.
   5. E 1300 Determining Load Resistance of Glass in Buildings.
   6. E 2190 Insulating Glass Unit Performance and Evaluation.

D. Code of Federal Regulations (CRF):
   1. 16CFR 1201 Safety Standard for Architectural Glazing Materials.

E. Glass Association of North America (GANA):
   1. Glazing Manual.
   2. Sealant Manual.

1.03 DEFINITIONS

A. Glass Manufacturers: Firms that produce primary glass, coated and uncoated, as defined in referenced glazing publications.

B. Glass Fabricators: Firms that cut, heat process, fabricate insulating units, coat, or otherwise provide finished products ready for installation.

C. Glass Thicknesses: Indicated by thickness designations in millimeters according to ASTM E 1300.

D. IBC: International Building Code.

E. Interspace: Space between lites of an insulating-glass unit.

1.04 COORDINATION

A. Coordinate glazing channel dimensions to provide necessary bite on glass, minimum edge and face clearances, and adequate sealant thicknesses, with reasonable tolerances.

1.05 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.
   1. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
   2. Review temporary protection requirements for glazing during and after installation.

1.06 ACTION SUBMITTALS

A. General: In compliance with Section 01 3300 and as specified herein.

A. Product Data: Manufacturer's data sheets on each product to be used, including:
   1. Preparation instructions and recommendations.
   2. Storage and handling requirements and recommendations.
   3. Installation methods.

B. Glass Samples: Provide three (3) samples each type of glass product other than clear monolithic vision glass; 12 inches square.

C. Preconstruction adhesion and compatibility test reports for all glazing accessories including but not limited to gaskets, setting blocks, sealants, adhesives, primers

D. Sample Warranties: For special warranties.

1.07 QUALITY ASSURANCE

A. Installer Qualifications: A qualified installer who employs glass installers for this Project who are certified under the National Glass Association's Certified Glass Installer Program.

B. Sealant Testing Agency Qualifications: An independent testing agency qualified according to ASTM C 1021 to conduct the testing indicated.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Protect glazing materials according to manufacturer's written instructions. Prevent damage to glass and glazing materials from condensation, temperature changes, direct exposure to sun, or other causes.

1.09 PROJECT CONDITIONS

A. Environmental Limitations: Do not proceed with glazing when ambient and substrate temperature conditions are outside limits permitted by glazing material manufacturers and when glazing channel substrates are wet from rain, frost, condensation, or other causes.
   1. Do not install glazing sealants when ambient and substrate temperature conditions are outside limits permitted by sealant manufacturer or are below 40 deg F.

B. Field Measurements: Verify field measurements with Drawing dimensions prior to fabrication of glass products.

1.10 WARRANTY

A. Provide Owner written warranties covering defects in materials and workmanship and following conditions for minimum periods specified from Date of Substantial Completion.
   1. Reflective/Coated Glass: Separation, crazing, peeling or discoloration of metallic film under normal conditions; 10 years.
   2. Spandrel Glass: Separation, crazing, peeling or discoloration of spandrel opacifier under normal conditions; 5 years.
   3. Insulating Units: Seal leakage causing moisture or vapor accumulation, reflective surface change or discoloration; 10 years.
   4. Laminated Units: No manufacturing defects resulting in edge separation or material obstruction of vision through glass surface; 5 years.
   5. Mirrors: No silver spoilage; 5 years.

B. Risk Analysis: In addition to base warranty, perform "risk analysis" establishing breakage possibility of glass units furnished. Recommend number of glass units of each size which should be stocked by Owner and provide for attic stock. Provide 1% of total Project requirements.

C. Replacement: In addition to base warranty and risk analysis, include complete two year replacement warranty covering metal, glass and accessory materials and labor to replace work damaged for any reason other than natural disasters, vandalism, or damage resulting from accident or abuse arising out of Owner’s operations. Glass units will be used from Owner’s stock and shall be restocked under this warranty, leaving full stock at end of warranty period.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Source Limitations for Glass: Obtain from single source from single manufacturer for each glass type.
   1. Acceptable Manufacturers:
      a. AGC Glass North America, Inc.
      b. Pilkington North America.
      c. Vitro Architectural Glass.

B. Acceptable Fabricators:
   1. AIG; American Insulated Glass.
   2. Insulite Glass, Inc.
   3. Nashville Tempered Glass.
   4. Oldcastle Building Envelope.
   5. Tristar Glass
   6. Trulite Glass & Aluminum Solutions, LLC.

C. Source Limitations for Glazing Accessories: Obtain from single source from single manufacturer for each product and installation method.

2.02 PERFORMANCE REQUIREMENTS

A. General: Installed glazing systems shall withstand normal thermal movement without failure, including loss or glass breakage attributable to the following: defective manufacture, fabrication, or installation; failure of sealants or gaskets to remain watertight and airtight; deterioration of glazing materials; or other defects in construction.

B. Structural Performance: Glazing shall withstand the following design loads within limits and under conditions indicated determined according to the IBC and ASTM E 1300.
   1. Maximum Lateral Deflection: For glass supported on all four edges, limit center-of-glass deflection at design wind pressure to not more than 1/50 times the short-side length or 1 inch, whichever is less.

C. Safety Glazing: Where safety glazing is indicated, provide glazing that complies with 16 CFR 1201, Category II.

2.03 GLASS PRODUCTS, GENERAL

A. Glazing Publications: Comply with published recommendations of glass product manufacturers and organizations below unless more stringent requirements are indicated. See these publications for glazing terms not otherwise defined in this Section or in referenced standards.
   1. GANA Publications: "Glazing Manual."

B. Safety Glazing Labeling: Where safety glazing is indicated, permanently mark glazing with certification label of the SGCC or manufacturer. Label shall indicate manufacturer's name, type of glass, thickness, and safety glazing standard with which glass complies.

C. Thickness: Where glass thickness is indicated, it is a minimum. Provide glass that complies with performance requirements and is not less than the thickness indicated.

D. Strength: Where annealed float glass is indicated, provide annealed float glass, heat-strengthened float glass, or fully tempered float glass. Where heat-strengthened float glass is indicated, provide heat-strengthened float glass or fully tempered float glass. Where fully tempered float glass is indicated, provide fully tempered float glass.

2.04 GLASS PRODUCTS

A. Clear Annealed Float Glass: ASTM C 1036, Type I, Class 1 (clear), Quality-Q3.

A. Fully Tempered Float Glass: ASTM C 1048, Kind FT (fully tempered), Condition A (uncoated) unless otherwise indicated, Type I, Class 1 (clear), Quality-Q3, tested for surface and edge compression per ASTM C 1048 and for impact strength per 16 CFR 1201 for Category II materials.
   1. Fabrication Process: By horizontal (roller-hearth) process with roll-wave distortion parallel to bottom edge of glass as installed unless otherwise indicated.

2.05 GLAZING ACCESSORIES

A. General:
   1. Compatibility: Compatible with one another and with other materials they contact, including glass products, seals of insulating-glass units, and glazing channel substrates, under conditions of service and application, as demonstrated by sealant manufacturer based on testing and field experience.
   2. Suitability: Comply with sealant and glass manufacturers' written instructions for selecting glazing sealants suitable for applications indicated and for conditions existing at time of installation.
   3. Colors of Exposed Glazing Sealants: As selected by Architect from manufacturer's full range.

B. Setting Blocks: ASTM C 864, neoprene, 80 to 90 Shore A durometer hardness; length 4 inches (100 mm), width of glazing rabbet space less 1/16 inch (1.5 mm), height required for glazing method, pane weight, and pane area.

C. Spacer Shims: ASTM C 864, neoprene, 50 to 60 Shore A durometer hardness; length 3 inches (75 mm), one half height of glazing stop, thickness required for application, one face self-adhesive.

D. Glazing Tape: Butyl compound tape with integral resilient tube spacer, 10 to 15 Shore A durometer hardness, black color, coiled on release paper; widths required for specified installation.

E. Glazing Tape: Closed cell polyvinyl chloride foam, maximum water absorption by volume 2 percent, designed for 25 percent compression percent for air barrier and vapor retarder seal, black color, coiled on release paper over adhesive on two sides; widths required for specified installation.

F. Glazing Splines: ASTM C 864, resilient polyvinyl chloride, extruded shape to fit glazing channel retaining slot; black color.

G. Glazing Gaskets: Glazing Gaskets: Extruded shape to fit glazing channel retaining slot.
1. Interior: ASTM C864, high density EPDM, 70 Shore A durometer hardness; with factory molded/vulcanized corners; black.

H. Glazing Clips: Manufacturer's standard type.

I. Sealants:
1. Type: Silicone, one-part, conforming to ASTM C920, Type S, Grade NS.
2. Colors: As selected by Architect from full range of manufacturer's standard colors.
3. Primer: When required by sealant manufacturer, type as recommended.
4. Acceptable Products (Glass to Glass):
a. Dow Corning Corp. “999 Silicone Building and Glazing Sealant”.
b. General Electric Co. “Silglaze N”.
5. Acceptable Products (Glass to Metal):
a. Dow Corning Corp. “795 Silicone Building Sealant”.
b. General Electric Co. “Silpruf”.

J. Cleaners, Primers, and Sealers: Types recommended by sealant or gasket manufacturer.

2.06 FABRICATION

A. Tempered Glass:
1. Cut float glass materials to indicated sizes and provide cut-outs and holes, if indicated, before heat strengthening.
2. Fully temper float glass materials in accordance with ASTM C 1048, Kind FT.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine framing, glazing channels, and stops, with Installer present, for compliance with the following:
1. Manufacturing and installation tolerances, including those for size, squareness, and offsets at corners.
2. Presence and functioning of weep systems.
3. Minimum required face and edge clearances.
4. Effective sealing between joints of glass-framing members.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Clean glazing channels and other framing members receiving glass immediately before glazing. Remove coatings not firmly bonded to substrates.

B. Examine glazing units to locate exterior and interior surfaces. Label or mark units as needed so that exterior and interior surfaces are readily identifiable. Do not use materials that leave visible marks in the completed Work.

3.03 GLAZING, GENERAL

A. Comply with combined written instructions of manufacturers of glass, sealants, gaskets, and other glazing materials, unless more stringent requirements are indicated, including those in referenced glazing publications.

B. Protect glass edges from damage during handling and installation. Remove damaged glass from Project site and legally dispose of off Project site. Damaged glass includes glass with edge damage or other imperfections that, when installed, could weaken glass, impair performance, or impair appearance.

C. Apply primers to joint surfaces where required for adhesion of sealants, as determined by preconstruction testing.

D. Install setting blocks in sill rabbets, sized and located to comply with referenced glazing publications, unless otherwise required by glass manufacturer. Set blocks in thin course of compatible sealant suitable for heel bead.

E. Do not exceed edge pressures stipulated by glass manufacturers for installing glass lites.

F. Provide spacers for glass lites where length plus width is larger than 50 inches.
   1. Locate spacers directly opposite each other on both inside and outside faces of glass. Install correct size and spacing to preserve required face clearances, unless gaskets and glazing tapes are used that have demonstrated ability to maintain required face clearances and to comply with system performance requirements.
   2. Provide 1/8-inch minimum bite of spacers on glass and use thickness equal to sealant width. With glazing tape, use thickness slightly less than final compressed thickness of tape.

G. Provide edge blocking where indicated or needed to prevent glass lites from moving sideways in glazing channel, as recommended in writing by glass manufacturer and according to requirements in referenced glazing publications.

H. Set glass lites in each series with uniform pattern, draw, bow, and similar characteristics.

I. Set glass lites with proper orientation so that coatings face exterior or interior as specified.

J. Where wedge-shaped gaskets are driven into one side of channel to pressurize sealant or gasket on opposite side, provide adequate anchorage so gasket cannot walk out when installation is subjected to movement.

K. Square cut wedge-shaped gaskets at corners and install gaskets in a manner recommended by gasket manufacturer to prevent corners from pulling away; seal corner joints and butt joints with sealant recommended by gasket manufacturer.

3.04 CLEANING AND PROTECTION

A. Immediately after installation remove nonpermanent labels and clean surfaces.

B. Protect glass from contact with contaminating substances resulting from construction operations. Examine glass surfaces adjacent to or below exterior concrete and other masonry surfaces at frequent intervals during construction, but not less than once a month, for buildup of dirt, scum, alkaline deposits, or stains.
   1. If, despite such protection, contaminating substances do come into contact with glass, remove substances immediately as recommended in writing by glass manufacturer. Remove and replace glass that cannot be cleaned without damage to coatings.

C. Remove and replace glass that is damaged during construction period.

D. Wash glass on both exposed surfaces not more than four days before date scheduled for inspections that establish date of Substantial Completion. Wash glass as recommended in writing by glass manufacturer.

3.05 GLASS SCHEDULE

A. **GL-1T**: Fully Tempered: Fully Tempered, clear monolithic float glass as determined to meet the requirements of in-service conditions.
   1. Class 1: Clear monolithic.
      a. Thickness: 14 mm.
      b. Locations: As indicated.
   2. Exposed Edges: Machine ground and flat polished.
   3. Butt Edges: Flat ground.
   4. Corner Edges: Lap-joint corners with exposed edges polished.

END OF SECTION

SECTION 08 8300

MIRRORS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 REFERENCE STANDARDS

A. American Society for Testing and Materials (ASTM):
1. B117 Method of Salt Spray Testing.
2. C1503 Standard Specification for Silvered Flat Glass Mirror.
3. C1036 Standard Specifications for Flat Glass.
4. D3359 Standard Test Methods for Measuring Adhesion by Tape Test.

1.03 ACTION SUBMITTALS

A. General: In compliance with Section 01 3300 and as specified herein.

B. Product Data: For each type of product.
1. Mirrors. Include description of materials and process used to produce each type of silvered flat glass mirror specified that indicates sources of glass, glass coating components, edge sealer, and quality-control provisions.

C. Shop Drawings: Include mirror elevations, edge details, mirror hardware, and attachment details.

D. Samples: For each type of the following:
1. Mirrors: 12 inches square, including edge treatment on two adjoining edges.
2. Mirror Clips: Full size.

1.04 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

B. Product Certificates: For each type of mirror and mirror mastic.

C. Preconstruction Test Reports: From mirror manufacturer indicating that mirror mastic was tested for compatibility and adhesion with mirror backing and substrates on which mirrors are installed.

D. Sample Warranty: For special warranty.

1.05 CLOSEOUT SUBMITTALS

A. Maintenance Data: For mirrors to include in maintenance manuals.

1.06 QUALITY ASSURANCE

A. Installer Qualifications: A qualified installer who employs glass installers for this Project who are certified under the National Glass Association's Certified Glass Installer Program.

1.07 PRECONSTRUCTION TESTING

A. Preconstruction Mirror Mastic Compatibility Test: Submit mirror mastic products to mirror manufacturer for testing to determine compatibility of mastic with mirror backing.
   1. Testing is not required if data are submitted based on previous testing of mirror mastic products and mirror backing matching those submitted.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Protect mirrors according to mirror manufacturer's written instructions and as needed to prevent damage to mirrors from moisture, condensation, temperature changes, direct exposure to sun, or other causes.

B. Comply with mirror manufacturer's written instructions for shipping, storing, and handling mirrors as needed to prevent deterioration of silvering, damage to edges, and abrasion of glass surfaces and applied coatings. Store indoors.

1.09 PROJECT CONDITIONS

A. Environmental Limitations: Do not install mirrors until ambient temperature and humidity conditions are maintained at levels indicated for final occupancy.

1.10 WARRANTY

A. Special Warranty: Manufacturer agrees to replace mirrors that deteriorate within specified warranty period. Deterioration of mirrors is defined as defects developed from normal use that are not attributed to mirror breakage or to maintaining and cleaning mirrors contrary to manufacturer's written instructions. Defects include discoloration, black spots, and clouding of the silver film.
   1. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Basis-of-Design Manufacturer; mr-1: Trulite “Scargard” surface protected mirror.

B. Source Limitations for Mirrors: Obtain mirrors from single source from single manufacturer.

C. Source Limitations for Mirror Accessories: Obtain mirror glazing accessories from single source.

2.02 SILVERED FLAT GLASS MIRRORS

A. Mirrors, General: ASTM C1503, Type 1, Class 1 Quality q2. Furnish full length; no horizontal joints acceptable.

B. Annealed Monolithic Glass Mirrors: Mirror Quality, clear.
   1. Nominal Thickness: 6.0 mm.

2.03 MISCELLANEOUS MATERIALS

A. Setting Blocks: Elastomeric material with a Shore, Type A durometer hardness of 85, plus or minus 5.

B. Edge Sealer: Coating compatible with glass coating and approved by mirror manufacturer for use in protecting against silver deterioration at mirrored glass edges.

C. Mirror Mastic: An adhesive setting compound, asbestos-free, produced specifically for setting mirrors and certified by both mirror and mastic manufacturer as compatible with glass coating and substrates on which mirrors will be installed.

2.04 MIRROR HARDWARE

A. Aluminum J-Channels: Aluminum extrusions with a return deep enough to produce a glazing channel to accommodate mirrors of thickness indicated and in lengths required to cover edges of mirrors in a single piece.
   1. Bottom Trim: J-channels formed with front leg and back leg not less than 3/8 and 7/8 inch in height, respectively, and a thickness of not less than 0.04 inch.
   2. Finish: Clear bright anodized.

B. Plated Steel Hardware: Formed-steel shapes with plated finish indicated.
   1. Profile: As indicated.
   2. Finish: Satin.

C. Fasteners: Fabricated of same basic metal and alloy as fastened metal and matching it in finished color and texture where fasteners are exposed.

D. Anchors and Inserts: Provide devices as required for mirror hardware installation. Provide toothed or lead-shield, expansion-bolt devices for drilled-in-place anchors.

2.05 FABRICATION

A. Fabricate mirrors in the shop to greatest extent possible.

B. Mirror Edge Treatment: Beveled polished edge of width shown.
   1. Seal edges of mirrors with edge sealer after edge treatment to prevent chemical or atmospheric penetration of glass coating.
   2. Require mirror manufacturer to perform edge treatment and sealing in factory immediately after cutting to final sizes.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine substrates, over which mirrors are to be mounted, with Installer present, for compliance with installation tolerances, substrate preparation, and other conditions affecting performance of the Work.

B. Verify compatibility with and suitability of substrates, including compatibility of existing finishes or primers with mirror mastic.

C. Proceed with installation only after unsatisfactory conditions have been corrected and surfaces are dry.

3.02 PREPARATION

A. Comply with mastic manufacturer's written installation instructions for preparation of substrates, including coating substrates with mastic manufacturer's special bond coating where applicable.

B. Remove manufacturer’s temporary labels and identification marks from mirrors.

3.03 INSTALLATION

A. General: Install mirrors to comply with mirror manufacturer's written instructions and with referenced GANA publications. Mount mirrors accurately in place in a manner that avoids distorting reflected images.
   1. GANA Publications: "Glazing Manual" and "Mirrors, Handle with Extreme Care: Tips for the Professional on the Care and Handling of Mirrors."

B. Set mirrors over backing with mastic as indicated.
   1. Provide continuous mirror channel along bottom edge of mirror; attach with toggle bolts at maximum 1’-4" on centers. Secure into position with adhesive and apply sealant to all edges. Seal between bottom of mirror and lavatory counter splash with silicone sealant.
   2. Install mastic as follows:
      a. Apply barrier coat to mirror backing where approved in writing by manufacturers of mirrors and backing material.
      b. Apply mastic to comply with mastic manufacturer's written instructions for coverage and to allow air circulation between back of mirrors and face of mounting surface.
      c. After mastic is applied, align mirrors and press into place while maintaining a minimum airspace of 1/8 inch between back of mirrors and mounting surface.
   3. Cut mirrors to fit closely without excessive clearances.

3.04 TOLERANCES

A. Allowable Tolerances; Multiple Mirror Installations:
   1. Fabrication Tolerances:
      a. Variation in Mirror Dimensions: + 1/32-inch.
      b. Variation in Square (Diagonal Measurements): + 1/16-inch.
   2. Installation Tolerances: + 1/8-inch in 10 feet variation from plumb or square.

