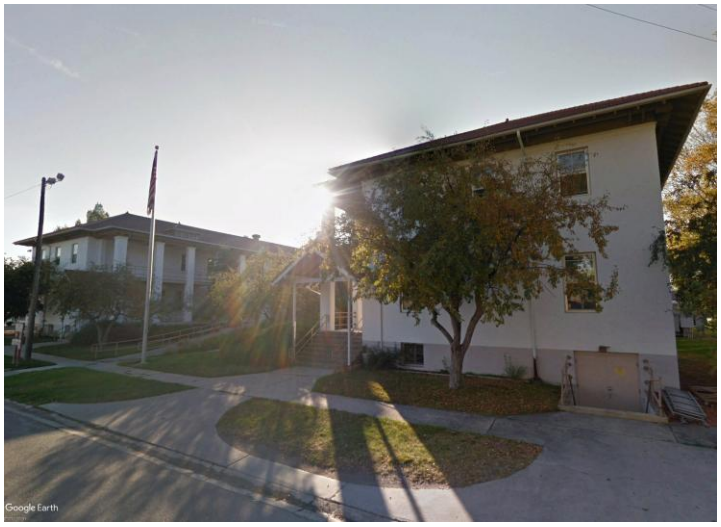
PROJECT MANUAL FOR:

BUILDING 24
BASEMENT REMODEL

Date: July 14, 2026

100% Construction Specifications



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CONSTRUCTION NOTICE

NOTICE: Contractors shall provide temporary protection and cleanup of work occurring in finished and/or occupied areas including, but not limited to, protection of all existing finishes and equipment, cleaning and/or replacement of damaged material, painting, vacuuming, dusting, and etc., required to restore and/or clean the work area to the complete satisfaction of the Contracting Officer.

NOTICE: Extent of architectural, mechanical, and electrical demolition indicated on the Drawings may differ from actual field conditions. Coordinate selective demolition requirements based on demolition plans, field conditions, and new construction plans.

MECHANICAL INTERRUPTION NOTICE

Contractor shall coordinate mechanical interruptions to occupied areas provide temporary mechanical systems to affected occupied areas for interruption(s) taking place during business hours.

1) Typical business hours are Monday through Friday 8:00 a.m. to 5:00 p.m.

Any known mechanical interruption, regardless of the time of day or day of the week, due to the Work of this Contract shall be delivered in writing to the Contracting Officer a minimum seven (7) calendar days in advance of interruption(s).

Do not interrupt mechanical equipment serving occupied portions of the building one-hour prior to and one-hour after typical business hours unless permitted under the following conditions and then only after providing temporary services/systems services to affected occupied areas during the interruption.

1) Submit a request for permission from the Contracting Officer a minimum seven (7) calendar days in advance of any mechanical interruption.
2) Request shall include the anticipated duration of the interruption and the affected building area(s).
3) Do not proceed with interruption(s) until Contracting Officer has informed building occupants affected by the interruption(s).

Contractor shall pay all costs associated with setting and removing temporary mechanical systems.

SERVICES/SYSTEMS INTERRUPTIONS NOTICE

Typical business hours are Monday through Friday 8:00 a.m. to 5:00 p.m. Contractor shall coordinate service/systems interruptions to occupied areas to occur during non-business hours and/or provide temporary services/systems to affected occupied areas for interruption(s) taking place during business hours.

Any known services/systems interruption, regardless of the time of day or day of the week, due to the Work of this Contract shall be delivered in writing to the Contracting Officer a minimum seven (7) calendar days in advance of interruption(s). Contractor shall provide a minimum seven (7) calendar days advance notice to the Contracting Officer prior to changeover from normal power source to temporary and return from temporary power source to normal. The notice allows the Owner and building occupants to schedule work accordingly and avoid any inconvenience prior to minor interruptions.

Do not interrupt services/systems serving occupied portions of the building one-hour prior to and one-hour after typical business hours unless permitted under the following conditions and then only after providing temporary services/systems services to affected occupied areas during the interruption.

1) Submit a request for permission from the Contracting Officer a minimum seven (7) calendar days in advance of any services/systems services interruption.
2) Request shall include the anticipated duration of the outage and the affected building area(s).
3) Do not proceed with interruption(s) until Contracting Officer has informed building occupants affected by the interruption(s).

Contractor shall provide temporary utilities including but not limited to mechanical, electrical, plumbing, and fire and life safety systems serving existing occupied areas, as necessary.

Contractor shall pay all costs associated with setting and removing temporary services/systems.

FIRE WATCH NOTICE

Contractor shall insure no “hot work” is performed in any area without the implementation of a fire watch. Contractor to reference mandatory NFPA 1, Chapter 41.2.3 “Fire Safety During Construction” and, at a minimum, comply with the following: Fire Watch is required in any area exceeding 400 square feet of floor area (including, but not limited to, crawlspaces, attics, and concealed combustible areas) not protected by the operable automatic fire sprinkler system. **Contractor shall obtain written “hot work” authorization permit from the Contracting Officer 72-hours before work starts.**

Contractor shall provide written notice to the Contracting Officer 72-hours prior to enacting a fire-watch period. Contractor shall submit to the Contracting Officer compliant personnel requirements and applicable training certificates for “Fire Watcher” individuals.

Per NFPA 1, a “Fire Watcher” is:

> “A person assigned to be in an area for the express purpose of notifying the fire department of an emergency, preventing a fire from occurring, extinguishing small fires, or protecting the public from fire or life safety dangers addressed in this Code. Specific requirements for personnel, their training, and any equipment are found in the appropriate sections of this Code.”

At all times during a period of fire watch, the contractor shall provide adequate fire extinguisher quantities and locations, as required by Specification Section 015000. Fire Watch personnel shall be provided with adequate 2-way radios, to provide immediate notification to a prior-approved authority. Coordinate with the Contracting Officer to identify a designated, prior-approved authority who shall be in immediate radio contact with Fire Watch personnel at all times during a period of fire

SECTION 011000
SUMMARY

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Project information.
   2. Work covered by Contract Documents.
   3. Phased construction.
   4. Access to site.
   5. Coordination with occupants.
   6. Work restrictions.
   7. Specification and drawing conventions.
   8. Miscellaneous provisions.

B. Related Requirements:
   1. Section 01 5000 - "Temporary Facilities and Controls" for limitations and procedures governing temporary use of Owner's Facilities."

1.02 PROJECT INFORMATION

A. Project Idenification: USFS Building 24 - Basement Remodel.

B. Project Location: Lolo National Forest Headquarters, 24 Fort Missoula Road, Missoula, MT 59804.

C. Owner: U.S. Forest Service, 24 Fort Missoula Road, Missoula, MT 59804.

D. Owner's Representative: Tanner Grimstad.

E. Architect: Mosaic Architecture, PC, 317 North Cruse Avenue, Helena, MT 59601.

1.03 WORK COVERED BY CONTRACT DOCUMENTS

A. The Work of Project is defined by the Contract Documents and consists of the following:
   1. This project consists of remodeling specified areas of Building 24 Lolo National Forest Headquarters at Fort Missoula. The work will include remodeling the south wing of the basement, north-west wing of the 2nd Floor (option item). The work shall include but is not limited to replacing flooring, replacing ceiling tile, painting, relocatingwalls, electrical, plumbing, HVAC data, and lighting. Furnish all labor, material, equipment, tools, transportation, and supplies necessary to complete the work according to the contract.
   2. Material and products for the Project shall be compliant with the federal government "Buy American Act."

B. Type of Contract:
   1. Project will be constructed under a single prime contract.

1.04 PHASED CONSTRUCTION

A. The work indicated shall be conducted in a single Phase.

1.05 ACCESS TO SITE

A. Use of Site: Limit use of Project Site to areas within the Contract Limits indicated. Do not disturb portions of Project Site beyond areas in which the work is indicated. Contractor shall not occupy other areas of the building other than those identified for remodel unless approved by the Contracting Officer. Areas included for remodel shall be closed off for access to occupants.
   1. Limits:
      a. Confine construction operations to 20'-0" beyond the perimeter of the building.
      b. Limit site disturbance, including earthwork.Protect existing vegitation and existing large trees.

c. Contractor shall use basement entities on the east side of the building to access the two basement remodel areas. Access entry to the 2nd floor shall be approved by the C.O.

2. Contractors' Staging Area shall be approved by the Contracting Officer.
3. Driveways, Walkways and Entrances: Keep driveways, roads, loading areas and entrances serving adjacent buildings and properly clear and available to Owner, Owner's employees, and emergency vehicles at all times. Do not use these areas for parking or storage of materials.
   a. Schedule delivers to minimize use of driveways and entrances by construction operations.
   b. Schedule deliveries to minimize space and time requirements for storage of materials and equipment onsite.

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

1.06 CONSTRUCTION RELATED DAMAGE

A. Construction Related Damage: Contractor agrees to pay the Owner all damages and costs incurred by the Owner or caused by the Owner by reason of the Contractor's construction activity related damage including but not limited to damage to any of the Owner's operation electrical equipment and/or computer technology and equipment.

1.07 COORDINATION WITH OCCUPANTS

A. Owner Limited Occupancy of Completed Areas of Construction: Owner reserves the right to occupy and to place and install equipment in completed portions of the Work, prior to Substantial Completion of the Work, provided such occupancy does not interfere with completion of the Work. Such placement of equipment and limited occupancy shall not constitute acceptance of the total work.
   1. Contracting Officer will prepare a Certificate of Substantial Completion for each specific portion of the Work to be occupied prior to Owner acceptance of the completed Work.
   2. Before limited government occupancy, mechanical and electrical systems shall be fully operational, and required tests and inspections shall be successfully completed. On occupancy, government will operate and maintain mechanical and electrical systems serving occupied portions of the Work.
   3. On occupancy, government will assume responsibility for maintenance and custodial service for occupied portions of work.
   4. Notify Owner not less than 72-hours in advance of any activities that will affect Owner's unrestricted access and/or operations and/or the Owner's operations.

1.08 WORK RESTRICTIONS

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

B. On-Site Work Hours: Limit work in existing building to normal business working hours of 8:00 am to 5:00 pm. Monday through Friday, unless otherwise indicated or arranged with Contracting Officer.
   1. Contractor shall coordinate extended. weekend, and/or holiday hours with the Owner; other work restrictions apply as enforced by the authorities having jurisdiction.

C. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by the government or others unless permitted under the following conditions and then only after providing temporary utility services according to requirements indicated:
   1. Notify Contracting Officer not less than 1 calender week in advance of proposed utility interruptions.
   2. Obtain Contracting Officers written permission before proceeding with disruptive operations.

D. Noise, Vibration, and Odors: Coordinate operations that may result in high levels of noise and vibration, odors, or other disruption to owner occupancy with Owner.
   1. Notify Contracting Officer not less than two days in advance of proposed disruptive operations.
   2. Obtain Contracting Officer written permission before proceeding with disruptive operations.

E. Nonsmoking Building: Smoking is not permitted anywhere on the Project Site or within the construction boundaries.

F. Controlled Substance: Use of tobacco products and other controlled substances on Project Site is not permitted.

1.09 SPECIFICATION AND DRAWING CONVENTIONS

A. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:
   1. Imperative mood and streamlined language are generally used in the Specifications. The words "shall," shall be, "shall comply with," depending on context, are implied where a colon (:) is used within a sentence or phrase.
   2. Specification requirements are to be performed by Contractor unless specifically stated otherwise.

B. Division 01 General Requirements: Requirements of Sections in Division 01 apply to the Work of all Sections in the Specifications.

C. Drawing Coordination: Requirements for materials and products identified on Drawings are described in detail in the Specifications. One or more of the following are used on Drawings to identify materials and products:
   1. Terminology: Materials and products are Identified by the typical generic terms used in the individual Specifications Sections.
   2. Abbreviations: Materials and products are Identified by abbreviations scheduled on Drawings.
   3. Keynoting: Materials and products are Identified by reference by reference keynotes referencing Specification Section numbers found in this Project Manual.

1.10 LAW AND REGULATIONS

A. Law and Regulations: All applicable federal and state laws, municipal ordinances, and the rules and regulations of all authorities having jurisdiction over the project shall apply to the contract throughout and will be deemed to be included in this contract the same as through herein written in full.

1.11 WARRANTY

A. Warranty and Service: The Contractor shall warranty all materials, equipment, and labor for one (1) year following the date of Substantial Completion.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

SECTION 012600
CONTRACT MODIFICATION PROCEDURES

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes administrative and procedural requirements for handling and processing Contract modifications, also see Federal Acquisition Regulations (FAR) Part 43.

1.02 MINOR CHANGES IN THE WORK

A. Contracting Officer will issue supplemental instructions authorizing minor changes in the Work, not involving adjustment to the Contract Sum or the Contract Time.

1.03 PROPOSAL REQUESTS

A. Owner-Initiated Proposal Requests: Contracting Officer 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. Proposal Requests issued by Contracting Officer are not instructions either to stop work in progress or to execute the proposed change.
   2. Within time specified in Proposal Request or 15 days, when not otherwise specified, 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 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. Provide Proposal Request Form.

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 Contracting Officer.
   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 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 Division 01 Section "Substitution Procedures" if the proposed change requires substitution of one product or system for product or system specified.
   7. Provide Proposal Request Form.

1.04 CONTRACT MODIFICATION PROCEDURES

A. On Contracting Officer’s approval of a Proposal Request, Contracting Officer will issue a Contract Modification for signatures of Contracting Officer and Contractor on form provided by the Contracting Officer. Multiple changes may be issued on one Contract Modification.

1.05 CONSTRUCTION CHANGE DIRECTIVE

A. Construction Change Directive: Contracting Officer may issue a Change Directive. Change Directive instructs Contractor to proceed with a change in the Work, for subsequent inclusion in a Contract Modification.
   1. Change Directive contains a complete description of change in the Work. It also designates method to be followed to determine change in the Contract Sum or the Contract Time.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 012600

SECTION 012900
PAYMENT PROCEDURES

PART 1 - GENERAL

1.01 SUMMARY

A. This Section specifies administrative and procedural requirements necessary to prepare a Schedule of Values for Applications for Payment. All other payment procedures are shown elsewhere.

1.02 SCHEDULE OF VALUES

A. Coordination: Coordinate preparation of the schedule of values with preparation of Contractor's construction schedule. Cost-loaded Critical Path Method Schedule may serve to satisfy requirements for the schedule of values.
   1. Correlate line items in the schedule of values with other required administrative forms and schedules, including the following:
      a. Application for Payment forms with continuation sheets.
      b. Submittal schedule.
      c. Items required to be indicated as separate activities in Contractor's construction schedule.
   2. Submit the schedule of values to Contracting Officer at earliest possible date but no later than 7 days before the date scheduled for submittal of initial Applications for Payment.

B. Format and Content: Use the 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 Contracting Officer.
      c. Forest Service project number.
      d. Contractor's name and address.
      e. Date of submittal.
   2. Arrange schedule of values consistent with standard industry formats. Format shall be submitted to the Contracting Officer for review and approval.
   3. Provide a breakdown of the Contract Sum in enough detail to facilitate continued evaluation of Applications for Payment and progress reports. Coordinate with the Project Manual table of contents.
   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.
   5. Each item in the schedule of values and Applications for Payment shall be complete. Include total cost and proportionate share of general overhead and profit for each item.
   6. Schedule Updating: Update and resubmit the schedule of values before the next Applications for Payment when Change Orders result in a change in the Contract Sum.

1.03 APPLICATIONS FOR PAYMENT

A. Each Application for Payment shall be consistent with previous applications and payments as certified by Contracting Officer and paid for by Government.

B. Payment Application Times: Progress payments shall be submitted to Contracting Officer on intervals and dates agreed to by the Contracting Officer

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 012900

SECTION 013100
PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.01 SUMMARY

A. This Section includes administrative provisions for coordinating construction operations on Project including, but not limited to, the following:
   1. Coordination Drawings.
   2. Project meetings.
   3. Requests for Interpretation (RFIs).

B. See Division 01 Section "Execution" for procedures for coordinating general installation and field-engineering services, including establishment of benchmarks and control points.

1.02 DEFINITIONS

A. RFI: Request from Contractor seeking interpretation or clarification of the Contract Documents.

1.03 COORDINATION

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 with other contractors to ensure maximum accessibility for required maintenance, service, and repair.
   3. Make adequate provisions to accommodate items scheduled for later installation.
   4. Where availability of space is limited, coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair of all components, including mechanical and electrical.

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 Contracting Officer 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 and activities of other contractors 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. Pre-installation conferences.
   7. Project closeout activities.
   8. Startup and adjustment of systems.
   9. Project closeout activities.

1.04 SUBMITTALS

A. Coordination Drawings: Prepare Coordination Drawings if limited space availability necessitates maximum utilization of space for efficient installation of different components or if coordination is required for installation of products and materials fabricated by separate entities.

1. Content: Project-specific information, drawn accurately to scale. Do not base Coordination Drawings on reproductions of the Contract Documents or standard printed data. Include the following information, as applicable:
    a. Indicate functional and spatial relationships of components of architectural, structural, civil, mechanical, and electrical systems.
    b. Indicate dimensions shown on the Contract Drawings and make specific note of dimensions that appear to be in conflict with submitted equipment and minimum clearance requirements. Provide alternate sketches to Contracting Officer for resolution of such conflicts. Minor dimension changes and difficult installations will not be considered changes to the Contract.
2. Sheet Size: At least 8-1/2 by 11 inches but no larger than 24 by 36 inches.
3. Number of Copies: Submit three opaque copies of each submittal. Contracting Officer will return one copy.
4. Refer to individual Sections for Coordination Drawing requirements for Work in those Sections.

1.05 PROJECT MEETINGS

A. General: Schedule and conduct meetings and conferences at Project site, unless otherwise indicated.
    1. Attendees: All participants and others involved will be informed of date and time of each meeting. Contractor will notify Contracting Officer of scheduled meeting dates and times.
    2. Agenda: Contractor shall prepare the meeting agenda. The agenda will be distributed to all invited attendees.
    3. Minutes: Contractor shall record significant discussions and agreements achieved. The meeting minutes will be distributed to everyone concerned, within three days of the meeting.

B. Preconstruction Conference: Schedule a preconstruction conference before starting construction, at a time coordinated with the Contracting Officer, but no later than 15 days after execution of the Agreement. Hold the conference at Project site or another convenient location. Conduct the meeting to review responsibilities and personnel assignments.
    1. Attendees: Authorized representatives of Contracting Officer, Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the conference. All 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. Phasing.
        c. Green Globe requirements.
        d. Critical work sequencing and long-lead items.
        e. Designation of key personnel and their duties.
        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.
        n. Work restrictions.
        o. Contracting Officer's occupancy requirements.
        p. Responsibility for temporary facilities and controls.
        q. Construction waste management and recycling.
        r. Parking availability.
        s. Office, work, and storage areas.

t. Equipment deliveries and priorities.
u. First aid.
v. Security.
w. Progress cleaning.
x. Working hours.

3. Minutes: Contracting Officer will record and distribute meeting minutes.

C. Pre-installation Conferences: Conduct a preinstallation conference at Project site before each construction activity that requires 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 Contracting Officer 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. The Contract Documents.
b. Green Globe requirements.
c. Options.
d. Related RFIs.
e. Related Change Orders.
f. Purchases.
g. Deliveries.
h. Submittals.
i. Review of mockups.
j. Possible conflicts.
k. Compatibility problems.
l. Time schedules.
m. Weather limitations.
n. Manufacturer's written recommendations.
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 parties who should have been present.
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. Progress Meetings: Conduct progress meetings at biweekly intervals. Coordinate dates of meetings with preparation of payment requests.
1. Attendees: In addition to the Contracting Officer, 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 conference shall be familiar with Project and authorized to conclude matters relating to the Work.

2. 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) Status of submittals.
        4) Deliveries.
        5) Off-site fabrication.
        6) Access.
        7) Site utilization.
        8) Temporary facilities and controls.
        9) Work hours.
        10) Hazards and risks.
        11) Progress cleaning.
        12) Quality and work standards.
        13) Status of correction of deficient items.
        14) Field observations.
        15) RFIs.
        16) Status of Green Globe requirements.
        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.
3. Minutes: Contractor shall record and distribute the meeting minutes.
4. Reporting: Distribute minutes of the meeting to each party present and to parties who should have been present.
    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.

1.06 REQUESTS FOR INTERPRETATION (RFIS)

A. Procedure: Immediately on discovery of the need for interpretation of the Contract Documents, and if not possible to request interpretation at Project meeting, prepare and submit an RFI in the form specified.
    1. RFIs shall originate with Contractor. RFIs submitted by entities other than Contractor will be returned with no response.
    2. Coordinate and submit RFIs in a prompt manner so as to avoid delays in Contractor's work or work of subcontractors.
    3. RFI forms to be completed by Contractor, sent to the Project Manager, and then forwarded to the Contracting Officer’s Representative for action. Electronic versions may be transmitted to all parties simultaneously.

B. Content of the RFI: Include a detailed, legible description of item needing interpretation and the following:

1. Project name.
2. Date.
3. Name of Contractor.
4. Name of Contracting Officer.
5. Name of Contracting Officer’s Field Representative if applicable.
6. RFI number, numbered sequentially.
7. Specification Section number and title and related paragraphs, as appropriate.
8. Drawing number and detail references, as appropriate.
9. Field dimensions and conditions, as appropriate.
10. Contractor's suggested solution(s). If Contractor's solution(s) impact the Contract Time or the Contract Sum, Contractor shall state impact in the RFI.
11. Contractor's signature.
12. Attachments: Include drawings, descriptions, measurements, photos, Product Data, Shop Drawings, and other information necessary to fully describe items needing interpretation.

C. Hard-Copy RFIs:
   1. Identify each page of attachments with the RFI number and sequential page number.

D. Contracting Officer's Action: Contracting Officer will review each RFI, determine action required, and return it. Allow two working days for Contracting Officer's response for each RFI. RFIs received after 1:00 p.m. will be considered as received the following working day.
   1. The following RFIs will be returned without action:
      a. Requests for approval of submittals.
      b. Requests for approval of substitutions.
      c. Requests for coordination information already indicated in the Contract Documents.
      d. Requests for adjustments in the Contract Time or the Contract Sum.
      e. Requests for interpretation of Contracting Officer's actions on submittals.
      f. Incomplete RFIs or RFIs with numerous errors.
   2. Contracting Officer's action may include a request for additional information, in which case Contracting Officer's time for response will start again.
   3. Contracting Officer'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 Division 01 Section "Contract Modification Procedures."
      a. If Contractor believes the RFI response warrants change in the Contract Time or the Contract Sum, notify Contracting Officer in writing within five days of receipt of the RFI response.

E. On receipt of Contracting Officer's action, update the RFI log and immediately distribute the RFI response to affected parties. Review response and notify Contracting Officer within five days if Contractor disagrees with response.

F. RFI Log: Prepare, maintain, and submit a tabular log of RFIs organized by the RFI number. Submit log weekly. Include the following:
   1. Project name.
   2. Name and address of Contractor.
   3. Name and address of Contracting Officer.
   4. Name and address of Contracting Officer’s field representative if applicable
   5. RFI number including RFIs that were dropped and not submitted.
   6. RFI description.
   7. Date the RFI was submitted.
   8. Date Contracting Officer's response was received.
   9. Identification of related Minor Change in the Work, Construction Change Directive, and Proposal Request, as appropriate.
   10. Identification of related Field Order, Work Change Directive, and Proposal Request, as appropriate.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 013100

SECTION 013200
CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 - GENERAL

1.01 SUMMARY

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

1.02 DEFINITIONS

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

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

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

1.03 INFORMATIONAL SUBMITTALS

A. Format for Submittals: Submit required submittals in the following format:
   1. Working electronic copy of schedule file, where indicated.
   2. PDF electronic file.

B. Startup Network Diagram: Of size required to display entire network for entire construction period. Show logic ties for activities.

C. Contractor's Construction Schedule: Initial schedule, of size required to display entire schedule for entire construction period.
   1. Submit a working electronic copy of schedule, using software indicated, and labeled to comply with requirements for submittals. Include type of schedule (initial or updated) and date on label.

D. CPM Reports: Concurrent with CPM schedule, submit each of the following reports. Format for each activity in reports shall contain activity number, activity description, original duration, remaining duration, early start date, early finish date, late start date, late finish date, and total float in calendar days.
   1. Activity Report: List of all activities sorted by activity number and then early start date, or actual start date if known.
   2. Logic Report: List of preceding and succeeding activities for all activities, sorted in ascending order by activity number and then early start date, or actual start date if known.

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

F. Daily Construction Reports: Submit at weekly intervals.

G. Site Condition Reports: Submit at time of discovery of differing conditions.

1.04 COORDINATION

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

PART 2 - PRODUCTS

2.01 CONTRACTOR'S CONSTRUCTION SCHEDULE, GENERAL

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

B. Activities: Treat each story or separate area as a separate numbered activity for each main element of the Work. Comply with the following:
   1. Activity Duration: Define activities so no activity is longer than 20 days, unless specifically allowed by the Contracting Officer.
   2. Procurement Activities: Include procurement process activities for the following long lead items and major items, requiring a cycle of more than 60 days, as separate activities in schedule. Procurement cycle activities include, but are not limited to, submittals, approvals, purchasing, fabrication, and delivery.
      a. Roof Top Air Handling Unit.
      b. VAV boxes.
      c. Air Cooled Chiller.
      d. Fan Coil Units.
      e. Landscape Plantings.
      f. Elevator.
      g. Storefront Entrances and Windows (and associated glazing).
      h. Automatic Sliding Entrances.
      i. Casework.
      j. Exterior Siding and Siding trim flashings from single source.
      k. Vertical Shading Devices.
      l. Mechanical Assisted Track Storage.
      m. Metal Pipe/Tube Railings & Handrails.
      n. Roller window shades.
   3. Submittal Review Time: Include review and resubmittal times indicated in Section 013300 "Submittal Procedures" in schedule. Coordinate submittal review times in Contractor's construction schedule with submittal schedule.
   4. Startup and Testing Time: Include no fewer than 15 days for startup and testing.
   5. Substantial Completion: Indicate completion in advance of date established for Substantial Completion, and allow time for Contracting Officer’s administrative procedures necessary for certification of Substantial Completion.
   6. Punch List and Final Completion: Include not more than 30 days for completion of punch list items and final completion.

C. Constraints: Include constraints and work restrictions indicated in the Contract Documents and as follows in schedule, and show how the sequence of the Work is affected.
   1. Phasing: Arrange list of activities on schedule by phase.
   2. Work under More Than One Contract: Include a separate activity for each contract.
   3. Work Restrictions: Show the effect of the following items on the schedule:
      a. Coordination with existing construction.
      b. Limitations of continued occupancies.
      c. Uninterruptible services.

d. Partial occupancy before Substantial Completion.
e. Use of premises restrictions.
f. Provisions for future construction.
g. Seasonal variations.
h. Environmental control.

4. Work Stages: Indicate important stages of construction for each major portion of the Work.

D. Milestones: Include milestones indicated in the Contract Documents in schedule, including, but not limited to, the Notice to Proceed, Substantial Completion, and final completion.

E. Upcoming Work Summary: Prepare summary report indicating activities scheduled to occur or commence prior to submittal of next schedule update. Summarize the following issues:
1. Unresolved issues.
2. Unanswered Requests for Information.
3. Rejected or unreturned submittals.
4. Notations on returned submittals.
5. Pending modifications affecting the Work and Contract Time.

F. Recovery Schedule: When periodic update indicates the Work is 14 or more calendar days behind the current approved schedule, submit a separate recovery schedule indicating means by which Contractor intends to regain compliance with the schedule.

G. Computer Scheduling Software: Prepare schedules using current version of a program that has been developed specifically to manage construction schedules.
1. Use Microsoft Project, for latest Windows operating system operating system.

2.02 CONTRACTOR'S CONSTRUCTION SCHEDULE (GANTT CHART)

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

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

2.03 REPORTS

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

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

PART 3 - EXECUTION

3.01 CONTRACTOR'S CONSTRUCTION SCHEDULE

A. Contractor's Construction Schedule Updating: At bi-weekly intervals, update schedule to reflect actual construction progress and activities. Issue schedule 4 work days before each regularly scheduled progress meeting.
   1. Revise schedule immediately after each meeting or other activity where revisions have been recognized or made. Issue updated schedule concurrently with the report of each such meeting.
   2. Include a report with updated schedule that indicates every change, including, but not limited to, changes in logic, durations, actual starts and finishes, and activity durations.
   3. As the Work progresses, indicate final completion percentage for each activity.

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

END OF SECTION 013200

SECTION 013233
PHOTOGRAPHIC DOCUMENTATION

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes administrative and procedural requirements for the following:
   1. Preconstruction photographs.
   2. Periodic construction photographs.
   3. Periodic progress photographs required for Green Globes Certification.

B. Related Requirements:
   1. Section 017700 "Closeout Procedures" for submitting photographic documentation as Project Record Documents at Project closeout.

1.02 INFORMATIONAL SUBMITTALS

A. Construction Photographs: Submit digital photographs to Contracting Officer.
   1. Identification: With each digital file submittal include electronic file information stating the following information:
      a. Date photograph was taken as date stamped by camera.

PART 2 - PRODUCTS

2.01 PHOTOGRAPHIC MEDIA

A. Digital Images: Provide images in JPG format, with minimum size of 8 megapixels, and date stamped by camera.

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.
   1. Maintain key plan with each set of construction photographs that identifies each photographic location.

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.

C. Preconstruction Photographs: Before commencement of work, take photographs of Project site and surrounding properties, including existing items to remain during construction, from different vantage points, as directed by Contracting Officer.
   1. Flag construction limits before taking construction photographs.
   2. Take photographs to show existing conditions adjacent to property before starting the Work.
   3. Take photographs of existing buildings either on or adjoining property to accurately record physical conditions at start of construction.
   4. Take photographs of all the existing building exterior elevations to accurately record the physical condition of the building exterior prior to the start of construction.
   5. Take photographs of all the existing building interior spaces to accurately record the physical conditions of each room within the building prior to the start of construction.

D. Periodic Construction Photographs: Take photographs weekly, with timing each month adjusted to coincide with the cutoff date associated with each Application for Payment. Select vantage points to show status of construction and progress since last photographs were taken.

E. Final Completion Construction Photographs: Take color photographs after date of Substantial Completion for submission as Project Record Documents.

END OF SECTION 013233

SECTION 013300
SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes requirements for the submittal schedule and administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other submittals.

B. Related Sections:
   1. Division 01 Section "Construction Progress Documentation" for submitting schedules and reports, including Contractor's construction schedule.
   2. Division 01 Section "Operation and Maintenance Data" for submitting operation and maintenance manuals.
   3. Division 01 Section "Project Record Documents" for submitting record Drawings, record Specifications, and record Product Data.
   4. Division 01 Section "Demonstration and Training" for submitting video recordings of demonstration of equipment and training of Owner’s personnel.

1.02 DEFINITIONS

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

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

1.03 ACTION SUBMITTALS

A. Submittal Schedule: Submit a schedule of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review, ordering, manufacturing, fabrication, and delivery when establishing dates. Include additional time required for making corrections or modifications to submittals noted by the Contracting Officer and additional time for handling and reviewing submittals required by those corrections.

1.04 SUBMITTAL ADMINISTRATIVE REQUIREMENTS

A. Contracting Officer's Digital Data Files: Electronic copies of CAD Drawings of the Contract Drawings will be provided by Contracting Officer for Contractor's use in preparing submittals.
   1. Contracting Officer will furnish Contractor one set of digital data drawing files of the Contract Drawings for use in preparing Shop Drawings.
      a. Contracting Officer makes no representations as to the accuracy or completeness of digital data drawing files as they relate to the Contract Drawings.

B. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.
   1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
   2. Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.
      a. Contracting Officer reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.

C. Processing Time: Allow time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Contracting Officer'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. Contracting Officer 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.

D. Identification and Information: Place a permanent label or title block on each paper copy submittal item for identification.
1. Indicate name of firm or entity that prepared each submittal on label or title block.
2. Provide a space approximately 6 by 8 inches on label or beside title block to record Contractor's review and approval markings and action taken by Contracting Officer.
3. Include the following information for processing and recording action taken:
    a. Project name.
    b. Date.
    c. Name of Contracting Officer.
    d. Name of Contractor.
    e. Name of subcontractor.
    f. Name of supplier.
    g. Name of manufacturer.
    h. Submittal number or other unique identifier, including revision identifier.
        1) Submittal number shall use Specification Section number followed by a decimal point and then a sequential number (e.g., 061000.01). Resubmittals shall include an alphabetic suffix after another decimal point (e.g., 061000.01.A).
    i. Number and title of appropriate Specification Section.
    j. Drawing number and detail references, as appropriate.
    k. Location(s) where product is to be installed, as appropriate.
    l. Other necessary identification.

E. Identification and Information: Identify and incorporate information in each electronic submittal file as follows:
1. Assemble complete submittal package into a single indexed file with links enabling navigation to each item.
2. Name file with submittal number or other unique identifier, including revision identifier.
    a. File name shall use project identifier and Specification Section number followed by a decimal point and then a sequential number (e.g., LNHS-061000.01). Resubmittals shall include an alphabetic suffix after another decimal point (e.g., LNHS-061000.01.A).
3. Provide means for insertion to permanently record Contractor's review and approval markings and action taken by Contracting Officer.
4. Include the following information on an inserted cover sheet:
    a. Project name.
    b. Date.
    c. Name and address of Contracting Officer.
    d. Name of Construction Manager.
    e. Name of Contractor.
    f. Name of firm or entity that prepared submittal.
    g. Name of subcontractor.
    h. Name of supplier.
    i. Name of manufacturer.
    j. Number and title of appropriate Specification Section.
    k. Drawing number and detail references, as appropriate.
    l. Location(s) where product is to be installed, as appropriate.
    m. Related physical samples submitted directly.
    n. Other necessary identification.

F. Options: Identify options requiring selection by the Contracting Officer.

G. Deviations: Identify deviations from the Contract Documents on submittals.

H. Additional Paper Copies: Unless additional copies are required for final submittal, and unless Contracting Officer observes noncompliance with provisions in the Contract Documents, initial submittal may serve as final submittal.
   1. Submit one copy of submittal to concurrent reviewer in addition to specified number of copies to Contracting Officer.

I. Transmittal: Assemble each submittal individually and appropriately for transmittal and handling. Transmit each submittal using a transmittal form. Contracting Officer will return submittals, without review, received from sources other than Contractor.
   1. Transmittal Form: Provide and industry standardized form to the Contracting Officer for review and approval.
   2. On an attached separate sheet, prepared on Contractor's letterhead, record relevant information, requests for data, revisions other than those requested by Contracting Officer on previous submittals, and deviations from requirements in the Contract Documents, including minor variations and limitations. Include same identification information as related submittal.

J. 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 Contracting Officer's action stamp.

K. 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.

L. Use for Construction: Use only final submittals that are marked with approval notation from Contracting Officer or COR’s email response.

PART 2 - PRODUCTS

2.01 SUBMITTAL PROCEDURES

A. General Submittal Procedure Requirements:
   1. Submit electronic submittals via email as PDF electronic files.
      a. Contracting Officer will return annotated file. Annotate and retain one copy of file as an electronic Project record document file.
   2. Action Submittals: Submit three paper copies of each submittal, unless otherwise indicated. Contracting Officer will return two copies.
   3. Informational Submittals: Submit two paper copies of each submittal, unless otherwise indicated. Contracting Officer will not return copies.
   4. Sustainable Design Requirements: Submit three paper copies of each submittal, unless otherwise indicated. Contracting Officer will return two copies.
   5. Closeout Submittals and Maintenance Material Submittals: Comply with requirements specified in Division 01 Section "Closeout Procedures."
   6. Certificates and Certifications Submittals: Provide a 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.
      a. Provide a digital signature with digital certificate on electronically-submitted certificates and certifications where indicated.
      b. Provide a notarized statement on original paper copy certificates and certifications where indicated.
   7. Test and Inspection Reports Submittals: Comply with requirements specified in Division 01 Section "Quality Requirements."

B. Product Data: 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. Green Globe sustainability requirements.
    c. Manufacturer's product specifications.
    d. Standard color charts.
    e. Statement of compliance with specified referenced standards.
    f. Testing by recognized testing agency.
    g. Application of testing agency labels and seals.
    h. Notation of coordination requirements.
    i. Availability and delivery time information.
4. For equipment, include the following in addition to the above, as 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. Submit Product Data before or concurrent with Samples.
6. Submit Product Data in the following format:
    a. PDF electronic file.

C. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data, unless submittal based upon Contracting Officer's digital data drawing files is otherwise permitted.
1. 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.
2. Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches but no larger than 24 by 36 inches.
3. Submit Shop Drawings in the following format:
    a. PDF electronic file.
    b. Two opaque (bond) copies of each submittal. Contracting Officer will return one copy.

D. Samples: Submit Samples for review of kind, color, pattern, and texture for a check of these characteristics with other elements and for a comparison of these characteristics between submittal and actual component as delivered and installed.
1. Transmit Samples that contain multiple, related components such as accessories together in one submittal package.
2. Identification: Attach label on unexposed side of Samples that includes the following:
    a. Generic description of Sample.
    b. Product name and name of manufacturer.
    c. Sample source.
    d. Number and title of applicable Specification Section.
3. 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.

4. 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. Contracting Officer will return submittal with options selected.
5. 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 three sets of Samples. Contracting Officer will retain two Sample sets; remainder will be returned.
      1) 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.

E. Product Schedule: As required in individual Specification Sections, prepare a written summary indicating types of products required for the Work and their intended location. Include the following information in tabular form:
   1. Submit product schedule in the following format:
      a. PDF electronic file.

F. Contractor's Construction Schedule: Comply with requirements specified in Division 01 Section "Construction Progress Documentation."

G. Application for Payment: Comply with requirements specified in Division 01 Section "Schedule of Values for Applications for Payment."

H. Schedule of Values: Comply with requirements specified in Division 01 Section "Schedule of Values for Application for Payment".

I. Subcontract List: Submit list in accordance with requirements stated elsewhere and below.
   1. Submit subcontract list in the following format:
      a. PDF electronic file.

J. Coordination Drawings: Comply with requirements specified in Division 01 Section "Project Management and Coordination."

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

L. 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 American Welding Society (AWS) forms. Include names of firms and personnel certified.

M. 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.

N. 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.

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

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

Q. Material Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.

R. Product Test Reports: Submit written reports indicating current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.

S. Research Reports: Submit written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project.

T. Schedule of Tests and Inspections: Comply with requirements specified in Division 01 Section "Quality Requirements."

U. Preconstruction Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements in the Contract Documents.

V. Compatibility Test Reports: Submit 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.

W. Field Test Reports: Submit reports 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 in the Contract Documents.

X. Maintenance Data: Comply with requirements specified in Division 01 Section "Operation and Maintenance Data."

Y. Design Data: Prepare and submit 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.

2.02 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 Contracting Officer.

B. Delegated-Design Services Certification: In addition to Shop Drawings, Product Data, and other required submittals, submit digitally-signed PDF electronic file and three paper copies of certificate, 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.
   1. Indicate that products and systems comply with performance and design criteria in the Contract Documents. Include list of codes, loads, and other factors used in performing these services.

PART 3 - EXECUTION

3.01 CONTRACTOR'S REVIEW

A. Action 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 Contracting Officer.

B. Project Closeout and Maintenance/Material Submittals: Refer to requirements in Division 01 Section "Closeout Procedures."

C. Approval Stamp: Stamp each submittal with a uniform, approval stamp. Include Project name and location, submittal number, Specification Section title and number, 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.

3.02 CONTRACTING OFFICER'S ACTION

A. General: Contracting Officer will not review submittals that do not bear Contractor's approval stamp and will return them without action.

B. Action Submittals: Contracting Officer will review each submittal, make marks to indicate corrections or modifications required, and return it. Contracting Officer or Representative will mark each submittal with appropriately to indicate action.

C. Informational Submittals: Contracting Officer will review each submittal and will not return it, or will return it if it does not comply with requirements. Contracting Officer will forward each submittal to the Contractor for action.

D. Incomplete submittals are not acceptable, will be considered nonresponsive, and will be returned without review.

E. Submittals not required by the Contract Documents may not be reviewed and may be discarded.

END OF SECTION 013300

SECTION 014000
QUALITY REQUIREMENTS

PART 1 - GENERAL

1.01 SUMMARY

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

B. Testing and inspecting 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. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and -control procedures that facilitate compliance with the Contract Document requirements.
   2. Requirements for Contractor to provide quality-assurance and -control services required by Contracting Officer or authorities having jurisdiction are not limited by provisions of this Section.

C. See Divisions 02 through 49 Sections for specific test and inspection requirements.

1.02 DEFINITIONS

A. 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.

B. 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. Services do not include contract enforcement activities performed by Contracting Officer.

C. Mockups: Full-size, physical assemblies that are constructed on-site. Mockups are used to verify selections made under sample submittals, to demonstrate aesthetic effects and, where indicated, qualities of materials and execution, and to review construction, coordination, testing, or operation; they are not Samples. Approved mockups establish the standard by which the Work will be judged.

D. Laboratory Mockups: Full-size, physical assemblies that are constructed at testing facility to verify performance characteristics.

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

F. Product Testing: Tests and inspections that are performed by an NRTL, an NVLAP, or a testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with industry standards.

G. Source Quality-Control Testing: Tests and inspections that are performed at the source, i.e., plant, mill, factory, or shop.

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

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

J. 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, and similar operations.
   1. Using a term such as "carpentry" does not imply that certain construction activities must be performed by accredited or unionized individuals of a corresponding generic name,

such as "carpenter." It also does not imply that requirements specified apply exclusively to trades people of the corresponding generic name.

K. Experienced: When used with an entity, "experienced" means having successfully completed a minimum of five previous projects similar in size and scope to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.

1.03 CONFLICTING REQUIREMENTS

A. General: If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer uncertainties and requirements that are different, but apparently equal, to Contracting Officer for a decision 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 Contracting Officer for a decision before proceeding.

1.04 SUBMITTALS

A. Qualification Data: 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.

B. Reports: Prepare and submit certified written reports that include the following:
   1. Date of issue.
   2. Project title and number.
   3. Name, address, and telephone number of testing agency.
   4. Dates and locations of samples and tests or inspections.
   5. Names of individuals making tests and inspections.
   6. Description of the Work and test and inspection method.
   7. Identification of product and Specification Section.
   8. Complete test or inspection data.
   9. Test and inspection results and an interpretation of test results.
   10. Record of temperature and weather conditions at time of sample taking and testing and inspecting.
   11. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
   12. Name and signature of laboratory inspector.
   13. Recommendations on retesting and re-inspecting.

C. Permits, Licenses, and Certificates: For Owner's records, 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.

1.05 QUALITY ASSURANCE

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

B. Installer Qualifications: A firm or individual experienced in installing, erecting, 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.

C. 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.

D. 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.

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 to those indicated for this Project in material, design, and extent.

F. Specialists: Certain sections of the Specifications 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. Requirement for specialists shall not supersede building codes and regulations governing the Work.

G. Testing Agency Qualifications: An NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspecting indicated, as documented according to ASTM E 548; and with additional qualifications specified in individual Sections; and where required by authorities having jurisdiction, that is acceptable to authorities.
   1. NRTL: A nationally recognized testing laboratory according to 29 CFR 1910.7.
   2. NVLAP: A testing agency accredited according to NIST's National Voluntary Laboratory Accreditation Program.

H. 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.

I. 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 in location and of size indicated or, if not indicated, as directed by Contracting Officer.
   2. Notify Contracting Officer seven days in advance of dates and times when mockups will be constructed.
   3. Demonstrate the proposed range of aesthetic effects and workmanship.
   4. Obtain Contracting Officer's approval of mockups before starting work, fabrication, or construction.
   5. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.
   6. Demolish and remove mockups when directed, unless otherwise indicated.

J. Laboratory Mockups: Comply with requirements of preconstruction testing and those specified in individual Sections in Divisions 02 through 49.

1.06 QUALITY CONTROL

A. Tests and inspections, as well as special tests and inspections, not explicitly assigned to Contracting Officer are Contractor's responsibility. 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.
   1. Where services are indicated as Contractor's responsibility, engage a qualified testing agency to perform these quality-control services.
      a. Contractor shall not employ same entity engaged by Contracting Officer, unless agreed to in writing by Contracting Officer.
   2. Notify testing agencies at least 24 hours in advance of time when Work that requires testing or inspecting will be performed.

3. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.
4. Testing and inspecting requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
5. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.

B. 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 Division 01 Section "Submittal Procedures."

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

D. Testing Agency Responsibilities: Cooperate with Contracting Officer and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.
1. Notify Contracting Officer and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
2. Determine the location 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 any duties of Contractor.

E. Associated Services: Cooperate with agencies 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 inspecting. 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 inspecting equipment at Project site.

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

1.07 SPECIAL TESTS AND INSPECTIONS

A. Special Tests and Inspections: Contractor will engage a qualified testing agency and/or special inspector to conduct special tests and inspections required by authorities having jurisdiction, as indicated in individual Specification Sections, and as follows:
1. Verifying that manufacturer maintains detailed fabrication and quality-control procedures and reviewing the completeness and adequacy of those procedures to perform the Work.
2. Notifying Contracting Officer and Contractor promptly of irregularities and deficiencies observed in the Work during performance of its services.

3. Submitting a certified written report of each test, inspection, and similar quality-control service to Contracting Officer with copy to Contractor and to authorities having jurisdiction.
4. Submitting a final report of special tests and inspections at Substantial Completion, which includes a list of unresolved deficiencies.
5. Interpreting tests and inspections and stating in each report whether tested and inspected work complies with or deviates from the Contract Documents.
6. Retesting and re-inspecting corrected work.

PART 2 - PRODUCTS

2.01 ASBESTOS CONTAINING MATERIAL

1. The Contractor shall not use during construction or incorporate into the final construction product any material or product that contains more than 1% asbestos by dry volume as determined by the Polar Light Microscopy Method. Less than 1% shall be considered under these specifications as Asbestos Free.

PART 3 - EXECUTION

3.01 REPAIR AND PROTECTION

A. General: On completion of testing, inspecting, 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. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible.
   2. Comply with the Contract Document requirements for Division 01 Section "Cutting and Patching."

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

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

3.02 SPECIAL INSPECTIONS SCHEDULE

A. Onsite concrete cylinders and masonry core samples taken under guidance of the General Contractor to be broken in a qualified lab selected by the General Contractor. The number of breaks is defined in the Specifications.

B. Rebar placement documented by digital photography will be submitted to the Contracting Officer for review prior to the placement of any concrete or masonry.

C. Field welds and bolting to be reviewed by K4 Inspection, Inc. under the guidance of the General Contractor.

END OF SECTION 014000

SECTION 014200
REFERENCES

PART 1 - GENERAL

1.01 DEFINITIONS

A. General: Basic Contract definitions are included in the Conditions of the Contract.

B. "Approved": When used to convey Contracting Officer's action on Contractor's submittals, applications, and requests, "approved" is limited to Contracting Officer's duties and responsibilities as stated in the Conditions of the Contract.

C. "Directed": A command or instruction by Contracting Officer. Other terms including "requested," "authorized," "selected," "required," and "permitted" have the same meaning as "directed."

D. "Indicated": Requirements expressed by graphic representations or in written form on Drawings, in Specifications, and in other Contract Documents. Other terms including "shown," "noted," "scheduled," and "specified" have the same meaning as "indicated."

E. "Regulations": Laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, and rules, conventions, and agreements within the construction industry that control performance of the Work.

F. "Furnish": Supply and deliver to Project site, ready for unloading, unpacking, assembly, installation, and similar operations.

G. "Install": Operations at Project site including unloading, temporarily storing, unpacking, assembling, erecting, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations.

H. "Provide": Furnish and install, complete and ready for the intended use.

I. "Project Site": Space available for performing construction activities. The extent of Project site is shown on Drawings and may or may not be identical with the description of the land on which Project is to be built.

1.02 INDUSTRY STANDARDS

A. Applicability of Standards: Unless the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.

B. Publication Dates: Comply with standards in effect as of date of the Contract Documents unless otherwise indicated.

C. Copies of Standards: Each entity engaged in construction on Project should be familiar with industry standards applicable to its construction activity. Copies of applicable standards are not bound with the Contract Documents.

1. Where copies of standards are needed to perform a required construction activity, obtain copies directly from publication source.

1.03 ABBREVIATIONS AND ACRONYMS

A. Industry Organizations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities indicated in Thomson Gale's "Encyclopedia of Associations" or in Columbia Books' "National Trade & Professional Associations of the U.S."