3.05 CLEANING AND PROTECTION

A. Protect mirrors from breakage and contaminating substances resulting from construction operations.

B. Do not permit edges of mirrors to be exposed to standing water.

C. Maintain environmental conditions that prevent mirrors from being exposed to moisture from condensation or other sources for continuous periods of time.

D. Clean exposed surface of mirrors not more than four days before date scheduled for inspections that establish date of Substantial Completion. Clean mirrors as recommended in writing by mirror manufacturer.

END OF SECTION

SECTION 08 8700

DECORATIVE FILMS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 REFERENCES

A. American Society for Testing and Materials (ASTM):
1. E 903 Test Method for Solar Absorbance, Reflectance, and Transmittance of Materials Using Integrating Spheres.

1.03 DEFINITIONS

A. Visible Light Transmittance: The ratio of the amount of visible light (380-780 nm) that is allowed to pass through a glazing system to the amount of visible light falling on the glazing system. The value is expressed as a percentage.

B. Diffuse Visible Light Reflectance (exterior): The percentage of visible light falling on a flat, non-mirrored surface that is neither transmitted nor absorbed but scattered backwardly at random angles from that surface. This value is also known as “non-specular reflectance”.

C. Privacy Film Rating: This number, between 0 (clear) and 10 (opaque), represents the relative difficulty an observer has in identifying the nature and character of an object located on the opposite side of the window, with the observer and the object both located at least 2 feet from the pane upon which the product has been installed.

D. Frost Series: These films have frosted and translucent finishes that ensure privacy without sacrificing natural light. They are ideal for commercial interior glazing applications such as office partitions or to meet interior design goals at a fraction of the cost of etched glass.

1.04 PERFORMANCE REQUIREMENTS

A. Provide Decorative films that do not have a masking sheet.

1.05 ACTION SUBMITTALS

A. General: In compliance with Section 01 3300 and as specified herein.

B. Product Data: For each type of product.

C. Samples: For each type of decorative film specified, two (2) samples 12 inches square and of same thickness indicated for final Work.

D. Qualification Data: Submit documentation indicating qualifications of decorative film manufacturer.

E. Warranty: Submit sample special warranty specified in this section.

F. Sustainable Construction Submittals:

1. Indicate compliance with the Georgia Energy Efficiency and Sustainability Construction Standards for State Buildings dated July 1, 2009. Submit completed Section 6.3-Georgia based Materials and Products document. Refer to the requirements of Section 01 8113 – Sustainable Design Requirements, Georgia Peach Program.

1.06 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: Submit for decorative film to include in maintenance manuals.

1.07 QUALITY ASSURANCE

A. Manufacturer Qualifications: A qualified manufacturer that has a minimum of 10 years of documented experience manufacturing decorative films similar to be used for this project.

B. Installer Qualifications: A firm that is authorized by decorative film manufacturer to install film in compliance with guidelines set forth by manufacturer.

C. Source Limitations: Obtain each type of decorative film from same manufacturer
1. Mock-ups: Build mock-ups to verify selections made under sample submittals and to evaluate surface preparation techniques and application workmanship.
2. Approved mock-ups may become part of completed work if undisturbed at time of Substantial Completion.

D. Pre-installation Conference: Conduct conference at project site to discuss methods and procedures relating to installation of the decorative films.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Deliver, store and handle materials in manufacturer's protective packaging.

B. Store and protect materials in compliance with manufacturer's written recommendations to prevent damage from condensation, temperature changes, direct exposure to sun, or other causes.

1.09 PROJECT CONDITIONS

A. Environmental Limitations: Do not proceed with installation of decorative films when ambient and substrate temperature conditions are outside limits permitted by material manufacturers.
1. Maintain temperature, humidity, and ventilation within limits recommended by manufacturer.

1.10 WARRANTY

A. Manufacturer's Limited Warranty: Manufacturer's standard form in which manufacturer agrees to replace films that fail within specified warranty period. Certain restrictions apply.
1. Warranty Period: 5 years from date of substantial completion.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Acceptable Manufacturers FLM-1: As indicated on the Finish Schedule.

2.02 DECORATIVE FILM ACCESSORIES

A. General: Provide accessories either manufactured by or acceptable to decorative film manufacturer for application indicated, and with a proven record of compatibility with surfaces contacted in installation.

B. Pressure Sensitive Adhesive: Provide adhesive activated by pressure and water and compatible with decorative film manufacturer.

C. Cleaners, Primers, and Sealers: Provide types recommended by film manufacturer.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine substrates for compliance with requirements and for conditions affecting performance of Decorative film including glass that is broken, chipped, cracked, abraded, or damaged in any way.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Comply with manufacturer's written instructions for surface preparation.

B. Clean substrates thoroughly prior to installation.

C. Prepare substrates using methods recommended by film manufacturer to achieve the best results for the substrate under project conditions.

D. Protect window frames and surrounding surfaces to prevent damage during installation.

3.03 INSTALLATION

A. Install in compliance with manufacturer's written instructions.

B. Install with no gaps or overlaps.

C. If seamed, make seams non-overlapping.

D. Do not remove release liner from film until just before each piece of film is cut and ready for installation.

E. Custom cut to glass with neat, square corners and edges to within 1/8-inch of frame.

F. Remove air bubbles, blisters, and other defects. Be careful to remove "fingers" to eliminate any contamination or excess water pockets. It is crucial to remove as much water as possible during installation.

3.04 FIELD QUALITY CONTROL

A. After installation, view film from a distance of 10 feet against a bright uniform sky or background. Film shall appear uniform in appearance with no visible streaks, wrinkles, banding, thin spots or pinholes.

B. If installed film does not meet these criteria, remove and replace with new film.

3.05 CLEANING AND PROTECTION

A. Remove excess mounting solution at finished seams, perimeter edges, and adjacent surfaces.

B. Use cleaning methods recommended by film manufacturer.

C. Replace films that cannot be cleaned.

D. Protect installed products until completion of project.

E. Touch-up, repair or replace damaged products before substantial completion.

END OF SECTION

SECTION 09 2900

GYPSUM BOARD

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 REFERENCE STANDARDS

A. American Society for Testing and Materials (ASTM):

1.	A 641	Zinc-Coated (Galvanized) Carbon Steel Wire.
2.	C 475	Joint Compound and Joint Tape for Finishing Gypsum Board.
3.	C 635	Manufacture, Performance, and Testing of Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings.
4.	C 645	Nonstructural Steel Framing Members.
5.	C 665	Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing
6.	C 754	Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products.
7.	C 834	Latex Sealants.
8.	C 840	Application and Finishing of Gypsum Board.
9.	C 919	Use of Sealants in Acoustical Applications.
10.	C 954	Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Steel Studs from 0.033 in. (0.84 mm) to 0.112 in. (2.84 mm) in Thickness.
11.	C 1002	Steel Self-Piercing Tapping Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs.
12.	C 1396	Gypsum Board.
13.	E 90	Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements.
14.	E 119	Test Methods for Fire Tests of Building Construction and Materials.

B. American Iron and Steel Institute (AISI):

1.	S100	North American Specification for the Design of Cold-Formed Steel Structural Members.
2.	S202	Code of Standard Practice.
3.	S240	North American Standard for Cold-Formed Steel Structural Framing.

C. Gypsum Association (GA):

1.	214	Standard Test Method for Surface Burning Characteristics of Building Materials.
2.	216	Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements.
3.	238	Guidelines for the Prevention of Mold Growth on Gypsum Board; Gypsum Association.
4.	600	Fire Resistance Design Manual.

D. Underwriters Laboratory (UL) - Fire Resistance Directory; Underwriters Laboratories Inc.; current edition.

1.03 SYSTEM DESCRIPTION

A. Design steel in compliance with AISI S100 “North American Specification for the Design of Cold-Formed Steel Structural Members”, except as otherwise shown or specified.

B. Design Criteria: Design and construct interior wall and partitions, except as may be specifically indicated otherwise; for a maximum allowable deflection of L/240, except L/360 for walls and partitions where finish on the room side is stone, tile, or wood panels; L equals to height in inches when subjected to uniformly distributed horizontal loads as scheduled herein:
   1. Typical Interior Partitions: 5 PSF, minimum design lateral load is required for interior walls by the building code.

C. Design framing system to accommodate deflection of primary building structure and construction tolerances.

D. Design and install partitions and furring with maximum 1/8-inch in 12 feet noncumulative variance from plumb and true.

1.04 ACTION SUBMITTALS

A. General: In compliance with Section 01 3300 and as specified in herein.

B. Product Data: For each type of product.

C. Samples: For the following products:
   1. Trim Accessories: Full-size Sample in 12-inch-long length for each trim accessory indicated.

D. Sustainable Construction Submittals:

   1. Indicate compliance with the Georgia Energy Efficiency and Sustainability Construction Standards for State Buildings dated July 1, 2009. Submit completed Section 6.3-Georgia based Materials and Products document. Refer to the requirements of Section 01 8113 – Sustainable Design Requirements, Georgia Peach Program.

1.05 QUALITY ASSURANCE

A. Code-Compliance Certification of Studs and Tracks: Provide documentation that framing members are certified according to the product-certification program of the Steel Framing Industry Association or a similar organization that provides a verifiable code compliance program.

B. Single Source Responsibility:
   1. Panel and Panel Accessories: Obtain each type of gypsum board and any related joint treatment materials from single manufacturer.
   2. Steel Framing and Accessories: Obtain steel framing members for gypsum board assemblies from single manufacturer.
   3. Finish Materials: Obtain finishing materials from same manufacturer of gypsum board or from single manufacturer acceptable to gypsum board manufacturer.

1.06 DELIVERY, STORAGE AND HANDLING

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

1.07 PROJECT CONDITIONS

A. Environmental Limitations: Comply with ASTM C 840 requirements or gypsum board manufacturer's written instructions, whichever are more stringent.

B. Do not install paper-faced gypsum panels until installation areas are enclosed and conditioned.

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

PART 2 - PRODUCTS

2.01 PERFORMANCE REQUIREMENTS

A. Fire-Resistance-Rated Assemblies: For fire-resistance-rated assemblies, provide materials and construction identical to those tested in assembly indicated in compliance with ASTM E 119 by an independent testing agency.

B. STC-Rated Assemblies: For STC-rated assemblies, provide materials and construction identical to those tested in assembly indicated in compliance with ASTM E 90 and classified in compliance with ASTM E 413 by an independent testing agency.

2.02 ACCEPTABLE MANUFACTURERS

A. Basis-of Design Manufacturer; Steel Framing and Furring System: Except as otherwise specified, products of Clark Dietrich are named to establish quality and design standards for steel framing and furring materials.
   1. Other Acceptable Manufacturers: Subject to compliance with requirements of this specification, provide named products and systems or comparable products and systems by one of the following manufacturers:
      a. Cemco
      b. Marino/WARE.

B. Basis-of-Design Manufacturer; Gypsum Board: Except as otherwise specified, products of USG Corporation are named to establish quality and design standards for gypsum board materials.
   1. Other Acceptable Manufacturers: Subject to compliance with requirements of this specification, provide named products and systems or comparable products and systems by one of the following manufacturers:
      a. CertainTeed Corporation.
      b. Continental Building Products, LLC
      c. Georgia-Pacific Gypsum LLC.
      d. National Gypsum Company.

C. Basis-of-Design Manufacturer; Direct Suspension System: Except as otherwise specified, products of Armstrong World Industries are named to establish quality and design standards.
   1. Other Acceptable Manufacturers: Products of following manufacturers will be acceptable provided systems meet UL, SBBCCI, and UBC requirements and all requirements of this specification:
      a. CertainTeed Ceilings.
      b. USG Company.

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

2.03 METAL FRAMING

A. Wall and Partition Framing System Components: ASTM C645, sizes indicated and gauges required to suit various clear-span conditions. G40 hot-dip galvanized coating where indicated.
   1. Studs:
      a. Walls: Metal studs, galvanized steel.
      b. Shaft Walls: “C-H” studs, hot-dipped galvanized, gauges as required to suit various clear-span conditions.
   2. Floor and Ceiling Runners:
      a. Wall: Runners, galvanized steel, sizes and shapes compatible with metal stud system.
      b. Shaft Wall: Steel "J" runners, galvanized steel.
   3. Channels:
      a. Furring: 7/8-inch, 26 gauge metal furring channels.
      b. Carrying: 1-1/2 inch deep, 16 gauge cold rolled steel, 0.475 pound per lineal foot.

B. Gypsum Board Ceiling Direct Suspension System Components: Armstrong World Industries "8900 Series Drywall Furring System", heavy duty system of hot-dipped galvanized steel main runners and cross tees in compliance with ASTM C 635.
   1. Main Runners: "8901-ST" double web, 1-1/2 inch x 15/16-inch x 12 feet long.
   2. Cross Runners: "8945-ST" double web, 1-1/2 inch x 1-1/2 inch x 4 foot long.
   3. Wall Track: 1-5/8 inch x one-inch x one-inch x 10 foot long, 25 gauge hot-dipped galvanized steel.

C. Wire: ASTM A641, Class 1 zinc coating, soft temper.
   1. Hangers: 12 gauge; 0.162-inch diameter.
   2. Ties: 16 gauge; 0.062-inch thick.

D. Fasteners: Drywall screws “Type S” and “Type G” bugle head, for power installation, ASTM C1002; cadmium plated for “wet wall” locations.

2.04 METAL FRAMING ACCESSORIES

A. Adjustable Furring Brackets: ClarkDietrich Building Systems “Adjustable Wall Furring Brackets”, 20 gauge galvanized steel with corrugated edges.

B. Resilient Channels: ClarkDietrich Building Systems “RC-1, galvanized steel resilient channels, 2-1/2 inches wide x 1/2-inch deep x 12’-0” long with prepunched holes in flanges.

2.05 GYPSUM BOARD

A. Standard Wallboard: USG “Sheetrock’, ASTM C 1396/C 1396M, tapered, in thickness indicated.

B. Gypsum Ceiling Board: USG “Sheetrock’, ASTM C 1396/C 1396M, tapered, 1/2-inch thick.

2.06 SPECIALTY GYPSUM BOARD

A. Glass-Mat Interior Gypsum Board: National Gypsum “Gold Bond Brand XP Gypsum Board, ASTM C 1658/C 1658M, tapered edges, 48-inches wide x thickness indicated, mold and mildew resistant, purple in color. Specifically designed for interior use. Square ends, 5/8-inch, Type X core. Other Manufacturer:

1. USG “Sheetrock Mold Tough”, “Sheetrock Mold Tough Firecode”, or “Sheetrock Mold Tough Firecode ‘C’”. tapered edges, 48-inches wide x thickness indicated.
2. Mold Resistance: ASTM D 3273, score of 10 as rated in compliance with ASTM D 3274.

2.07 TILE BACKING PANELS

A. Glass-Mat, Water-Resistant Backing Board: USG “Durock”, ASTM C 1178/C 1178M, with manufacturer's standard edges. Incombustible and water resistant gypsum core with fiberglass mat laminated to both sides. Other Acceptable Manufacturer:
   1. G-P Gypsum LLC, a Georgia Pacific company “DensShield Tile Backer”.
   2. Mold Resistance: ASTM D 3273, score of 10 as rated in compliance with ASTM D 3274.

2.08 TRIM ACCESSORIES

A. Interior Trim: ASTM C 1047.
   1. Material: Galvanized or aluminum-coated steel sheet, rolled zinc, plastic, or paper-faced galvanized-steel sheet.
   2. Shapes:
      a. Cornerbead.
      b. Bullnose bead.
      c. LC-Bead: J-shaped; exposed long flange receives joint compound.
      d. L-Bead: L-shaped; exposed long flange receives joint compound.
      e. U-Bead: J-shaped; exposed short flange does not receive joint compound.
      f. Expansion (control) joint.
      g. Curved-Edge Cornerbead: With notched or flexible flanges.

B. Aluminum Trim: Extruded accessories of profiles and dimensions indicated.
   1. Manufacturers: Subject to compliance with requirements in the section, provide products by one of the following:
      a. Fry Reglet Corporation
      b. Gordon, Inc.
      c. Pittcon Industries.
   2. Aluminum: Alloy and temper with not less than the strength and durability properties of ASTM B 221, Alloy 6063-T5.
   3. Finish: Corrosion-resistant primer compatible with joint compound and finish materials specified.

C. Mullion Trim Cap: Provide a non-invasive, anchored and high STC/OITC sound attenuating, fire-resistant, thermally mass loaded partition closure for sealing construction created voids and gaps. Provide units with capability to accommodate variations in adjacent surfaces. Provide from one of the following acceptable manufacturers:

   1. Gordon Interior Specialties Divisions, Gordon, Inc. ASTM E90-09 and E413-16. Min. 52 STC rating with acoustical batts for sound attenuation; extruded aluminum partition closure. Provide extruded aluminum partition closures, pre-assembled and spring loaded to provide a tight fit for vertical junctures of partitions and window wall mullions. They are sound tested to a. Finish to match mullions.
      a. “Mullion Mate 3 High STC”- for openings 2-7/8" – 3-15/16".
      b. “Mullion Mate 4 High STC”- for openings 4" – 4-15/16”.
      c. “Mullion Mate 5 High STC”- for openings 5” – 6-15/16”.
      d. “Mullion Mate 7 High STC”- for openings 7” – 9-3/4”.
      e. “Mullion Mate 9 High STC” for openings 9” – 13-3/4”.

D. Window Trim Cap: Provide a non-invasive, anchored and high STC/OITC sound attenuating, fire-resistant, thermally mass loaded partition closure for sealing construction created voids and

gaps. Provide units with capability to accommodate variations in adjacent surfaces. Provide from one of the following acceptable manufacturers:

1. Gordon Interior Specialties Divisions, Gordon, Inc. ASTM E90-09 and E413-16. Min. 52 STC rating with acoustical batts for sound attenuation; extruded aluminum partition closure. Provide extruded aluminum partition closures, pre-assembled and spring loaded to provide a tight fit for vertical junctures of partitions and window walls. They are sound tested to a. Finish to match mullions.
   a. "Window Mate 3 High STC"- for openings 2-7/8" – 3-15/16".
   b. "Window Mate 4 High STC"- for openings 4" – 4-15/16".
   c. "Window Mate 5 High STC"- for openings 5" – 6-15/16".
   d. "Window Mullion Mate 7 High STC"- for openings 7" – 9-3/4".

2.09 JOINT TREATMENT MATERIALS

A. General: Comply with ASTM C 475/C 475M.

B. Joint Tape:
   1. Interior Gypsum Board: Paper.
   2. Exterior Gypsum Soffit Board: Paper.
   3. Glass-Mat Gypsum Sheathing Board: 10-by-10 glass mesh.
   4. Tile Backing Panels: As recommended by panel manufacturer.

C. Joint Compound for Interior Gypsum Board: For each coat, use formulation that is compatible with other compounds applied on previous or for successive coats.
   1. Prefilling: At open joints, rounded or beveled panel edges, and damaged surface areas, use setting-type taping compound.
   2. Embedding and First Coat: For embedding tape and first coat on joints, fasteners, and trim flanges, use setting-type taping compound.
      a. Use setting-type compound for installing paper-faced metal trim accessories.
   3. Fill Coat: For second coat, use setting-type, sandable topping compound.
   4. Finish Coat: For third coat, use setting-type, sandable topping compound.
   5. Skim Coat: For final coat of Level 5 finish, use setting-type, sandable topping compound.

D. Joint Compound for Exterior Applications:
   1. Exterior Gypsum Soffit Board: Use setting-type taping compound and setting-type, sandable topping compound.
   2. Glass-Mat Gypsum Sheathing Board: As recommended by sheathing board manufacturer.

E. Joint Compound for Tile Backing Panels:
   1. Glass-Mat, Water-Resistant Backing Panel: As recommended by backing panel manufacturer.
   2. Cementitious Backer Units: As recommended by backer unit manufacturer.
   3. Water-Resistant Gypsum Backing Board: Use setting-type taping compound and setting-type, sandable topping compound.