B. Industry Organizations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list.

AA	Aluminum Association, Inc. (The)
AAADM	American Association of Automatic Door Manufacturers
AABC	Associated Air Balance Council
AAMA	American Architectural Manufacturers Association

AASHTO	American Association of State Highway and Transportation Officials
AATCC	American Association of Textile Chemists and Colorists (The)
ABAA	Air Barrier Association of America
ABMA	American Bearing Manufacturers Association
ACI	ACI International (American Concrete Institute)
ACPA	American Concrete Pipe Association
AEIC	Association of Edison Illuminating Companies, Inc. (The)
AF&PA	American Forest & Paper Association
AGA	American Gas Association
AGC	Associated General Contractors of America (The)
AHA	American Hardboard Association (Now part of CPA)
AHAM	Association of Home Appliance Manufacturers
AI	Asphalt Institute
AIA	American Institute of Architects (The)
AISC	American Institute of Steel Construction
AISI	American Iron and Steel Institute
AITC	American Institute of Timber Construction
ALCA	Associated Landscape Contractors of America (Now PLANET - Professional Landcare Network
ALSC	American Lumber Standard Committee, Incorporated
AMCA	Air Movement and Control Association International, Inc.
ANSI	American National Standards Institute
AOSA	Association of Official Seed Analysts, Inc.
APA	Architectural Precast Association
APA	APA - The Engineered Wood Association
APA EWS	APA - The Engineered Wood Association; Engineered Wood Systems
API	American Petroleum Institute
ARI	Air-Conditioning & Refrigeration Institute
ARMA	Asphalt Roofing Manufacturers Association
ASCE	American Society of Civil Engineers
ASCE/SEI	American Society of Civil Engineers/Structural Engineering Institute (See ASCE)
ASHRAE	American Society of Heating, Refrigerating and Air-Conditioning Engineers
ASME	American Society of Sanitary Engineering
ASSE	American Society of Sanitary Engineering
ASTM	ASTM International(American Society for Testing and Materials International)
AWCI	AWCI International(Association of the Wall and Ceiling Industry International)
AWCMA	American Window Covering Manufacturers Association (Now WCSC)
AWI	Architectural Woodwork Institute
AWPA	American Wood-Preservers' Association
AWS	American Welding Society
AWWA	American Water Works Association
BHMA	Builders Hardware Manufacturers Association
BIA	Brick Industry Association (The)
BICSI	BICSI

BIFMA	BIFMA International (Buisness and Institutional Furniture Manufacturer's Assocation Internattional)
BISSC	Baking Industry Sanitation Standards Committee
CCC	Carpet Cushion Council
CDA	Copper Development Assocation
CEA	Canadian Electricity Association
CFFA	Chemical Fabrics & Film Association, Inc.
CGA	Compressed Gas Association
CIMA	Cellulose Insulation Manufacturers Association
CISCA	Ceilings & Interior Systems Construction Association
CISPI	Cast Iron Soil Pipe Institute
CLFMI	Chain Link Fence Manufacturers Institute
CRRC	Cool Roof Rating Council
CPA	Composite Panel Association
CPPA	Corrugated Polyethylene Pipe Association
CRI	Carpet and Rug Institute (The)
CRSI	Concrete Reinforcing Steel Institute
CSA	Canadian Standards Association
CSI	Cast Stone Institute
CSI	Construction Specification Institute (The)
CSSB	Cedar Shake & Shingle Bureau
CTI	Cooling Technology Institute (Formally: Cooling Tower Institute)
DHI	Door and Hardware Institute
EIA	Electronic Industries Alliance
EIMA	EIFS Industry Member Association
EJCDC	Engineers Joint Contract Documents Committee
EJMA	Expansion Joint Manufacturers Association, Inc.
ESD	ESD Association
FIBA	Federation International de basketball (The International Basketball Federation)
FIVB	Federation International de Volleyball (The International Volleyball Federation)
FM Approvals	FM Approvals
FM Global	FM Global (Formerly: FMG -FM Global)
FMRC	Factory Mutual Research (Now FM Global)
FRSA	Florida Roofing, Sheet Metal & Air Conditioning Contractors Association, Inc.
FSA	Fluid Sealing Association
GA	Forest Stewardship Council
GANA	Glass Association of North America
GRI	(Now GSI)
GS	Green Seal
GSI	Geosynthetic Institute
HI	Hydraulic Institute
HI	Hydronics Institute
HMMA	Hollow Metal Manufacturers Association (Part of NAAMM)

HPVA	Hardwood Plywood & Veneer Association
HPW	H.P. White Laboratory
IAS	International Approval Services (Now CSA International)
IBF	International Badminton Federation
ICEA	Insulated Cable Engineers Association, Inc.
ICRI	International Concrete Repair Institute, Inc.
IEC	International Electrotechnical Commission
IEEE	Institute of Electronics Engineers, Inc (The)
IESNA	Illuminating Engineering Society of North America
IEST	Institute of Environmental Sciences and Technology
IGMA	Insulating Glass Manufacturers Alliance
ILI	Indiana Limestone Institute of America, Inc
ISO	International Organization for Standardization
ISSFA	International Solid Surface Fabricators Association
ITS	Intertek Testing Service NA
ITU	International Telecommunication Union
KCMA	Kitchen Cabinet Manufacturers Association
LMA	Laminating Materials Association (Now Part of CNA)
LPI	Lighting Protection Institute
MBMA	Metal Building Manufacturers Association
MFMA	Maple Flooring Manufacturers Association, Inc.
MFMA	Metal Framing Manufacturers Association, Inc.
MH	Material Handling (Now MHIA)
MHIA	Material Handling Industry of America
MIA	Marble Institute of America
MPI	Master Painters Institute
MSS	Manufacturers Standardization Society of the Valve and fitting Industry, Inc.
NAAMM	National Association of Architectural Metal Manufactures
NACE	NACE International (National Association of Corrosion Engineers International)
NADCA	National Air Duct Cleaners Association
NAGWS	National Association for Girls and Women in Sport
NAIMA	North America Insulation Manufacturers Association
NBGQA	National Building Granite Quarries Association, Inc.
NCAA	National Collegiate Athletic Association (The)
NCMA	National Concrete Masonry Association
NCPI	National Clay Pipe Institute
NCTA	National Cable & Telecommunications Association
NEBB	National Environmental Balancing Bureau
NECA	National Electrical Contractors Association
NELMA	Northeastern Lumber Manufacturers' Association
NEMA	National Electrical Manufacturers Association
NETA	International Electrical Testing Association
NFHS	National Federation of State High School Association
NFPA	National Fire Protection Association
NFRC	National Fenestration Rating Council

NGA	National Glass Association
NHLA	National Hardwood Lumber Association
NLGA	National Lumber Grades Authority
NOFMA	NOFMA: The Wood Flooring Manufacturers Association (Formerly National Oak Flooring Manufacturers Association)
NRCA	National Roofing Contractors Association
NRMCA	National Ready Mixed Concrete Association
NSF	NSF International (National Sanitation Foundation Association)
NSSGA	National Stone, Sand & Gravel Association
NTMA	National Terrazzo & Mosaic Association, Inc. (The)
NTRMA	National Tile Roofing Manufacturers Association (Now TRI)
NWWDA	National Wood Windowe and Door Association (Now WDMA)
OPL	Omega Point Laboratories, Inc (now ITS)
PCI	Precast/Prestressed Concrete Institute
PDCA	Painting & Decorating Contractors of America
PDI	Plumbing & Drainage Institute
PGI	PVC Geomembrane Institute
PLANET	Professional Landcar Network (Formerly ACLA - Associated Landscape Contractors of America)
PTI	Post-Tensioning Institute
RCSC	Research Council of Structural Connections
RFCI	Resilient Floor Covering Institute
RIS	Redwood Inspection Service
SAE	SAE International
SDI	Steel Deck Institute
SDI	Steel Door Institute
SEFA	Scientific Equipment and Furniture Association
SEI/ASCE	Structural Engineering Institute/American Society of Civil Engineers (See ASCE)
SGCC	Safety Glazing Certification Council
SIA	Securty Industry Association
SIGMA	Sealed Insulating Glass Manufacturers Association (Now IGMA)
SJI	Steel Joist Institute
SMA	Screen Manufacturers Association
SMACNA	Sheet Metal and Air Conditioning Contractors' National Association
SMPTE	Society of Motion Picture and Television Engineers
SPFA	Spray Polyurethane Foam Alliance (Formerly SPI/SPFD The Society of the Plastics Industry, Inc; Spray Polyurethane Foam Division)
SPIB	Southern Pine Inspection Bureau (The)
SPRI	Single Ply Roofing Industry
SSINA	Specialty Steel Industry of North America
SSPC	The Society of Protective Coatings
STI	Steel Tank Institute
SWI	Steel Window Institute
SWRI	Sealant, Waterproofing & Restoration Institute
TCA	Tile Council of America, Inc.

TIA/EIA	Telecommunication Industry Association/Electronic Industries Alliance
TMS	The Masonry Society
TPI	Truss Plate Institute, Inc.
TRI	Tile Roofing Institute
UL	Underwriters Laboratories Inc.
UNI	Uni-Bell PVC Pipe Association
USAV	USA Volleyball
USGA	U.S. Green Building Council
USITT	United States Institute for Theatre Technology, Inc.
WASTEC	Waste Equipment Technology Association
WCLIB	West Coast Lumber Inspection Bureau
WCMA	Window Covering Manufacturers Association (Now WCSC)
WCSC	Window Covering Safety Council (Formerly WMCA Window Covering Manufacturers Association)
WDMA	Window & Door Manufacturers Association (Formerly NWWDA National Wood Window and Door Association)
WI	Woodwork Institute (Formerly Woodwork Institute of California)
WIC	Woodwork Institute of California (Now WI)
WMMPA	Wood Molding & Millwork Producers Association
WSRCA	Western States Roofing Contractors Association
WWPA	Western Wood Proiducts Association

C. Code Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list.

BOCA	BOCA International, Inc. (See ICC)
IAPMO	International Association of Plumbing and Mechanical Officials
ICBO	International Conference of Building Officials
ICBO ES	ICBO ES ICBO Evaluation Service, Inc. (See ICC-ES)
ICC	International Code Council ICC-ES
ICC-ES	ICC Evaluation Service, Inc.
SBCCI	Southern Building Code Congress International, Inc. (See ICC)
UBC	Uniform Building Code (See ICC)

D. Federal Government Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list.

CE	Army Corps of Engineers
CPSC	Consumer Product Safety Commission DOCDepartment of Commerce
DOC	Department of Commerce
DOD	Department of Defense
DOE	Department of Energy
EPA	Environmental Protection Agency
FAA	Federal Aviation Administration
FCC	Federal Communications Commission
FDA	Food and Drug Administration
GSA	General Services Administration
HUD	Department of Housing and Urban Development
LBL	Lawrence Berkeley National Laboratory

NCHRP	National Cooperative Highway Research Program (See TRB)
NIST	National Institute of Standards and Technology
OSHA	Occupational Safety & Health Administration
PBS	Public Building Service (See TRB)
PHS	Office of Public Health and Science
RUS	Rural Utilities Service (See USDA)
SD	State Department
TRB	Transportation Research Board
USDA	Department of Agriculture
USPS	Postal Service

E. Standards and Regulations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the standards and regulations in the following list.

ADAAG	Americans with Disabilities Act (ADA) Architectural Barriers Act (ABA)
CFR	Code of Federal Regulations
DOD	Department of Defense Military Specifications and Standards
DSCC	Defense Supply Center Columbus (See FS)
FED-STD	Federal Standard (See FS)
FS	Federal Specification
FTMS	Federal Test Method Standard (See FS)
MIL	(See MILSPEC)
MILSPEC	(See MILSPEC)
UFAS	Uniform Federal Accessibility Standards

F. State Government Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list.

CBHF	State of California, Department of Consumer Affairs Bureau of Home Furnishings and Thermal Insulation
CCR	California Code of Regulations CPUC California Public Utilities Commission
TFS	Texas Forest Service - Forest Resource Development

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 014200

SECTION 015000
TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.01 SUMMARY

A. This Section includes requirements for temporary utilities, support facilities, and security and protection facilities.

B. See Division 01 Section "Execution" for progress cleaning requirements.

C. See Division 02 through 49 Sections for temporary heat, ventilation, and humidity requirements for products in those sections.

1.02 DEFINITIONS

A. Permanent Enclosure: As determined by Contracting Officer, permanent or temporary roofing is complete, Insulated, and watertight; exterior walls are insulated and watertight; and all openings are closed with permanent construction or substantial temporary closures.

1.03 USE CHARGES

A. General: Cost of use charges for temporary facilities shall be included in the contract Sum. Allow other entities to use temporary services and facilities without cost, including, but not limited to, Contracting Officer, testing agencies, and authorities having jurisdiction. The Contractor will be allowed to use electrical services or tie into electrical with no sue charges. Restroom facilities, office space, garbage and all other services are the Contractor's responsibility.

1.04 SUBMITTALS

A. Site Plan: Show temporary facilities, utility hookups, staging areas, and parking areas for construction personnel. Install service to comply with NFPA 70.

1.05 QUALITY ASSURANCE

A. Electrical Service: Comply with NECA, NEMA, and UL standards and regulations for temporary electrical 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.

1.06 PROJECT CONDITIONS

A. Temporary Use of Permeant Facilities: Installer of each permanent service shall 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

2.01 MATERIALS

A. Chain-Link Fencing: Minimum 2-inch, 0.148-inch- thick, galvanized steel, chain-link fabric fencing; minimum 6 feet high with galvanized steel pipe posts; minimum 2-3/8-inch- OD line posts and 2-7/8-inch- OD corner and pull posts, with 1-5/8-inch- OD top rails.

B. Portable Chain-Link Fencing: Minimum 2-inch, 9-gage, galvanized steel, chain-link fabric fencing; minimum 6 feet high with galvanized steel pipe posts; minimum 2-3/8-inch- OD line posts and 2-7/8-inch- OD corner and pull posts, with 1-5/8-inch- OD top and bottom rails. Provide galvanized steel bases for supporting posts.

C. Lumber and Plywood: Comply with requirements in Division 06 Section "Rough Carpentry."

D. Gypsum Board: Minimum 1/2 inch thick by 48 inches wide by maximum available lengths; regular-type panels with tapered edges. Comply with ASTM C 36/C 36M.

E. Insulation: Unfaced mineral-fiber blanket, manufactured from glass, slag wool, or rock wool; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively.

2.02 TEMPORARY FACILITIES

A. Field Offices, General: Prefabricated or mobile units with serviceable finishes, temperature controls, and foundations adequate for normal loading.

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

2.03 EQUIPMENT

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

B. HVAC Equipment: Unless Contracting Officer authorizes use of permanent HVAC system, provide vented, self-contained, liquid-propane-gas or fuel-oil heaters with individual space thermostatic control.
   1. Use of gasoline-burning space heaters, open-flame heaters, or salamander-type heating units is prohibited.
   2. Permanent HVAC System: If Contracting Officer authorizes use of permanent HVAC system for temporary use during construction, provide filter with MERV of 8 at each return air grille in system and remove at end of construction.

PART 3 - EXECUTION

3.01 INSTALLATION, GENERAL

A. Locate facilities where they will serve Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required by progress of the Work.
   1. Locate facilities to limit site disturbance as specified in Division 01 Section "Summary."

B. Provide each facility ready for use when needed to avoid delay. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.

3.02 TEMPORARY UTILITY INSTALLATION

A. General: Install temporary service or connect to existing service.
   1. Arrange with utility company, Contracting Officer, and existing users for time when service can be interrupted, if necessary, to make connections for temporary services.

B. Sewers and Drainage: Provide temporary utilities to remove effluent lawfully.

C. Water Service: Install water service and distribution piping in sizes and pressures adequate for construction.

D. Sanitary Facilities: Provide temporary toilets, wash facilities, and drinking water for use of construction personnel. Comply with authorities having jurisdiction for type, number, location, operation, and maintenance of fixtures and facilities.

E. Heating: Provide temporary heating 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.

F. Ventilation and Humidity Control: Provide temporary ventilation required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed. Coordinate ventilation requirements to produce ambient condition required and minimize energy consumption.

G. Electric Power Service: Provide electric power service and distribution system of sufficient size, capacity, and power characteristics required for construction operations.
   1. Install electric power service overhead, unless otherwise indicated. Contractor may contract directly with NorthWestern Energy to install a meter and transformer at the Utility Company’s discretion.

2. Connect temporary service to Owner's existing power source, as directed by Contracting Officer. Contractor may supply meter, feeder and all hookups to connect to the existing buildings power.

H. Lighting: Provide temporary lighting with local switching that provides adequate illumination for construction operations, observations, inspections, and traffic conditions.
   1. Install and operate temporary lighting that fulfills security and protection requirements without operating entire system.

I. Telephone Service: Provide temporary telephone service in common-use facilities for use by all construction personnel. Install one telephone line(s) for each field office.
   1. Provide additional telephone lines for the following:
      a. Provide a dedicated telephone line for each facsimile machine and computer in each field office.
   2. At each telephone, post a list of important telephone numbers including police and fire departments, Contractor's home office, Contracting Officer's office, Contracting Officer's Representative's Office, Principal subcontractors' field and home offices.
   3. Provide superintendent with cellular telephone or portable two-way radio for use when away from field office.

J. Electronic Communication Service: Provide temporary electronic communication service, including electronic mail in field office.

3.03 SUPPORT FACILITIES INSTALLATION

A. General: Comply with the following:
   1. Provide incombustible construction for offices, shops, and sheds located within construction area or within 30 feet of building lines. Comply with NFPA 241.
   2. Maintain support facilities until near Substantial Completion. Remove before Substantial Completion. Personnel remaining after Substantial Completion will be permitted to use permanent facilities, under conditions acceptable to the Contracting Officer.

B. Temporary Roads and Paved Areas: Construct and maintain temporary roads and paved areas adequate for construction operations. Locate temporary roads and paved areas within construction limits indicated on Drawings.
   1. Provide dust-control treatment that is nonpolluting and nontracking. Reapply treatment as required to minimize dust..

C. Traffic Controls: Comply with requirements of authorities having jurisdiction.
   1. Protect existing site improvements to remain including curbs, pavement, and utilities.
   2. Maintain access for fire-fighting equipment and access to fire hydrants.

D. Parking: Provide temporary parking areas for construction personnel.

E. Dewatering Facilities and Drains: Comply with requirements of authorities having jurisdiction. Maintain Project site, excavations, and construction free of water.
   1. Dispose of rainwater in a lawful manner that will not result in flooding Project or adjoining properties nor endanger permanent Work or temporary facilities.
   2. Remove snow and ice as required to minimize accumulations.

F. Project Identification and Temporary Signs: Provide Project identification and other signs as indicated on Drawings. Install signs where indicated to inform public and individuals seeking entrance to Project. Unauthorized signs are not permitted.
   1. Provide temporary, directional signs for construction personnel and visitors.
   2. Maintain and touchup signs so they are legible at all times.

G. Waste Disposal Facilities: Provide waste-collection containers in sizes adequate to handle waste from construction operations. Comply with requirements of authorities having jurisdiction. Comply with Division 01 Section "Execution" for progress cleaning requirements.

H. Lifts and Hoists: Provide facilities necessary for hoisting materials and personnel.

1. Truck cranes and similar devices used for hoisting materials are considered "tools and equipment" and not temporary facilities.

I. Temporary Stairs: Until permanent stairs are available, provide temporary stairs where ladders are not adequate.

3.04 SECURITY AND PROTECTION FACILITIES INSTALLATION

A. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction in ways and by methods that comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.

B. Temporary Erosion and Sedimentation Control: Provide measures to prevent soil erosion and discharge of soil-bearing water runoff and airborne dust to adjacent properties and walkways, according to requirements of authorities having jurisdiction.

C. Stormwater Control: Comply with authorities having jurisdiction. Provide barriers in and around excavations and subgrade construction to prevent flooding by runoff of stormwater from heavy rains.

D. Tree and Plant Protection: Install temporary fencing located as indicated or outside the drip line of trees to protect vegetation from damage from construction operations. Protect tree root systems from damage, flooding, and erosion.

E. 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. Obtain extended warranty for Owner. Perform control operations lawfully, using environmentally safe materials.

F. Lockup: Provide lockable entrances to prevent unauthorized entrance, vandalism, theft, and similar violations of security.

G. Barricades, Warning Signs, and Lights: Comply with requirements of authorities having jurisdiction for erecting structurally adequate barricades, including warning signs and lighting.

H. Temporary Enclosures: Provide temporary enclosures for protection of construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities. Provide temporary weathertight enclosure for building exterior.
   1. Where heating or cooling is needed and permanent enclosure is not complete, insulate temporary enclosures.
   2. At the exterior ADA ramp, for the duration of the project.

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

3.05 OPERATION, TERMINATION, AND REMOVAL

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

B. 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.

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

D. 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. Contracting Officer reserves right to take possession of Project identification signs.
   2. At Substantial Completion, clean and renovate permanent facilities used during construction period. Comply with final cleaning requirements specified in Division 01 Section "Closeout Procedures."

END OF SECTION 015000

SECTION 015719
TEMPORARY ENVIRONMENTAL CONTROLS

PART 1 GENERAL

1.01 DESCRIPTION

A. This section specifies the control of environmental pollution and damages that the Contractor must consider. It includes management of visual aesthetics, noise, solid waste, as well as other pollutants and resources encountered or generated by the Contractor. The Contractor is obligated to consider specified control measures with the costs included within the various contract items of work.

B. Environmental pollution and damage is defined as the presence of chemical, physical, or biological elements or agents which:
   1. Adversely effect human health or welfare.
   2. Unfavorable alter ecological balances of importance of human life.
   3. Effect other species of importance of humankind.
   4. Degrade the utility of the environment for aesthetics, cultural, and historical purposes.

C. Definitions of Pollutants:
   1. Chemical Waste: Petroleum, products, bituminous materials, salts, acid, alkalis, herbicides, pesticides, organic chemicals, and inorganic wastes.
   2. Debris: Combustible and noncombustible wastes, resulting from construction or maintenance and repair work.
   3. Solid Waste: Rubbish, debris, garbage, and other discarded solid materials resulting from industrial, commercial, and agricultural operations and from community activities.
   4. Rubbish: Combustible and noncombustible wastes such as paper, boxes, glass, metal and lumber scrap.
   5. Sanitary Wastes:
      a. Sewage: Domestic sanitary sewage and human wastes.

1.02 QUALITY CONTROL

A. Establish and maintain quality control for the environmental protection of all items set forth herein.

B. Record on daily reports any problems in complying with laws, regulations, and ordinances. Note any corrective action taken.

1.03 REFERENCES

A. The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

B. U.S. National Archives and Records Administration (NARA): 33 CFR 328 Definitions.

1.04 SUBMITTALS

A. In accordance with Section, 013300 "Submittal Procedures," furnish the following:
   1. Environmental Protection Plan: After the contract is awarded and prior to the commencement of the work, the Contractor shall meet with the Contracting Officer to discuss the proposed Environmental Protection Plan and to develop mutual understanding relative to details of environmental protection. Not more than 20 days after the meeting, the Contractor shall prepare and submit to the Contracting Officer and the for approval, a written and/or graphic Environmental Protection Plan including, but not limited to, the following:
      a. Names of persons within the Contractor's organization who are responsible for ensuring adherence to the Environmental Protection Plan.
      b. Names and qualifications of persons responsible for manifesting hazardous waste to be removed from the site.
      c. Names and qualifications of persons responsible for training the Contractor's environmental protection personnel.

d. Description of the Contractor's environmental protection personnel training program.
e. A list of Federal, State, and local laws, regulations, and permits concerning environmental protection, pollution control, noise control, and abatement that are applicable to the Contractor's proposed operations and the requirements imposed by those laws, regulations, and permits.
f. Methods for protection of features to be preserved within authorized work areas including trees, shrubs, vines, grasses, ground cover, landscape features, soil, historical and archeological and cultural resources.
g. Procedures to provide the environmental protection that comply with the applicable laws and regulations. Describe the procedures to correct pollution of the environment due to accident, natural causes, or failure to follow procedures as described in the Environmental Protection Plan.
h. Permits, licenses, and the location of the solid waste disposal area.
i. Drawings showing locations of any proposed temporary excavations for material storage areas and structures.
j. Environmental Monitoring Plans for the job site including land, air, and noise.
k. Work Area Plan showing the proposed activity in each portion of the area and identifying the areas of limited use or non-use. Plan should include measures for making the limits of use areas.

B. Approval of the Contractor's Environmental Protection Plan will not relieve the Contractor of responsibility for adequate and continued control of pollutants and other environmental protection measures.

1.05 PROTECTION OF ENVIRONMENTAL RESOURCES

A. Protect environmental resources within the project boundaries and those affected outside the limits of permanent work during the entire period of this contract. Confine activities to areas defined by the specifications and drawings.

B. Protection of Land Resources: Prior to construction, identify all land resources to be preserved within the work area. Do not remove, cut, deface, injure, or destroy land resources including trees, shrubs, vines, grasses, top soil, and land forms without permission from the Contracting Officer. Do not fasten or attach ropes, cables, or guys to trees for anchorage unless specifically authorized, or where special emergency use is permitted.
1. Work Area Limits: Prior to any construction, mark the areas that require work to be performed under the contract. Mark or fence isolated areas within the general work area that are to be saved and protected. Protect monuments, works of art, and markers before construction operations begin. Convey all personnel the purpose of marking and protecting all necessary objects.
2. Protection of Landscape: Protect trees, shrubs, vines, grasses, land forms, and other landscape features shown on the drawings to be preserved by marking, fencing, or using any other approved techniques.
a. Box and protect from damage existing trees and shrubs to remain on the construction site.
b. Immediately repair all damage to existing trees and shrubs by trimming, cleaning, and painting with antiseptic tree paint.
c. Do not store building materials or perform construction activities closer to existing trees or shrubs than the farthest extension of their limbs.

C. Protection of Air Resources: Keep construction activities under surveillance, management, and control to minimize pollution of air resources. Burning is not permitted on the job site. Keep activities, equipment, processes, and work operated or performed, in strict accordance with Montana Department of Environmental Quality and Federal emission and performance laws and standards. Maintain ambient air quality standards set by the Environmental Protection Agency, for those construction operations and activities specified.