2.10 AUXILIARY MATERIALS

A. General: Provide auxiliary materials that comply with referenced installation standards and manufacturer's written instructions.

B. Steel Drill Screws: ASTM C 1002 unless otherwise indicated.

1. Use screws complying with ASTM C 954 for fastening panels to steel members from 0.033 to 0.112 inch thick.

C. Sound-Attenuation Blankets: ASTM C 665, Type I (blankets without membrane facing) produced by combining thermosetting resins with mineral fibers manufactured from glass, slag wool, or rock wool.
1. Fire-Resistance-Rated Assemblies: Comply with mineral-fiber requirements of assembly.

D. Acoustical Joint Sealant: Manufacturer's standard nonsag, paintable, nonstaining latex sealant complying with ASTM C 834. Product effectively reduces airborne sound transmission through perimeter joints and openings in building construction as demonstrated by testing representative assemblies in compliance with ASTM E 90.
1. Manufacturer: Subject to compliance with requirements in this Section, provide products by one of the following:
a. Hilti, Inc.
b. Pecora Corporation.
c. USG Corporation.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine areas and substrates including welded hollow-metal frames and support framing, with Installer present, for compliance with requirements and other conditions affecting performance of the Work.

B. Examine panels before installation. Reject panels that are wet, moisture damaged, and mold damaged.

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

3.02 METAL FRAMING INSTALLATION

A. Install cold-formed framing in compliance with requirement of ASTM C 754.

B. Framing Installation:
1. Accurately place top and bottom runners, track and headers and securely attach metal studs in correct position so finished work will be sturdy, plumb and true-to-line. Space metal studs on centers indicated except where good practice requires closer spacing. Space metal studs on 16-inch centers for all partitions to receive tile finishes.
a. Extend metal studs from floor to overhead construction except where indicated to stop at ceiling line.
2. Isolate steel framing from building structure at locations indicated to prevent transfer of loading imposed by structural movement. Comply with details shown in Drawings and following:
a. Where building structure abuts ceiling perimeter or penetrates ceiling.
b. Where partition framing and wall furring abut structure, except at floor.
3. Install runners (tracks) at floors, ceilings, and structural walls and columns where gypsum board stud assemblies abut other construction.
4. Where partitions abut walls, columns, window wall framing and other partitions, apply continuous strip of acoustical tape between runner and structure.
5. Where studs are installed directly against exterior walls, install building felt strips between studs and wall.

6. At indicated partitions, seal each side of partition with acoustical sealant as recommended by manufacturer and specified herein, except fire rated partitions, which shall be firestopped in compliance with Section 07 84 00.
7. At control joints, install double studs attached to runner and track with 1/2-inch between studs.
8. Handle and lift prefabricated panels in a manner to not cause distortion in any member.
9. Anchor runner track securely to the supporting structure. Install concrete anchors only after full compressive strength has been achieved.
10. Butt all track joints. Securely anchor abutting pieces of track to a common structural element, or splice them together.
11. Align and plumb studs, and securely attach to the flanges or webs of both upper and lower tracks.
12. Attach wall stud bridging when required in a manner to prevent stud rotation. Space bridging rows according to manufacturer's instructions.
13. Provided temporary bracing until erection is completed.
14. Where indicated in Drawings, provide for structural vertical movement using means in compliance with manufacturer's instructions.

C. Drywall Penetration Barrier Mesh Installation:
1. Barrier Mesh sheets may be installed with diamond running in direction most suitable.
2. Barrier Mesh Clips shall be installed to secure mesh to framing members.
3. Mesh joints occurring on framing members may either join staggered or butt together.
4. It is acceptable to overlap mesh joints to achieve tie-in.
5. Barrier Mesh sheets shall join, begin and terminate on a framing member.
6. Barrier Mesh sheets not joining on framing member shall be wire tied with 18GA steel tie wire.
7. Wire tying shall be no less frequent than the installation of Mesh Clips.

D. Wall Furring Installation:
1. Erect wall furring directly attached to concrete block and concrete walls.
2. Erect furring channels vertically. Space furring channels maximum 2 feet on center, not more than 4-inches form floor and ceiling lines and abutting walls.
3. All furred-out cavities must be closed off/capped off at top.

E. Ceiling Framing Installation:
1. Coordinate location of hangers with other work to support ceiling loads.
2. Install ceiling framing independent of walls, columns, and above-ceiling work. Sizes, locations and spacings of hangers, main runner channel, furring channels and attachments to be in compliance with ASTM C754.
3. Direct Suspension System: Install for suspended gypsum board ceilings. Secure #12 gauge hanger wire (pigtail knot) to underside of structure above in approved method.
    a. Install 1-5/8 inch wall track on perimeter wall 12-inches on center with proper components to receive tees, and screw attach gypsum board in proper ceiling level.
    b. Support main beams and cross tees with hanger wire 2 feet, 3 feet or maximum 4 feet apart on tees. Align route holes in main runner to accommodate cross tees. Engage ends of main beams to fit securely.
    c. Secure cross tees perpendicular to main beams at maximum 1’-4" on centers.
    d. Install cross beams or wire to support light fixtures or ceiling grille in place loads.
    e. Use drywall clips as necessary to complete ceiling design integrating with gypsum board grid components.
4. Conventional Grillage System: May be used at Contractor’s option.
    a. Suspend carrying channels maximum 4 feet on center from hanger wires.
    b. Secure metal furring channels to carrying channels at maximum 1’-4" on centers with tie wires.

3.03 APPLYING AND FINISHING PANELS, GENERAL

A. Comply with ASTM C 840.

B. Install ceiling panels across framing to minimize the number of abutting end joints and to avoid abutting end joints in central area of each ceiling. Stagger abutting end joints of adjacent panels not less than one framing member.

C. Install panels with face side out. Butt panels together for a light contact at edges and ends with not more than 1/16 inch of open space between panels. Do not force into place.

D. Locate edge and end joints over supports, except in ceiling applications where intermediate supports or gypsum board back-blocking is provided behind end joints. Do not place tapered edges against cut edges or ends. Stagger vertical joints on opposite sides of partitions. Do not make joints other than control joints at corners of framed openings.

E. Form control and expansion joints with space between edges of adjoining gypsum panels.

F. Cover both faces of support framing with gypsum panels in concealed spaces (above ceilings, etc.), except in chases braced internally.
   1. Fit gypsum panels around ducts, pipes, and conduits.
   2. Where partitions intersect structural members projecting below underside of floor/roof slabs and decks, cut gypsum panels to fit profile formed by structural members; allow 1/4- to 3/8-inch-wide joints to install sealant.

G. Isolate perimeter of gypsum board applied to non-load-bearing partitions at structural abutments. Provide 1/4- to 1/2-inch-wide spaces at these locations and trim edges with edge trim where edges of panels are exposed. Seal joints between edges and abutting structural surfaces with acoustical sealant.

H. Attachment to Steel Framing: Attach panels so leading edge or end of each panel is attached to open (unsupported) edges of stud flanges first.

I. Install sound attenuation blankets before installing gypsum panels unless blankets are readily installed after panels have been installed on one side.

3.04 APPLYING INTERIOR GYPSUM BOARD

A. Install interior gypsum board in the following locations:
   1. Wallboard Type: As indicated on Drawings.
   2. Type X: Where required for fire-resistance-rated assembly.
   3. Ceiling Type: Ceiling surfaces.
   4. Glass-Mat Interior Type: At walls that contain plumbing fixtures except at showers and locations indicated to receive tile.

B. Single-Layer Application:
   1. On ceilings, apply gypsum panels before wall/partition board application to greatest extent possible and at right angles to framing unless otherwise indicated.
   2. On partitions/walls, apply gypsum panels horizontally (perpendicular to framing) unless otherwise indicated or required by fire-resistance-rated assembly, and minimize end joints.
      a. Stagger abutting end joints not less than one framing member in alternate courses of panels.
      b. At stairwells and other high walls, install panels horizontally unless otherwise indicated or required by fire-resistance-rated assembly.

3. Fastening Methods: Apply gypsum panels to supports with steel drill screws.

3.05 APPLYING TILE BACKING PANELS

A. Glass-Mat, Water-Resistant Backing Panels: Comply with manufacturer's written installation instructions and install at locations indicated to receive tile. Install with 1/4-inch gap where panels abut other construction or penetrations.

B. Where tile backing panels abut other types of panels in same plane, shim surfaces to produce a uniform plane across panel surfaces.

3.06 INSTALLING TRIM ACCESSORIES

A. General: For trim with back flanges intended for fasteners, attach to framing with same fasteners used for panels. Otherwise, attach trim in compliance with manufacturer's written instructions.

B. Control Joints: Install control joints in compliance with ASTM C 840 and in specific locations approved by Architect for visual effect.

C. Interior Trim: Install in the following locations:
1. Cornerbead: Use at outside corners.
2. Bullnose Bead: Use where indicated.
3. LC-Bead: Use at exposed panel edges.
4. L-Bead: Use where indicated.
5. U-Bead: Use at exposed panel edges.
6. Curved-Edge Cornerbead: Use at curved openings.

D. Mullion Trim Cap: Install per manufacturer’s recommendations.

3.07 FINISHING GYPSUM BOARD

A. General: Treat gypsum board joints, interior angles, edge trim, control joints, penetrations, fastener heads, surface defects, and elsewhere as required to prepare gypsum board surfaces for decoration. Promptly remove residual joint compound from adjacent surfaces.

B. Prefill open joints, rounded or beveled edges, and damaged surface areas.

C. Apply joint tape over gypsum board joints, except for trim products specifically indicated as not intended to receive tape.

D. Gypsum Board Finish Levels: Finish panels to levels indicated below and in compliance with ASTM C 840:
1. Level 4: At panel surfaces that will be exposed to view unless otherwise indicated.
   a. Primer and its application to surfaces are specified in Section 09 9000.
2. Level 5: At panel surfaces where the total surface that will be exposed to view will be over 10 feet in height.
   a. Primer and its application to surface are specified in Section 09 9000.

E. Glass-Mat Gypsum Sheathing Board: Finish in compliance with manufacturer's written instructions for use as exposed soffit board.

F. Glass-Mat Faced Panels: Finish in compliance with manufacturer's written instructions.

3.08 PROTECTION

A. Protect adjacent surfaces from drywall compound and promptly remove from floors and other non-drywall surfaces. Repair surfaces stained, marred, or otherwise damaged during drywall application.

B. Protect installed products from damage from weather, condensation, direct sunlight, construction, and other causes during remainder of the construction period.

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

END OF SECTION 09 2900

SECTION 09 3013

CERAMIC TILING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 REFERENCE STANDARDS

A. American Society for Testing and Materials (ASTM):

1.	A108.01	General Requirements: Subsurfaces and Preparation by Other Trades.
2.	A108.02	General Requirements: Materials, Environmental, and Workmanship.
3.	A108.1A	Installation of Ceramic Tile in the Wet-set Method, with Portland Cement Mortar.
4.	108.1B	Installation of Ceramic Tile on a Cured Portland Cement Mortar Setting Bed with Dry-set or Latex Portland Cement Mortar.
5.	A108.1C	Contractor's Option: Installation of Ceramic Tile in the Wet-Set Method with Portland Cement Mortar or Installation of Ceramic Tile on a Cured Portland Cement Mortar Setting Bed with Dry-Set or Latex-Portland Cement Mortar.
6.	A108.5	Installation of Ceramic Tile with Dry-set Portland Cement Mortar or Latex-Portland Cement Mortar.
7.	A108.6	Installation of Ceramic Tile with Chemical Resistant, Water Cleanable Tile-setting and -Grouting Epoxy.
8.	A108.9	Installation of Ceramic Tile with Modified Epoxy Emulsion Mortar/Grout.
9.	A108.10	Installation of Grout in Tilework.
10.	A108.13	Installation of Load Bearing, Bonded, Waterproof Membranes for Thin-Set Ceramic Tile and Dimension Stone.
11.	A118.17	Installation of Crack Isolation Membranes for Thin-Set Ceramic Tile and Dimension Stone.
12.	A118.1	Dry-set Cement Mortar.
13.	A118.3	Chemical Resistant, Water Cleanable Tile-setting and -Grouting Epoxy and Water Cleanable Tile-setting Epoxy Adhesive.
14.	A118.4	Modified Dry-Set Cement Mortar.
15.	A118.8	Modified Epoxy Emulsion Mortar/Grout.
16.	A118.10	Load Bearing, Bonded Waterproof Membranes for Thin-set Ceramic Tile and Dimension Stone Installation.
17.	A118.12	Crack Isolation Membranes for Thin-Set Ceramic Tile and Dimension Stone Installation.
18.	A118.13	Bonded Sound Reduction Membranes for Thin-set Ceramic Tile Installation.
19.	A118.15	Improved Modified Dry-Set Cement Mortar.
20.	A137.1	Ceramic Tile.

B. Tile Council of North America (TCNA):
1. Handbook for Ceramic Tile Installation.

C. ISO 13007; Standards for Ceramic Tiles; Grouts and Adhesives.

1.03 DEFINITIONS

A. General: Definitions in the ANSI A108 series of tile installation standards and in ANSI A137.1 apply to Work of this Section unless otherwise specified.

B. Module Size: Actual tile size plus joint width indicated.

C. Face Size: Actual tile size, excluding spacer lugs.

1.04 SYSTEM DESCRIPTION

A. Performance Requirements in compliance with:
   1. Coefficient of Friction for Floor Tile. Tested in compliance with ASTM C1028 and A137.1.
      a. Wet and Dry Areas for Accessible Routes: Minimum 0.60.
      b. Wet and Dry Areas for Ramps: Minimum 0.80.
   2. Absorption Rate for Floor Tile: Maximum absorption of 0.5%.

1.05 SUBMITTALS

A. General: In compliance with Section 01 3300 and as specified herein.

B. Product Data: For each type of product.

C. Shop Drawings: Show locations of each type of tile and tile pattern. Show widths, details, and locations of expansion, contraction, control, and isolation joints in tile substrates and finished tile surfaces.

D. Samples: For tile, grout, and accessories involving color selection.
   1. Full-size units of each type and composition of tile and for each color and finish required.
   2. Assembled samples mounted on a rigid panel, with grouted joints, for each type and composition of tile and for each color and finish required. Make samples at least 12 inches square, but not fewer than four tiles. Use grout of type and in color or colors approved for completed Work.
   3. Full-size units of each type of trim and accessory for each color and finish required.
   4. Metal edge strips in 6-inch lengths.

E. Qualification Data; (FIO): For Installer.

F. Master Grade Certificates; (FIO): For each shipment, type, and composition of tile, signed by tile manufacturer and Installer.

G. Product Certificates; (FIO): For each type of product.

H. Product Test Reports; (FIO): For tile-setting and -grouting products and certified porcelain tile.

I. Sustainable Construction Submittals:

   1. Indicate compliance with the Georgia Energy Efficiency and Sustainability Construction Standards for State Buildings dated July 1, 2009. Submit completed Section 6.3-Georgia based Materials and Products document. Refer to the requirements of Section 01 8113 – Sustainable Design Requirements, Georgia Peach Program.

1.06 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials that match and are from same production runs as products installed and that are packaged with protective covering for storage and identified with labels describing contents.
   1. Tile and Trim Units: Furnish quantity of full-size units equal to 3 percent of amount installed for each type, composition, color, pattern, and size indicated.
   2. Grout: Furnish quantity of grout equal to 3 percent of amount installed for each type, composition, and color indicated.

1.07 QUALITY ASSURANCE

A. Installer Qualifications:
   1. Engage an experienced installer who has successfully completed tile installations similar in material, design, and extent indicated for Project.

B. Mockups: Build mockups to verify selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.
   1. Build mockup of each type of floor tile installation.
   2. Build mockup of each type of wall tile installation.
   3. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Deliver and store packaged materials in original containers with seals unbroken and labels intact until time of use. Comply with requirements in ANSI A137.1 for labeling tile packages.

B. Store tile and cementitious materials on elevated platforms, under cover, and in a dry location.

C. Store aggregates where grading and other required characteristics can be maintained and contamination can be avoided.

D. Store liquid materials in unopened containers and protected from freezing.

1.09 PROJECT CONDITIONS

A. Environmental Limitations: Do not install tile until construction in spaces is complete and ambient temperature and humidity conditions are maintained at the levels indicated in referenced standards and manufacturer's written instructions.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Source Limitations for Tile: Obtain tile of each type and color or finish from single source or producer.
   1. Obtain tile of each type and color or finish from same production run and of consistent quality in appearance and physical properties for each contiguous area.

B. Source Limitations for Setting and Grouting Materials: Obtain ingredients of a uniform quality for each mortar, adhesive, and grout component from single manufacturer and each aggregate from single source or producer.
   1. Obtain setting and grouting materials, except for unmodified Portland cement and aggregate, from single manufacturer.

2. Obtain waterproof membrane and crack isolation membrane, except for sheet products, from manufacturer of setting and grouting materials.

C. Source Limitations for Other Products: Obtain each of the following products specified in this Section from a single manufacturer:
1. Waterproof membrane.
2. Crack isolation membrane.
3. Metal edge strips.

2.02 PRODUCTS, GENERAL

A. ANSI Ceramic Tile Standard: Provide tile that complies with ANSI A137.1 for types, compositions, and other characteristics indicated.
1. Provide tile complying with Standard grade requirements.

B. ANSI Standards for Tile Installation Materials: Provide materials complying with ANSI A108.02, ANSI standards referenced in other Part 2 articles, ANSI standards referenced by TCNA installation methods specified in tile installation schedules, and other requirements specified.

C. Factory Blending: For tile exhibiting color variations within ranges, blend tile in factory and package so tile units taken from one package show same range in colors as those taken from other packages and match approved Samples.

2.03 TILE PRODUCTS

A. Ceramic Tile: As Indicate on Finish Schedule.
1. Tile Color, Glaze, and Pattern: As indicated on Finish Schedule.

B. Grout Color: As indicated on Finish Schedule.

2.04 MEMBRANES

A. General: Manufacturer's standard product, selected from the following, that complies with ANSI A118.10 and is recommended by the manufacturer for the application indicated. Include reinforcement and accessories recommended by manufacturer.

B. Waterproofing/crack isolation membrane complying with ANSI A118.12 as required for isolating installation from cracking due to minor substrate movement and normal structural deflections as specified in ANSI A108.17.
1. Acceptable Manufacturer: Laticrete “Hydro Ban”.
2. Other Acceptable Manufacturers:
a. Bonsal American, an Oldcastle Company.
b. Custom Building Products.
c. Mapei Corporation “Mapelastic AquaDefense”.

2.05 SETTING MATERIALS

A. Thin-Set/Medium-Bed, Modified Dry-Set Mortar: Comply with requirements in ANSI A118.4. Provide product that is approved by manufacturer for application thickness of 5/8 inch.
1. Acceptable Manufacturer: Laticrete “254 Platinum”, polymer-modified medium bed mortar, non-slumping formula to eliminate lippage. Other Acceptable Manufacturers:
a. Bonsal American, an Oldcastle Company.
b. Custom Building Products.
c. Mapei Corporation.

2. Provide prepackaged, dry-mortar mix containing dry, redispersible, vinyl acetate or acrylic additive to which only water must be added at Project site.
3. For wall applications, provide mortar that complies with requirements for nonsagging mortar in addition to the other requirements in ANSI A118.15.

2.06 GROUT MATERIALS

A. Water-Cleanable Epoxy Grout: ANSI A118.3, with anti-microbial properties.
1. Acceptable Manufacturer: Laticrete “Spectralock Pro Premium Grout”.
2. Other Acceptable Manufacturers:
   a. Bonsal American, an Oldcastle Company.
   b. Custom Building Products
   c. Mapei Corporation “Kerapoxy CQ”.
3. Provide product certified by manufacturer for intended use.

2.07 TILE BACKING PANELS

A. Glass-Mat Gypsum Tile Backer Board as specified in section 09 2116 Gypsum Board Assemblies in thickness as indicated.

2.08 MISCELLANEOUS MATERIALS

A. Trowelable Underlayments and Patching Compounds: Latex-modified, portland cement-based formulation provided or approved by manufacturer of tile-setting materials for installations indicated.

B. Metal Edge Strips TS-3, TS-5: Angle or L-shaped, height to match tile and setting-bed thickness, designed specifically for flooring applications; stainless-steel, ASTM A 666, 300 Series exposed-edge material.
1. Basis-of-Design Manufacturer: Schluter Systems;
   a. TS-3: “Reno-U”.
   b. TS-5: “Dilex-AHK”.

C. Tile Cleaner: A neutral cleaner capable of removing soil and residue without harming tile and grout surfaces, specifically approved for materials and installations indicated by tile and grout manufacturers.

D. Water: Clean, fresh and free from deleterious substances.

E. Sealant: As specified in Section 07 9200.

2.09 MIXING MORTARS AND GROUT

A. Mix mortars and grouts to comply with referenced standards and mortar and grout manufacturers' written instructions.

B. Add materials, water, and additives in accurate proportions.

C. Obtain and use type of mixing equipment, mixer speeds, mixing containers, mixing time, and other procedures to produce mortars and grouts of uniform quality with optimum performance characteristics for installations indicated.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine substrates, areas, and conditions where tile will be installed, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of Work.
   1. Verify that substrates for setting tile are firm; dry; clean; free of coatings that are incompatible with tile-setting materials, including curing compounds and other substances that contain paint, soap, wax, oil, or silicone; and comply with flatness tolerances required by ANSI A108.01 for installations indicated.
   2. Verify that concrete substrates for tile floors installed with bonded mortar bed comply with surface finish requirements in ANSI A108.01 for installations indicated.
      a. Verify that surfaces that received a steel trowel finish have been mechanically scarified.
      b. Verify that protrusions, bumps, and ridges have been removed by sanding or grinding.
   3. Verify that installation of grounds, anchors, recessed frames, electrical and mechanical units of work, and similar items located in or behind tile has been completed.
   4. Verify that joints and cracks in tile substrates are coordinated with tile joint locations; if not coordinated, adjust joint locations in consultation with Architect.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Fill cracks, holes, and depressions in concrete substrates for tile floors installed with mortar with trowelable leveling and patching compound specifically recommended by tile-setting material manufacturer.

B. Where indicated, prepare substrates to receive waterproofing by applying a reinforced mortar bed that complies with ANSI A108.1A and is sloped 1/4 inch per foot toward drains.

C. Blending: For tile exhibiting color variations, verify that tile has been factory blended and packaged so tile units taken from one package show same range of colors as those taken from other packages and match approved Samples. If not factory blended, either return to manufacturer or blend tiles at Project site before installing.

3.03 CERAMIC TILE INSTALLATION

A. Comply with TCNA's "Handbook for Ceramic, Glass, and Stone Tile Installation" for TCNA installation methods specified in tile installation schedules. Comply with parts of the ANSI A108 series "Specifications for Installation of Ceramic Tile" that are referenced in TCNA installation methods, specified in tile installation schedules, and apply to types of setting and grouting materials used.
   1. For the following installations, follow procedures in the ANSI A108 series of tile installation standards for providing 95 percent mortar coverage:
      a. Tile floors in wet areas.
      b. Tile floors consisting of tiles 8 by 8 inches or larger.
      c. Tile floors consisting of rib-backed tiles.

B. Extend tile work into recesses and under or behind equipment and fixtures to form complete covering without interruptions unless otherwise indicated. Terminate work neatly at obstructions, edges, and corners without disrupting pattern or joint alignments.

C. Accurately form intersections and returns. Perform cutting and drilling of tile without marring visible surfaces. Carefully grind cut edges of tile abutting trim, finish, or built-in items for straight aligned joints. Fit tile closely to electrical outlets, piping, fixtures, and other penetrations so plates, collars, or covers overlap tile.

D. Jointing Pattern: Lay tile in pattern as indicated. Lay out tile work and center tile fields in both directions in each space or on each wall area. Lay out tile work to minimize the use of pieces that are less than half of a tile. Provide uniform joint widths unless otherwise indicated.
1. Where adjoining tiles on floor, base, walls, or trim are specified or indicated to be same size, align joints.
2. Where tiles are specified or indicated to be whole integer multiples of adjoining tiles on floor, base, walls, or trim, align joints unless otherwise indicated.

E. Joint Widths: Unless otherwise indicated, install tile with the following joint widths:
1. Porcelain Wall Tile: As recommended in writing by tile manufacturer.
2. Porcelain Floor Tile: As recommended in writing by tile manufacturer.

F. Expansion Joints: Provide expansion joints and other sealant-filled joints, including control, contraction, and isolation joints, in compliance with TCNA EJ171 with appropriate materials. Form joints during installation of setting materials, mortar beds, and tile. Do not saw-cut joints after installing tiles.
1. Where joints occur in concrete substrates, locate joints in tile surfaces directly above them. Refer to TCNA Handbook, EJ171 and ANSI AN-3.8 for details on placement, size and specifications of materials.
2. At intersection of tiled walls and tiled floors, install flexible sealant. Do not grout this intersection.

G. Metal Edge Strips: Install where exposed edge of tile flooring meets LVT, Carpet tile or VCT, or other flooring that finishes flush with or below top of tile and no threshold is indicated.

3.04 MEMBRANE INSTALLATION

A. Install waterproofing and crack isolation membrane to comply with ANSI A108.13/A 108.17 and manufacturer's written instructions to produce membrane of uniform thickness that is bonded securely to substrate.

B. Allow membrane to cure and verify by testing that it is watertight before installing tile or setting materials over it.

3.05 ADJUSTING AND CLEANING

A. Remove and replace tile that is damaged or that does not match adjoining tile. Provide new matching units, installed as specified and in a manner to eliminate evidence of replacement.

B. Cleaning: On completion of placement and grouting, clean all ceramic tile surfaces so they are free of foreign matter.
1. Remove grout residue from tile as soon as possible.
2. Clean grout smears and haze from tile according to tile and grout manufacturer's written instructions but no sooner than 10 days after installation. Use only cleaners recommended by tile and grout manufacturers and only after determining that cleaners are safe to use by testing on samples of tile and other surfaces to be cleaned. Protect metal surfaces and plumbing fixtures from effects of cleaning. Flush surfaces with clean water before and after cleaning.

3.06 PROTECTION

A. Protect installed tile work with kraft paper or other heavy covering during construction period to prevent staining, damage, and wear. If recommended by tile manufacturer, apply coat of neutral protective cleaner to completed tile walls and floors.

B. Prohibit foot and wheel traffic from tiled floors for at least seven days after grouting is completed.

C. Before final inspection, remove protective coverings and rinse neutral protective cleaner from tile surfaces.

3.07 INTERIOR CERAMIC TILE INSTALLATION SCHEDULE

A. Interior Floor Installations, Above Ground Concrete Subfloor:
   1. Ceramic Tile Installation; CT-1: TCNA F115A-18; Medium set mortar.
      a. Thinset Mortar: Medium-bed, modified dry-set mortar.
      b. Grout: Water-cleanable epoxy grout.

B. Interior Wall Installations, Metal Studs or Furring:
   1. Ceramic Tile Installation; CT-2, CT-3: TCNA W245; thin set mortar on coated glass mat water-resistant gypsum board.
      a. Thin set Mortar: Modified dry-set mortar.
      b. Grout: Water-cleanable epoxy grout.

END OF SECTION

SECTION 09 5113

ACOUSTICAL PANEL CEILINGS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

A. Section includes acoustical panels and exposed suspension systems for interior ceilings.

B. Products furnished, but not installed under this Section, include anchors, clips, and other ceiling attachment devices to be cast in concrete.

1.03 REFERENCE STANDARDS

A. American Architectural Manufacturers Association (AAMA):
1. 611 Voluntary Specification for Anodized Architectural Aluminum.

B. American Society for Testing and Materials (ASTM):
1. A 641/A 641M Zinc-Coated (Galvanized) Carbon Steel Wire.
2. A 653/A 653M Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
3. C 635/C 635M Manufacture, Performance, and Testing of Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings.
4. C 636/C 636M Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels.
5. D 3273 Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber.
6. D 3274 Method for Evaluating Degree of Surface Disfigurement of Paint Films by Microbial (Fungal or Algal) Growth or Soil and Dirt Accumulation.
7. E 84 Test Method for Surface Burning Characteristics of Building Materials.
8. E 119 Test Methods for Fire Tests of Building Construction and Materials.
9. E 1264 Classification for Acoustical Ceiling Products.
10. G 21 Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi.

1.04 SUBMITTALS

A. General: In compliance with Section 01 3300 and as specified herein.

B. Product Data: For each type of product.

C. Samples for Verification: For each component indicated and for each exposed finish required, prepared on Samples of sizes indicated below:
1. Acoustical Panels: Set of 6-inch-square Samples of each type, color, pattern, and texture.
2. Exposed Suspension-System Members, Moldings, and Trim: Set of 6-inch- long Samples of each type, finish, and color.

D. Coordination Drawings; (FIO): Reflected ceiling plans, drawn to scale, on which the following items are shown and coordinated with each other, using input from installers of the items involved:
   1. Ceiling suspension-system members.
   2. Structural members to which suspension systems will be attached.
   3. Method of attaching hangers to building structure.
      a. Furnish layouts for cast-in-place anchors, clips, and other ceiling attachment devices whose installation is specified in other Sections.
   4. Carrying channels or other supplemental support for hanger-wire attachment where conditions do not permit installation of hanger wires at required spacing.
   5. Size and location of initial access modules for acoustical panels.
   6. Items penetrating finished ceiling and ceiling-mounted items including the following:
      a. Lighting fixtures.
      b. Diffusers.
      c. Grilles.
      d. Speakers.
      e. Sprinklers.
      f. Access panels.
      g. Perimeter moldings.
   7. Show operation of hinged and sliding components covered by or adjacent to acoustical panels.

E. Product Test Reports; (FIO): For each acoustical panel ceiling, for tests performed by manufacturer and witnessed by a qualified testing agency.

F. Evaluation Reports; (FIO): For each acoustical panel ceiling suspension system and anchor and fastener type, from ICC-ES.

G. Field quality-control reports; (FIO).

H. Sustainable Construction Submittals:

   1. Indicate compliance with the Georgia Energy Efficiency and Sustainability Construction Standards for State Buildings dated July 1, 2009. Submit completed Section 6.3-Georgia based Materials and Products document. Refer to the requirements of Section 01 8113 – Sustainable Design Requirements, Georgia Peach Program.

1.05 CLOSEOUT SUBMITTALS

A. Maintenance Data: For finishes to include in maintenance manuals.

1.06 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
   1. Acoustical Ceiling Units: Full-size panels equal to 2 percent of quantity installed.
   2. Suspension-System Components: Quantity of each exposed component equal to 2 percent of quantity installed.
   3. Hold-Down Clips: Equal to 2 percent of quantity installed.
   4. Impact Clips: Equal to 2 percent of quantity installed.

1.07 QUALITY ASSURANCE

A. Installer Qualifications: Engage an experienced installer who has completed acoustical panel ceilings similar in material, design, and extent to that indicated and with record of successful in-service performance.

B. Source Limitations for Ceiling Units: Obtain each acoustical ceiling panel from one source with resources to provide products of consistent quality in appearance and physical properties without delaying Work.

C. Source Limitations for Suspension System: Obtain each suspension system from one source with resources to provide products of consistent quality in appearance and physical properties without delaying Work.

D. Fire-Test-Response Characteristics: Provide acoustical panel ceilings that comply with following requirements:
   1. Fire-response tests were performed by UL or ITS/Warnock Hersey testing and inspecting agency that is acceptable to authorities having jurisdiction and that performs testing and follow-up services.
   2. Surface-burning characteristics of acoustical panels comply with ASTM E1264 for Class A materials as determined by testing identical products per ASTM E84.
   3. Fire-resistance-rated assemblies, which are indicated by design designations from UL's "Fire Resistance Directory," from ITS/Warnock Hersey's Directory of Listed Products," or from listing of another testing and inspecting agency, are identical in materials and construction to those tested per ASTM E119.
   4. Products are identified with appropriate markings of applicable testing and inspecting agency.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Deliver acoustical panels, suspension-system components, and accessories to Project site and store them in a fully enclosed, conditioned space where they will be protected against damage from moisture, humidity, temperature extremes, direct sunlight, surface contamination, and other causes.

B. Before installing acoustical panels, permit them to reach room temperature and a stabilized moisture content.

C. Handling:
   1. Handle metal suspension system carefully to prevent warping, twisting, and bending of members. Remove and replace members having damaged or abraded paint finish.
   2. Handle acoustical ceiling panels carefully to prevent breaking corners and edges and to prevent soiling exposed surfaces.

1.09 PROJECT CONDITIONS

A. Environmental Limitations: Do not install acoustical panel ceilings until spaces are enclosed and weathertight, wet-work in spaces is complete and dry, work above ceilings is complete, and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.
   1. Pressurized Plenums: Operate ventilation system for not less than 48 hours before beginning acoustical panel ceiling installation.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Source Limitations: Obtain each type of acoustical ceiling panel and its supporting suspension system from single source from single manufacturer.

2.02 PERFORMANCE REQUIREMENTS

A. Surface-Burning Characteristics: Comply with ASTM E 84; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency. Flame-Spread Index: Class A according to ASTM E 1264.

B. Fire-Resistance Ratings: Comply with ASTM E 119; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
   1. Indicate design designations from UL or from the listings of another qualified testing agency.

2.03 ACOUSTICAL PANELS

A. Basis-of-Design Manufacturer: Trade names of Armstrong World Industries, Inc. are named herein to establish quality and design standards. Type: See Finish Schedule in Drawings.
   1. Other Acceptable Manufacturers: Subject to compliance with all requirements of this specification, provide named products and systems or comparable products and systems by one of the following manufacturers:
      a. USG Interiors, LLC
      b. CertainTeed Corporation.

B. Antimicrobial Treatment: Manufacturer's standard broad spectrum, antimicrobial formulation that inhibits fungus, mold, mildew, and gram-positive and gram-negative bacteria and showing no mold, mildew, or bacterial growth when tested according to ASTM D 3273, ASTM D 3274, or ASTM G 21 and evaluated according to ASTM D 3274 or ASTM G 21.

2.04 METAL SUSPENSION SYSTEM

A. Basis-of-Design Metal Suspension System Manufacturer: Armstrong Acoustical Suspension System" Main and cross runners roll formed from cold-rolled steel sheet; hot-dip galvanized, G60 coating designation; with prefinished, 15/16-inch-wide aluminum caps on flanges.
   1. Structural Classification: Intermediate-duty system.
   2. End Condition of Cross Runners: Override (stepped) type.
   3. Face Design: Flat, flush.
   4. Cap Material: Cold-rolled steel.

B. Other Acceptable Manufacturers: Subject to compliance with all requirements of this specification, provide named products and systems or comparable products and systems by one of the following manufacturers:
   1. USG Corportion.
   2. CertainTeed Corporation.

C. Metal Suspension-System Standard: Provide manufacturer's standard, direct-hung, metal suspension system and accessories according to ASTM C 635/C 635M and designated by type, structural classification, and finish indicated.

2.05 ACCESSORIES

A. Attachment Devices: Size for five times the design load indicated in ASTM C 635/C 635M, Table 1, "Direct Hung," unless otherwise indicated.

B. Wire Hangers, Braces, and Ties: Provide wires as follows:
   1. Zinc-Coated, Carbon-Steel Wire: ASTM A 641/A 641M, Class 1 zinc coating, soft temper, pre-stretched.
   2. Size: Wire diameter sufficient for its stress at three times hanger design load (ASTM C 635/C 635M, Table 1, "Direct Hung") will be less than yield stress of wire, but not less than 0.106-inch- diameter wire.

C. Hanger Rods: Mild steel, zinc coated or protected with rust-inhibitive paint.

D. Flat Hangers: Mild steel, zinc coated or protected with rust-inhibitive paint.

E. Angle Hangers: Angles with legs not less than 7/8-inch wide; formed with 0.04-inch-thick, galvanized-steel sheet complying with ASTM A 653/A 653M, G90 coating designation; with bolted connections and 5/16-inch-diameter bolts.

F. Hold-Down Clips: Manufacturer's standard hold-down.

G. Impact Clips: Manufacturer's standard impact-clip system designed to absorb impact forces against acoustical panels.

2.06 METAL EDGE MOLDINGS AND TRIM

A. Basis-of-Design Manufacturer:
   1. Acceptable Manufacturers: Subject to compliance with all requirements of this specification, provide named products and systems or comparable products and systems by one of the following manufacturers:
      a. Armstrong World Industries, Inc.
      b. USG Corporation.
      c. CertainTeed Corporation.

B. Roll-Formed, Sheet-Metal Edge Moldings and Trim: Type and profile indicated or, if not indicated, manufacturer's standard moldings for edges and penetrations that comply with design requirements; formed from sheet metal of same material, finish, and color as that used for exposed flanges of suspension-system runners.
   1. Edge moldings shall fit acoustical panel edge details and suspension systems indicated and match width and configuration of exposed runners unless otherwise indicated.
   2. For lay-in panels with reveal edge details, provide stepped edge molding that forms reveal of same depth and width as that formed between edge of panel and flange at exposed suspension member.

2.07 ACOUSTICAL SEALANT

A. Acoustical Sealant: As specified in Section 07 9200.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine substrates, areas, and conditions, including structural framing to which acoustical panel ceilings attach or abut, with Installer present, for compliance with requirements specified

in this and other Sections that affect ceiling installation and anchorage and with requirements for installation tolerances and other conditions affecting performance of acoustical panel ceilings.

B. Examine acoustical panels before installation. Reject acoustical panels that are wet, moisture damaged, or mold damaged.

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

3.02 PREPARATION

A. Measure each ceiling area and establish layout of acoustical panels to balance border widths at opposite edges of each ceiling. Avoid using less-than-half-width panels at borders unless otherwise indicated, and comply with layout shown on reflected ceiling plans.

B. Layout openings for penetrations centered on the penetrating items.

3.03 INSTALLATION

A. Install acoustical panel ceilings according to ASTM C 636/C 636M and manufacturer's written instructions.
   1. Fire-Rated Assembly: Install fire-rated ceiling systems according to tested fire-rated design.

B. Suspend ceiling hangers from building's structural members and as follows:
   1. Install hangers plumb and free from contact with insulation or other objects within ceiling plenum that are not part of supporting structure or of ceiling suspension system.
   2. Splay hangers only where required to miss obstructions; offset resulting horizontal forces by bracing, countersplaying, or other equally effective means.
   3. Where width of ducts and other construction within ceiling plenum produces hanger spacings that interfere with location of hangers at spacings required to support standard suspension-system members, install supplemental suspension members and hangers in form of trapezes or equivalent devices.
   4. Secure wire hangers to ceiling-suspension members and to supports above with a minimum of three tight turns. Connect hangers directly to structure or to inserts, eye screws, or other devices that are secure and appropriate for substrate and that will not deteriorate or otherwise fail due to age, corrosion, or elevated temperatures.
   5. Secure flat, angle, channel, and rod hangers to structure, including intermediate framing members, by attaching to inserts, eye screws, or other devices that are secure and appropriate for both the structure to which hangers are attached and the type of hanger involved. Install hangers in a manner that will not cause them to deteriorate or fail due to age, corrosion, or elevated temperatures.
   6. Do not support ceilings directly from permanent metal forms or floor deck. Fasten hangers to cast-in-place hanger inserts, postinstalled mechanical or adhesive anchors, or power-actuated fasteners that extend through forms into concrete.
   7. When steel framing does not permit installation of hanger wires at spacing required, install carrying channels or other supplemental support for attachment of hanger wires.
   8. Do not attach hangers to steel deck tabs.
   9. Do not attach hangers to steel roof deck. Attach hangers to structural members.
   10. Space hangers not more than 48 inches o.c. along each member supported directly from hangers unless otherwise indicated; provide hangers not more than 8 inches from ends of each member.
   11. Size supplemental suspension members and hangers to support ceiling loads within performance limits established by referenced standards.