1. Particulates: Control dust particles, aerosols, and gaseous by-products from all construction activities, processing, and preparation of materials at all times, including weekends, holidays, and hours when work is not in progress.
2. Particulates Control: Maintain

D. Reduction of Noise: Minimize noise using every action possible. Perform noise-producing work in less sensitive hours of the day or week as directed by the Contracting officer. Maintain noise-produced work at or below the decibel levels and within the time periods specified.
1. Perform construction activities involving repetitive, high-level impact noise only between 8:00 am and 6:00 pm unless otherwise permitted by local ordinance or the Contracting Officer. Repetitive impact noise on the property shall not exceed the following dB limitations:

Time Duration of Impact Noise	Sound Level in dB
More than 12 minutes in any hour	70
Less than 30 seconds of any hour	85
Less than three minutes of any hour	80
Less than 12 minutes of any hour	75

2. Provide sound-deadening devices on equipment and take noise abatement measures that are necessary to comply with the requirements of this contract of, but not limited to, the following:
a. Maintain maximum permissible construction equipment noise levels at 15 m (50 feet) (dBA):

Earthmoving		Materials Handling	
Front Loaders	75	Concrete Mixers	75
Backhoes	75	Concrete Pumps	75
Dozers	75	Cranes	75
Tractors	75	Derricks Impact	75
Scapers	80	Pile Drivers	95
Graders	75	Jack Hammers	75
Trucks	75	Rock Drills	80
Pavers	80	Pneumatic Tools	80
Stationary			
Pumps	75	Blasting	//-//
Generators	75	Saws	75
Compressors	75	Vibrators	75

b. Use shields or other physical barriers to restrict noise transmission.
c. Provide soundproof housings or enclosures for noise-producing machinery.
d. Use efficient silencers on equipment air intakes.
e. Use efficient intake and exhaust mufflers on internal combustion engines that are maintained so equipment performs below noise levels specified.
f. Conduct truck loading, unloading, and hauling operations so that noise is kept to minimum.
3. Measure sound level for noise exposure due to the construction at least once every five successive working days while work is being performed above 55 dB(A) noise level. Measure noise exposure at the property line or 50 feet from the noise source, whichever is greater. Measure the sound levels on the A weighing network of a General purpose sound level meter at slow response. To minimize the effect of reflective sound waves at building, take measurements at three to six feet in front os any building face. Submit the recorded information to the Contracting Officer noting any problems and the alternative for mitigating actions.

E. Restoration of Damaged Property: If any cost to the Government. direct or indirect damage is done to public or private property resulting from any act, omission, neglect, or misconduct, the Contractor shall restore the damaged property to a condition equal to that existing before the damage at no additional cost to Government. Repair, rebuild, or restore property as directed or make good such damage in a acceptable manner.

F. Final Clean-Up: On completion of project and after removal of all debris, rubbish, and temporary construction, Contractor shall leave the construction area in a clean condition satisfactory to the Contracting Officer. Cleaning shall include off the station disposal of all items and materials not required to be salvaged, as well as all debris and rubbish resulting from demolition and new work operations.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

SECTION 015719.11
INDOOR AIR QUALITY (IAQ) MANAGEMENT

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Special requirements for Indoor Air Quality (IAQ) management during construction operations.
      a. Control of emissions during construction.
      b. Moisture control during construction.
   2. Procedures for testing baseline IAQ. Baseline IAQ requirements specify maximum indoor pollutant concentrations for acceptance of the facility.

1.02 DEFINITIONS

A. Definitions Pertaining to Substantial Development: As defined in ASTM E2114.

B. Adequate Ventilation: Ventilation, including air circulation and air changes, required to cure materials, dissipate humidity, and prevent accumulation of particulates, dust, fumes, vapors, or gases.

C. Hazardous Materials: Any material that is regulated as a hazardous material in accordance with 49 CFR 173, requires a Material Safety Data Sheets (MSDS) in accordance with 29 CFR 1910.1200, or which during end use, treatment, handling, storage, transportation or disposal meets or has components which meet or have the potential to meet the definition of a Hazardous Waste in accordance with 40 CFR 261. Throughout this specification, hazardous material includes hazardous chemicals.
   1. Hazardous Materials Include: Pesticides, biocides, and carcinogens as listed by recognized authorities, such as the Environment Protection Agency (EPA) and the International Agency for Research on Cancer (IARC).

D. Indoor Air Quality (IAQ): The composition and characteristics of the air in an enclosed space that affect the occupants of that space. The indoor air quality of a space refers to the relative quality of air in a building with respect to contaminants and hazards and is determined by the level of indoor air pollution and other characteristics of the air, including those that impact comfort such as air temperature, relative humidity and air speed.

E. Interior Final Finishes: Materials and products that will be exposed at interior occupied spaces; including flooring, wallcovering, finish carpentry, and ceilings.

F. Packaged Dry Products: Materials and products that are installed in dry form and are delivered to the site in manufacturer's packaging; including carpets, resilient flooring, ceiling tiles, and insulation.

G. Wet Products: Materials and products installed in wet form, including paints, sealants, adhesives, special coatings, and other materials which require curing.

1.03 QUALIFIED ASSURANCE

A. Inspection and Testing Lab Qualifications: Minimum of 5 years experience in performing teh types of testing specified herein.

1.04 PRECONSTRUCTION MEETING

A. After award of Contract and prior to the commencement of work, schedule and conduct meeting with Contracting Officer to discuss the proposed IAQ Management Plan and to develop mutual understanding relative to details of environmental protection.

1.05 SUBMITTALS

A. Indoor Air Quality (IAQ) Management Plan: Not less than 10 days before the Pre-Construction Meeting, prepare and submit a IAQ Management Plan including, but not limited to, the following:
   1. Procedures for control of emissions during construction:

a. Identify schedule for application of interior finishes.
2. Procedures for moisture control during construction:
a. Identify porous materials and absorptive materials.
b. Identify schedule for inspection and stored and installed absorptive materials.
3. Revise and Resubmit Plan as required by the Contracting Officer:
a. Approval of Contractor's Plan will not relieve the Contractor of responsibility for compliance with applicable environmental regulations.

B. Product Data:
1. Submit product data for filtration media used during construction and during operation. Include Minimum Efficiency Reporting Value (MERV).
2. Submit air pressure difference maps for each mode of operation of HVAC.
3. Material Safety Data Sheets: Submit MSDS's for inclusion in Operation and Maintenance Manual for the following products. Coordinate with Section 01 7823.
a. Adhesives.
b. Floor and wall patching/leveling materials.
c. Caulking and sealants.
d. Insulating materials.
e. Fireproofing and firestopping.
f. Carpet.
g. Paint.
h. Clear finish for wood surface.
i. Lubricants.
j. Cleaning products.

C. Inspection and Test Reports:
1. Moisture control inspections.
2. Moisture content testing.
3. Moisture penetrating testing.
4. Microbial Growth testing.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 IAQ MANAGEMENT - EMISSIONS CONTROL

A. During construction operations, follow the recommendations in SMACNA IAQ Guidelines for Occupied Buildings under Construction.

B. HVAC Protection:
1. Seal return registers during construction operations.
2. Provide temporary exhaust during construction operations.
3. To the greatest extent possible, isolate and/or shutdown the return side of the HVAC system during construction. When ventilation system must be operational during construction activities, provide temporary filters.

C. Source Control: Provide low and zero VOC materials as specified.

D. Pathway Interruptions: Isolate areas of work necessary to prevent contamination of clean or occupied spaces. Provide pressure differentials and/or physical barriers to protect clean or occupied spaces.

E. Housekeeping: Curing construction, maintain project and building products and systems to prevent contamination of building spaces.

F. Temporary Ventilation:
1. Provide minimum 48-hour pre-ventilation of packaged dry products prior to installation. Remove from packaging and ventilate in a secure, dry, well-ventilated space free from strong contaminant sources and residues. Provide a temperature range of 60 degrees F

minimum to 90 degrees F maximum continuously during the ventilation period. Do not ventilate within limits of Work unless otherwise approved Contracting Officer.

2. Provide adequate ventilation during and after installation of interior wet products and interior final finishes.
3. Provide filtration media with a Minimum Efficiency Reporting Value (MERV) of 8 as determined by ASHRAE 52.2 during construction and replace filters prior to occupancy following the building "flush-out" indicated below. Coordinate with work of Division 23, Heating Ventilating and Air Conditioning (HVAC).

G. Scheduling: Schedule construction operations involving wet products prior to packaged dry products to the greatest extent possible.

H. Flush-Out: After construction ends, prior to occupancy and with all interior finishes installed, the area of construction is to be flushed with 100% outdoor air for 14 consecutive days prior to occupancy while maintaining and internal temperature of at least 60 degrees F and relative humidity no higher than 60%. After flush-out sequence has been completed replace all filters in HRV.

3.02 IAQ MANAGEMENT - MOISTURE

A. Housekeeping:
1. Keep materials dry. Protect stored onsite and installed absorptive materials from moisture damage.
2. Verify that installed materials and products are dry prior to sealing and weatherproofing the building envelope.
3. Install interior absorptive material only after building envelope is sealed and weatherproofed.

B. Inspections: Document and report results of inspections; state whether or not inspections indicate satisfactory conditions.
1. Examine materials dampness as they arrive. If acceptable to Contracting Officer, dry damp materials completely prior to installation; otherwise, reject materials that arrive damp.
2. Examine materials as they arrive and reject materials that arrive contaminated with mold.
3. Inspect stored and installed absorptive materials regularly for dampness and mold growth. Inspect weekly and after each rain event.
    a. Where stored on site or installed absorptive materials become wet, notify Contracting Officer immediately. Inspect for damage. If acceptable to Contracting Officer, dry completely prior to closing assemblies; otherwise remove and replace with new materials.
4. Basement: Monitor basement and crawlspace humidity, and dehumidify when relative humidity is greater than 85 percent for more than 2 weeks or at the first sign of mold growth.
5. Site Drainage: Verify that final grades of site work and landscaping drain surface water and ground water away from the building.
6. Weather-Proofing: Inspect moisture control materials as they are being installed. Include the following:
    a. Air Barrier: Verify air barrier is installed without punctures and/or other damage. Verify air barrier is sealed completely.
    b. Flashing: Verify correct shingling of the flashing for roof, walls, windows, doors, and other penetrations.
    c. Insulation Layer: Verify insulation is installed without voids.
    d. Roofing: In accordance with ASTM D7186 Standard Practice for Quality Assurance Observation of Roof Construction and Repair.
7. Plumbing: Verify satisfactory pressure test of pipes and drains is performed before closing in and insulating lines.
8. HVAC: Inspect HVAC system to verify the following:
    a. Condensate pans are sloped and plumbed correctly.

b. Access panels are installed to allow inspection and cleaning of coils and ductwork downstream of coils.
c. Ductwork and return plenums are air sealed.
d. Duct insulation is installed and sealed.
e. Chilled water line and refrigerant line insulation are installed and sealed.

C. Schedule:
1. Schedule work such that absorptive materials, including but not limited to porous insulations, paper-faced gypsum board, ceiling tile, and finish flooring are not installed until they can be protected from rain and construction related water.
2. Weatherproof as quickly as possible. Schedule installation of moisture control materials. Including but not limited to air barriers, flashings, exterior sealant and roofing, at the earliest possible time.

D. Testing for Moisture Content: Test moisture content of porous materials and absorptive materials to ensure that they are dry before sealing them into an assembly. Document and report results of testing. Where test are not satisfactory, dry materials and retest. If satisfactory results cannot be obtained with retest, remove and replace with new materials.
1. Concrete:
a. ASTM D4263 Test Method for Indicating Moisture of Concrete by the Plastic Sheet Method.
b. ASTM F1869 Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride.
c. ASTM F2170 Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in Situ Probes.
2. Wood Moisture Test as per ASTM D4444 - Standard TestMethods for Use and Calibration of Hand-Held Moisture Meters; unless otherwise indicated acceptable upper limits for wood products are <20% at center piece; <15% at surface.
3. Gypsum Board, Gypsum Paster, Insulation, and other Absorptive Materials: Moisture test with a Pinless Moisture Meter to assess patterns of moisture, if any.

E. Testing and Moisture Penetration:
1. Windows: Test as per ASTM E1105 test Method for Field Determination of Water Penetration of Installed Exterior Windows, Skylights, Doors, and Curtain Walls by Unifrom of Cyclic Static Air Pressure Difference; unless otherwise indicated, acceptable upper limits are no leakage for 15 minutes.
2. Horizontal Waterproofing (not roofing): Test per ASTM D5957 Standard Guide for Flood Testing Horizontal Waterproofing Installations; acceptable upper limits are no leakage for 15 minutes.
3. Masonry: Test as per ASTM C1601 Standard Test Method for FIeld Determination of Water Penetration of Masonry Wall Sources; acceptable upper limits are no leakage for 15 minutes.
4. Exterior Walls:
a. Air Tightness of the Enclosure Test: ASTM E779 Standard Test Method for Determining Air Leakage Rate by Fan Pressurization or ASTM E1827 Standard Test Methods for Determining Air Tightness of Buildings Using an Orifice Blower Door.
b. Water Leakage: review as per ASTM E2128 Standard Guide for Evaluating Water Leakage of Building Walls.

F. Testing for Support of Microbial Growth: Test and report in accordance with ASTM D6329 Standard Guide for Developing Methodology for Evaluating the Ability of Indoor Materials to Support Microbial Growth Using Static Environmental Chambers. Indicate susceptibility of product or material to colonization and amplification of microorganisms. Identify microorganisms and condition of testing.
1. Normal Conditions: Perform testing at 35 degrees centigrade and 50 percent relative humidity.

2. Extreme Conditions: Perform worst case scenarios screening tests by providing an atmosphere where environmental conditions may be favorable for microbial growth.
3. Perform testing for the following:
    a. Fireproofing material on appropriate substrate.
    b. Ceiling tile.
    c. Wallcovering.

END OF SECTION

SECTION 016000
PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.01 SUMMARY

A. This 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; product substitutions; and comparable products.

B. No "or equal" or “substitution” products will be considered in lieu of the named product.

C. See Division 01 Section "Closeout Procedures" for submitting warranties for Contract closeout.

D. See Divisions 02 through 49 Sections for specific requirements for warranties on products and installations specified to be warranted.

1.02 DEFINITIONS

A. Products: Items purchased 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.
   1. 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.
   2. New Products: Items that have not previously been incorporated into another project or facility, except that products consisting of recycled-content materials are allowed, unless explicitly stated otherwise. Products salvaged or recycled from other projects are not considered new products.
   3. Comparable Product: Product that is demonstrated and approved through submittal process, or where indicated as a product substitution, 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. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor.

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

1.03 SUBMITTALS

A. Substitution Requests: Submit five 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 form provided at end of this Section.
   2. Documentation: Show compliance with requirements for substitutions and the following, as applicable:
      a. Statement indicating why specified material or product cannot be provided.
      b. Coordination information, including a list of changes or modifications 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 substitution with those of the Work specified. Significant qualities may include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.
      d. Product Data, including drawings and descriptions of products and fabrication and installation procedures.

e. Samples, where applicable or requested.
f. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners.
g. Material test reports from a qualified testing agency indicating and interpreting test results for compliance with requirements indicated.
h. Research/evaluation reports evidencing compliance with building code in effect for Project, from a model code organization acceptable to authorities having jurisdiction.
i. Detailed comparison of Contractor's Construction Schedule using proposed substitution with products specified for the Work, including effect on the overall Contract Time. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating lack of availability or delays in delivery.
j. Cost information, including a proposal of change, if any, in the Contract Sum.
k. Contractor's certification that proposed substitution complies with requirements in the Contract Documents and is appropriate for applications indicated.
l. 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.

3. Contracting Officer’s Action: If necessary, Contracting Officer will request additional information or documentation for evaluation within 7 days of receipt of a request for substitution. Contracting Officer will notify Contractor of acceptance or rejection of proposed substitution within 15 days of receipt of request, or 7 days of receipt of additional information or documentation, whichever is later.
   a. Form of Acceptance: Change Order.
   b. Use product specified if Contracting Officer cannot make a decision on use of a proposed substitution within time allocated.

B. Comparable Product Requests: Submit five 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. Contracting Officer’s Action: If necessary, Contracting Officer will request additional information or documentation for evaluation within one week of receipt of a comparable product request. Contracting Officer will notify Contractor of approval or rejection of proposed comparable product request within 15 days of receipt of request, or 7 days of receipt of additional information or documentation, whichever is later.
   a. Form of Approval: As specified in Division 01 Section "Submittal Procedures."
   b. Use product specified if Contracting Officer cannot make a decision on use of a comparable product request within time allocated.

C. Basis-of-Design Product Specification Submittal: Comply with requirements in Division 01 Section "Submittal Procedures." Show compliance with requirements.

1.04 QUALITY ASSURANCE

A. Compatibility of Options: If Contractor is given option of selecting between two or more products for use on Project, product selected shall be compatible with products previously selected, even if previously selected products were also options.

1.05 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, and handle products using means and methods that will prevent damage, deterioration, and loss, including theft. Comply with manufacturer's written instructions.

B. 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 ensure compliance with the Contract Documents and to ensure that products are undamaged and properly protected.

C. 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, with ventilation adequate to prevent condensation.
4. Store cementitious products and materials on elevated platforms.
5. Store foam plastic from exposure to sunlight, except to extent necessary for period of installation and concealment.
6. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.
7. Protect stored products from damage and liquids from freezing.

1.06 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: Preprinted written warranty published by individual manufacturer for a particular product and specifically endorsed by manufacturer to Owner.
2. Special Warranty: Written warranty required by or incorporated into the Contract Documents, either to extend time limit provided by manufacturer's warranty or to provide more rights for Owner.

B. Special Warranties: Prepare a written document that contains appropriate terms and identification, ready for execution. Submit a draft for approval before final 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 appropriate form properly executed.
3. Refer to Divisions 2 through 16 Sections for specific content requirements and particular requirements for submitting special warranties.

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

PART 2 - PRODUCTS

2.01 PRODUCT SELECTION PROCEDURES

A. General Product Requirements: Provide products that comply with the Contract Documents, that are undamaged and, unless otherwise indicated, that are new at time of installation.
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. Contracting Officer reserves the right to limit selection to products with warranties not in conflict with requirements of the Contract Documents.
4. Where products are accompanied by the term "as selected," Contracting Officer will make selection.
5. Where products are accompanied by the term "match sample," sample to be matched is Contracting Officer's.
6. Descriptive, performance, and reference standard requirements in the Specifications establish "salient characteristics" of products.

B. Product Selection Procedures:
   1. Product: Where Specifications name a single product and manufacturer, provide the named product that complies with requirements.
   2. Manufacturer/Source: Where Specifications name a single manufacturer or source, provide a product by the named manufacturer or source that complies with requirements.
   3. Products: Where Specifications include a list of names of both products and manufacturers, provide one of the products listed that complies with requirements.
   4. Manufacturers: Where Specifications include a list of manufacturers' names, provide a product by one of the manufacturers listed that complies with requirements.
   5. Available Products: Where Specifications include a list of names of both products and manufacturers, provide one of the products listed, or an unnamed product, that complies with requirements. Comply with provisions in Part 2 "Comparable Products" Article for consideration of an unnamed product.
   6. Available Manufacturers: Where Specifications include a list of manufacturers, provide a product by one of the manufacturers listed, or an unnamed manufacturer, that complies with requirements. Comply with provisions in Part 2 "Comparable Products" Article for consideration of an unnamed product.
   7. Product Options: Where Specifications indicate that sizes, profiles, and dimensional requirements on Drawings are based on a specific product or system, provide the specified product or system. Comply with provisions in Part 2 "Product Substitutions" Article for consideration of an unnamed product or system.
   8. Basis-of-Design Product: Where Specifications name a product and include a list of manufacturers, provide the specified 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 provisions in Part 2 "Comparable Products" Article for consideration of an unnamed product by the other named manufacturers.
   9. Visual Matching Specification: Where Specifications require matching an established Sample, select a product that complies with requirements and matches Contracting Officer's sample. Contracting Officer's decision will be final on whether a proposed product matches.
      a. If no product available within specified category matches and complies with other specified requirements, comply with provisions in Part 2 "Product Substitutions" Article for proposal of product.
   10. Visual Selection Specification: Where Specifications include the phrase "as selected from manufacturer's colors, patterns, textures" or a similar phrase, select a product that complies with other specified requirements.
      a. Standard Range: Where Specifications include the phrase "standard range of colors, patterns, textures" or similar phrase, Contracting Officer will select color, pattern, density, or texture from manufacturer's product line that does not include premium items.
      b. Full Range: Where Specifications include the phrase "full range of colors, patterns, textures" or similar phrase, Contracting Officer will select color, pattern, density, or texture from manufacturer's product line that includes both standard and premium items.

2.02 PRODUCT SUBSTITUTIONS

A. Timing: Contracting Officer will consider requests for substitution if received within 60 days after the Notice to Proceed. Requests received after that time may be considered or rejected at discretion of Contracting Officer.

B. Conditions: Contracting Officer will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Contracting Officer will return requests without action, except to record noncompliance with these requirements:
   1. Requested substitution offers Owner a substantial advantage in cost, time, energy conservation, or other considerations, after deducting additional responsibilities Owner

must assume. Owner's additional responsibilities may include compensation to Contracting Officer for redesign and evaluation services, increased cost of other construction by Owner, and similar considerations.

2. Requested substitution does not require extensive revisions to the Contract Documents.
3. Requested substitution is consistent with the Contract Documents and will produce indicated results.
4. Requested substitution meets sustainable design requirements.
5. Substitution request is fully documented and properly submitted.
6. Requested substitution will not adversely affect Contractor's Construction Schedule.
7. Requested substitution has received necessary approvals of authorities having jurisdiction.
8. Requested substitution is compatible with other portions of the Work.
9. Requested substitution has been coordinated with other portions of the Work.
10. Requested substitution provides specified warranty.

2.03 COMPARABLE PRODUCTS

A. Conditions: Contracting Officer will consider Contractor's request for comparable product when the following conditions are satisfied. If the following conditions are not satisfied, Contracting Officer will return requests without action, except to record noncompliance with these requirements:

1. Evidence that the proposed product does not require extensive revisions to the Contract Documents that it is consistent with the Contract Documents and will produce the indicated results, and that it is compatible with other portions of the Work.
2. Detailed comparison of significant qualities of proposed product with those named in the Specifications. Significant qualities include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.
3. Evidence that the proposed product does meets sustainability requirements.
4. Evidence that proposed product provides specified warranty.
5. List of similar installations for completed projects with project names and addresses and names and addresses of Contracting Officers and owners, if requested.
6. Samples, if requested.

PART 3 - EXECUTION (NOT USED)

END OF SECTION 016000

SUBSTITUTION REQUEST FORM

Project Name:

SPECIFICATIONS
Name of Specified Item: Division #: Paragraph:

DRAWINGS
Sheet Number(s): Detail Number(s):

PROPOSED SUBSTITUTE

1. Why is substitution being proposed?

2. Will substitution affect dimensions indicated on drawings? (Explain):

3. Will substitution impact, alter, change or modify sustainable design requirements specified or indicated? (Explain):

4. Will substitution affect wiring, piping, ductwork, etc. indicated on the drawings?

5. What effect will substitution have on other trades? (Explain):

6. Differences between proposed substitute and specified item?

7. Manufacturer's guarantees of the specified items and proposed items are:

   a. Same (Explain):
   b. Different (Explain):

8. If the substitution request is accepted, it will result in:

   a. No cost impact.
   b. A credit of $_____
   c. No impact on construction schedule.
   d. Construction schedule shortened by:_____

9. Product Data attached? Yes No

10. Sample attached hereto? Yes No

SUBSTITUTE PRODUCT SUBMITTED BY:	GENERAL CONTRACTOR'S REVIEW COMMENTS:
Firm:	Recommended:
Address:	Recommended As Noted Below:
	Not Recommended:
Signature:	Signature:
Date:	Date:
Remarks:	Remarks:

SECTION 017300
EXECUTION

PART 1 - GENERAL

1.01 SUMMARY

A. This Section includes general procedural requirements governing execution of the Work including, but not limited to, the following:
   1. Construction layout.
   2. Field engineering and surveying.
   3. General installation of products.
   4. Progress cleaning.
   5. Starting and adjusting.
   6. Protection of installed construction.
   7. Correction of the Work.

B. See Division 01 Section "Closeout Procedures" for submitting final property survey with Project Record Documents, recording of deviations accepted by Contracting Officer from indicated lines and levels, and final cleaning.

1.02 SUBMITTALS

A. Certificates: Submit certificate signed by land surveyor certifying that location and elevation of improvements comply with requirements.

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

C. Certified Surveys: Submit two copies signed by land surveyor.

D. Final Property Survey: Submit 5 copies showing the Work performed and record survey data.

1.03 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.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 EXAMINATION

A. Existing Conditions: The existence and location of site improvements, utilities, and other construction indicated as existing are not guaranteed. Before beginning work, investigate and verify the existence and location of mechanical and electrical systems and other construction affecting the Work.
   1. Before construction, verify the location and points of connection of utility services.