C. Secure bracing wires to ceiling suspension members and to supports with a minimum of four tight turns. Suspend bracing from building's structural members as required for hangers, without attaching to permanent metal forms, steel deck, or steel deck tabs. Fasten bracing wires into concrete with cast-in-place or postinstalled anchors.

D. Install edge moldings and trim of type indicated at perimeter of acoustical ceiling area and where necessary to conceal edges of acoustical panels.
   1. Apply acoustical sealant in a continuous ribbon concealed on back of vertical legs of moldings before they are installed.
   2. Screw attach moldings to substrate at intervals not more than 16 inches o.c. and not more than 3 inches from ends. Miter corners accurately and connect securely.
   3. Do not use exposed fasteners, including pop rivets, on moldings and trim.

E. Install suspension-system runners so they are square and securely interlocked with one another. Remove and replace dented, bent, or kinked members.

F. Install acoustical panels with undamaged edges and fit accurately into suspension-system runners and edge moldings. Scribe and cut panels at borders and penetrations to provide precise fit.
   1. Arrange directionally patterned acoustical panels as indicated on reflected ceiling plans.
   2. Carefully cut panels where required to fit recessed lighting fixtures and air distribution devices and sprinkler drops.
   3. Provide additional hanger wires at corners of each lay-in fixture, and elsewhere as required by each item installed in ceiling.
   4. Install hold-down clips in areas indicated, in areas required by authorities having jurisdiction, and for fire-resistance ratings. Space hold-down clips as recommended by panel manufacturer’s unless otherwise indicated or required.
   5. Paint cut edges of panel remaining exposed after installation; match color of exposed panel surfaces using coating recommended in writing for this purpose by acoustical panel manufacturer.
   6. Protect lighting fixtures and air ducts according to requirements indicated for fire-resistance-rated assembly.

3.04 ERECTION TOLERANCES

A. Suspended Ceilings: Install main and cross runners level to a tolerance of 1/8 inch in 12 feet, non-cumulative.

B. Moldings and Trim: Install moldings and trim to substrate and level with ceiling suspension system to a tolerance of 1/8 inch in 12 feet, non-cumulative.

3.05 FIELD QUALITY CONTROL

A. Special Inspections: Engage a qualified special inspector to perform the following special inspections:
   1. Periodic inspection during the installation of suspended ceiling grids according to ASCE/SEI 7.

B. Testing Agency: Engage a qualified testing agency to perform tests and inspections.

C. Perform the following tests and inspections of completed installations of acoustical panel ceiling hangers and anchors and fasteners in successive stages and when installation of ceiling suspension systems on each floor has reached 20 percent completion, but no panels have been installed. Do not proceed with installations of acoustical panel ceiling hangers for the next area

until test results for previously completed installations of acoustical panel ceiling hangers show compliance with requirements.

1. Within each test area, testing agency will select one of every 10 power-actuated fasteners and postinstalled anchors used to attach hangers to concrete and will test them for 200 lbf of tension; it will also select one of every two postinstalled anchors used to attach bracing wires to concrete and will test them for 440 lbf of tension.
2. When testing discovers fasteners and anchors that do not comply with requirements, testing agency will test those anchors not previously tested until 20 pass consecutively and then will resume initial testing frequency.

D. Acoustical panel ceiling hangers, anchors, and fasteners will be considered defective if they do not pass tests and inspections.

E. Prepare test and inspection reports.

3.06 CLEANING

A. Clean exposed surfaces of acoustical panel ceilings, including trim, edge moldings, and suspension-system members. Comply with manufacturer's written instructions for cleaning and touchup of minor finish damage.

B. Remove and replace ceiling components that cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.

END OF SECTION

SECTION 09 6400
DANCE FLOORING

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Wood dance flooring system.

1.2 SUBMITTALS

A. Submit under provisions of Section 01 3300.

B. Product Data: Manufacturer's data sheets on each product to be used, including:
1. Preparation instructions and recommendations.
2. Storage and handling requirements and recommendations.
3. Installation methods.

C. Selection Samples: For each finish product specified, two complete sets of color samples representing manufacturer's full range of available colors and patterns.

D. Verification Samples: For each finish product specified, two samples, minimum size 6 inches (150 mm) square, representing actual product, color, and patterns.

1.3 QUALITY ASSURANCE

A. Installer Qualifications: Installer shall have at least three years experience in installing similar dance floor systems and shall be approved by the manufacturer.

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

1.4 DELIVERY, STORAGE, AND HANDLING

A. Store products in manufacturer's unopened packaging until ready for installation.

1.5 PROJECT CONDITIONS

A. The flooring system shall not be delivered and installed until all masonry, plastering, tile work and all overhead mechanical and electrical trades are completed and building is enclosed and weather tight.

B. Permanent heat, light and ventilation shall be installed and operating during and after installation, maintaining a temperature range of 65 to 80 degrees F and a relative humidity range of 35 percent to 50 percent.

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

1.6 WARRANTY

A. Manufacturer warrants its sub floor construction materials to be free from manufacturing defects for a minimum of two years and its integrated vinyl surfaces to be free from manufacturing defects for five years.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturer: Harlequin Floors, which is located at: 1531 Glen Ave.; Moorestown, NJ 08057; Toll Free Tel: 800-642-6440; Fax: 856-231-4403; Email:request info (contact@harlequinfloors.com); Web:https://us.harlequinfloors.com/en/.

B. Requests for substitutions will be considered in accordance with provisions of Section 01 2500.

2.2 HARLEQUIN ACTIVITY SPRUNG FLOOR SYSTEM

A. System: A sprung or floating dance floor system consisting of a sub floor construction utilizing system specific components with an integrated surface.
   1. Product: Harlequin Allegro Activity Sprung Floor System by American Harlequin Corporation.
   2. Surface: Vinyl.
   3. Surface: Hardwood.

B. Performance:
   1. Weight with Vinyl Surface: 11 lb/sy.
   2. Overall Thickness: 0.330 inches.
   3. ASTM E648, E662 – Class 1.

C. Top Panel, Sub-surface: Semi-flexible, 3/8 inch (9 mm), Harlequin moisture resistant load distribution panels.

PART 3 EXECUTION

3.1 EXAMINATION

A. Do not begin installation until substrates have been properly prepared.
   1. The Contractor shall provide a concrete slab smooth and level to a tolerance of 1/4 inch (6.5 mm) in a 10 feet (3 m) radius. High areas shall be ground down and low areas filled with appropriate leveling compounds.
   2. Concrete sub floors shall be cured and dry to industry standards. They shall have an adequate moisture barrier beneath and at the perimeter of the slab.
   3. Wood sub floors shall be structurally sound, and level. Loose boards and nails shall be secured and gaps filled.

B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 PREPARATION

A. Clean surfaces thoroughly prior to installation.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.3 INSTALLATION

A. Install in accordance with manufacturer's instructions.
1. Flooring shall be stored on the premises for 24-48 hours before installation commences, or as required for acclimation. The flooring installer will make final determination of acclimation period.

B. Installation
a. Flooring contractor shall be approved and certified by the manufacturer of the flooring materials.

3.4 PROTECTION

A. Protect installed products until completion of project.

B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION

SECTION 09 6513

RESILIENT BASE AND ACCESSORIES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUBMITTALS

A. General: In compliance with Section 01 3300 and as specified herein.

B. Product Data: For each type of product.

C. Samples: For each type of product indicated and for each color, texture, and pattern required in manufacturer's standard-size Samples, but not less than 12 inches long.

D. Sustainable Construction Submittals:

1. Indicate compliance with the Georgia Energy Efficiency and Sustainability Construction Standards for State Buildings dated July 1, 2009. Submit completed Section 6.3-Georgia based Materials and Products document. Refer to the requirements of Section 01 8113 – Sustainable Design Requirements, Georgia Peach Program.

1.03 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
1. Furnish not less than 10 linear feet for every 500 linear feet or fraction thereof, of each type, color, pattern, and size of resilient product installed.

1.04 QUALITY ASSURANCE

A. Mockups: Build mockups to verify selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.
1. Coordinate mockups in this Section with mockups specified in other Sections.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Store resilient products and installation materials in dry spaces protected from the weather, with ambient temperatures maintained within range recommended by manufacturer, but not less than 50 deg F or more than 90 deg F.

1.06 PROJECT CONDITIONS

A. Maintain ambient temperatures within range recommended by manufacturer, but not less than 70 deg F or more than 95 deg F, in spaces to receive resilient products during the following time periods:
1. 48 hours before installation.
2. During installation.
3. 48 hours after installation.

B. After installation and until Substantial Completion, maintain ambient temperatures within range recommended by manufacturer.

C. Install resilient products after other finishing operations, including painting, have been completed.

PART 2 - PRODUCTS

2.01 THERMOPLASTIC-RUBBER BASE WB-1

A. Basis-of-Design Manufacturer: Roppe Corporation, USA
   1. Other Acceptable Manufacturers:
      a. Armstrong World Industries, Inc.
      b. Johnsonite; a Tarkett company.

B. Product Standard: ASTM F 1861, Type TP (rubber, thermoplastic).
   1. Group: I (solid, homogeneous).
   2. Style and Location: As indicated in Drawings.
   3. Thickness: 1/8-inch.
   4. Height: 4 inches.
   5. Lengths: Coils in manufacturer's standard length.
   6. Corners: Preformed.
   7. Colors: As indicated on Finish Schedule.

2.02 INSTALLATION MATERIALS

A. Trowelable Leveling and Patching Compounds: Latex-modified, portland cement based or blended hydraulic-cement-based formulation provided or approved by resilient-product manufacturer for applications indicated.

B. Adhesives: Water-resistant type recommended by resilient-product manufacturer for resilient products and substrate conditions indicated.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine substrates, with Installer present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.
   1. Verify that finishes of substrates comply with tolerances and other requirements specified in other Sections and that substrates are free of cracks, ridges, depressions, scale, and foreign deposits that might interfere with adhesion of resilient products.

B. Proceed with installation only after unsatisfactory conditions have been corrected.
   1. Installation of resilient products indicates acceptance of surfaces and conditions.

3.02 PREPARATION

A. Prepare substrates according to manufacturer's written instructions to ensure adhesion of resilient products.

B. Fill cracks, holes, and depressions in substrates with trowelable leveling and patching compound; remove bumps and ridges to produce a uniform and smooth substrate.

C. Do not install resilient products until they are the same temperature as the space where they are to be installed.
   1. At least 48 hours in advance of installation, move resilient products and installation materials into spaces where they will be installed.

D. Immediately before installation, sweep and vacuum clean substrates to be covered by resilient products.

3.03 RESILIENT BASE INSTALLATION

A. Comply with manufacturer's written instructions for installing resilient base.

B. Apply resilient base to walls, columns, pilasters, casework and cabinets in toe spaces, and other permanent fixtures in rooms and areas where base is required.

C. Install resilient base in lengths as long as practical without gaps at seams and with tops of adjacent pieces aligned.

D. Tightly adhere resilient base to substrate throughout length of each piece, with base in continuous contact with horizontal and vertical substrates.

E. Do not stretch resilient base during installation.

F. On masonry surfaces or other similar irregular substrates, fill voids along top edge of resilient base with manufacturer's recommended adhesive filler material.

G. Preformed Corners: Install preformed corners before installing straight pieces.

3.04 CLEANING AND PROTECTION

A. Comply with manufacturer's written instructions for cleaning and protecting resilient products.

B. Perform the following operations immediately after completing resilient-product installation:
   1. Remove adhesive and other blemishes from exposed surfaces.
   2. Sweep and vacuum horizontal surfaces thoroughly.
   3. Damp-mop horizontal surfaces to remove marks and soil.

C. Protect resilient products from mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period.

D. Cover resilient products subject to wear and foot traffic until Substantial Completion.

END OF SECTION

SECTION 09 6519

RESILIENT TILE FLOORING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

A. Section Includes:
1. Vinyl composition floor tile.
2. Luxury vinyl floor tile.

1.03 REFERENCE STANDARDS

A. American Society for Testing and Materials (ASTM):

1.	C 109	Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or [**50-mm**] Cube Specimens).
2.	D 695	Test Method for Compressive Properties of Rigid Plastics.
3.	D 695	Test Method for Compressive Properties of Rigid Plastics.
4.	D 2240	Test Method for Rubber Property Durometer Hardness.
5.	D 2240	Test Method for Rubber Property Durometer Hardness.
6.	E 648	Test Method for Critical Radiant Flux of Floor-Covering Systems Using a Radiant Heat Energy Source.
7.	E 662	Standard Test Method for Specific Optical Density of Smoke Generated
8.	F 510	Test Method for Resistance to Abrasion of Resilient Floor Coverings Using an Abrader with a Grit Feed Meter.
9.	F 710	Practice for Preparing Concrete Floors to Receive Resilient Flooring.
10.	F 970	Test Method for Static Load Limit.
11.	F 1066	Vinyl Composition Floor Tile.
12.	F 1344	Rubber Floor Tile.
13.	F 1516	Practice for Sealing Seams of Resilient Flooring Products by the Heat Weld Method (when Recommended).
14.	F 1700	Solid Vinyl Floor Tile.
15.	F 1869	Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride.
16.	F 2170	Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes.
17.	F 2982	Polyester Composition Floor Tile.
18.	E 648	Test Method for Critical Radiant Flux of Floor-Covering Systems Using a Radiant Heat Energy Source.

B. American with Disabilities Act Architectural Guidelines (ADAAG).

C. National Fire Protection Association (NFPA):

1.	253	Standard Method of Test for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source.

1.04 SUBMITTALS

A. General: In compliance with Section 01 3300 and as specified herein.

B. Product Data:
1. Manufacturer's recommended maintenance instructions for Owner's use.
2. Underlayment and leveling compound manufacturer's installation instructions and approval of compatibility with finish flooring.

C. Shop Drawings: For each type of floor tile. Include floor tile layouts, edges, columns, doorways, enclosing partitions, built-in furniture, cabinets, and cutouts.
1. Show details of special patterns.
2. Show details of flooring transitions to different adjacent materials.

D. Samples: Full-size units of each color, pattern and style selected by Architect.

E. Product Schedule: For floor tile. Use same designations indicated on Drawings.

F. Qualification Data (FIO): For Installer.

G. Fire Test Certification (FIO): Submit manufacturer's certification that flooring has been tested by independent laboratory and complies with required fire tests.

H. Sustainable Construction Submittals:

1. Indicate compliance with the Georgia Energy Efficiency and Sustainability Construction Standards for State Buildings dated July 1, 2009. Submit completed Section 6.3-Georgia based Materials and Products document. Refer to the requirements of Section 01 8113 – Sustainable Design Requirements, Georgia Peach Program.

1.05 CLOSEOUT SUBMITTALS

A. Maintenance Data: For each type of floor tile to include in maintenance manuals.

1.06 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
1. Floor Tile: Furnish one box for every 50 boxes or fraction thereof, of each type, color, and pattern of floor tile installed.

1.07 QUALITY ASSURANCE

A. Manufacturer: Provide each type of resilient flooring and accessories by a single manufacturer, including recommended primers, adhesives, sealants, including moisture mitigation system, finish accessories and leveling compounds.

B. Installer Qualifications: Installer experienced in performing work of this section who has specialized in installation of work similar to that required for this project.
1. Engage an installer who employs workers for this Project who are trained or certified by floor tile manufacturer for installation techniques required.

C. Pre-Installation Meeting: Pre-installation meeting to verify project requirement, substrate conditions, manufacturer's installation instructions, manufacturer's warranty requirements, and installer qualifications.

D. Bond Test: Install multiple bond test using a 3'-0" x 3'-0" pieces of material adhered with the appropriate adhesive to verify quality of adhesion. Remove half of each piece after 24 hours, then the other half after 48 hours. Assess resistance to indentation, place end user equipment onto a sample for 72 hours.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Store floor tile and installation materials in dry spaces protected from the weather, with ambient temperatures maintained within range recommended by manufacturer, but not less than 50 deg F or more than 90 deg F. Store floor tiles on flat surfaces.

1.09 PROJECT CONDITIONS

A. Environmental Requirements: Maintain ambient temperatures within range recommended by manufacturer, and not less than 70 deg F or more than 95 deg F for 48 hours prior to, during and thereafter installation, in spaces to receive floor tile.

B. After installation and until Substantial Completion, maintain ambient temperatures within range recommended by manufacturer, but not less than 55 deg F or more than 95 deg F.

C. Close spaces to traffic during floor tile installation.

D. Close spaces to traffic for 48 hours after floor tile installation.

E. Install floor tile after other finishing operations, including painting, have been completed.

PART 2 - PRODUCTS

2.01 PERFORMANCE REQUIREMENTS

A. Fire-Test-Response Characteristics: For resilient tile flooring, as determined by testing identical products according to ASTM E 648 or NFPA 253 by a qualified testing agency.
   1. Critical Radiant Flux Classification: Class I, not less than 0.45 W/sq. cm.

2.02 LUXURY VINYL FLOOR TILE; LVT-1

A. Basis-of-Design Manufacturer: In accordance with Finish Schedule.

B. Other Acceptable Manufacturers: Subject to compliance with requirements, manufacturers other than the scheduled product manufacturer must demonstrate materials substantially similar in color, texture, and appearance to the scheduled material by submitting samples to the Architect for approval no less than 10 days prior to bidding:
   1. Patcraft
   2. Armstrong World Industries.
   3. Johnsonite, A Tarkett Company.
   4. Mannington Mills, Inc.

2.03 RUBBER FLOOR TILE; RF-1

A. Basis-of-Design Manufacturer: In accordance with Finish Schedule.

2.04 Other Acceptable Manufacturers:

A. Requests for substitutions will be considered in accordance with provisions of Section 01 2500.

2.05 INSTALLATION MATERIALS

A. Trowelable Leveling and Patching Compounds: Latex-modified, portland cement based or blended hydraulic-cement-based formulation provided or approved by floor tile manufacturer for applications indicated.

B. Adhesives: Water-resistant type recommended by floor tile and adhesive manufacturers to suit floor tile and substrate conditions indicated.

C. TS-4 Metal Edge/Transition Strips: Extruded aluminum with mill finish of profile indicated, of height required to protect exposed edges of resilient floor covering, and of maximum lengths to minimize running joints. Basis-of-Design Manufacturer: Schluter Systems “Vinpro-S”.

D. Floor Polish: Provide protective, liquid floor-polish products recommended by floor tile manufacturer if required.

E. Rubber flooring installation and materials to be in accordance with manufacturer’s recommendations including adhesives as supplied by flooring manufacturer for applicable installation including humidity.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine substrates, with Installer present, for compliance with requirements for maximum moisture content and other conditions affecting performance of Work. Verify that substrate conditions are acceptable for product installation in compliance with manufacturer's instructions (i.e. moisture tests, bond test, pH test, etc.).

B. Visually inspect flooring materials, adhesives and accessories prior to installation. Do not install flooring material with visual defects.

C. Examine subfloors prior to installation to determine that surfaces are smooth and free from cracks, holes, ridges, and other defects that might prevent adhesive bond or impair durability or appearance of flooring material.

D. Inspect subfloors prior to installation to determine that surfaces are free from curing, sealing, parting and hardening compounds; residual adhesives; adhesive removers; and other foreign materials that might prevent adhesive bond. Visually inspect for evidence of moisture, alkaline salts, carbonation, dusting, mold, or mildew.

E. Report conditions contrary to contract requirements that would prevent proper installation. Do not proceed with installation until unsatisfactory conditions have been corrected.

F. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Prepare substrates according to floor tile manufacturer's written instructions to ensure adhesion of resilient products.

B. Concrete Substrates: Prepare in compliance with ASTM F 710. Perform pH tests on concrete floors regardless of their age or grade level. Document and retain test results.
   1. Verify that substrates are dry and free of curing compounds, sealers, and hardeners.
   2. Remove substrate coatings and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, using mechanical methods recommended by floor tile manufacturer. Do not use solvents.
   3. Alkalinity and Adhesion Testing: Perform tests recommended by floor tile manufacturer. Proceed with installation only after substrate alkalinity falls within range on pH scale recommended by manufacturer in writing.
   4. Moisture Testing: Proceed with installation only after substrates pass testing according to floor tile manufacturer's written recommendations, but not less stringent than the following:
      a. Perform anhydrous calcium chloride test according to ASTM F 1869. Proceed with installation only after substrates have maximum moisture-vapor-emission rate of 5 lb of water/1000 sq. ft. in 24 hours.
      b. Perform relative humidity test using in situ probes according to ASTM F 2170. Proceed with installation only after substrates have a maximum 80 percent relative humidity level.

C. Fill cracks, holes, and depressions in substrates with trowelable leveling and patching compound; remove bumps and ridges to produce a uniform and smooth substrate.

D. Immediately before installation, sweep and vacuum clean substrates to be covered by resilient floor tile.

3.03 FLOOR TILE INSTALLATION

A. Comply with manufacturer’s product data, including technical bulletins, product catalog, installation instructions, and product carton instructions for installation and maintenance procedures as required.

B. Lay out floor tiles from center marks established with principal walls, discounting minor offsets, so tiles at opposite edges of room are of equal width. Adjust as necessary to avoid using cut widths that equal less than one-half tile at perimeter.

C. Match floor tiles for color and pattern by selecting tiles from cartons in the same sequence as manufactured and packaged, if so numbered. Discard broken, cracked, chipped, or deformed tiles.
   1. Lay tiles with grain direction as indicated on the drawings, or if no grain is indicated, with grain running in one direction for plank (rectangular) materials and with grain direction alternating in adjacent tiles (basket-weave pattern) for square materials.

D. Scribe, cut, and fit floor tiles to butt neatly and tightly to vertical surfaces and permanent fixtures including built-in furniture, cabinets, pipes, outlets, and door frames.

E. Extend floor tiles into toe spaces, door reveals, closets, and similar openings. Extend floor tiles to center of door openings.

F. Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating on floor tiles as marked on substrates. Use chalk or other nonpermanent marking device.

G. Install floor tiles on covers for telephone and electrical ducts, building expansion-joint covers, and similar items in finished floor areas. Maintain overall continuity of color and pattern between

pieces of tile installed on covers and adjoining tiles. Tightly adhere tile edges to substrates that abut covers and to cover perimeters.

H. Adhere floor tiles to flooring substrates using a full spread of adhesive applied to substrate to produce a completed installation without open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks, and other surface imperfections.

3.04 ACCESSORY INSTALLATION

A. Apply top set wall base to walls, columns, casework, and other permanent fixtures in areas where top-set base is required. Install base in lengths as long as practical, with inside corners fabricated from base materials that are mitered or coped. Tightly bond base to vertical substrate with continuous contact at horizontal and vertical surfaces.

B. Fill voids with plastic filler along the top edge of the resilient wall base or integral cove cap on masonry surfaces or other similar irregular substrates.

C. Place resilient edge strips tightly butted to flooring, and secure with adhesive recommended by the edge strip manufacturer. Install edge strips at edges of flooring that would otherwise be exposed.

D. Apply metal edge strips where shown on Drawings, after flooring installation. Secure units to substrate, complying with edge strip manufacturer's recommendations.

3.05 CLEANING AND PROTECTION

A. Comply with manufacturer's written instructions for cleaning and protecting floor tile.

B. Perform the following operations immediately after completing floor tile installation:
1. Remove adhesive and other blemishes from exposed surfaces.
2. Sweep and vacuum surfaces thoroughly.
3. Damp-mop surfaces to remove marks and soil.

C. Protect floor tile from mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period.

D. Cover floor tile until Substantial Completion.

END OF SECTION

SECTION 09 6813

TILE CARPETING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 REFERENCE STANDARDS

A. American Association of Textile Chemists and Colorists (AATCC):
1. 16 Colorfastness to Light.
2. 24 Resistance of Textiles to Insects.
3. 134 Electrostatic Propensity of Carpets.
4. 165 Colorfastness to Crocking: Carpets - AATCC Crockmeter Method.
5. 174 Antimicrobial Activity Assessment of Carpets.

B. American National Standards Institute/NSF International (ANSI/NSF):
1. 140 Sustainable Carpet Assessment Standard.

C. American Society for Testing Materials (ASTM):
1. E 648 Test Method for Critical Radiant Flux of Floor-Covering Systems Using a Radiant Heat Energy Source.
2. E 662 Test Method for Specific Optical Density of Smoke Generated by Solid Materials.
3. E 2471 Test Method for Using Seeded-Agar for the Screening Assessment of Antimicrobial Activity In Carpets.
4. F 710 Practice for Preparing Concrete Floors to Receive Resilient Flooring.

D. National Fire Protection Association (NFPA):
1. 253 Method of Test for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source.

1.03 SUBMITTALS

A. General: In compliance with Section 01 3300 and as specified herein.

B. Product Data: For each type of product.
1. Include manufacturer's written data on physical characteristics, durability, and fade resistance.
2. Include manufacturer's written installation recommendations for each type of substrate.

C. Shop Drawings: For carpet tile installation, plans showing the following:
1. Columns, doorways, enclosing walls or partitions, built-in cabinets, and locations where cutouts are required in carpet tiles.
2. Carpet tile type, color, and dye lot.
3. Type of subfloor.
4. Type of installation.
5. Pattern of installation.
6. Pattern type, location, and direction.
7. Pile direction.

8. Type, color, and location of insets and borders.
9. Type, color, and location of edge, transition, and other accessory strips.
10. Transition details to other flooring materials.

D. Samples: For each of the following products and for each color and texture required. Label each Sample with manufacturer's name, material description, color, pattern, and designation indicated on Drawings and in schedules.
1. Carpet Tile: Full-size Sample.
2. Exposed Edge, Transition, and Other Accessory Stripping: 12-inch-long Samples.

E. Product Schedule: For carpet tile. Use same designations indicated on Drawings.

F. Qualification Data;(FIO): For Installer.

G. Product Test Reports;(FIO): For carpet tile, for tests performed by a qualified testing agency.

H. Sample Warranty;(FIO): For special warranty.

I. Sustainable Construction Submittals:

1. Indicate compliance with the Georgia Energy Efficiency and Sustainability Construction Standards for State Buildings dated July 1, 2009. Submit completed Section 6.3-Georgia based Materials and Products document. Refer to the requirements of Section 01 8113 – Sustainable Design Requirements, Georgia Peach Program.

1.04 CLOSEOUT SUBMITTALS

A. Maintenance Data: For carpet tiles to include in maintenance manuals. Include the following:
1. Methods for maintaining carpet tile, including cleaning and stain-removal products and procedures and manufacturer's recommended maintenance schedule.
2. Precautions for cleaning materials and methods that could be detrimental to carpet tile.

1.05 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials, from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
1. Carpet Tile: Full-size units equal to 5 percent of amount installed for each type indicated, but not less than 10 sq. yd.

1.06 QUALITY ASSURANCE

A. Installer Qualifications: An experienced installer who is certified by the International Certified Floorcovering Installers Association.
B. Mockups: Build mockups to verify selections made under Sample submittals, to demonstrate aesthetic effects, and to set quality standards for fabrication and installation.
1. Build mockups at locations and in sizes shown on Drawings.
2. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Comply with CRI's "CRI Carpet Installation Standard."

1.08 PROJECT CONDITIONS

A. Comply with CRI's "CRI Carpet Installation Standard" for temperature, humidity, and ventilation limitations.

B. Environmental Limitations: Do not deliver or install carpet tiles until spaces are enclosed and weathertight, wet-work in spaces is complete and dry, and ambient temperature and humidity conditions are maintained at levels planned for building occupants during the remainder of the construction period.

C. Do not install carpet tiles over concrete slabs until slabs have cured and are sufficiently dry to bond with adhesive and concrete slabs have pH range recommended by carpet tile manufacturer.

D. Where demountable partitions or other items are indicated for installation on top of carpet tiles, install carpet tiles before installing these items.

1.09 WARRANTY

A. Special Warranty for Carpet Tiles: Manufacturer agrees to repair or replace components of carpet tile installation that fail in materials or workmanship within specified warranty period.
   1. Warranty does not include deterioration or failure of carpet tile due to unusual traffic, failure of substrate, vandalism, or abuse.
   2. Failures include, but are not limited to, the following:
      a. More than 10 percent edge raveling, snags, and runs.
      b. Dimensional instability.
      c. Excess static discharge.
      d. Loss of tuft-bind strength.
      e. Loss of face fiber.
      f. Delamination.
   3. Warranty Period: 15 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.01 CARPET TILE

A. Basis-of-Design Manufacturer; In accordance with the Finish Schedule.

2.02 INSTALLATION ACCESSORIES

A. Trowelable Leveling and Patching Compounds: Latex-modified, hydraulic-cement-based formulation provided or recommended by carpet tile manufacturer.

B. Adhesives: Water-resistant, mildew-resistant, nonstaining, pressure-sensitive type to suit products and subfloor conditions indicated, that comply with flammability requirements for installed carpet tile, and are recommended by carpet tile manufacturer for releasable installation.

C. TS-4 Metal Edge/Transition Strips: Extruded aluminum with mill finish of profile and width shown, of height required to protect exposed edge of carpet, and of maximum lengths to minimize running joints. Basis-of-Design Manufacturer: Schluter Systems “Vinpro-S”.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for maximum moisture content, alkalinity range, installation tolerances, and other conditions affecting carpet tile performance.

B. Examine carpet tile for type, color, pattern, and potential defects.

C. Concrete Subfloors: Verify that concrete slabs comply with ASTM F 710 and the following:
   1. Slab substrates are dry and free of curing compounds, sealers, hardeners, and other materials that may interfere with adhesive bond. Determine adhesion and dryness characteristics by performing bond and moisture tests recommended by carpet tile manufacturer.
   2. Subfloor finishes comply with requirements specified in Section 03 3000 "Cast-in-Place Concrete" for slabs receiving carpet tile.
   3. Subfloors are free of cracks, ridges, depressions, scale, and foreign deposits.

D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. General: Comply with CRI's "Carpet Installation Standards" and with carpet tile manufacturer's written installation instructions for preparing substrates indicated to receive carpet tile.

B. Use trowelable leveling and patching compounds, according to manufacturer's written instructions, to fill cracks, holes, depressions, and protrusions in substrates. Fill or level cracks, holes and depressions 1/8-inch wide or wider, and protrusions more than 1/32 inch unless more stringent requirements are required by manufacturer's written instructions.

C. Concrete Substrates: Remove coatings, including curing compounds, and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, without using solvents. Use mechanical methods recommended in writing by adhesive and carpet tile manufacturers.

D. Broom and vacuum clean substrates to be covered immediately before installing carpet tile.

3.03 INSTALLATION

A. General: Comply with CRI's "CRI Carpet Installation Standard," Section 18, "Modular Carpet" and with carpet tile manufacturer's written installation instructions.

B. Installation Method: As recommended in writing by carpet tile manufacturer.

C. Maintain dye-lot integrity. Do not mix dye lots in same area.

D. Maintain pile-direction patterns recommended in writing by carpet tile manufacturer.

E. Cut and fit carpet tile to butt tightly to vertical surfaces, permanent fixtures, and built-in furniture including cabinets, pipes, outlets, edgings, thresholds, and nosings. Bind or seal cut edges as recommended by carpet tile manufacturer.

F. Extend carpet tile into toe spaces, door reveals, closets, open-bottomed obstructions, removable flanges, alcoves, and similar openings.

G. Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating on carpet tile as marked on subfloor. Use nonpermanent, nonstaining marking device.

H. Install pattern parallel to walls and borders.

3.04 CLEANING AND PROTECTION

A. Perform the following operations immediately after installing carpet tile:
1. Remove excess adhesive and other surface blemishes using cleaner recommended by carpet tile manufacturer.
2. Remove yarns that protrude from carpet tile surface.
3. Vacuum carpet tile using commercial machine with face-beater element.

B. Protect installed carpet tile to comply with CRI's "Carpet Installation Standard," Section 20, "Protecting Indoor Installations."

C. Protect carpet tile against damage from construction operations and placement of equipment and fixtures during the remainder of construction period. Use protection methods indicated or recommended in writing by carpet tile manufacturer.

END OF SECTION

SECTION 09 9000

PAINTS AND COATINGS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 REFERENCE STANDARDS

A. American Society for Testing Materials (ASTM) - Testing Methods.
   1. D523 Test Method for Specular Gloss.

B. Master Paint Institute (MPI):
   1. MPI Approved Products Lists.
   2. MPI Architectural Painting Specification Manual.

C. Society for Protective Coatings (SSPC):
   1. PA 1 Paint Application Specification No. 1: Shop, Field, and Maintenance Painting of Steel.
   2. SP 2 Surface Preparation Specification No. 2: Hand Tool Cleaning.
   3. SP 3 Surface Preparation Specification No. 3: Power Tool Cleaning.
   4. SP 11 Surface Preparation Specification No. 11: Power Tool Cleaning to Bare Metal.

D. Society for Protective Coatings/NACE International (SSPC/NACE):
   1. SP 7/NACE No. 4 Joint Surface Preparation Standard SSPC-SP 7/NACE No. 4: Brush-off Blast Cleaning.

1.03 DEFINITIONS

A. MPI Gloss Level 1: Not more than five units at 60 degrees and 10 units at 85 degrees, according to ASTM D 523.

B. MPI Gloss Level 2: Not more than 10 units at 60 degrees and 10 to 35 units at 85 degrees, according to ASTM D 523.

C. MPI Gloss Level 3: 10 to 25 units at 60 degrees and 10 to 35 units at 85 degrees, according to ASTM D 523.

D. MPI Gloss Level 4: 20 to 35 units at 60 degrees and not less than 35 units at 85 degrees, according to ASTM D 523.

E. MPI Gloss Level 5: 35 to 70 units at 60 degrees, according to ASTM D 523.

F. MPI Gloss Level 6: 70 to 85 units at 60 degrees, according to ASTM D 523.

G. MPI Gloss Level 7: More than 85 units at 60 degrees, according to ASTM D 523.

1.04 ACTION SUBMITTALS

A. General: In compliance with Section 01 3300 and as specified herein.

B. Product Data: Provide product data minimum 30 days before beginning painting Work for each type of product. Include preparation requirements and application instructions.
   1. Include Printout of current "MPI Approved Products List" for each product category specified, with the proposed product highlighted.
   2. Indicate VOC content.
   3. Indicate manufacturer, brand name, quality and type paint for each surface to be painted and finished.

C. Samples: Provide sample finish for surfaces and colors requested by Architect.
   1. Label each sample with formula, color name and number, sheen designation and gloss units.
   2. Submit samples on rigid backing, 8 inches square.
   3. Apply coats on Samples in steps to show each coat required for system.
   4. Label each sample for location and application area.

D. Product List: Cross-reference to paint system and locations of application areas. Use same designations indicated on Drawings and in schedules. Include color designations.

1.05 QUALITY ASSURANCE

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

1.06 DELIVERY, STORAGE, AND HANDLING

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

1.07 PROJECT CONDITIONS

A. Apply paints only when temperature of surfaces to be painted and ambient air temperatures are between 50 and 95 deg F.

B. Do not apply paints when relative humidity exceeds 85 percent; at temperatures less than 5 deg F above the dew point; or to damp or wet surfaces.

C. Provide adequate continuous ventilation and sufficient heating to maintain temperature above 45 deg F. for 24 hours before, during and 48 hours after application of finishes.

D. Protection:
1. Adequately protect other surfaces from paint and damage. Repair damage resulting from inadequate and unsuitable protection.
2. Furnish sufficient drop cloths, shields and protective equipment to prevent spray and droppings from damaging surfaces not being painted and in particular, surfaces within storage and preparation area.
3. Place cotton waste, cloths and material which may constitute fire hazard in closed metal containers and remove daily from site.
4. Remove electrical plates, surface hardware, fittings and fastenings, prior to painting operations. These items are to be carefully stored, cleaned and replaced on completion of work in each area. Do not use solvent that may remove permanent lacquer finish to clean hardware.
5. Protect surfaces and materials not to be painted.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. Basis-of-Design Manufacturer; Sherwin-Williams is named herein to establish quality and design standards. Subject to compliance with requirements, provide named products and systems by Sherwin-Williams as listed in the Painting Schedule for paint category indicated.
1. Benjamin Moore & Co.
2. PPG Architectural Coatings.

2.02 PAINT, GENERAL

A. MPI Standards: Products shall comply with MPI standards indicated and shall be listed in its "MPI Approved Products Lists."

B. Material Compatibility:
1. Materials for use within each paint system shall be compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
2. For each coat in a paint system, products shall be recommended in writing by topcoat manufacturers for use in paint system and on substrate indicated.

C. Colors: As indicated in Finish Legend.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine substrates and conditions scheduled to be painted prior to beginning of Work for compliance with requirements; for maximum moisture content and other conditions affecting performance of Work.

B. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter as follows:
1. Concrete: 12 percent.

2. Fiber-Cement Board: 12 percent.
3. Masonry (Clay and CMUs): 12 percent.
4. Wood: 15 percent.
5. Gypsum Board: 12 percent.
6. Plaster: 12 percent.

C. Gypsum Board Substrates: Verify that finishing compound is sanded smooth.

D. Verify suitability of substrates, including surface conditions and compatibility, with existing finishes and primers.

E. Proceed with coating application only after unsatisfactory conditions have been corrected.
1. Report all substrates and materials exhibiting mildew of the surface to Architect.
2. Do not clean and paint substrates and materials exhibiting mildew on surface without Architect's prior examination.
3. Application of coating indicates acceptance of surfaces and conditions.

3.02 PREPARATION

A. Comply with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual" applicable to substrates and paint systems indicated.

B. Remove hardware, covers, plates, and similar items already in place that are removable and are not to be painted. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.
1. After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection if any.

C. Clean substrates of substances that could impair bond of paints, including dust, dirt, oil, grease, and incompatible paints and encapsulants.
1. Remove incompatible primers and reprime substrate with compatible primers or apply tie coat as required to produce paint systems indicated.

D. Galvanized-Metal Substrates: Remove grease and oil residue from galvanized sheet metal by mechanical methods to produce clean, lightly etched surfaces that promote adhesion of subsequently applied paints.

E. Wood Substrates:
1. Seal top and bottom edges of wood doors with 2 coats of shellac or other effective sealer immediately upon door delivery to Project site, and after trimming to size.

3.03 APPLICATION

A. Apply paints according to manufacturer's written instructions and to recommendations in "MPI Manual."
1. Use applicators and techniques suited for paint and substrate indicated.
2. Paint surfaces behind movable equipment and furniture same as similar exposed surfaces. Before final installation, paint surfaces behind permanently fixed equipment or furniture with prime coat only.
3. Paint front and backsides of access panels, removable or hinged covers, and similar hinged items to match exposed surfaces.
4. Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.
5. Primers specified in painting schedules may be omitted on items that are factory primed or factory finished if acceptable to topcoat manufacturers.

B. Tint each undercoat a lighter shade to facilitate identification of each coat if multiple coats of same material are to be applied. Tint undercoats to match color of topcoat, but provide sufficient difference in shade of undercoats to distinguish each separate coat.

C. If undercoats or other conditions show through topcoat, apply additional coats until cured film has a uniform paint finish, color, and appearance.

D. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.

3.04 MECHANICAL AND ELECTRICAL EQUIPMENT

A. Review Divisions 23 and 26 for items of mechanical and electrical equipment to be painted.

B. Repaint exposed machinery and equipment as necessary to repair damaged finish. Do not paint over nameplates on machinery and equipment.

C. Remove grilles, covers and access panels for mechanical and electrical systems from location and paint separately.

D. Finish paint primed equipment to color selected.

E. Paint, to limit of sight line, interior surfaces of air ducts, convector and baseboard heating cabinets that are visible through grilles and louvers with one coat of flat black paint. Paint dampers exposed immediately behind louvers, grilles, convector and baseboard cabinets to match face panels.