B. Existing Utilities: 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 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; and underground electrical services.
   2. Furnish location data for work related to Project that must be performed by public utilities serving Project site.

C. Acceptance of Conditions: 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. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.

2. Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.
3. Examine walls, floors, and roofs for suitable conditions where products and systems are to be installed.
4. 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 local utility 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, submit a request for information to Contracting Officer. Include a detailed description of problem encountered, together with recommendations for changing the Contract Documents.

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 Contracting Officer promptly.

B. General: Engage a land surveyor 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 dimensions within tolerances indicated. Do not scale Drawings to obtain required dimensions.
3. Inform installers of lines and levels to which they must comply.
4. Check the location, level and plumb, of every major element as the Work progresses.
5. Notify Contracting Officer when deviations from required lines and levels exceed allowable tolerances.
6. 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 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 Contracting Officer.

3.04 FIELD ENGINEERING

A. Reference Points: Locate existing permanent benchmarks, control points, and similar reference points before beginning the Work. Preserve and protect permanent benchmarks and control points during construction operations.

B. Benchmarks: Establish and maintain a minimum of two permanent benchmarks on Project site, referenced to data established by survey control points. Comply with authorities having jurisdiction for type and size of benchmark.
   1. Record benchmark locations, with horizontal and vertical data, on Project Record Documents.

C. Certified Survey: On completion of major site improvements, and other work requiring field-engineering services, prepare a certified survey showing dimensions, locations, angles, and elevations of construction and site work.

3.05 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.

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. Tools and Equipment: Do not use tools or equipment that produce harmful noise levels.

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

G. Anchors and Fasteners: Provide anchors and fasteners as required to anchor each component securely in place, accurately located and aligned with other portions of the Work.
   1. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by Contracting Officer.
   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.

H. 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.

I. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.

3.06 PROGRESS CLEANING

A. General: Clean Project site and work areas daily, including common areas. Coordinate progress cleaning for joint-use areas where more than one installer has worked. 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 materials more than 7 days during normal weather or 3 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.

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: Burying or burning waste materials on-site will not be permitted. Washing waste materials down sewers or into waterways will not be permitted.

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 assure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

3.07 STARTING AND ADJUSTING

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

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

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: If a factory-authorized service representative is required to inspect field-assembled components and equipment installation, comply with qualification requirements in Division 01 Section "Quality Requirements."

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

3.09 CORRECTION OF THE WORK

A. Repair or remove and replace defective construction. Restore damaged substrates and finishes. Comply with requirements in Division 01 Section "Cutting and Patching."
   1. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment.

B. Restore permanent facilities used during construction to their specified condition.

C. Remove and replace damaged surfaces that are exposed to view if surfaces cannot be repaired without visible evidence of repair.

D. Repair components that do not operate properly. Remove and replace operating components that cannot be repaired.

E. Remove and replace chipped, scratched, and broken glass or reflective surfaces.

END OF SECTION 017300

SECTION 017329
CUTTING AND PATCHING

PART 1 - GENERAL

1.01 SUMMARY

A. This Section includes procedural requirements for cutting and patching.

B. See Divisions 2 through 33 Sections for specific requirements and limitations applicable to cutting and patching individual parts of the Work.

C. Patching of fire-rated construction to follow all applicable Codes and requirements.

1.02 SUBMITTALS

A. Cutting and Patching Proposal: Submit a proposal describing procedures at least 5 days before the time cutting and patching will be performed, requesting approval to proceed. Include the following information:
   1. Extent: Describe cutting and patching, show how they will be performed, and indicate why they cannot be avoided.
   2. Changes to In-Place Construction: Describe anticipated results. Include changes to structural elements and operating components as well as changes in building's appearance and other significant visual elements.
   3. Products: List products to be used and firms or entities that will perform the Work.
   4. Dates: Indicate when cutting and patching will be performed.
   5. Utility Services and Mechanical/Electrical Systems: List services/systems that cutting and patching procedures will disturb or affect. List services/systems that will be relocated and those that will be temporarily out of service. Indicate how long services/systems will be disrupted.
   6. Structural Elements: Where cutting and patching involve adding reinforcement to structural elements, submit details and engineering calculations showing integration of reinforcement with original structure.
   7. Contracting Officer's Approval: Obtain approval of cutting and patching proposal before cutting and patching. Approval does not waive right to later require removal and replacement of unsatisfactory work.

1.03 QUALITY ASSURANCE

A. Structural Elements: Do not cut and patch structural elements in a manner that could change their load-carrying capacity or load-deflection ratio.

B. 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.

C. Miscellaneous Elements: Do not cut and patch miscellaneous elements or related components in a manner that could change their load-carrying capacity, that results in reducing their capacity
   1. to perform as intended, or that results in increased maintenance or decreased operational life or safety.

D. Visual Requirements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch construction exposed on the exterior or in occupied spaces in a manner that would, in Contracting Officer's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.

1.04 WARRANTY

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

PART 2 - PRODUCTS

2.01 MATERIALS

A. General: Comply with requirements specified in other Sections.

B. In-Place Materials: Use materials 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 match the visual and functional performance of in-place materials.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine surfaces to be cut and patched and conditions under which cutting and patching are to be performed.
   1. Compatibility: Before patching, verify compatibility with and suitability of substrates, including compatibility with in-place finishes or primers.
   2. Proceed with installation only after unsafe or unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Temporary Support: Provide temporary support of Work to be cut.

B. 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.

C. Adjoining Areas: Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.

D. 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.

3.03 PERFORMANCE

A. 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. 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 as small as possible, neatly to 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 or Masonry: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.
   4. Excavating and Backfilling: Comply with requirements in applicable Division 31 Sections where required by cutting and patching operations.
   5. 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.
   6. Proceed with patching after construction operations requiring cutting are complete.

C. 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

possible. Provide materials and comply with installation requirements specified in other Sections.

1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate 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 eliminate evidence of patching and refinishing.
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.
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.

D. Cleaning: Clean areas and spaces where cutting and patching are performed. Completely remove paint, mortar, oils, putty, and similar materials.

END OF SECTION 017329

SECTION 017419
CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes administrative and procedural requirements for the following:
   1. Recycling nonhazardous demolition and construction waste.
   2. Disposing of nonhazardous demolition and construction waste.
   3. Salvage existing material from demolition activities.

1.02 DEFINITIONS

A. Construction Waste: Building and site improvement materials and other solid waste resulting from construction, remodeling, renovation, or repair operations. Construction waste includes packaging.

B. Demolition Waste: Building and site improvement materials resulting from demolition or selective demolition operations.

C. Disposal: Removal off-site of demolition and construction waste and subsequent sale, recycling, reuse, or deposit in landfill or incinerator acceptable to authorities having jurisdiction.

D. Salvage and Reuse: Recovery of demolition or construction waste and subsequent incorporation into the Work.

1.03 PERFORMANCE REQUIREMENTS

A. General: Achieve end-of-Project rates for salvage/recycling of a minimum of 75 percent by weight of total non-hazardous solid waste generated by the Work. Facilitate recycling and salvage of materials, including the following:
   1. Any building products that can be removed and recycled from the general waste stream that can be adequately recycled.

1.04 ACTION SUBMITTALS

A. Waste Management Plan: Submit plan within 7 days of date established for commencement of the Work.

1.05 INFORMATIONAL SUBMITTALS

A. Waste Reduction Progress Reports: Concurrent with each Application for Payment, submit report. Include the following information:
   1. Material category.
   2. Generation point of waste.
   3. Total quantity of waste in tons
   4. Quantity of waste salvaged, both estimated and actual in tons.
   5. Quantity of waste recycled, both estimated and actual in tons .
   6. Total quantity of waste recovered (salvaged plus recycled) in tons .
   7. Total quantity of waste recovered (salvaged plus recycled) as a percentage of total waste.

B. Green Globes Submittal: 3.5.4.1.1. Submit Waste Management Plan.

C. Waste Reduction Calculations: Before request for Substantial Completion, submit calculated end-of-Project rates for salvage, recycling, and disposal as a percentage of total waste generated by the Work.

D. Records of Donations: Indicate receipt and acceptance of salvageable waste donated to individuals and organizations. Indicate whether organization is tax exempt.

E. Records of Sales: Indicate receipt and acceptance of salvageable waste sold to individuals and organizations. Indicate whether organization is tax exempt.

F. Recycling and Processing Facility Records: Indicate receipt and acceptance of recyclable waste by recycling and processing facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices.

G. Landfill and Incinerator Disposal Records: Indicate receipt and acceptance of waste by landfills and incinerator facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices.

1.06 QUALITY ASSURANCE

A. Waste Management Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination."

1.07 WASTE MANAGEMENT PLAN

A. General: Develop a waste management plan according to ASTM E 1609 and requirements of 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.

B. Waste Identification: Indicate anticipated types and quantities of demolition, site-clearing and construction waste generated by the Work. Include estimated quantities and assumptions for estimates.

C. Waste Reduction Work Plan: List each type of waste and whether it will be salvaged, recycled, or disposed of in landfill or incinerator. Include points of waste generation, total quantity of each type of waste, quantity for each means of recovery, and handling and transportation procedures.
   1. Salvaged Materials for Reuse: For materials that will be salvaged and reused in this Project, describe methods for preparing salvaged materials before incorporation into the Work.
   2. Salvaged Materials for Sale: For materials that will be sold to individuals and organizations, include list of their names, addresses, and telephone numbers.
   3. Salvaged Materials for Donation: For materials that will be donated to individuals and organizations, include list of their names, addresses, and telephone numbers.
   4. Recycled Materials: Include list of local receivers and processors and type of recycled materials each will accept. Include names, addresses, and telephone numbers.
   5. Disposed Materials: Indicate how and where materials will be disposed of. Include name, address, and telephone number of each landfill and incinerator facility.
   6. Handling and Transportation Procedures: Include method that will be used for separating recyclable waste including sizes of containers, container labeling, and designated location on Project site where materials separation will be located.

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.

B. Waste Management Coordinator: Engage a waste management coordinator to be responsible for implementing, monitoring, and reporting status of waste management work plan.

C. Training: Train workers, subcontractors, and suppliers on proper waste management procedures, as appropriate for the Work occurring at Project site.
   1. Distribute waste management plan to everyone concerned within 3 days of submittal return.
   2. Distribute waste management plan to entities when they first begin work on-site. Review plan procedures and locations established for salvage, recycling, and disposal.

D. Site Access and Temporary Controls: Conduct waste management operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.

1. Designate and label specific areas on Project site necessary for separating materials that are to be salvaged, recycled, reused, donated, and sold.
2. Comply with Division 01 Section "Temporary Facilities and Controls" for controlling dust and dirt, environmental protection, and noise control.

3.02 SALVAGING DEMOLITION WASTE

A. Salvaged Items for Sale: Not permitted on Project site.

B. Salvaged Items for Owner's Use:
   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 on-site.
   5. Protect items from damage during transport and storage.

3.03 RECYCLING CONSTRUCTION WASTE, GENERAL

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

B. Recycling Receivers and Processors: List below is provided for information only; available recycling receivers and processors include, but are not limited to, the following:

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 they are 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 off Owner's property and transport to recycling receiver or processor.

3.04 RECYCLING DEMOLITION WASTE

A. Concrete: Remove reinforcement and other metals from concrete and sort with other metals.
   1. Demolished concrete may be used as fill material for designated berming on site. Refer to Civil Drawings.

B. Masonry: Remove metal reinforcement, anchors, and ties from existing stone masonry and sort with other metals.
   1. Demolished masonry shall be salvaged and stacked on a pallet for possible reuse by government. Coordinate storage location with Contracting Officer.

C. Wood Materials: Sort and stack members according to size, type, and length. Separate lumber, engineered wood products, panel products, and treated wood materials.

D. Gypsum Board: Stack large clean pieces on wood pallets or in container and store in a dry location. Remove edge trim and sort with other metals. Remove and dispose of fasteners.

E. Piping: Reduce piping to straight lengths and store by type and size. Separate supports, hangers, valves, sprinklers, and other components by type and size.

F. Conduit: Reduce conduit to straight lengths and store by type and size.

3.05 RECYCLING CONSTRUCTION WASTE

A. Packaging:

1. Cardboard and Boxes: Break down packaging into flat sheets. Bundle and store in a dry location.
2. Polystyrene Packaging: Separate and bag materials.
3. Pallets: As much as possible, require deliveries using pallets to remove pallets from Project site. For pallets that remain on-site, break down pallets into component wood pieces and comply with requirements for recycling wood.
4. Crates: Break down crates into component wood pieces and comply with requirements for recycling wood.

B. Wood Materials:
1. Clean Cut-Offs of Lumber: Grind or chip into small pieces.
2. Clean Sawdust: Bag sawdust that does not contain painted or treated wood.

C. Gypsum Board: Stack large clean pieces on wood pallets or in container and store in a dry location.
1. Clean Gypsum Board: Grind scraps of clean gypsum board using small mobile chipper or hammer mill. Screen out paper after grinding.

3.06 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: Transport waste materials off Owner's property and legally dispose of them.

END OF SECTION 017419

	A	B	C	D	E	F	G	H	I	J
Material	**Quantity Recycled (in tons)**	**Quantity Salvaged or Reused (in tons)**	**A + B = Total Quantity Diverted from Landfill**	**Quantity To Landfill (in tons)**	**C + D = Total Quantity Generated (in tons)**	**Tip Fee/Ton at Landfill**	**C x F = Tip Fee Savings resulting from Landfill Diversion**	**Cost of Recycling (R), Salvage (S), or Reuse (Re) (Specify R, S, or Re)**	**Revenue from Recycling, Salvage, or Reuse**	**G - H + I = Total Cost (-) or Savings (+) from Diversion**
Asphalt/Concrete										
Brick/Masonry/Tile										
Building Materials (doors, windows, fixtures, shingles, lumber, insulation, sheetgoods, etc.)										
Carpet										
Carpet Padding, Foam Only										
Cardboard										
Ceiling Tile										
Drywall										
Glass										
Scrap Metal Aluminum										
Copper										
Steel										
Unpainted Wood & Pallets										
Yard Trimmings, Brush, Trees, Stumps, etc.										
Garbage/Trash										
Other										
Column Totals										
	Total Quantity Recycled	**Total Quantity Reused or Salvaged**	**Total Quantity Diverted from Landfill**	**Total Quantity To Landfill**	**Total Quantity Generated**		**Tip Fee Savings from Diversion**	**Total Cost of Recycling, Salvage, or Reuse**	**Revenue from Recycling, Salvage, or Reuse**	**Total Cost (-) or Savings (+) from Diversion**

Percentage Diverted = _____(C divided by E from Column Totals) Should meet 75% diversion go

*See Appendix B for Standard Solid Waste Volume to Weight Conversions

STANDARD SOLID WASTE CONVERSIONS

The following sections provide conversions for solid waste and recyclable materials. Section 1 provides formulas to convert solid waste volume (cubic yards) into tons. Section 2 includes conversion factors to estimate the volume and weight of a number of solid waste and recyclable materials.

1. To convert cubic yards to tons:

A: For un-compacted trash, to convert the units of cubic yards into tons, using the standard density of trash value of 250 pounds per cubic yard:

Using "X" cubic yards, multiply by 250 pounds per cubic yard, divide by 2000 pounds per ton, to obtain value in tons.

"X" *cubic yards* x 250 $\frac{\textit{pounds}}{\textit{cubic yard}}$ ÷ $\frac{1\ \textit{ton}}{2000\ \textit{pounds}}$ = _____*tons*

This equals:

"X" *cubic yards* x 0.125 $\frac{\textit{tons}}{\textit{cubic yard}}$ = _____*tons*

In this case, 8 cubic yards = one ton.

B: To determine your own density value for un-compacted trash (instead of using the standard value of 250 pounds per cubic yard), using a 32 gallon trash can:

(1) Weigh the trash can both filled and empty (use a full 32 gallon trash can filled with trash roughly level to the top);
(2) Subtract the empty weight from the filled weight to get the weight of trash (filled weight – empty weight = weight of trash);
(3) Use the formula, using "Y" your weight of trash (pounds), divided by 0.15 cubic yards per 32 gallon trash can, to obtain your value in pounds per cubic yard; which equals:

"Y" $\frac{\textit{pounds}}{\textit{32 gallon can}}$ / 0.15 $\frac{\textit{cubic yards}}{\text{32 gallon can}}$ = _____ $\frac{\textit{pounds}}{\text{cubic yard}}$

(4) Substitute this value for the 250 pounds per cubic yard value in Method A above.

This would be the more accurate measure of your park's specific waste.

C: For compacted trash, to convert cubic yards into tons:

To use a compaction ratio, multiply the appropriate ratio times the un-compacted trash weight in Formula A to obtain the compacted trash weight.

"X" *cubic yards* x $\frac{3}{1}$ (compaction ratio) x 250 $\frac{\textit{pounds}}{\textit{cubic yard}}$ x $\frac{1\ \textit{ton}}{2000\ \textit{pounds}}$ = _____*tons*

3:1 (typical)
4:1 (higher-compaction vehicles)

If you or your hauler don't know the compacting ratio, the typical values for compacted trash are 500 to 1000 lbs./cubic yard, average 700 lbs./cubic yard. **Use 700 lbs. per cubic yard if you don't have more accurate records.**

1 .1 Yellowstone's measurement analysis of compacted trash = 500 lbs./cubic yard

For compacted trash, 0.4 is used instead of 0.125 in Formula A:

"X" *cubic yards* x 0.4 $\frac{\text{tons}}{\text{cubic yard}}$ = _____*tons*

D: To convert container size to cubic yards for un-compacted waste:

If you don't have size and weight information on your specific containers, then these typical values can be used:

1 cubic yard = 202 gallons
32 gallon can = 0.15 cubic yards
60 gallon tote = 0.30 cubic yards
90 gallon tote = 0.45 cubic yards

2. EPA's Standard Volume-to-Weight Conversion Factors

Category	Recyclable Materials (u/c = uncompacted/ compacted & baled)	Volume	Estimated Waste (in pounds)
FOOD SCRAPS[A]	Food scraps, solid and liquid fats	55-gal drum	412
GLASS	Bottles[B]		
	Whole Bottles	1 yd^3	500-700
	A. Semicrushed Crushed (mechanically)	1 yd^3 1 yd^3	1,000-1,800 1,800-2,700
	Uncrushed to manually broken	55-gal drum	300
	Refillable Whole Bottles[C]		
	Refillable beer bottles	1 case = 24 bottles	10-14
	Refillable soft drink bottles	1 case = 24 bottles	12-22
	8 oz glass container	1 case = 24 bottles	12
LEAD-ACID BATTERIES	Car[D]	1 battery	39.4 lb
	Truck[E]	1 battery	53.3 lb lead and plastic
	Motorcycle[E]	1 battery	9.5 lb lead and plastic

Category	Recyclable Materials (u/c = uncompacted/ compacted & baled)	Volume	Estimated Waste (in pounds)
METALS	Aluminum Cans[F]		
	Whole	1 yd^3	50-75
	Compacted (manually)	1 yd^3	250-430
	Uncompacted	1 full grocery bag	1.5
		1 case = 24 cans	0.9
	Ferrous (tin coated steel cans) [G]		
	Whole	1 yd^3	150
	Flattened	1 yd^3	850
	Whole	1 case = 6 cans	22
	Major Appliances[E]		
	Air conditioners (room)	1 unit	64.2
	Dishwashers	1 unit	92
	Dryers (clothes)	1 unit	130
	Freezers	1 unit	193
	Microwave ovens	1 unit	50
	Refrigerators	1 unit	181.1
	Ranges	1 unit	267
	Washers (clothes)	1 unit	177
	Water heaters	1 unit	131
PAPER	Newspaper[F]		
	Uncompacted	1 yd^3	360-505
	Compacted/baled	1 yd^3	720-1,000
	12 in. stack	-	35
	Old Corrugated Containers[F]		
	Uncompacted	1 yd^3	50-150 (300)[1]
	Compacted	1 yd^3	300-500
	Baled	1 yd^3	700-1,100
	Computer Paper[F]		
	Uncompacted	1 yd^3	655
	Compacted/baled	1 yd^3	1,310
	1 case	2,800 sheets	42
	White Ledger[F]		
	Stacked (u/c)	1 yd^3	375-465/755-925
	Crumpled (u/c)	1 yd^3	110-205/325
	Ream of 20# bond; 8.5”x11”	1 ream = 500 sheets	5
	Ream of 20# bond; 8.5”x14”	1 ream = 500 sheets	6.4
	White ledger pads	1 case = 72 pads	38
	Tab Cards[F]		
	Uncompacted	1 yd^3	605
	Compacted/baled	1 yd^3	1,215-1,350
	Miscellaneous Paper		
	Yellow legal pads[F]	1 case = 72 pads	38
	Colored message pads[F]	1 carton = 144 pads	22
	Telephone directories[H]	1 yd^3	250
	Mixed Ledger/Office Paper[F]		
	Flat (u/c)	1 yd^3	380/755
	Crumpled (u/c)	1 yd^3	110-205/610

Category	Recyclable Materials (u/c = uncompacted/ compacted & baled)	Volume	Estimated Waste (in pounds)
PLASTIC[J]	PET (Soda Bottles)		
	Whole bottles (uncompacted)	1 yd^3	30-40
	Whole bottles (compacted)	1 yd^3	515
	Whole bottles (uncompacted)	gaylord	40-53
	Baled	30” x 62”	500-550
	Granulated	semiload	30,000
	Granulated	gaylord	700-750
	8 bottles (2 L size)	16 L	1
	HDPE (Dairy)		
	Whole (uncompacted)	1 yd^3	24
	Whole (compacted)	1 yd^3	270
	Baled	32” x 60”	400-500
	HDPE (Mixed)		
	Baled	32” x 60”	900
	Granulated	gaylord	800-1,000
	Granulated	semiload	42,000
	Other Plastic		
	Uncompacted	1 yd^3	50
	Compacted/baled	1 yd^3	400-700
	Mixed PET and HDPE (Dairy)		
	Whole	1 yd^3	32
	Film		
	Baled	semiload	50
	Baled	30” x 42” x 48”	400-700
TEXTILES[H]	Mixed Textiles	1 yd^3	175
TIRES	Car Tires		
	Whole tire[E]	1 tire	21
	Crumb rubber[K]	1 tire	12
	Truck Tires		
	Whole tire[E]	1 tire	70
	Crumb rubber[K]	1 tire	60
WOOD	Wood chips[L]	1 yd^3	725
	Pallets[F]	-	30-100 (40 avg)
YARD TRIMMINGS[F]	Grass Clippings		
	Uncompacted	1 yd^3	350-450
	Compacted	1 yd^3	550-1,500
	Leaves		
	Uncompacted	1 yd^3	200-250
	Compacted	1 yd^3	300-450
	Vacuumed	1 yd^3	350
FURNISHINGS[E]	Foam rubber mattress	1 mattress	55
MUNICIPAL SOLID WASTE[M]	Residential waste (uncompacted at curb)	1 yd^3	150-300
	Commercial-industrial waste (uncompacted)	1 yd^3	300-600
	MSW (compacted in truck)	1 yd^3	500-1,000
	MSW (landfill density)	1 yd^3	750-1,250

A. Information obtained from Washington State.
B. Draft National Recycling Coalition Measurement Standards and Reporting Guidelines presented to NRC membership. October 31, 1989.
C. Personal communication with a representative from Allwaste. November 6, 1995.
D. Battery Council International. 1995. 1994 National Recycling Rate Study.
E. U.S. EPA. 1995. Methodology for Characterization of Municipal Solid Waste in the United States: 1994 Update. EPA530-R-96-001. Washington, DC.
F. U.S. EPA. 1993. Business Guide for Reducing Solid Waste. EPA530-K-92-004. Washington, DC.
G. Personal communication with a representative from the Steel Recycling Institute. November 1, 1995.
H. Information obtained from Massachusetts State.
I. Information obtained from New Jersey and New York States.
J. Personal communication with a representative from the American Plastics Council. November 2, 1995.
K. Personal communication with a representative from the Scrap Tire Management Council. November 6, 1995.
L. Information obtained from Northeast Forest Products, Martin Mulch Company, and the Solid Waste Association of North America.
M. Solid Waste Association of North America, Manger of Landfill Operations Training and Certification Course. January 1989.
N. Information obtained from New Jersey and New York States.

SECTION 017700
CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:
   1. Substantial Completion procedures.
   2. Final completion procedures.
   3. Warranties.
   4. Final cleaning.

B. Related Sections:
   1. Division 01 Section "Operation and Maintenance Data" for operation and maintenance manual requirements.
   2. Division 01 Section "Project Record Documents" for submitting Record Drawings, Record Specifications, and Record Product Data.
   3. Division 01 Section "Demonstration and Training" for requirements for instructing Owner's personnel.
   4. Divisions 02 through 49 Sections for specific closeout and special cleaning requirements for the Work in those Sections.