F. Paint exposed conduit and electrical equipment occurring in finished areas. Color and texture to match adjacent surfaces.

G. Paint both sides and edges of plywood backboards for electrical equipment before installing backboards and mounting equipment on them.

H. Size and paint exposed insulated piping, insulated ducts, heat exchanger shells, including those having insulated surfaces finished with canvas, with 2 coats interior latex paint after priming foil or jacket with compatible primer recommended by manufacturer.

3.05 FIELD QUALITY CONTROL

A. Surfaces which require paint finish are to be properly and completely finished with materials and in manner similar to other surfaces of similar type.

B. Runs, sags, drips, drapes, thin spots, holidays and other unworkmanlike results will not be accepted. Cut in sharp lines and color breaks.

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

3.06 CLEANING AND PROTECTION

A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.

B. After completing paint application, clean spattered surfaces. Remove spattered paints by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.

C. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.

D. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

3.07 INTERIOR PAINTING SCHEDULE

A. Number of coats specified herein are minimum number to cover and finish decorated surfaces. If, after specified number of coats are applied, surfaces are not completely covered, apply additional coats as necessary at no additional cost to Owner. Allow each coat to dry thoroughly before applying succeeding coat.
   1. Colors:
      a. As indicated on Finish Schedule.

B. Galvanized-Metal Substrates; Hollow Metal Doors and Frames:
   1. Latex System MPI INT 5.3A:
      a. Prime Coat: Primer, Galvanized, Water based, MPI #134.
         1) S-W Pro Industrial Pro-Cryl Universal Primer; B66W1310, at 1.8 dry mils per coat.
         2) Benjamin Moore Ultra Spec HP, Acrylic Metal Primer; HP04.
         3) PPG Pitt-Tech Plus Waterborne Acrylic Primer Finish; 4020PF.
      b. Second and Third Coat: Latex, Interior, Semi-Gloss (MPI Gloss Level 5), MPI #54.
         1) S-W ProMar 200 Zero VOC Interior Latex Gloss; B21W12651, at 1.6 dry mils per coat.
         2) Benjamin Moore Ultra Spec 500, Waterborne Interior Gloss; N540.
         3) PPG Speedhide Interior Zero VOC Latex Semi-Gloss; 6-4510XI.

   2. Institutional Low-Odor/VOC Latex System MPI INT 5.3N:
      a. Prime Coat: Primer, Galvanized, water based, MPI #134.
         1) S-W Pro Industrial Pro-Cryl Universal Acrylic Primer B66W1310, at 1.8 dry mils per coat.
         2) Benjamin Moore Ultra Spec HP Acrylic Metal Primer; HP04.
         3) PPG Pitt Tech Plus Waterborne Acrylic Primer Finish, 4020PF.
      b. Second and Third Coat: Latex, Interior, Institutional Low Odor/VOC, Semi-Gloss (MPI Gloss Level 5), MPI #147 X.
         1) S-W Pro Industrial Acrylic Semi-Gloss; B55W00651, at 2.1 dry mils per coat.
         2) Benjamin Moore Ultra Spec 500 Waterborne Interior Gloss, N540.
         3) PPG Speedhide Zero Interior Zero VOC Latex Semi-Gloss, 6-4510XI.

C. Gypsum Board Substrates:
1. Institutional Low-Odor/VOC Latex System MPI INT 9.2M;
a. Prime Coat: Primer sealer, interior, institutional low odor/VOC, MPI #149.
1) S-W ProMar 200 Zero VOC Interior Latex Primer B28W02600, at 1.0 dry mils per coat.
2) Benjamin Moore Ultra Spec 500, Waterborne Interior Primer; N534.
3) PPG Speedhide Zero Interior Zero VOC Latex Sealer, 6-4900XI.
b. Typical/Accent Walls and Partitions; Second and Third Coat: Latex, Interior, Institutional Low Odor/VOC (MPI Gloss Level 2), MPI #144.
1) S-W ProMar 200 HP Zero VOC Interior Acrylic Low Gloss Eg-Shel B41W01951, 2-coats at 1.7 dry mils per coat.
2) Benjamin Moore Ultra Spec 500 Interior Low Sheen Finish; N537.
3) PPG Speedhide Zero Interior Zero VOC Latex Eggshell, 6-4310XI.
c. Typical Ceilings; Second and Third Coat: Latex, Interior, Institutional Low Odor/VOC flat (MPI Gloss Level 1), MPI #143.
1) S-W ProMar 200 Zero VOC Interior Latex Flat; B30W12651, at 1.6 dry mils per coat.
2) Benjamin Moore Ultra Spec 500 Interior Flat Finish; N536.
3) PPG Speedhide Zero Interior Zero VOC Latex Flat, 6-4110XI.

2. Restroom Walls to Receive Paint (if Required); Waterbased Light Industrial Coating (over latex sealer) MPI INT 9.2L:
a. Prime Coat: Primer sealer, latex, interior, MPI #50.
1) S-W ProMar 200 Zero Interior Latex Primer, B28W02600, at 1.0 dry mils, per coat.
2) Benjamin Moore Ultra Spec 500 Waterborne Interior Latex Primer Sealer; N534.
3) PPG Speedhide Zero Interior Zero VOC Latex Sealer, 6-4900XI.
b. Intermediate Coat: Light industrial coating, interior, water based, matching topcoat.
c. Topcoat: Light Industrial Coating, Interior, Waterbased, Semi-Gloss (MPI Gloss Level 5) MPI #151.
1) S-W Pro Industrial Pre-Catalyzed Epoxy Eg-shell, K45W00151, at 1.5 dry mils per coat.
2) Benjamin Moore Corotech Pre-Catalyzed Epoxy Eggshell; HP140.
3) PPG Pitt-Glaze WB1 Interior Eggshell Pre-Catalyzed WB Acrylic Epoxy, 16-310.

END OF SECTION

SECTION 10 2600

WALL PROTECTION

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 REFERENCE STANDARDS

A. American Society for Testing and Materials (ASTM):
1. D 256 Test Methods for Determining the Izod Pendulum Impact Resistance of Plastics.
2. D 543 Evaluating the Resistance of Plastics to Chemical Reagents.
3. D 6098 Classification System and Basis for Specification for Extruded and Compression Molded Shapes Made from Polycarbonate (PC).
4. E 84 Test Method for Surface Burning Characteristics of Building Materials.
5. E1966 Test Method for Fire-Resistive Joint Systems.
6. F476 Test Methods for Security of Swinging Door Assemblies.

B. United Laboratory (UL):
1. 723 Standard for Test for Surface Burning Characteristics of Building Materials.
2. 2079 Standard for Tests for Fire Resistance of Building Joint Systems.

1.03 ACTION SUBMITTALS

A. General: In compliance with Section 01 3300 and as specified herein.

B. Product Data: For each type of product.
1. Include construction details, material descriptions, impact strength, dimensions of individual components and profiles, and finishes.
2. Include fire ratings of units recessed in fire-rated walls and listings for door-protection items attached to fire-rated doors.

C. Shop Drawings: For each type of wall protection showing locations and extent.
1. Include plans, elevations, sections, and attachment details.

D. Samples for Initial Selection: For each type of impact-resistant wall-protection unit indicated, in each color and texture specified.
1. Include Samples of accent strips and accessories to verify color selection.
2. Corner Guards: 12 inches long. Include example top caps.
3. Abuse-Resistant Wall Covering: 6 by 6 inches square.

E. Sustainable Construction Submittals:

1. Indicate compliance with the Georgia Energy Efficiency and Sustainability Construction Standards for State Buildings dated July 1, 2009. Submit completed Section 6.3-Georgia based Materials and Products document. Refer to the requirements of Section 01 8113 – Sustainable Design Requirements, Georgia Peach Program.

1.04 INFORMATIONAL SUBMITTALS (FIO)

A. Material Certificates: For each type of exposed plastic material.

B. Sample Warranty: For special warranty.

1.05 CLOSEOUT SUBMITTALS

A. Maintenance Data: For each type of wall and door protection product to include in maintenance manuals.
   1. Include recommended methods and frequency of maintenance for maintaining best condition of plastic covers under anticipated traffic and use conditions. Include precautions against using cleaning materials and methods that may be detrimental to finishes and performance.

1.06 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials, from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
   1. Corner-Guard Covers: Full-size plastic covers of maximum length equal to 2 percent of each type, color, and texture of cover installed, but no fewer than two, 48-inch- long units.
   2. Mounting and Accessory Components: Amounts proportional to the quantities of extra materials. Package mounting and accessory components with each extra material.

1.07 QUALITY ASSURANCE

A. Installer Qualifications: Engage an installer who has minimum 3 years experience in installation of work in this Section.

B. Manufacturer's Qualifications: Not less than 5 years experience in production of specified products and a record of successful performance.

C. Fire Performance Characteristics: Provide wall panels with UL label indicating conformance with ASTM E84 and Class B/2 characteristics as follows:
   1. Flame Spread: 75 or less.
   2. Smoke Developed: 350 or less.

D. Impact Strength: Provide assembled wall protection units tested in compliance with ASTM F476.

E. Chemical and Stain Resistance: Provide wall panels with chemical and stain resistance in compliance with ASTM D543.

F. Single Source Responsibility: Provide components of wall protection system manufactured by same company to ensure compatibility of color, texture and physical properties.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Store wall and door protection in original undamaged packages and containers inside well-ventilated area protected from weather, moisture, soiling, extreme temperatures, and humidity.
   1. Maintain room temperature within storage area at not less than 70 deg F during the period plastic materials are stored.
   2. Keep plastic materials out of direct sunlight.
   3. Store plastic wall- and door-protection components for a minimum of 72 hours, or until plastic material attains a minimum room temperature of 70 deg F.

a. Store corner-guard covers in a vertical position.

1.09 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace components of wall- and door-protection units that fail in materials or workmanship within specified warranty period.
   1. Failures include, but are not limited to, the following:
      a. Structural failures including detachment of components from each other or from the substrates, delamination, and permanent deformation beyond normal use.
      b. Deterioration of metals, metal finishes, plastics, and other materials beyond normal use.
   2. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Source Limitations: Obtain wall-protection products from single source from single manufacturer.

2.02 PERFORMANCE REQUIREMENTS

A. Surface Burning Characteristics: Comply with ASTM E 84 or UL 723; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
   1. Flame-Spread Index: 75 or less.
   2. Smoke-Developed Index: 450 or less.

2.03 CORNER GUARDS

A. Surface-Mounted, Plastic-Cover Corner Guards CG-1: Manufacturer's standard assembly consisting of snap-on, resilient plastic cover installed over retainer; including mounting hardware; fabricated with 90-degree turn to match wall condition. High impact vinyl acrylic extrusion, nominal 0.078-inch thick. Class A.
   1. Basis-of-Design Manufacturer and Type: Korogard. “G100”.
   2. Other Acceptable Manufacturers:
      a. Korogard Wall Protection Systems.
      b. Nystrom, Inc.
   3. Cover: Extruded rigid plastic, minimum 0.078-inch wall thickness; as follows:
      a. Profile: Nominal 2-inch-long leg.
      b. Angle: 90 degrees.
      c. Height: As indicated in Drawings.
      d. Color and Texture: As indicated in Finish Schedule.
   4. Continuous Retainer: Minimum 0.060-inch-thick, one-piece, 6063-T5 extruded aluminum.
   5. Retainer Clips: Manufacturer's standard impact-absorbing clips.
   6. Top and Bottom Caps: Prefabricated, injection-molded plastic; color matching cover; field adjustable for close alignment with snap-on cover.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine substrates and wall areas, with Installer present, for compliance with requirements for installation tolerances, fire rating, and other conditions affecting performance of the Work.

B. Examine walls to which wall and door protection will be attached for blocking, grounds, and other solid backing that have been installed in the locations required for secure attachment of support fasteners.
   1. For wall and door protection attached with adhesive, verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.

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

3.02 PREPARATION

A. Complete finishing operations, including painting, before installing wall and door protection.

B. Before installation, clean substrate to remove dust, debris, and loose particles.

3.03 INSTALLATION

A. Installation Quality: Install wall and door protection according to manufacturer's written instructions, level, plumb, and true to line without distortions. Do not use materials with chips, cracks, voids, stains, or other defects that might be visible in the finished Work.

B. Mounting Heights: Install wall and door protection in locations and at mounting heights indicated on Drawings.

C. Accessories: Provide splices, mounting hardware, anchors, trim, joint moldings, and other accessories required for a complete installation.
   1. Provide anchoring devices and suitable locations to withstand imposed loads.
   2. Where splices occur in horizontal runs of more than 20 feet, splice aluminum retainers and plastic covers at different locations along the run, but no closer than 12 inches apart.
   3. Adjust caps as required to ensure tight seams.

D. Abuse-Resistant Wall Covering: Install top and edge moldings, corners, and divider bars as required for a complete installation.

3.04 CLEANING

A. Immediately after completion of installation, clean plastic covers and accessories using a standard ammonia-based household cleaning agent.

B. Remove excess adhesive using methods and materials recommended in writing by manufacturer.

END OF SECTION

SECTION 10 4400

FIRE EXTINGUISHERS, CABINETS, AND ACCESSORIES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 REFERENCE STANDARDS

A. American Architectural Manufacturers Association (AAMA):
1. 2603 Voluntary Specification, Performance Requirements and Test Procedures for Pigmented Organic Coatings on Aluminum Extrusions and Panels.

B. American Society for Testing and Materials (ASTM):
1. A 666-15 Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar.
2. A 1008 Steel Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Solution Hardened, and Bake Hardenable.
3. B 36 Brass Plate, Sheet, Strip, and Rolled Bar.
4. B 221 Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
5. C 1036 Flat Glass.
6. C 1048 Heat-Strengthened and Fully Tempered Flat Glass.
7. D 4802 Poly (Methyl Methacrylate) Acrylic Plastic Sheet.
8. E 814 Test Method for Fire Tests of Penetration Firestop Systems.

C. National Association of Architectural Metal Manufacturers:
1. AMP 500 Metal Finishes Manual for Architectural and Metal Products.

D. National Fire Protection Association (NFPA):
1. NFPA 10 Portable Fire Extinguishers.

1.03 ACTION SUBMITTALS

A. General: In compliance with Section 01 3300 and as specified herein.

B. Product Data: For each type of product. Include rating and classification, material descriptions, dimensions of individual components and profiles, operational features, color and finish, wall mounting brackets with mounted measurements, anchorage details, rough-in measurements, location details, and manufacturer’s installation instructions.

C. Product Schedule: For fire extinguishers, cabinets and accessories. Use same designations indicated on Drawings.

D. Sustainable Construction Submittals:

1. Indicate compliance with the Georgia Energy Efficiency and Sustainability Construction Standards for State Buildings dated July 1, 2009. Submit completed Section 6.3-Georgia based Materials and Products document. Refer to the requirements of Section 01 8113 – Sustainable Design Requirements, Georgia Peach Program.

1.04 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For fire extinguishers to include in maintenance manuals.

1.05 COORDINATION

A. Coordinate type and capacity of fire extinguishers with fire-protection cabinets to ensure fit and function.

1.06 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace fire extinguishers that fail in materials or workmanship within specified warranty period.
1. Failures include, but are not limited to, the following:
a. Failure of hydrostatic test according to NFPA 10.
b. Faulty operation of valves or release levers.
2. Warranty Period: Six years from date of Substantial Completion.

PART 2 - PRODUCTS

2.01 PERFORMANCE REQUIREMENTS

A. Fire Extinguishers: Listed and labeled for type, rating, and classification by an independent testing agency acceptable to authorities having jurisdiction.
1. Provide fire extinguishers approved, listed, and labeled by FM Global.

B. Fire-Rated Fire-Protection Cabinets: Listed and labeled to comply with requirements in ASTM E814 for fire-resistance rating of walls where they are installed.

C. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

D. NFPA Compliance: Fabricate and label fire extinguishers to comply with NFPA 10, "Portable Fire Extinguishers."

2.02 FIRE EXTINGUISHERS

A. Fire Extinguishers: Type, size, and capacity for each fire-protection cabinet and mounting bracket indicated.
1. Instruction Labels: Include pictorial marking system complying with NFPA 10, Appendix B, and bar coding for documenting fire-extinguisher location, inspections, maintenance, and recharging.

B. Basis-of-Design Manufacturer and Type:
1. Typical Locations and Inside Fire Extinguisher Cabinets: Potter-Roemer, Inc. "Model 3010", 10 lb. ABC multi-purpose dry chemical extinguisher; red enamel steel; complete with pressure gauge and wall mounting bracket.

2. Electronic Equipment Room Locations: Potter-Roemer, Inc. "Model 3410", 10 lb. BC carbon dioxide fire extinguisher; red glossy polyester coated aluminum cylinder; complete with discharge horn, pressure gauge and wall bracket.

C. Other Acceptable Manufacturers: Subject to compliance with all requirements of this specification, provide named products and systems or comparable products and systems by one of following manufacturers:
1. Amerex Corporation.
2. Buckeye Fire Equipment Company.
3. J. L. Industries, Inc.; a division of Activar Construction Product Group
4. Larsen's Manufacturing Company.

2.03 FIRE EXTINGUISHER CABINETS

A. Basis-of-Design Manufacturer and Type: Potter-Roemer, Inc. "Dana Series, Model 7260-F- VW" fire extinguisher cabinet.
1. Cabinet Type: Suitable for fire extinguisher.
2. Cabinet Construction: One-hour fire rated.
   a. Fire-Rated Cabinets: Construct fire-rated cabinets with double walls fabricated from 0.043-inch-thick cold-rolled steel sheet lined with minimum 5/8-inch-thick fire-barrier material. Provide factory-drilled mounting holes.
3. Cabinet Material: Cold-rolled steel sheet.
4. Recessed Cabinet:
   a. Trimless with Hidden Flange: Flange of same metal and finish as box overlaps surrounding wall finish and is concealed from view by an overlapping door.
5. Cabinet Trim Material: Same material and finish as door.
6. Door Material: Steel sheet.
7. Door Style: Flush opaque panel, frameless, with no exposed hinges.
8. Door Hardware: Manufacturer's standard door-operating hardware of proper type for cabinet type, trim style, and door material and style indicated.
   a. Provide recessed door pull and friction latch.
   b. Provide continuous hinge, of same material and finish as trim, permitting door to open 180 degrees.
9. Identification: Lettering complying with authorities having jurisdiction for letter style, size, spacing, and location. Locate as indicated.
   a. Identify fire extinguisher in fire-protection cabinet with the words "FIRE EXTINGUISHER."
      1) Location: Applied to cabinet door.

B. Other Acceptable Manufacturers: Subject to compliance with all requirements of this specification, provide named products and systems or comparable products and systems by one of following manufacturers:
1. Amerex Corporation.
2. Buckeye Fire Equipment Company.
3. J. L. Industries, Inc.; a division of Activar Construction Product Group
4. Larsen's Manufacturing Company.

2.04 FIRE EXTINGUISHER SIGNS

A. Basis-of-Design Manufacturer and Type: Accuform "PSM327" brushed aluminum 3D projection sign, that projects 45 degrees from wall, .025-inch thick brushed aluminum with images printed on two panels. Graphics to be in red showing locations of Fire Extinguishers.

2.05 FABRICATION

A. Fire-Protection Cabinets: Provide manufacturer's standard box (tub) with trim, frame, door, and hardware to suit cabinet type, trim style, and door style indicated.
B. Cabinet Doors: Fabricate doors according to manufacturer's standards, from materials indicated and coordinated with cabinet types and trim styles.
C. Cabinet Trim: Fabricate cabinet trim in one piece with corners mitered, welded, and ground smooth.