1.02 SUBSTANTIAL COMPLETION

A. Preliminary Procedures: Before requesting inspection for determining date of Substantial Completion, complete the following. List items below that are incomplete with request.
   1. Prepare a list of items to be completed and corrected (punch list), the value of items on the list, and reasons why the Work is not complete.
   2. Advise Contracting Officer of pending insurance changeover requirements.
   3. Submit specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
   4. Obtain and submit releases permitting Contracting Officer unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
   5. Prepare and submit Project Record Documents, operation and maintenance manuals, final completion construction photographic documentation, damage or settlement surveys, property surveys, and similar final record information.
   6. Deliver tools, spare parts, extra materials, and similar items to location designated by Contracting Officer. Label with manufacturer's name and model number where applicable.
   7. Make final changeover of permanent locks and deliver keys to Contracting Officer. Advise Contracting Officer’s personnel of changeover in security provisions.
   8. Complete startup testing of systems.
   9. Submit test/adjust/balance records.
   10. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
   11. Advise Contracting Officer of changeover in heat and other utilities.
   12. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.
   13. Complete final cleaning requirements, including touchup painting.
   14. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.

B. Inspection: Submit a written request for inspection for Substantial Completion. On receipt of request, Contracting Officer will either proceed with inspection or notify Contractor of unfulfilled requirements. Contracting Officer 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 Contracting Officer, that must be completed or corrected before certificate will be issued.

1. Reinspection: 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.

1.03 FINAL COMPLETION

A. Preliminary Procedures: Before requesting final inspection for determining final completion, complete the following:
   1. Submit a final Application for Payment according to payment requirements.
   2. Submit certified copy of Contracting Officers Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Contracting Officer. The certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
   3. Submit evidence of final, continuing insurance coverage complying with insurance requirements.
   4. Instruct Contracting Officer's personnel in operation, adjustment, and maintenance of products, equipment, and systems. Submit demonstration and training video recordings.

B. Inspection: Submit a written request for final inspection for acceptance. On receipt of request, Contracting Officer will either proceed with inspection or notify Contractor of unfulfilled requirements.
   1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

1.04 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, starting with exterior areas first and proceeding from lowest floor to highest floor.
   2. Organize items applying to each space by major element, including categories for ceiling, individual walls, floors, equipment, and building systems.
   3. Submit list of incomplete items in the following format:
      a. PDF electronic file.

1.05 WARRANTIES

A. Submittal Time: Submit written warranties on request of Contracting Officer for designated portions of the Work where commencement of warranties other than date of Substantial Completion is indicated.

B. Organize warranty documents into an orderly sequence based on the table of contents of the Project Manual.
   1. Bind warranties and bonds in heavy-duty, 3-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.
   4. Scan warranties and bonds and assemble complete warranty and bond submittal package into a single indexed electronic PDF file with links enabling navigation to each item. Provide table of contents at beginning of document.

C. 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 meet Green Seal 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 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 neither planted nor 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; shampoo 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. Replace chipped or broken glass and other damaged transparent materials. Polish mirrors and glass, taking care not to scratch surfaces.
      k. Remove labels that are not permanent.
      l. Touch up and otherwise repair and restore marred, exposed finishes and surfaces. Replace finishes and surfaces that cannot be satisfactorily repaired or restored or that already show evidence of repair or restoration.
         1) Do not paint over "UL" and other required labels and identification, including mechanical and electrical nameplates.
      m. Wipe surfaces of mechanical and electrical equipment and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.
      n. Replace parts subject to operating conditions during construction that may impede operation or reduce longevity.
      o. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.

p. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.
q. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency. Replace burned-out bulbs, and those noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.
r. Leave Project clean and ready for occupancy.

END OF SECTION 017700

SECTION 017823
OPERATION AND MAINTENANCE DATA

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes administrative and procedural requirements for preparing operation and maintenance manuals, including the following:
   1. Operation and maintenance documentation directory.
   2. Emergency manuals.
   3. Operation manuals for systems, subsystems, and equipment.
   4. Product maintenance manuals.
   5. Systems and equipment maintenance manuals.

B. Related Sections:
   1. Divisions 02 through 49 Sections for specific operation and maintenance manual requirements for the Work in those Sections.

1.02 CLOSEOUT SUBMITTALS

A. Format: Submit operations and maintenance manuals in the following format:
   1. PDF electronic file (vector). Assemble each manual into a composite electronically-indexed file. Submit on digital media acceptable to Contracting Officer. Rasterized (pixel-scanned) pdfs will not be acceptable
      a. Name each indexed document file in composite electronic index with applicable item name. Include a complete electronically-linked operation and maintenance directory.
      b. Enable inserted reviewer comments on draft submittals.
   2. Three (3) paper copies. Include a complete operation and maintenance directory. Enclose title pages and directories in clear plastic sleeves. Contracting Officer will return 2 copies.

B. 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. Contracting Officer will return copy with comments.
   1. Correct or modify each manual to comply with Contracting Officers comments. Submit copies of each corrected manual within 15 days of receipt of Contracting Officers comments and prior to commencing demonstration and training.

PART 2 - PRODUCTS

2.01 REQUIREMENTS FOR EMERGENCY, OPERATION, AND MAINTENANCE MANUALS

A. Organization: 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 Contracting Officer.
   8. Name and contact information for Commissioning Agent.
   9. Names and contact information for major consultants to the Contracting Officer 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.

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. 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: Enable bookmarking of individual documents based upon 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 upon opening file.

F. Manuals, Paper Copy: Submit manuals in the form of hard copy, bound and labeled volumes.
   1. Binders: Heavy-duty, three-ring, vinyl-covered, post-type binders, in thickness necessary to accommodate contents, sized to hold 8-1/2-by-11-inch paper; with clear plastic sleeve on spine to hold label describing contents and with pockets inside covers to hold folded oversize sheets.
      a. Identify each binder on front and spine, with printed title "OPERATION AND MAINTENANCE MANUAL," Project title or name, subject matter of contents. Indicate volume number for multiple-volume sets.
   2. Dividers: Heavy-paper dividers with plastic-covered tabs for each section of the manual. Mark each tab to indicate contents. Include typed list of products and major components of equipment included in the section on each divider, cross-referenced to Specification Section number and title of Project Manual.
   3. Protective Plastic Sleeves: Transparent plastic sleeves designed to enclose diagnostic software storage media for computerized electronic equipment.
   4. Drawings: Attach reinforced, punched binder tabs on drawings and bind with text.
      a. If oversize drawings are necessary, fold drawings to same size as text pages and use as foldouts.
      b. If drawings are too large to be used as foldouts, fold and place drawings in labeled envelopes and bind envelopes in rear of manual. At appropriate locations in manual, insert typewritten pages indicating drawing titles, descriptions of contents, and drawing locations.

2.02 EMERGENCY MANUALS

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

B. 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.

C. 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.

D. 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.

2.03 OPERATION MANUALS

A. 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 is 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.

B. 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.

C. 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.

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

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

2.04 PRODUCT MAINTENANCE MANUALS

A. 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.

B. 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.

C. 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.

D. 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.

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

F. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.

2.05 SYSTEMS AND EQUIPMENT MAINTENANCE MANUALS

A. 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 warranty and bond information, as described below.

B. 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.

C. Manufacturers' Maintenance Documentation: Manufacturers' maintenance documentation including the following information for each component part or piece of equipment:
   1. Standard maintenance instructions and bulletins.
   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.

D. 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.

E. 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.

F. 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.

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

H. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.

PART 3 - EXECUTION

3.01 MANUAL PREPARATION

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

C. Operation and Maintenance Manuals: Assemble a complete set of operation and maintenance data indicating operation and maintenance of each system, subsystem, and piece of equipment not part of a system.

D. Manufacturers' Data: Where manuals contain manufacturers' standard printed data, 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.

E. 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 operation and maintenance manuals.

F. Comply with Division 01 Section "Closeout Procedures" for schedule for submitting operation and maintenance documentation.

END OF SECTION 017823

SECTION 017839
PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes administrative and procedural requirements for project record documents, including the following:
   1. Record Drawings.
   2. Record Specifications.
   3. Record Product Data.

B. Related Sections:
   1. Division 01 Section "Operation and Maintenance Data" for operation and maintenance manual requirements.
   2. Divisions 02 through 49 Sections for specific requirements for project record documents of the Work in those Sections.

1.02 CLOSEOUT SUBMITTALS

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

B. Record Specifications: Submit one (1) paper copy of Project's Specifications, including addenda and contract modifications.

C. Record Product Data: Submit one (1) paper copy of each submittal.

PART 2 - PRODUCTS

2.01 RECORD DRAWINGS

A. Record Prints: Maintain one (1) set of marked-up paper copies of the Contract Drawings and Shop Drawings.
   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. Record data as soon as possible after obtaining it.
      c. Record and check the markup before enclosing concealed installations.
   2. Mark the Contract Drawings and Shop Drawings completely and accurately. Utilize personnel proficient at recording graphic information in production of marked-up record prints.
   3. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at same location.

4. 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 Contracting Officer. When authorized, prepare a full set of corrected digital data files of the Contract Drawings, as follows:
   1. Format: Same digital data software program, version, and operating system as the original Contract Drawings.
   2. Format: DWG latest Autocad version operating in latest Microsoft Windows operating system.
   3. Format: Annotated PDF electronic file with comment function enabled.
   4. Incorporate changes and additional information previously marked on record prints. Delete, redraw, and add details and notations where applicable.
   5. Refer instances of uncertainty to Contracting Officer for resolution.
   6. Contracting Officer will furnish Contractor one (1) set of digital data files of the Contract Drawings for use in recording information.

C. Format: Identify and date each record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.
   1. Record Prints: Organize record prints and newly prepared record Drawings 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 Contracting Officer.
      e. Name of Contracting Officer’s field representative.
      f. Name of Contractor.

2.02 RECORD SPECIFICATIONS

A. Preparation: Mark 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. Note related Change Orders, record Product Data, and record Drawings where applicable.

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

2.03 RECORD PRODUCT DATA

A. 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.

B. Format: Submit record Product Data as annotated PDF electronic file and paper copy.

2.04 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 and paper copy

PART 3 - EXECUTION

3.01 RECORDING AND MAINTENANCE

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

B. Maintenance of Record Documents and Samples: Store record documents and Samples 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 Contracting Officer's reference during normal working hours.

END OF SECTION 017839

SECTION 017900
DEMONSTRATION AND TRAINING

PART 1 GENERAL

1.01 SUMMARY

A. Section includes administrative and procedural requirements for instructing Owner's personnel, including the following:
   1. Demonstration of operation of systems, subsystems, and equipment.
   2. Training and operation and maintenance of systems, subsystems, and equipment.

1.02 INFORMATIONAL SUBMITTALS

A. Instruction Program: Submit online of instructional program for demonstration and training, including a list of training modules, and a schedule of proposed dates, times, length of instruction time, and instructors' names for each training module. Include learning objective and outline for each training module.
   1. Indicate proposed training modules, utilizing manufacturer-produced demonstration and training video recordings for systems, equipment, and products in lieu of video recording of live instructional module.

1.03 CLOSEOUT SUBMITTALS

A. At completion of training, submit complete training manual(s) for Owner's use.

1.04 QUALITY ASSURANCE

A. Preconstruction Meeting: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination." Review methods and procedures related to demonstrate and training.

1.05 COORDINATION

A. Coordinate instruction schedule with Owner's operations. Adjust schedule as required to minimize disrupting Owner's operations.

B. Coordinate content of training modules with content of approved emergency, operation and maintenance manuals. Do not submit instruction program until operation and maintenance data.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

SECTION 024100
DEMOLITION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Selective demolition of building elements for alteration purposes.

1.02 RELATED REQUIREMENTS

A. Section 015000 - Temporary Facilities and Controls: Site fences, security, protective barriers, and waste removal.

B. Section 016000 - Product Requirements: Handling and storage of items removed for salvage and relocation.

C. Section 017000 - Execution and Closeout Requirements: Project conditions; protection of bench marks, survey control points, and existing construction to remain; reinstallation of removed products; temporary bracing and shoring.

1.03 REFERENCE STANDARDS

A. 29 CFR 1926 - Safety and Health Regulations for Construction; Current Edition.

B. NFPA 241 - Standard for Safeguarding Construction, Alteration, and Demolition Operations; 2027.

PART 2 PRODUCTS -- NOT USED

PART 3 EXECUTION

3.01 DEMOLITION

A. Remove selective portions of building designated on demolition plans.

3.02 GENERAL PROCEDURES AND PROJECT CONDITIONS

A. Comply with applicable codes and regulations for demolition operations and safety of adjacent structures and the public.
   1. Obtain required permits.
   2. Take precautions to prevent catastrophic or uncontrolled collapse of structures to be removed; do not allow worker or public access within range of potential collapse of unstable structures.
   3. Provide, erect, and maintain temporary barriers and security devices.
   4. Conduct operations to minimize effects on and interference with adjacent structures and occupants.
   5. Do not close or obstruct roadways or sidewalks without permits from authority having jurisdiction.
   6. Obtain written permission from owners of adjacent properties when demolition equipment will traverse, infringe upon, or limit access to their property.

B. Do not begin removal until receipt of notification to proceed from Contracting officer.

C. Protect existing structures and other elements to remain in place and not removed.
   1. Provide bracing and shoring.
   2. Prevent movement or settlement of adjacent structures.
   3. Stop work immediately if adjacent structures appear to be in danger.

3.03 EXISTING UTILITIES

A. Coordinate work with utility companies. Notify utilities before starting work, comply with their requirements, and obtain required permits.

B. Protect existing utilities to remain from damage.

C. Do not disrupt public utilities without permit from authority having jurisdiction.

D. Do not close, shut off, or disrupt existing life safety systems that are in use without at least 7 days prior written notification to Contracting officer.

E. Do not close, shut off, or disrupt existing utility branches or take-offs that are in use without at least 3 days prior written notification to Contracting officer.

F. Locate and mark utilities to remain; mark using highly visible tags or flags, with identification of utility type; protect from damage due to subsequent construction, using substantial barricades if necessary.

G. Remove exposed piping, valves, meters, equipment, supports, and foundations of disconnected and abandoned utilities.

3.04 SELECTIVE DEMOLITION FOR ALTERATIONS

A. Existing construction and utilities indicated on drawings are based on casual field observation and existing record documents only.
   1. Verify construction and utility arrangements are as indicated.
   2. Report discrepancies to Contracting Officer before disturbing existing installation.
   3. Beginning of demolition work constitutes acceptance of existing conditions that would be apparent upon examination prior to starting demolition.

B. Remove existing work as indicated and required to accomplish new work.
   1. Remove items indicated on drawings.

C. Services including, but not limited to, HVAC, Plumbing, Fire Protection, and Electrical: Remove existing systems and equipment as indicated.
   1. Maintain existing active systems to remain in operation, and maintain access to equipment and operational components.
   2. Where existing active systems serve occupied facilities but are to be replaced with new services, maintain existing systems in service until new systems are complete and ready for service.
   3. Verify that abandoned services serve only abandoned facilities before removal.
   4. Remove abandoned pipe, ducts, conduits, and equipment, including those above accessible ceilings. Remove back to source of supply where possible, otherwise cap stub and tag with identification.

D. Protect existing work to remain.
   1. Prevent movement of structure. Provide shoring and bracing as required.
   2. Perform cutting to accomplish removal work neatly and as specified for cutting new work.
   3. Repair adjacent construction and finishes damaged during removal work.
   4. Patch to match new work.

3.05 DEBRIS AND WASTE REMOVAL

A. Remove debris, junk, and trash from site.

B. Leave site in clean condition, ready for subsequent work.

C. Clean up spillage and wind-blown debris from public and private lands.

END OF SECTION

SECTION 061000
ROUGH CARPENTRY

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Structural dimension lumber framing.

B. Non-structural dimension lumber framing.

C. Rough opening framing for doors, windows, and roof openings.

D. Concealed wood blocking, nailers, and supports.

1.02 REFERENCE STANDARDS

A. ANSI A208.1 - American National Standard for Particleboard; 2022.

B. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2023.

C. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2026a.

D. AWC (WFCM) - Wood Frame Construction Manual for One- and Two-Family Dwellings; 2015.

E. AWPA U1 - Use Category System: User Specification for Treated Wood; 2025.

F. PS 1 - Structural Plywood; 2023.

G. PS 20 - American Softwood Lumber Standard; 2025.

H. WWPA G-5 - Western Lumber Grading Rules; 2025.

1.03 SUBMITTALS

A. See Section 013000 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide technical data on wood preservative materials.

C. Manufacturer's Certificate: Certify that wood products supplied for rough carpentry meet or exceed specified requirements.

1.04 DELIVERY, STORAGE, AND HANDLING

A. General: Cover wood products to protect against moisture. Support stacked products to prevent deformation and to allow air circulation.

PART 2 PRODUCTS

2.01 GENERAL REQUIREMENTS

A. Dimension Lumber: Comply with PS 20 and requirements of specified grading agencies.
   1. Species: Douglas Fir-Larch, unless otherwise indicated.
   2. If no species is specified, provide any species graded by the agency specified; if no grading agency is specified, provide lumber graded by any grading agency meeting the specified requirements.
   3. Grading Agency: Any grading agency whose rules are approved by the Board of Review, American Lumber Standard Committee (www.alsc.org) and who provides grading service for the species and grade specified; provide lumber stamped with grade mark unless otherwise indicated.
   4. Lumber of other species or grades is acceptable provided structural and appearance characteristics are equivalent to or better than products specified.

B. Lumber fabricated from old growth timber is not permitted.

2.02 DIMENSION LUMBER FOR CONCEALED APPLICATIONS

A. Grading Agency: Western Wood Products Association; WWPA G-5.

B. Sizes: Nominal sizes as indicated on drawings, S4S.

C. Moisture Content: S-dry or MC19.

D. Stud Framing (2 by 2 through 2 by 6 (50 by 50 mm through 50 by 150 mm)):
   1. Species: Douglas Fir-Larch.
   2. Grade: As indicated on drawings.

E. Miscellaneous Framing, Blocking, Nailers, Grounds, and Furring:
   1. Lumber: S4S, No. 2 or Standard Grade.
   2. Boards: Standard or No. 3.

2.03 CONSTRUCTION PANELS

A. Communications and Electrical Room Mounting Boards: PS 1 A-D plywood, or medium density fiberboard; 3/4 inch thick; flame spread index of 25 or less, smoke developed index of 450 or less, when tested in accordance with ASTM E84.

2.04 ACCESSORIES

A. Fasteners and Anchors:
   1. Provide fabricated post bases, column caps, beam seats, etc as indicated in drawings.
   2. Metal and Finish: Hot-dipped galvanized steel complying with ASTM A153/A153M for high humidity and preservative-treated wood locations, unfinished steel elsewhere.
   3. Anchors: As indicated on drawings.

PART 3 EXECUTION

3.01 PREPARATION

A. Install sill gasket under sill plate of framed walls bearing on foundations; puncture gasket cleanly to fit tightly around protruding anchor bolts.

B. Coordinate installation of rough carpentry members specified in other sections.

3.02 INSTALLATION - GENERAL

A. Select material sizes to minimize waste.

B. Reuse scrap to the greatest extent possible; clearly separate scrap for use on site as accessory components, including: shims, bracing, and blocking.

C. Where treated wood is used on interior, provide temporary ventilation during and immediately after installation sufficient to remove indoor air contaminants.

3.03 FRAMING INSTALLATION

A. Set structural members level, plumb, and true to line. Discard pieces with defects that would lower required strength or result in unacceptable appearance of exposed members.

B. Make provisions for temporary construction loads, and provide temporary bracing sufficient to maintain structure in true alignment and safe condition until completion of erection and installation of permanent bracing.

C. Install structural members full length without splices unless otherwise specifically detailed.

D. Comply with member sizes, spacing, and configurations indicated, and fastener size and spacing indicated, but not less than required by applicable codes and AWC (WFCM) Wood Frame Construction Manual.

E. Install horizontal spanning members with crown edge up and not less than 1-1/2 inches (38 mm) of bearing at each end.

F. Construct double joist headers at floor and ceiling openings and under wall stud partitions that are parallel to floor joists; use metal joist hangers unless otherwise detailed.

G. Frame wall openings with two or more studs at each jamb; support headers on cripple studs.

3.04 BLOCKING, NAILERS, AND SUPPORTS

A. Provide framing and blocking members as indicated or as required to support finishes, fixtures, specialty items, and trim.

B. Provide the following specific non-structural framing and blocking:
   1. Cabinets and shelf supports.
   2. Wall brackets.
   3. Grab bars.
   4. Towel and bath accessories.
   5. Wall-mounted door stops.

3.05 TOLERANCES

A. Framing Members: 1/4 inch (6 mm) from true position, maximum.

B. Surface Flatness of Floor: 1/8 inch in 10 feet (1 mm/m) maximum, and 1/4 inch in 30 feet (7 mm in 10 m) maximum.

C. Variation from Plane (Other than Floors): 1/4 inch in 10 feet (2 mm/m) maximum, and 1/4 inch in 30 feet (7 mm in 10 m) maximum.

END OF SECTION

SECTION 062000
FINISH CARPENTRY

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Wood casings and molding.

B. Wood base.

1.02 RELATED REQUIREMENTS

A. Section 08 1416 - Flush Wood Doors.

1.03 REFERENCE STANDARDS

A. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2026a.

B. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards, 2nd Edition; 2014, with Errata (2016).

C. AWMAC/WI (NAAWS) - North American Architectural Woodwork Standards; 2021, with Errata.

D. BHMA A156.9 - Cabinet Hardware; 2020.

E. HPVA HP-1 - American National Standard for Hardwood and Decorative Plywood; 2024.

F. NEMA LD 3 - High-Pressure Decorative Laminates; 2005.

G. WDMA I.S. 4 - Industry Specification for Preservative Treatment for Millwork; 2025.

1.04 SUBMITTALS

A. See Section 013000 - Administrative Requirements for submittal procedures.

B. Shop Drawings: Indicate materials, component profiles, fastening methods, jointing details, and accessories.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Protect from moisture damage.

PART 2 PRODUCTS

2.01 MATERIALS

A. Unless otherwise indicated provided products of quality specified by AWI Architectural Woodwork Quality Standards Illustrated for Premium Grade.

B. Unless otherwise indicated provide products of quality specified by Woodwork Institute Manual of Millwork for Premium Grade.

2.02 WOOD-BASED COMPONENTS

A. Wood fabricated from old growth timber is not permitted.

2.03 LUMBER MATERIALS

A. Door Casings:
   1. Size: See Drawings.
   2. Species: Match Existing.

B. Wood Base:
   1. Size: See Drawings.
   2. Species: Match Existing.

2.04 FASTENINGS

A. Adhesive for Purposes Other Than Laminate Installation: Suitable for teh purpose; not containing formaldehyde or other volatile organic compounds.

B. Fasteners: Of size and type to suit application; ungalvanized finish in concealed locations and chrome finish in expsoed locations.

2.05 ACCESSORIES

A. Wood Filler: Solvent base, tinted to match surface finish color.

2.06 SITE FINISHING MATERIALS

A. Stain and Finishing Materials: In compliance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS), unless noted otherwise.

2.07 FABRICATION

A. Shop assemble work for delivery to site, permitting passage through building openings.

B. Fit exposed sheet material edges with 3/8 inch matching hardwood (9 mm matching hardwood) edging. Use one piece for full length only.

C. When necessary to cut and fit on site, provide materials with ample allowance for cutting. Provide trim for scribing and site cutting.

2.08 SHOP FINISHING

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

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

C. On items to receive transparent finishes, use wood filler that matches surrounding surfaces and is of type recommended for the applicable finish.

D. Finish work in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS), Section 5 - Finishing for grade specified and as follows:

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify adequacy of backing and support framing.

B. Verify mechanical, electrical, and building items affecting work of this section are placed and ready to receive this work.

3.02 INSTALLATION

A. Set and secure materials and components in place, plumb and level.

B. Carefully scribe work abutting other components, with maximum gaps of 1/32 inch (0.79 mm). Do not use additional overlay trim to conceal larger gaps.

3.03 TOLERANCES

A. Maximum Variation from True Position: 1/16 inch (1.6 mm).

B. Maximum Offset from True Alignment with Abutting Materials: 1/32 inch (0.79 mm).

END OF SECTION

SECTION 064100
ARCHITECTURAL WOOD CASEWORK

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Cabinet units and custom components.

B. PLAM Countertops.

C. Solid Surface Countertops.

D. Hardware.

1.02 RELATED REQUIREMENTS

A. Section 061000 - Rough Carpentry: Support framing, grounds, and concealed blocking.

1.03 REFERENCE STANDARDS

A. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards, 2nd Edition; 2014, with Errata (2016).

B. AWMAC/WI (NAAWS) - North American Architectural Woodwork Standards; 2021, with Errata.

C. NEMA LD 3 - High-Pressure Decorative Laminates; 2005.

1.04 DEFINITIONS

A. Exposed Portions of Cabinets: Surfaces visible when doors and drawers are closed., including bottoms of cabinets more than 48 inches above floor, and surfaces visible in open cabinets.

B. Semi-Exposed Portions of Cabinets: Surfaces behind opaque doors, such as interior of cabinets, shelves, dividers, interiors and slides of drawers, and interior faces of doors. Tops of cabinets 72 inches o more above the floor are defined as semi-exposed.

C. Concealed Portions of Cabinets: Surfaces usually visible after installation, including sleepers, web frames, dust panels, and ends and backs that are placed directly against walls or other cabinets.

1.05 SUBMITTALS

A. See Section 013000 - Administrative Requirements, for submittal procedures.

B. Shop Drawings:
   1. Show location of each item, dimensioned plans and elevations, large-scale details, attachment devices, and other components.
   2. Show locations and sizes of furring, blocking, and hanging strips, including concealed blocking and reinforcement.
   3. Show locations and sizes of cutouts and holes for plumbing fixtures and other items installed in architectural woodwork.
   4. Provide one set of shop drawings which includes all products within this section, engineered and built by a single source manufacturer, with seamless coordination amongst all products.

C. Samples For Selection:
   1. Samples with applied transparent finishes to be provided upon request.
   2. High pressure decorative laminate sample chains to be provided upon request.
   3. PVC edgebanding color charts to be provided upon request.
   4. Solid surface color samples to be provided upon request.

D. Samples for Final Verification:
   1. Lumber with / for transparent finish, not less than 15 square inches, for each species and cut, finished on one side.
   2. Veneer faced panel products with / for transparent finish, not less than 15 square inches, for each species and cut. Include at least one face-veneer seam and finish as specified.

3. Laminated sample blocks: 4 inch x 4 inch, applied to substrate, with PVC edgebanding on two edges. Provide one sample block for each color/pattern selection upon request.
4. Solid surface sample blocks: 2 inch x 2 inch. Provide one sample block for each color/pattern selection upon request.

E. Mockups: Build mockups to verify selections made, to demonstrate aesthetic effects, and set quality standards for materials and execution.
1. Approved mockups may become part of the completed work if undisturbed at time of substantial completion.
a. Cast, non-porous, filled polymer, not coated, laminated or of composite construction, with through body colors.
b. 1/2 inch thick sheet stock.
2. Interior Wood Trim: Provide finished wood lumber and moldings complying with the following requirements.
a. Species and Cut: Plain-sawn, clear, kiln dried fir selected for compatible grain and color.
b. Texture: Surfaced smooth.
c. Lumber for Transparent Finish (Stained or Clear): Solid lumber stock.
3. Wood Molding Patterns: Provide stock moldings indicated, made to patterns included in WMMPA WM 7 and graded under WMMPA
a. Moldings for Transparent Finish: N-Grade.

1.06 QUALITY ASSURANCE

A. Fabricator Qualifications: Company specializing in fabricating the products specified in this section with minimum five years of documented experience.

1.07 DELIVERY, STORAGE, AND HANDLING

A. If woodwork must be stored in areas other than final installation location, store only in areas where environmental conditions comply with these requirements.

1.08 FIELD CONDITIONS

A. Field Measurements: Where woodwork is 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 work.
1. Locate concealed framing, blocking and reinforcements that support woodwork by field measurements before being enclosed.
2. Where field dimensions cannot be made without delaying the work, project general contractor will guarantee dimensions in order to proceed with manufacturing of woodwork.

PART 2 PRODUCTS

2.01 MATERIALS

A. Provide materials that comply with requirements of AWS Sections 5, 6, 10, and 11 (2009 AWI, AWMAC, WI – Architectural Woodwork Standards – 1st Edition) and the referenced product standards indicated:
1. Laminate: NEMA Test LD-3, 2005.
a. If colors are not indicated in Room Finish Schedule, selection will be from standard Wilsonart and Formica color offerings.
2. Thermally fused melamine: NEMA Test LD-3, 2005
a. TFM allowed on casework interiors only, as specified below. Utilization of TFM on any exterior casework surfaces, including door and drawer faces and finished ends, will not be permitted.
b. If colors are not indicated in Room Finish Schedule, selection will be from standard white, gray, or beige color offerings.
3. Hardboard: ANSI / AHA A135.4.
4. Particleboard: ANSI 208.1-2009, M-2 requirements, Industrial Grade.

5. Solid Surface Countertop: Non-porous, homogeneous material maintaining the same composition throughout the part with a composition of acrylic polymer, aluminum trihydrate filler and pigment; non-coated, laminates or of composite construction.
6. Wood Molding Patterns: Provide stock moldings indicated, made to patterns included in WMMPA WM 7 and graded under WMMPA WM4.

2.02 FABRICATION, GENERAL

A. Complete fabrication, including assembly, finishing, and hardware application, before shipment to project site to maximum extent possible.
   1. Trial fit assemblies at fabrication shop that cannot be shipped completely assembled.
   2. Insert dowels, screws, bolted connectors, and other fastening devices that can be removed after trial fitting.
   3. Verify that various parts fit as intended and check measurements of assemblies against field measurements indicated on shop drawings before disassembling for shipment.

B. Factory cut openings, to maximum extent possible, to receive hardware, appliances, plumbing fixtures, electrical work, and similar items.

2.03 LAMINATE CLAD CABINETS

A. Quality Standard: Comply with AWS Section 10 - casework (2009 AWI, AWMAC, WI-Architectural Woodwork Standards - 1st Edition).

B. Grade: Custom.

C. Core: Industrial grade plywood.

D. Laminate Cladding on Surfaces:
   1. Exposed Surface: High pressure decorative laminate VGS (0.028 thickness) balanced with high pressure cabinet liner (0.020 thickness). Use of TFM on exposed exterior surfaces will not be permitted.
      a. Manufacturer:
         1) **PL1: Wilsonart Premium Laminate - Harvest Maple.**
   2. Semi-Exposed Surfaces: Thermally fused melamine laminate.
   3. Unfinished core surfaces, even on concealed surfaces (excluding edges), will not be permitted.

E. PVC Edgebanding:
   1. Cabinet body edges and shelf edge: 1mm PVC banding, machine applied and trimmed.
   2. Cabinet door and drawer edges: 3mm PVC banding, machine applied and machine profiled to 1/8 inch radius.

F. Drawer Box Construction:
   1. Minimum 1/2 inch thick particleboard sides, back, sub-front, and bottom, with bottom screwed directly to the assembled drawer box.
   2. All drawer box surfaces (excluding edges) to be finished with thermally fused melamine laminate.
   3. Top edge of drawer box finished with 1mm PVC machine applied and trimmed.

2.04 CABINET HARDWARE

A. Comply with ANSI/BHMA A156.9, Grade 1 units.

B. Door and drawer front pulls:
   1. Pull program offering must include minimum of 20 metal pull design and finish option combinations including:
      a. Top Knob: Europa 4 inch long finger pull.

C. Hinges: Concealed 120-degree swing, self-closing, clip-on style.
   1. Doors up to 34 inches in height have 2 hinges per door.
   2. Doors 35 inches to 62 inches in height have 3 hinges per door.
   3. Doors 63 inches to 80 inches in height have 4 hinges per door.

4. All doors have rubber bumpers.

D. Drawer Slides:
   1. Type: Full extension.
   2. Mounting: Side mounted.
   3. Features: Provide self closing/stay closed type.

E. Shelf Supports: Injection molded, clear polycarbonate, adjustable on 32mm holes, with two integral support pins, and automatic lock down tabs for 3/4 inch and 1 inch thick shelves to prevent accidental tipping of shelf. Each shelf assembly to support a minimum of 1,200 pounds, evenly distributed, without failure.

F. Magnetic Catch: BHMA A156.9, B03141, Grade 1.

G. Counter Support Bracket: Epoxy powder coated, 11 gauge steel with integral cleat mount opening and wire management opening. Provide where indicated on drawings. Provide rating of 500 pounds.

2.05 LAMINATE CLAD COUNTERTOPS

A. Quality Standard: Comply with AWS Section 11 – Countertops (2009 AWI, AWMAC, WI – Architectural Woodwork Standards – 1st Edition).

B. Grade: Custom.

C. Style: High pressure decorative laminate with top mounted backsplash.

D. Core: Industrial grade plywood.

E. Laminate Cladding on Surfaces.
   1. Horizontal surfaces: High pressure decorative laminate HGS (0.048 thickness).
   2. Exposed edges: 3mm PVC banding, machine applied and machine profiled to 1/8 inch radius.
   3. Backsplash laminate: High pressure decorative laminate HGS (0.048 thickness).
   4. All laminated countertop surfaces must be properly balanced with high pressure backer BKH. Unfinished core surfaces, even on concealed surfaces (excluding edges), will not be permitted.

F. Provide tops in as long as practical continuous lengths. Provide field glued splines at joints, with not joints closer than 24 inches on either side of sink cutouts.

G. Scribe backsplash to wall for tight fit.

H. Manufacturer:
   1. **PL2: Wilsonart Premium Laminate - Canyon Zephyr.**

2.06 COUNTERTOP FABRICATION

A. General: Fabricate components in shop, to greatest extent practicable, in sizes and shapes indicated according to approved shop drawings and Wilsonart Quartz Fabrication manual.

B. Joint Seams: Form joint seams between quartz surfacing components with specified seam adhesive. Completed joints inconspicuous in appearance and without voids. Provide joint reinforced if required by manufacturer for particular installation conditions.

2.07 INSTALLATION MATERIALS

A. Joint Adhesive: Methacrylate-based adhesive for chemically bonding quartz surfacing seams. Color complementary to quartz surfacing sheet material. UL 2818 GREENGUARD Gold certified and complying with SCAQMD Rule 1168.
   1. Basis-of-Design Product: Wilsonart Hard Surface Adhesive.
   2. Adhesives shall have a VOC content of 70 g/L or less.

B. Elastomeric Sealant: Mildew-resistant silicone sealant for filing gaps between countertops and terminating substrates in wet environment applications. Complies with ASTM C920, Type S (single component), Grade NS (nonsag).
   1. Basis-of-Design Product: Wilsonart; Color Matched Caulk.

2. Color: Complementary to quartz surfacing color.

C. Siliconized Acrylic Sealant: Siliconized acrylic latex sealant. For general applications to fill gaps between countertops and at terminating substrates. Complies with ASTM C384, Type OP, Grade NF, and SMAQMD Rule 1168.
   1. Basis-of-Design Product: Wilsonart; Color Matched Caulk.
   2. Color: Complementary to quartz surfacing color.

D. Construction Ad, endsplashes, adhesive: Countertop manufacturer's recommended silicone-based construction adhesive for backsplashes, applications, and other applications according to Manufacturer's published fabrication instructions.

2.08 SHOP FINISHING

A. Preparation for finishing: Comply with AWS Section 5 – Finishing (2009 AWI, AWMAC, WI – Architectural Woodwork Standards – 1st Edition) for sanding, filling countersunk fasteners, sealing concealed surfaces, and similar preparations for finishing architectural woodwork as applicable to each unit of work.
   1. Backpriming: Apply one coat of sealer or primer, compatible with finish coats, to concealed surfaces of woodwork. Apply one coat to back of paneling.
   2. Transparent Finish:
      a. Grade: Custom.
      b. AWI Finish System: Conversion varnish.
      c. Staining: Match approved samples for color.
      d. Sheen: Satin, 31-45 gloss units measured on 60-degree gloss meter per ASTM-D523.

2.09 ADHESIVES

A. For bonding laminate to core: PVA adhesive for cold press applications, machine applied as a consistent, rigid glue line.

B. For bonding PVC edgebanding to core: Hot melt adhesive, machine applied.

C. For installation: Adhesives that comply with VOC content limits according to EPA Method 24, 40-CFR-59, Subpart D. Wood glues VOC content less than 30 g/L. Contact adhesive VOC content less than 250 g/L.

2.10 LAMINATE MATERIALS

A. Manufacturers:
   1. Formica Corporation: www.formica.com.
   2. Wilsonart: www.wilsonart.com.
   3. Pionite; www.pionite.com
   4. Substitutions: See Section 01 6000 - Product Requirements.

B. High Pressure Decorative Laminate (HPDL): NEMA LD 3, types as recommended for specific applications.

PART 3 EXECUTION

3.01 PREPARATION AND INSTALLATION

A. Interior architectural woodwork includes wood furring, blocking, shims, and hanging strips for installation of woodwork items unless concealed within other construction before woodwork installation.

B. Condition woodwork to humidity conditions as specified in Project Conditions.

C. Quality Standard: Install woodwork to Comply with AWS Sections 5, 6, 10, and 11 (2009 AWI, AWMAC, WI – Architectural Woodwork Standards – 1st Edition).

D. Install woodwork plumb, level, true, and straight with no distortions. Shim as required with concealed shims. Install to a tolerance of 1/8 inch in 96 inches for plumb and level, with no variations in flushness of adjoining surfaces.

E. Scribe and cut woodwork to fit adjoining work, and refinish cut surfaces or repair damaged finish at cuts.

F. Anchor woodwork to anchors or blocking built into substrates. Secure to grounds, stripping and blocking with countersunk, concealed fasteners and blind nailing as required.
   1. Drill pilot holes in hardwood before fastening to prevent splitting. Fasten to prevent movement or warping.
   2. Except where prefinished matching fastener heads are required, use fine finishing nails for exposed nailing.

G. Install cabinets without distortion so that doors and drawers fit openings properly and are accurately aligned. Adjust hardware to center doors and drawers in openings and to provide easy operation.

H. Anchor countertops securely to base units and other support systems as indicated.

I. Install standing and running trim, and rails with minimum number of joints possible, using full-length pieces from maximum length lumber available. Stagger joints in adjacent and related members. Cope returns and miter corners.
   1. Fill gaps between top of base and wall with plastic wood filler, sand smooth, and finish same as wood base.

J. Install miscellaneous accessories per manufacturer's instructions using fasteners appropriate to substrate and recommended by manufacturer. Install units plumb and level, firmly anchored, in locations indicated on drawings.

K. Touch up finishing work specified in this section after installation of woodwork. Fill nail holes with matching filler where exposed.

3.02 ADJUSTING

A. Repair damaged case goods and woodwork where possible to eliminate defects. If repair is not sufficient woodwork must be replaced. Adjust joints for uniform appearance.

B. Clean, lubricate and adjust hardware.

C. Clean case goods and woodwork on exposed and semi-exposed surfaces. Touch-up factory applied finishes to restore damaged or soiled areas.

END OF SECTION

SECTION 078400
FIRESTOPPING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Firestopping systems.

B. Firestopping of all joints and penetrations in fire resistance rated and smoke resistant assemblies, whether indicated on drawings or not, and other openings indicated.

1.02 RELATED REQUIREMENTS

A. Section 092116 - Gypsum Board Assemblies: Gypsum wallboard fireproofing.

1.03 REFERENCE STANDARDS

A. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials; 2026.

B. ASTM E814 - Standard Test Method for Fire Tests of Penetration Firestop Systems; 2024.

C. FM (AG) - FM Approval Guide; current edition.

D. FM 4991 - Approval Standard of Firestop Contractors; 2013.

E. ITS (DIR) - Directory of Listed Products; Current Edition.

F. SCAQMD 1168 - Adhesive and Sealant Applications; 1989, with Amendment (2022).

G. UL (FRD) - Fire Resistance Directory; Current Edition.

1.04 SUBMITTALS

A. See Section 013000 - Administrative Requirements, for submittal procedures.

B. Schedule of Firestopping: List each type of penetration, fire rating of the penetrated assembly, and firestopping test or design number.

C. Product Data: Provide data on product characteristics, performance ratings, and limitations.

D. USA Certification of Origin: Manufacturer shall supply with first submittal, an example of their Certificate of Origin declaring product is wholly manufactured and assembled specifically in the United States, including city and state locations. A notarized Certificate of Origin shall be provided with closeout documents.

E. Manufacturer's Installation Instructions: Indicate preparation and installation instructions.

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

G. Certificate from authority having jurisdiction indicating approval of materials used.

H. Installer Qualification: Submit qualification statements for installing mechanics.

1.05 QUALITY ASSURANCE

A. Fire Testing: Provide firestopping assemblies of designs that provide the scheduled fire ratings when tested in accordance with methods indicated.
   1. Listing in UL (FRD), FM (AG), or ITS (DIR) will be considered as constituting an acceptable test report.
   2. Valid evaluation report published by ICC Evaluation Service, Inc. (ICC-ES) at www.icc-es.org will be considered as constituting an acceptable test report.
   3. Submission of actual test reports is required for assemblies for which none of the above substantiation exists.

B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

1.06 FIELD CONDITIONS

A. Comply with firestopping manufacturer's recommendations for temperature and conditions during and after installation; maintain minimum temperature before, during, and for three days after installation of materials.

B. Provide ventilation in areas where solvent-cured materials are being installed.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Subject to compliance with through penetration firestop systems (XHEZ), joint systems (XHBN) and perimeter firestop systems (XHDG) and any other appropriate section listed in Volume II of the UL Fire Resistance Directory, provide products of one or a combination of the following as required by condition of use:
   1. 3M Fire Protection Products: www.3m.com/firestop.
   2. Hilti, Inc: www.us.hilti.com/#sle.
   3. Tremco Inc.

B. Firestopping Manufacturers:

2.02 FIRESTOPPING ASSEMBLY REQUIREMENTS

A. Provide firestopping composed of components that are compatible with each other, the substrates forming openings and the items, if any, penetrating the firestopping under conditions of service and application, as demonstrated by the fire-resistance-rated systems.

B. Firestopping assmeblies required when penetrating a rated wall or roof system.

C. Provide components for each firestopping system that are needed to install fill material. Use only components specified by the firestopping manufacturer and approved by the qualified testing agency for the designated fire-resistance-rated systems.

D. Firestopping materials are either "cast-in-place" or "post-installed". Provide cast-in-place firestop devices prior to concrete placement.

E. Firestopping:
   1. Use only firestop products that have been ASTM E814, UL 1479 or UL 2079 tested and approved for specific fire-rated construction conditions conforming to construction assembly type, penetrating item type, annular space requirements and fire-rating involved for each separate instance.
   2. Provide a firestop system with an "F" rating as determined by UL 1479 or ASTM E 814 which is equal to the time rating of construction joint assembly.

F. Sealants, caulking materials or foams for use with non-combustible items including steel pipe, copper pipe, rigid steel conduit and electrical metallic tubing (EMT), the following products are accepatable:
   1. Hilti CP 618 Firestop Putty Stick (non insulated).
   2. Hilti FS-One High Performance Intumescent Firestop Sealant.
   3. Hilti FS 620 Fire Foam.
   4. 3M Fire Barrier CP25 WB.
   5. 3M Fire Stop Sealant 2000.
   6. Tremco Tremstop Fire Sil Sealant.
   7. Tremco Tremstop IA Intumescent Acrylic Firestop Sealant.

G. Intumescent sealants, caulking materials for use with combustible items (penetrants consumed by high heat and flame) including insulated metal pipe, PVC jacketed, flexible cable or cable bundles and plastic pipe (closed piping system) the following products are acceptable:
   1. Hilti-FS-ONE Intumescent Firestop Sealant.
   2. Tremco Tremstop WBM Intumescent Firestop Sealant,.

H. Intumescent sealants, caulking materials for use with combustible plastic piping (open piping system), the following materials are acceptable:
   1. Hilti-FS-ONE Intumescent Firestop Sealant.
   2. Tremco Tremstop WBM Intumescent Firestop Sealant.

I. Foams, intumescent sealants or caulking materials for use with flexible cable or cable bundles, the following products are acceptable:
   1. Hilti-FS-ONE Intumescent Firestop Sealant.
   2. Hilti FS 620 Fire Foam.
   3. Hilti CP 601s Elastomeric Firestop Sealants.
   4. Hilti CP 606 Flexible Firestop Board with Accessories.

J. Non-curing, re-penetrable intumescent putty or foam materials for use with flexible cable or cable bundles, the following products are acceptable:
   1. Hilti CP 617 Firestop Putty Pad.
   2. Hilti CP 618 Firestop Plug.

K. Wall opening protective materials for use with UL listed metallic and specified nonmetallic outlet boxes, the following products are acceptable:
   1. Hilti CP 617 Firestop Putty Pad.
   2. Hilti CP 618 Firestop Plug.

L. Firestop collar or wrap devices attached to assembly around combustible plastic pipe (closed and open piping system), the following products are acceptable:
   1. Hilti CP 643N Firestop Collar.
   2. Hilti CP 644 Firestop Collar.
   3. Hilti CP 645/648 Wrap Strips.

2.03 MATERIALS

A. Firestopping Sealants: Provide only products having lower volatile organic compound (VOC) content than required by South West Coast Air Quality Management District Rule No. 1168.

B. Primers, Sleeves, Forms, Insulation, Packing, Stuffing and Accessories: Type required for tested assembly design.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify openings are ready to receive the work of this section.

B. Examine areas and conditions under which work is to be performed and identify conditions detrimental to proper or timely completion.

3.02 PREPARATION

A. Clean substrate surfaces of dirt, dust, grease, oil, loose material, or other materials that could adversely affect bond of firestopping material.

B. Remove incompatible materials that could adversely affect bond.

C. Install backing materials to prevent liquid material from leakage.

3.03 INSTALLATION

A. Install materials in manner described in fire test report and in accordance with manufacturer's instructions, completely closing openings.

B. Do not cover installed firestopping until inspected by authorities having jurisdiction.

C. Install labeling required by code.

3.04 CLEANING

A. Clean adjacent surfaces of firestopping materials.

END OF SECTION

SECTION 079200
JOINT SEALANTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Nonsag gunnable joint sealants.

B. Joint backings and accessories.

1.02 REFERENCE STANDARDS

A. ASTM C834 - Standard Specification for Latex Sealants; 2017 (Reapproved 2023).

B. ASTM C919 - Standard Practice for Use of Sealants in Acoustical Applications; 2024.

C. ASTM C920 - Standard Specification for Elastomeric Joint Sealants; 2018 (Reapproved 2024).

D. ASTM C1193 - Standard Guide for Use of Joint Sealants; 2025.

E. SCAQMD 1168 - Adhesive and Sealant Applications; 1989, with Amendment (2022).

1.03 SUBMITTALS

A. See Section 013000 - Administrative Requirements, for submittal procedures.

B. Product Data for Sealants: Submit manufacturer's technical data sheets for each product to be used, that includes the following.
   1. Physical characteristics, including movement capability, VOC content, hardness, cure time, and color availability.
   2. List of backing materials approved for use with the specific product.
   3. Substrates that product is known to satisfactorily adhere to and with which it is compatible.
   4. Substrates the product should not be used on.

C. USA Certificate of Origin: Manufacturer shall supply with first submittal, an example of their Certificate of Origin declaring product is wholly manufactured and assembled specifically in the United States, including city and state locations. A notarized Certificate of Origin shall be provided with closeout documents.

1.04 WARRANTY

A. See Section 017800 - Closeout Submittals, for additional warranty requirements.

B. Correct defective work within a five year period after Date of Substantial Completion.

C. Warranty: Include coverage for installed sealants and accessories that fail to achieve watertight seal , exhibit loss of adhesion or cohesion, or do not cure.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Gunnable and Pourable Sealants:
   1. Bostik Inc: www.bostik-us.com/#sle.
   2. Dow Chemical Company: consumer.dow.com/en-us/industry/ind-building-construction.html/#sle.
   3. Pecora Corporation: www.pecora.com/#sle.
   4. Sherwin-Williams Company: www.sherwin-williams.com/#sle.
   5. Sika Corporation: www.usa-sika.com/#sle.
   6. Substitutions: See Section 016000 - Product Requirements.

2.02 JOINT SEALANTS - GENERAL

A. Sealants and Primers - General: Provide products having volatile organic compound (VOC) content.

B. General Purpose Exterior Sealant: Acrylic, solvent release curing; ASTM C920, Grade NS, Class 12-1/2, Uses M, G, and A; single or multi- component.
   1. Color: Match adjacent finished surfaces.

2. Applications: Use for:
    a. Joints between concrete and other materials.
    b. Joints between metal frames and other materials.
    c. Other exterior joints for which no other sealant is indicated.

C. General Purpose Interior Sealant: Acrylic emulsion latex; ASTM C834, Type OP, Grade NF single component, paintable.
1. Color: Match adjacent finished surfaces.
2. Applications: Use for:
    a. Interior wall and ceiling control joints.
    b. Joints between door and window frames and wall surfaces.
    c. Other interior joints for which no other type of sealant is indicated.

D. Bathtub/Tile Sealant: White silicone; ASTM C920, Uses I, M and A; single component, mildew resistant.
1. Applications: Use for:
    a. Joints between plumbing fixtures and floor and wall surfaces.
    b. Joints between kitchen and bath countertops and wall surfaces.

E. Acoustical Sealant for Concealed Locations:
1. Composition: Acrylic latex emulsion sealant.
2. Applications: Use for concealed locations only:
    a. Sealant bead between top stud runner and structure and between bottom stud track and floor.
    b. See drawings for specific acoustic details.

2.03 ACCESSORIES

A. Backing Tape: Self-adhesive polyethylene tape with surface that sealant will not adhere to and recommended by tape and sealant manufacturers for specific application.

B. Masking Tape: Self-adhesive, nonabsorbent, non-staining, removable without adhesive residue, and compatible with surfaces adjacent to joints and sealants.

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

D. Primers: Type recommended by sealant manufacturer to suit application; non-staining.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that joints are ready to receive work.