2.06 GENERAL FINISH REQUIREMENTS

A. Comply with NAAMM's AMP 500, "Metal Finishes Manual for Architectural and Metal Products," for recommendations for applying and designating finishes.
B. Protect mechanical finishes on exposed surfaces of fire-protection cabinets from damage by applying a strippable, temporary protective covering before shipping.
C. Finish fire-protection cabinets after assembly.
D. Appearance of Finished Work: Noticeable variations in same piece are unacceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify rough opening for cabinets are correctly sized and located.
B. Examine fire extinguishers for proper charging and tagging.
   1. Remove and replace damaged, defective, or undercharged fire extinguishers.
C. Examine walls and partitions for suitable framing depth and blocking where recessed cabinets will be installed.
D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION

A. Install fire extinguishers cabinets and accessories plumb and level in wall, at heights indicated in Drawings in locations indicated and in compliance with requirements of Authorities Having Jurisdiction. Provide thickened wall to install recessed cabinets at locations indicated on Drawings.
   1. Fire-Protection Cabinets: 42 inches above finished floor to top of fire extinguisher.
B. Fasten mounting brackets to inside surface of fire-protection cabinets, square and plumb.
C. Install fire extinguishers in fire extinguisher cabinets in locations indicated and in compliance with requirements of authorities having jurisdiction.
   1. Mounting Brackets: Top of fire extinguisher to be at 42 inches above finished floor.
D. Mounting Brackets: Fasten mounting brackets to surfaces, square and plumb, at locations indicated.

END OF SECTION

SECTION 12 3623.13

PLASTIC-LAMINATE-CLAD COUNTERTOPS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 ACTION SUBMITTALS

A. General: In compliance with Section 01 3300 and as specified herein.

B. Product Data: For each type of product.
   1. Include data for fire-retardant treatment from chemical-treatment manufacturer and certification by treating plant that treated materials comply with requirements.

C. Shop Drawings: For plastic-laminate-clad countertops.
   1. Include plans, sections, details, and attachments to other work. Detail fabrication and installation, including field joints.
   2. Show locations and sizes of cutouts and holes for items installed in plastic-laminate-clad countertops.
   3. Apply AWI Quality Certification Program label to Shop Drawings as specified in Section 06 4116.

D. Samples: As specified in Section 06 4116.
   1. Fabrication Sample: For each type and profile of countertop required, provide one sample applied to core material with specified edge material applied to one edge.

E. Sustainable Construction Submittals:

   1. Indicate compliance with the Georgia Energy Efficiency and Sustainability Construction Standards for State Buildings dated July 1, 2009. Submit completed Section 6.3-Georgia based Materials and Products document. Refer to the requirements of Section 01 8113 – Sustainable Design Requirements, Georgia Peach Program.

1.03 INFORMATIONAL SUBMITTALS

A. Qualification Data: As specified in Section 06 4116.

B. Product Certificates: For the following:
   1. Composite wood and agrifiber products.
   2. High-pressure decorative laminate.
   3. Chemical-resistant, high-pressure decorative laminate.
   4. Adhesives.

C. Quality Standard Compliance Certificates: AWI Quality Certification Program.

D. Evaluation Reports: For fire-retardant-treated materials, from ICC-ES.

1.04 QUALITY ASSURANCE

A. Fabricator Qualifications: Shop that employs skilled workers who custom fabricate products similar to those required for this Project and whose products have a record of successful in-service performance.

B. Installer Qualifications: Fabricator of products. AWI's Quality Certification Program accredited participant.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Deliver countertops only after casework and supports on which they will be installed have been completed in installation areas.

B. Store countertops in areas where environmental conditions comply with requirements specified in "Field Conditions" Article.

C. Keep surfaces of countertops covered with protective covering during handling and installation.

1.06 PROJECT CONDITIONS

A. Environmental Limitations: Do not deliver or install countertops until building is enclosed, wet-work is complete, and HVAC system is operating and maintaining temperature and relative humidity at levels planned for building occupants during the remainder of the construction period.

B. Field Measurements: Where countertops are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication and indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

C. Established Dimensions: Where countertops are indicated to fit to other construction, establish dimensions for areas where countertops are to fit. Provide allowance for trimming at site, and coordinate construction to ensure that actual dimensions correspond to established dimensions.

PART 2 - PRODUCTS

2.01 PLASTIC-LAMINATE-CLAD COUNTERTOPS

A. Quality Standard: Unless otherwise indicated, comply with the "Architectural Woodwork Standards" for grades of plastic-laminate-clad countertops indicated for construction, finishes, installation, and other requirements.
   1. The Contract Documents contain requirements that are more stringent than the referenced quality standard. Comply with requirements of Contract Documents in addition to those of the referenced quality standard.

B. Grade: Custom.

C. High-Pressure Decorative Laminate: NEMA LD 3, Grade HGS.
   1. Basis-of-Design Manufacturers: In Accordance with the Finish Schedule.
   2. Sheet Thickness: 0.048 inch nominal.
   3. Laminate Conformance Standard: NEMA LD 3, Grade HGS.

D. Edge Treatment: Same as laminate cladding on horizontal surfaces.

E. Core Material: As indicated in Drawings and specified in Section 06 4116, provide MDF made with exterior glue or exterior-grade plywood to comply with quality standard. Fire retardant materials as required.

F. Core Material at Sinks: Marine-grade plywood.

G. Core Thickness: 3/4 inch.
1. Build up countertop thickness to 1 1/2 inches at front, back, and ends with additional layers of core material laminated to top.

2.02 WOOD MATERIALS

A. Wood Products: Provide materials that comply with requirements of referenced quality standard and as specified in Section 06 4116.

2.03 FIRE-RETARDANT-TREATED MATERIALS

A. Fire-Retardant-Treated Materials: As specified in Section 06 4116.

2.04 ACCESSORIES

A. Brackets: Rangine Corporation “Rakks Model No. EH”. Surface mounted counter brackets: L-shaped bracket fabricated from aluminum T sections designed for supporting 25-inch deep work surface.
1. Size (height by depth by thickness): As indicated by depth of countertop.
2. Load capacity per bracket: 450 pounds.
3. Finish: White powder coated finish, to be painted in field color of wall in which installed.

B. Table Leg: Hafele “E-Leg, Tapered”.
1. Steel leg with taper from 2-3/8 inch to 1-inch.
2. Static Load Rating: 220 lbs.
3. Finish: To be determined by Architect from manufacturers full color range.

2.05 FABRICATION

A. Sand fire-retardant-treated wood lightly to remove raised grain on exposed surfaces before fabrication.

B. Fabricate countertops to dimensions, profiles, and details indicated. Provide front and end overhang of 1 inch over base cabinets. Ease edges to radius indicated for the following:
1. Solid-Wood (Lumber) Members: 1/16 inch unless otherwise indicated.

C. Complete fabrication, including assembly, to maximum extent possible before shipment to Project site. Disassemble components only as necessary for shipment and installation. Where necessary for fitting at site, provide ample allowance for scribing, trimming, and fitting.
1. Notify Architect seven days in advance of the dates and times countertop fabrication will be complete.
2. Trial fit assemblies at fabrication shop that cannot be shipped completely assembled. Install dowels, screws, bolted connectors, and other fastening devices that can be removed after trial fitting. Verify that various parts fit as intended, and check measurements of assemblies against field measurements before disassembling for shipment.

D. Shop cut openings to maximum extent possible to receive appliances, plumbing fixtures, electrical work, and similar items. Locate openings accurately, and use templates or roughing-in

diagrams to produce accurately sized and shaped openings. Sand edges of cutouts to remove splinters and burrs.

1. Seal edges of cutouts by saturating with varnish.

PART 3 - EXECUTION

3.01 PREPARATION

A. Before installation, condition countertops to average prevailing humidity conditions in installation areas.

B. Before installing countertops, examine shop-fabricated work for completion and complete work as required, including removal of packing.

3.02 INSTALLATION

A. Grade: Install countertops to comply with same grade as item to be installed.

B. Assemble countertops and complete fabrication at Project site to the extent that it was not completed in the shop.

1. Provide cutouts for appliances, plumbing fixtures, electrical work, and similar items. Locate openings accurately, and use templates or roughing-in diagrams to produce accurately sized and shaped openings. Sand edges of cutouts to remove splinters and burrs.
2. Seal edges of cutouts by saturating with varnish.

C. Field Jointing: Where possible, make in the same manner as shop jointing, using dowels, splines, adhesives, and fasteners recommended by manufacturer. Prepare edges to be joined in shop so Project-site processing of top and edge surfaces is not required. Locate field joints where shown on Shop Drawings.

1. Secure field joints in countertops with concealed clamping devices located within 6 inches of front and back edges and at intervals not exceeding 24 inches. Tighten according to manufacturer's written instructions to exert a constant, heavy-clamping pressure at joints.

D. Scribe and cut countertops to fit adjoining work, refinish cut surfaces, and repair damaged finish at cuts.

E. Fire-Retardant-Treated Wood: Handle, store, and install fire-retardant-treated wood to comply with chemical-treatment manufacturer's written instructions, including those for adhesives used to install woodwork.

F. Countertop Installation: Anchor securely by screwing through corner blocks of base cabinets or other supports into underside of countertop.

1. Install countertops level and true in line. Use concealed shims as required to maintain not more than a 1/8-inch-in-96-inches variation from a straight, level plane.
2. Secure backsplashes to tops with concealed metal brackets at 16 inches o.c. and to walls with adhesive.

G. Seal joints between countertop and backsplash, if any, and joints where countertop and backsplash abut walls with mildew-resistant silicone sealant or another permanently elastic sealing compound recommended by countertop material manufacturer.

H. Support Brackets:

1. Install in compliance with approved shop drawings and manufacturer's written installation instructions.
2. Install brackets at locations and heights indicated in Drawings. Verify locations in field with Architect.
3. Install brackets rigidly to blocking in metal studs walls so that they are secure, plumb, and aligned.
4. Install with fasteners of type, size, and quantity as supplied or recommended in writing by bracket manufacturer for type of application and substrate and in color to match bracket.

I. Table Leg:
1. Install in compliance with approved shop drawings and manufacturer's written installation instructions.
2. Install brackets at locations and heights indicated in Drawings. Verify locations in field with Architect.
3. Install with fasteners of type, size, and quantity as supplied or recommended in writing by leg manufacturer for type of application and substrate and in color to match bracket.

3.03 ADJUSTING AND CLEANING

A. Repair damaged and defective countertops, where possible, to eliminate functional and visual defects. Where not possible to repair, replace countertops. Adjust joinery for uniform appearance.

B. Clean countertops on exposed and semiexposed surfaces.

C. Protection: Provide Kraft paper or other suitable covering over countertop surfaces, taped to underside of countertop at a minimum of 48 inches o.c. Remove protection at Substantial Completion.

END OF SECTION

SECTION 12 3661.16

SOLID SURFACING COUNTERTOPS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 ACTION SUBMITTALS

A. General: In compliance with Section 01 3300 and as specified herein.

B. Product Data: For countertop materials and sinks, indicate product description including solid surface sheets, sinks, bowls and illustrating full range of standard colors, fabrication information and compliance with specified performance requirements. Submit Product data with resistance to list of chemicals.

C. Shop Drawings: For countertops. Indicate plans, sections, dimensions, component sizes, edge details, thermosetting requirements, fabrication details, attachment provisions, sizes of furring, blocking, including concealed blocking and coordination requirements with adjacent work. Show locations and sizes of cutouts and holes for plumbing fixtures, faucets, soap dispensers, waste receptacles and other items installed in solid surface.
1. Show locations and details of joints.
2. Show direction of directional pattern, if any.

D. Coordination Drawings: Submit coordination drawings indicating plumbing and miscellaneous steel work indicating locations of wall rated or non-rated, blocking requirements, locations and recessed wall items and similar items.

E. Samples for Verification: Submit minimum 6" x 6" samples. Cut sample and seam together for representation of inconspicuous seam. Indicate full range of color and pattern variation.

F. Sustainable Construction Submittals:

1. Indicate compliance with the Georgia Energy Efficiency and Sustainability Construction Standards for State Buildings dated July 1, 2009. Submit completed Section 6.3-Georgia based Materials and Products document. Refer to the requirements of Section 01 8113 – Sustainable Design Requirements, Georgia Peach Program.

1.03 INFORMATIONAL SUBMITTALS

A. Qualification Data: For fabricator.

1.04 CLOSEOUT SUBMITTALS

A. Maintenance Data: For solid surface material countertops to include in maintenance manuals. Include Product Data for care products used or recommended by Installer and names, addresses, and telephone numbers of local sources for products.

1.05 QUALITY ASSURANCE

A. Fabricator Qualifications: Shop that employs skilled workers who custom-fabricate countertops similar to that required for this Project, and whose products have a record of successful in-service performance.

B. Installer Qualifications: Fabricator of countertops.

C. Mockups: Build mockups to demonstrate aesthetic effects and to set quality standards for fabrication and execution.
   1. Build mockup of typical countertop as shown on Drawings.
   2. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.06 PROJECT CONDITIONS

A. Field Measurements: Verify dimensions of countertops by field measurements after base cabinets are installed but before countertop fabrication is complete.

1.07 COORDINATION

A. Coordinate locations of utilities that will penetrate countertops or backsplashes.

PART 2 - PRODUCTS

2.01 SOLID SURFACE COUNTERTOP MATERIALS

A. Solid Surface Material: Non-porous, homogeneous-filled plastic resin complying with ICPA SS-1.
   1. SS-1 and SS-2: Acceptable Manufacturer: In Accordance with the Finish Schedule.
      a. Other Acceptable Manufacturer: Subject to compliance with all requirements of this specification, provide named products and systems or comparable products and systems by one of following manufacturers:
         1) Samsung Chemicals USA.
         2) DuPont “Corian Solid Surface”.
         3) Wilsonart, Inc.
   2. SS-2: Acceptable Manufacturer: DuPont “Corian Solid Surface”
      a. Other Acceptable Manufacturer: Subject to compliance with all requirements of this specification, provide named products and systems or comparable products and systems by one of following manufacturers:
         1) Samsung Chemicals USA.
         2) Wilsonart Contract.
   3. Performance Criteria:

a.	Tensile Strength; ASTM D638:	6000 psi min.
b.	Tensile Modulus; ASTM D638:	1.5×10^6 psi min.
c.	Tensile Elongation; ASTM D638:	0.4% min.
d.	Flexural Strength; ASTM D790:	10000 psi min.
e.	Flexural Modulus; ASTM D790:	1.5×10^6 psi min.
f.	Hardness; ASTM D785:	55-62-Rockwell "M" scale min.
g.	Thermal Expansion; ASTM E228:	1.37×10^5 in./in./°F.
h.	Fungi and Bacteria; ASTM G21, G22:	No microbial growth.
i.	Microbial Resistance; UL 2824:	Resistance to mold growth.
j.	Ball Impact; NEMA LD 3, Method 3.8:	No fracture: ½ ball.

k. Weatherability; ASTM G155; ΔE*94<5 in 1,000 hrs.
l. Flame Spread; ASTM E84, NFPA 255, UL 723: <25.
m. Smoke Developed; ASTM E84, NFPA 255, UL 723: <25.
n. Flammability; NFPA 101: Class A.

4. Integral Sink Bowls: Comply with CSA B45.5/IAPMO Z124.
5. Colors and Patterns: As indicated in Finish Schedule.

B. Plywood: Exterior softwood plywood complying with DOC PS 1, Grade C-C Plugged, touch sanded.

2.02 COMPONENTS

A. Counter Perimeter Frame: Ensure 3/4" thick, moisture resistant cores for counter tops in wet areas having sinks or lavatories are 3/4" thick exterior grade plywood with waterproof adhesive, Fir or Poplar plywood, veneer core only.

B. Lavatory Tops with Integral Bowls: Molded countertop of solid polymer material in depth as indicated on Drawings, complete with integrally molded bowl[s] of solid polymer material; edge details as indicated on Drawings.

2.03 COUNTERTOP FABRICATION

A. Fabricate countertops according to solid surface material manufacturer's written instructions and to the AWI/AWMAC/WI's "Architectural Woodwork Standards."
1. Grade: Custom.
2. Fabricate components in shop to greatest extent practical to sizes and shapes indicated. Form joints between components using manufacturer’s standard joint adhesive without conspicuous joints. Provide factory cutouts for accessories.
3. Where indicated, thermoform corners and edges to shapes and sizes indicated in Drawings, prior to seaming and joining. Cut components larger than finished dimensions and sand edges to remove nicks and scratches.
4. Ensure no blistering, whitening and cracking of components during forming.

B. Configuration:
1. Front: Straight, slightly eased at top.
2. Backsplash: Straight, slightly eased at corner.
3. End Splash: None.

C. Backsplashes: 1/2-inch- thick, solid surface material.

D. Fabricate tops with shop-applied edges unless otherwise indicated. Comply with solid surface material manufacturer's written instructions for adhesives, sealers, fabrication, and finishing.
1. Fabricate with loose backsplashes for field assembly.
2. Install integral sink bowls in countertops in the shop.

E. Joints: Fabricate countertops in sections for joining in field with joints at locations indicated in Shop Drawings.
1. Joint Locations: Not within 18 inches of a sink and not where a countertop section less than 36 inches long would result, unless unavoidable.
2. Fabricate joints between components using manufacturer's standard joint adhesive. Ensure joints are inconspicuous in appearance and without voids. Attach 2-inch wide reinforcing strip of solid polymer material under each joint.

F. Cutouts and Holes:

1. Undercounter Plumbing Fixtures: Make cutouts for fixtures in shop using template or pattern furnished by fixture manufacturer. Form cutouts to smooth, even curves.
   a. Provide vertical edges, slightly eased at juncture of cutout edges with top and bottom surfaces of countertop and projecting 3/16 inch into fixture opening.
   b. Provide vertical edges, rounded to 3/8-inch radius at juncture of cutout edges with top surface of countertop, slightly eased at bottom, and projecting 3/16 inch into fixture opening.
   c. Provide 3/4-inch full bullnose edges projecting 3/8 inch into fixture opening.
2. Counter-Mounted Plumbing Fixtures: Prepare countertops in shop for field cutting openings for counter-mounted fixtures. Mark tops for cutouts and drill holes at corners of cutout locations. Make corner holes of largest radius practical.
3. Fittings: Drill countertops in shop for plumbing fittings, undercounter soap dispensers, and similar items.

2.04 INSTALLATION MATERIALS

A. Adhesive: Product recommended by solid surface material manufacturer.

B. Sealant for Countertops: Standard mildew resistant as per Section 07 9200.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine substrates to receive solid surface material countertops and conditions under which countertops will be installed, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of countertops.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION

A. Install countertops level to a tolerance of 1/8 inch in 8 feet, 1/4 inch maximum. Do not exceed 1/64-inch difference between planes of adjacent units.

B. Fasten subtops to cabinets by screwing through subtops into cornerblocks of base cabinets. Shim as needed to align subtops in a level plane.

C. Secure countertops to subtops with adhesive according to solid surface material manufacturer's written instructions. Align adjacent surfaces and, using adhesive in color to match countertop, form seams to comply with manufacturer's written instructions. Carefully dress joints smooth, remove surface scratches, and clean entire surface.

D. Bond joints with adhesive and draw tight as countertops are set. Mask areas of countertops adjacent to joints to prevent adhesive smears.
   1. Clamp units to temporary bracing, supports, or each other to ensure that countertops are properly aligned and joints inconspicuous in finished work.

E. Install backsplashes and end splashes by adhering to wall and countertops with adhesive. Mask areas of countertops and splashes adjacent to joints to prevent adhesive smears.

F. Install aprons to backing and countertops with adhesive. Mask areas of countertops and splashes adjacent to joints to prevent adhesive smears. Fasten by screwing through backing. Predrill holes for screws as recommended by manufacturer.

G. Complete cutouts not finished in shop. Mask areas of countertops adjacent to cutouts to prevent damage while cutting. Make cutouts to accurately fit items to be installed, and at right angles to finished surfaces unless beveling is required for clearance. Ease edges slightly to prevent snipping.
   1. Seal edges of cutouts in particleboard subtops by saturating with varnish.

H. Apply sealant to gaps at walls; comply with Section 07 9200.

END OF SECTION