B. Verify that backing materials are compatible with sealants.

3.02 PREPARATION

A. Remove loose materials and foreign matter that could impair adhesion of sealant.

B. Clean joints, and prime as necessary, in accordance with manufacturer's instructions.

C. Perform preparation in accordance with manufacturer's instructions and ASTM C1193.

D. Mask elements and surfaces adjacent to joints from damage and disfigurement due to sealant work; be aware that sealant drips and smears may not be completely removable.

3.03 INSTALLATION

A. Perform work in accordance with sealant manufacturer's requirements for preparation of surfaces and material installation instructions.

B. Perform installation in accordance with ASTM C1193.

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

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

E. Install bond breaker backing tape where backer rod cannot be used.

F. Install sealant free of air pockets, foreign embedded matter, ridges, and sags, and without getting sealant on adjacent surfaces.

G. Do not install sealant when ambient temperature is outside manufacturer's recommended temperature range, or will be outside that range during the entire curing period, unless manufacturer's approval is obtained and instructions are followed.

H. Nonsag Sealants: Tool surface concave, unless otherwise indicated; remove masking tape immediately after tooling sealant surface.

END OF SECTION

SECTION 081416
FLUSH WOOD DOORS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Factory finished flush wood doors.

B. Flush wood doors; flush and flush glazed configuration; non-rated.

1.02 RELATED REQUIREMENTS

A. Section 081113 - Hollow Metal Doors and Frames.

B. Section 087100 - Door Hardware.

C. Section 088000 - Glazing.

1.03 REFERENCE STANDARDS

A. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards, 2nd Edition; 2014, with Errata (2016).

B. AWMAC/WI (NAAWS) - North American Architectural Woodwork Standards; 2021, with Errata.

C. ICC (IBC) - International Building Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

D. ITS (DIR) - Directory of Listed Products; Current Edition.

E. UL 10C - Standard for Positive Pressure Fire Tests of Door Assemblies; Current Edition, Including All Revisions.

F. WDMA I.S. 1A - Interior Architectural Wood Flush Doors; 2021, with Errata (2022).

1.04 SUBMITTALS

A. See Section 013000 - Administrative Requirements, for submittal procedures.

B. Product Data: Indicate door core materials and construction; veneer species, type and characteristics.

C. Shop Drawings: Show doors and frames, elevations, sizes, types, swings, undercuts, beveling, blocking for hardware, factory machining, factory finishing, cutouts for glazing and other details.
   1. Provide information as required by AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS).

D. USA Certificate of Origin: Manufacturer shall supply with first submittal, an example of their Certificate of Origin declaring product is wholly manufactured and assembled specifically in the United States, including city and state locations. A notarized Certificate of Origin shall be provided with closeout documents.

E. Warranty, executed in Contracting officer's name.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Package, deliver and store doors in accordance with specified quality standard.

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

C. Protect doors with resilient packaging sealed with heat shrunk plastic. Do not store in damp or wet areas; or in areas where sunlight might bleach veneer. Seal top and bottom edges with tinted sealer if stored more than one week. Break seal on site to permit ventilation.

1.06 WARRANTY

A. See Section 017800 - Closeout Submittals, for additional warranty requirements.

B. Include coverage for delamination of veneer, warping beyond specified installation tolerances, defective materials, and telegraphing core construction.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Wood Veneer Faced Doors:
   1. Eggers Industries: www.eggersindustries.com.
   2. Graham Wood Doors: www.grahamdoors.com/#sle.
   3. Marshfield DoorSystems, Inc: www.marshfielddoors.com/#sle.
   4. VT Industries, Inc: www.vtindustries.com/#sle.
   5. Substitutions: See Section 016000 - Product Requirements.

2.02 DOORS

A. Doors: Refer to drawings for locations and additional requirements.
   1. Quality Standard: Custom Grade, Heavy Duty performance, in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS), unless noted otherwise.
   2. Wood Veneer Faced Doors: 5-ply unless otherwise indicated.

B. Interior Doors: 1-3/4 inches thick unless otherwise indicated; flush construction.
   1. Provide solid core doors at each location.
   2. Fire Rated Doors: Tested to ratings indicated on drawings in accordance with UL 10C - Positive Pressure; Underwriters Laboratories Inc (UL) or Intertek/Warnock Hersey (WHI) labeled without any visible seals when door is open.
   3. Wood veneer facing for factory stained and transparent finish.

2.03 DOOR AND PANEL CORES

A. Non-Rated Solid Core and 20 Minute Rated Doors: Type particleboard core (PC), plies and faces as indicated.

2.04 DOOR FACINGS

A. Interior Solid-Core Doors:
   1. Basis-of-Design Product: Subject to compliance with requirements, provide Marshfield Door Systems; "Signature Series" or a comparable product by one of the following:
      a. Algoma Hardwoods.
      b. Eggers Industries.
   2. Veneer Grade: A
   3. Species: Vertical Grain Douglas Fir.
   4. Cut: Quatersawn.
   5. Match Between Veneer Leaves: Book match.
   6. Pair and Set Match: Provide for doors hung in same opening or separated only by mullions. Provide sets up to four doors.
   7. Transom Match: Continuous match.
   8. WDMA I.S.1-A Performance Grade.

2.05 FACTORY FINISHING - WOOD VENEER DOORS

A. Finish work in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS), Section 5 - Finishing for grade specified and as follows:
   1. Transparent:
      a. System - 1, Lacquer, Nitrocellulose.
      b. Sheen: Satin.

B. Seal door top edge with color sealer to match door facing.

2.06 ACCESSORIES

A. Wood Door Frames:
   1. Solid wood frames.
   2. 5/4" stock frames (1" finished thickness).
   3. Depth to match wall thickness.
   4. Joinery: Head member dado jointed to jamb members.

5. Stop: 3/4" x 2", dado 1/4" into frame.
6. Sand and prep for field painting.

B. Glazing Stops: Wood, of same species as door facing, butted corners; prepared for countersink style tamper proof screws.

C. Door Hardware: As specified in Section 087100.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions before starting work.

B. Verify that opening sizes and tolerances are acceptable.

C. Do not install doors in frame openings that are not plumb or are out-of-tolerance for size or alignment.

3.02 INSTALLATION

A. Install doors in accordance with manufacturer's instructions and specified quality standard.

B. Factory-Finished Doors: Do not field cut or trim; if fit or clearance is not correct, replace door.

C. Use machine tools to cut or drill for hardware.

D. Coordinate installation of doors with installation of frames and hardware.

E. Coordinate installation of glazing.

3.03 ADJUSTING

A. Adjust doors for smooth and balanced door movement.

B. Adjust closers for full closure.

END OF SECTION

SECTION 092116
GYPSUM BOARD ASSEMBLIES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Performance criteria for gypsum board assemblies.

B. Gypsum wallboard.

C. Joint treatment and accessories.

D. Acoustical sealants.

E. Textured finish system.

1.02 RELATED REQUIREMENTS

A. Section 061000 - Rough Carpentry: Building framing and sheathing.

B. Section 061000 - Rough Carpentry: Wood blocking product and execution requirements.

C. Section 072100 - Thermal Insulation: Acoustic insulation.

D. Section 072500 - Weather Barriers: Water-resistive barrier over sheathing.

1.03 REFERENCE STANDARDS

A. AISI S100-12 - North American Specification for the Design of Cold-Formed Steel Structural Members; 2012.

B. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2025a.

C. ASTM C475/C475M - Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board; 2017 (Reapproved 2022).

D. ASTM C514 - Standard Specification for Nails for the Application of Gypsum Board; 2004 (Reapproved 2020).

E. ASTM C645 - Standard Specification for Nonstructural Steel Framing Members; 2024.

F. ASTM C754 - Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products; 2020.

G. ASTM C840 - Standard Specification for Application and Finishing of Gypsum Board; 2025.

H. ASTM C954 - Standard Specification for Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Steel Studs from 0.033 in. (0.84 mm) to 0.112 in. (2.84 mm) in Thickness; 2022.

I. ASTM C1002 - Standard Specification for Steel Self-Piercing Tapping Screws for Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs; 2022.

J. ASTM C1280 - Standard Specification for Application of Exterior Gypsum Panel Products for Use as Sheathing; 2025.

K. ASTM C1396/C1396M - Standard Specification for Gypsum Board; 2024.

L. ASTM E90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements; 2023.

M. ASTM E413 - Classification for Rating Sound Insulation; 2022.

N. GA-216 - Application and Finishing of Gypsum Panel Products; 2024.

1.04 SUBMITTALS

A. See Section 013000 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide manufacturer's data on partition head to structure connectors, showing compliance with requirements.

C. USA Certificate of Origin: Manufacturer shall supply with first submittal, an example of their Certificate of Origin declaring product is wholly manufactured and assembled specifically in the United States, including city and state locations. A notarized Certificate of Origin shall be provided with closeout documents.

1.05 QUALITY ASSURANCE

A. Perform in accordance with ASTM C 840. Comply with requirements of GA-600 for fire rated assemblies.
   1. Maintain one copy of all installation standards at project site.

PART 2 PRODUCTS

2.01 GYPSUM BOARD ASSEMBLIES

A. Provide completed assemblies complying with ASTM C840 and GA-216.

B. Manufacturers:
   1. CertainTeed Corporation: www.certainteed.com.
   2. G-P Gypsum Corporation: www.gp.com.
   3. National Gypsum Company: www.nationalgypsum.com.
   4. USG: www.usg.com.
   5. Substitutions: See Section 01 6000 - Product Requirements.

C. Interior Partitions, Indicated as Acoustic: Provide completed assemblies with the following characteristics:
   1. Acoustic Attenuation: STC Rating per drawings calculated in accordance with ASTM E413, based on tests conducted in accordance with ASTM E90.

D. Fire Rated Assemblies: Provide completed assemblies with the following characteristics:
   1. At Assemblies Indicated with Fire Rating: Use type required by indicated tested assembly: if no tested assembly is indicated, use Type X.
   2. Thickness: 5/8 inch and 3/8 inch.
   3. Edges: Tapered.

E. Ceiling Board: Special sag-resistant type.
   1. Application: Ceilings unless otherwise indicated.
   2. Core Type: Type X.
   3. Thickness: 5/8 inch.
   4. Edges: Tapered.

F. Water-Resistant Gypsum Backing Board: ASTM C 1396/C 1396M: ends square cut.
   1. Application: Ceilings and walls in bathrooms.
   2. Core Type: Type X.
   3. Thickness: 5/8 inch.
   4. Edges: Tapered.

G. Gypsum Backing Board for Multi-Layer Application: ASTM C 442/ASTM C 1396 or where backing board is not available from manufacturer, gypsum wall board, ASTM C 1396, of type edge configuration and thickness indicated below, in maximum lengths available to minimize end-to-end joints.

2.02 GYPSUM WALLBOARD ACCESSORIES

A. Acoustic Sealant: Acrylic emulsion latex or water-based elastomeric sealant; do not use solvent-based non-curing butyl sealant.

B. Acoustic Sealant: Non-hardening, non-skinning, for use in conjunction with gypsum board.

C. Water-Resistive Barrier: As specified in Section 07 2500.

D. Joint Materials: ASTM C475/C475M and as recommended by gypsum board manufacturer for project conditions.

E. High Build Drywall Surfacer: Vinyl acrylic latex-based coating for spray application, designed to take the place of skim coating and separate paint primer in achieving Level 5 finish.

F. Screws for Fastening of Gypsum Panel Products to Wood Studs Less than 0.033 inch in Thickness and Wood Members: ASTM C1002; self-piercing tapping screws, corrosion resistant.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that project conditions are appropriate for work of this section to commence.

3.02 ACOUSTIC ACCESSORIES INSTALLATION

A. Acoustic Insulation: Place tightly within spaces, around cut openings, behind and around electrical and mechanical items within partitions, and tight to items passing through partitions.

B. Acoustic Sealant: Install in accordance with manufacturer's instructions.
   1. Place one bead continuously on substrate before installation of perimeter framing members.
   2. Place continuous bead at perimeter of each layer of gypsum board.
   3. Seal around all penetrations by conduit, pipe, ducts, and rough-in boxes, except where firestopping is provided.

3.03 BOARD INSTALLATION

A. Comply with ASTM C840, GA-216, and manufacturer's instructions. Install to minimize butt end joints, especially in highly visible locations.

B. Single-Layer Non-Rated: Install gypsum board in most economical direction, with ends and edges occurring over firm bearing.

C. Double-Layer Fire-Rated: Use gypsum board for first layer, placed parallel to framing or furring members, with ends and edges occurring over firm bearing. Use glass mat faced gypsum board at exterior walls and at other locations as indicated. Place second layer perpendicular to framing or furring members. Offset joints of second layer from joints of first layer.

D. Fire-Rated Construction: Install gypsum board in strict compliance with requirements of assembly listing.

E. Installation on Wood Framing: For rated assemblies, comply with requirements of listing authority. For non-rated assemblies, install as follows:
   1. Single-Layer Applications: Screw attachment.
   2. Double-Layer Application: Install base layer using screws or nails. Install face layer using adhesive.

3.04 INSTALLATION OF TRIM AND ACCESSORIES

A. Control Joints: Place control joints consistent with lines of building spaces and as indicated.
   1. Not more than 30 feet (10 meters) apart on walls and ceilings over 50 feet (16 meters) long.

B. Corner Beads: Install at external corners, using longest practical lengths.

C. Edge Trim: Install at locations where gypsum board abuts dissimilar materials.

3.05 JOINT TREATMENT

A. Finish gypsum board in accordance with levels defined in ASTM C840, as follows:
   1. Level 4: Walls and ceilings to receive paint finish or wall coverings, unless otherwise indicated.
   2. Level 3: Walls to receive textured wall finish. Light Orange-peel finish.
   3. Level 1: Fire rated wall areas above finished ceilings, whether or not accessible in the completed construction.

B. Tape, fill, and sand exposed joints, edges, and corners to produce smooth surface ready to receive finishes.
   1. Feather coats of joint compound so that camber is maximum 1/32 inch (0.8 mm).

2. Taping, filling and sanding is not required at base layer of double layer applications.

3.06 TEXTURE FINISH

A. Apply finish texture coating by means of spraying apparatus in accordance with manufacturer's instructions and to match approved sample.

3.07 TOLERANCES

A. Maximum Variation of Finished Gypsum Board Surface from True Flatness: 1/8 inch in 10 feet (3 mm in 3 m) in any direction.

END OF SECTION

SECTION 092216
NON-STRUCTURAL METAL FRAMING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Metal partition and ceiling framing.

B. Framing accessories.

1.02 RELATED REQUIREMENTS

A. Section 061000 - Rough Carpentry: Wall sheathing.

B. Section 092116 - Gypsum Board Assemblies: Metal studs for gypsum board partition framing.

1.03 REFERENCE STANDARDS

A. ASTM C645 - Standard Specification for Nonstructural Steel Framing Members; 2024.

B. ASTM C754 - Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products; 2020.

C. ASTM C1002 - Standard Specification for Steel Self-Piercing Tapping Screws for Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs; 2022.

D. SSPC-Paint 20 - Zinc-Rich Primers (Type I, "Inorganic," and Type II, "Organic"); 2002 (Ed. 2004).

1.04 SUBMITTALS

A. See Section 013000 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data describing framing member materials and finish, product criteria, load charts, and limitations.

C. Product Data: Provide manufacturer's data on partition head to structure connectors, showing compliance with requirements.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Metal Framing, Connectors, and Accessories:
   1. SCAFCO Corporation: www.scafco.com/#sle.
   2. Substitutions: See Section 016000 - Product Requirements.

2.02 FRAMING MATERIALS

A. Non-Loadbearing Framing System Components: ASTM C645; galvanized sheet steel, of size and properties necessary to comply with ASTM C754 for the spacing indicated, with maximum deflection of wall framing of L/240 at 5 psf (L/240 at 240 Pa).
   1. Studs: C shaped with flat or formed webs with knurled faces.

B. Partition Head to Structure Connections: Provide track fastened to structure with legs of sufficient length to accommodate deflection, for friction fit of studs cut short and braced with continuous bridging on both sides.

2.03 FABRICATION

A. Fabricate assemblies of framed sections to sizes and profiles required.

B. Fit, reinforce, and brace framing members to suit design requirements.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions before starting work.

B. Verify that rough-in utilities are in proper location.

3.02 INSTALLATION OF STUD FRAMING

A. Extend partition framing to structure where indicated and to ceiling in other locations.

B. Partitions Terminating at Ceiling: Attach ceiling runner securely to ceiling track in accordance with manufacturer's instructions.

C. Align and secure top and bottom runners at 24 inches (600 mm) on center.

D. Fit runners under and above openings; secure intermediate studs to same spacing as wall studs.

E. Align stud web openings horizontally.

F. Secure studs to tracks using crimping method. Do not weld.

G. Fabricate corners using a minimum of three studs.

H. Coordinate installation of bucks, anchors, and blocking with electrical, mechanical, and other work to be placed within or behind stud framing.

3.03 TOLERANCES

A. Maximum Variation From True Position: 1/8 inch in 10 feet (3 mm in 3 m).

B. Maximum Variation From Plumb: 1/8 inch in 10 feet (3 mm in 3 m).

END OF SECTION

SECTION 095100
ACOUSTICAL CEILINGS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Suspended metal grid ceiling system.

B. Acoustical units.

1.02 RELATED REQUIREMENTS

A. Section 265100 - Interior Lighting: Light fixtures in ceiling system.

1.03 REFERENCE STANDARDS

A. ASTM C423 - Standard Test Method for Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method; 2023, with Editorial Revision (2024).

B. ASTM C635/C635M - Standard Specification for Manufacture, Performance, and Testing of Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings; 2022.

C. ASTM C636/C636M - Standard Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-In Panels; 2019 (Reapproved 2025).

D. ASTM C665 - Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing; 2024.

E. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2026a.

F. ASTM E580/E580M - Standard Practice for Installation of Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels in Areas Subject to Earthquake Ground Motions; 2024a.

G. ASTM E1264 - Standard Classification for Acoustical Ceiling Products; 2023.

1.04 SUBMITTALS

A. See Section 013000 - Administrative Requirements, for submittal procedures.

B. Product Data: Submit manufacturer's technical data for each type of acoustical ceiling unit and suspension system required.

C. Shop Drawings: Layout and details of acoustical ceilings show locations of items that are to be coordinated with, or supported by the ceilings.

D. Acoustical Certifications: Manufacturer's certifications that products comply with specified requirements, including laboratory reports showing compliance with specified tests and standards. For acoustical performance, each carton of material must carry an approved independent laboratory classification of NRC, CAC, and AC.

E. If the material supplied by the acoustical subcontractor does not have an Underwriter's Laboratory classification of acoustical performance on every carton, subcontractor shall be required to send material from every production run appearing on the job to an independent or NVLAP approved laboratory for testing, at the architect's or owner's discretion. All products not conforming to manufacturer's current published values must be removed, disposed of and replaced with complying product at the expense of the Contractor performing the work.

F. USA Certificate of Origin: Manufacturer shall supply with first submittal, an example of their Certificate of Origin declaring product is wholly manufactured and assembled specifically in the United States, including city and state locations. A notarized Certificate of Origin shall be provided with closeout documents.

1.05 MAINTENANCE

A. Extra Materials: Deliver extra materials to Owner. Furnish extra materials described below that match products installed. Packaged with protective covering for storage and identified with appropriate labels.

1. Acoustical Ceiling Units: Furnish quality of full-size units equal to 5.0 percent of amount installed.
2. Exposed Suspension System Components: Furnish quantity of each exposed suspension component equal to 2.0 percent of amount installed.

1.06 WARRANTY

A. Acoustical Panel: Submit a written warranty executed by the manufacturer, agreeing to repair or replace panels that fail within the warranty period. Failures include, but are not limited to the following:
   1. Acoustical Panels: Sagging and warping
   2. Grid System: Rusting and manufacturer's defects

B. Warranty Period:
   1. Acoustical panels: Ten (10) years from date of substantial completion
   2. Suspension: Ten (10) years from date of substantial completion
   3. Ceiling System: Thirty (30) years from date of substantial completion

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Acoustic Tiles/Panels:
   1. Basis of Design: Armstrong World Industries, Inc: www.armstrongceilings.com/#sle.
   2. CertainTeed Corporation: www.certainteed.com/#sle.
   3. USG Corporation: www.usg.com/ceilings/#sle.
   4. Substitutions: See Section 01 6000 - Product Requirements.

B. Suspension Systems:
   1. Basis of Design: Armstrong World Industries,: www.armstrongceilings.com/#sle.
   2. CertainTeed Corporation: www.certainteed.com/#sle.
   3. USG Corporation: www.usg.com/ceilings/#sle.
   4. Substitutions: See Section 01 6000 - Product Requirements.

C. Perimeter Systems:
   1. Basis of Design: Armstrong World Industries,: www.armstrongceilings.com/#sle.
   2. CertainTeed Corporation: www.certainteed.com/#sle.
   3. USG Corporation: www.usg.com/ceilings/#sle.
   4. Substitutions: See Section 01 6000 - Product Requirements.

2.02 ACOUSTICAL TILES FOR ACOUSTICAL CEILING

A. Products: Subject to compliance with requirements, provide one of the following:
   1. **ACT-1** - Armstrong World Industries, Inc; CORTEGA Second Look II: 2767. Class A Rated.
      a. Color: White
      b. Sound Absorption (NRC): 0.55
      c. Sound Blocking (CAC): 35
      d. Material: Mineral Fiber.
      e. Texture: Medium.
      f. Density: 0.5 to 0.7 lbs/cu ft.
      g. Light Reflectance: ASTM E 1477; 0.82.
      h. Size: 24 inch x 48 inch.
      i. Edge Profile: Angled Tegular 15/16 in for interface with PRELUDE XL Fire Guard 15/16" Exposed Tee grid.
      j. Suspension System: Prelude XL Fire Guard 15/16" Exposed Tee.
   2. **ACT-2** - Armstrong World Industries, Inc; CORTEGA Second Look II: 2767. Class A Rated.
      a. Color: White
      b. Sound Absorption (NRC): 0.55.

c. Sound Blocking (CAC): 35.
d. Material: Mineral Fiber.
e. Texture: Medium.
f. Density: 0.5 to 0.7 lbs/cu ft.
g. Light Reflectance: ASTM E 1477; 0.82.
h. Size: 24 inch x 24 inch.
i. Edge Profile: Angled Tegular 15/16 in for interface with PRELUDE XL Fire Guard 15/16" Exposed Tee grid.
j. Suspension System: Prelude XL Fire Guard 15/16" Exposed Tee.

3. **ACT-G** - Armstrong World Industries, Inc; FELTWORKS Acoustical Ceiling Panels.
   a. Surface Texture: Soft.
   b. Composition: Non-woven layered and formed Polyester felt (PET) fiber.
   c. Color: Beige (FBG).
   d. Edge Profile: Square, Long Edges Beveled/Short Edges Beveled.
   e. Light Reflectance (LR) Cotton Panel: ASTM E1477; 0.78.
   f. Sizes:
      1) Item 8246 - 48" x 96" x 1".
   g. Acoustical Performance id tested per ASTM C423
      1) Ceiling Panel:
         (a) Screw to 7/8" meta furring - 0.80 NRC.
   h. Flame Spread: Class A.
   i. Dimensional Stability:HumiGuard Plus.
   j. Suspension System: Steel hat channel 20-guage 7/8" galvanized steel.

2.03 METAL SUSPENSION SYSTEM, GENERAL

A. Metal Suspension System Standard: Provide manufacturer's standard metal suspension system of types, structural classifications, and finishes indicated that comply with applicable requirements in ASTM C 635.

B. Finishes and Colors: Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes. Provide manufacturer's standard factory applied finish for type of system indicated.indicated.

C. Attachment Devices: Size for five times the design load indicated in ASTM C 635, Table 1, "Direct Hung" unless otherwise indicated. Comply with seismic design requirements.

D. Wire Hangers, Braces and Ties: Provide wire complying with the following requirements:
   1. Zinc Coated Carbon Steel Wire: ASTM A 641/A 641M, Class 1 zinc coating, soft temper.
   2. Size: Select wire diameter so its stress at 3 times hanger design load (ASTM C 635, Table 1, "Direct Hung" will be less than yield stress of wire, but provide not less than 0.106 inch diameter in size.

E. Hanger Rods: Mild steel, zinc coated or protected with rust inhibitive paint.

F. 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.

G. Seismic Struts: Manufacturer's standard compression struts designed to accomodates lateral forces.

H. Seismic Clips: Manufacturer's standard seismic clips designed and spaced to secure acoustical tiles in place.

I. Exposed Steel Suspension System Type Prelude XL: Formed steel, commercial quality cold rolled; intermediate-duty.
   1. Profile: Tee; 15/16 inch wide face.
   2. Construction: Double web.
   3. Finish: White painted.

J. Exposed Aluminum Suspension System Type Prelude XL: Extruded aluminum; light-duty.
   1. Profile: Tee; 15/16 inch wide face.
   2. Painted white.

2.04 METAL SUSPENSION SYSTEM FOR ACOUSTICAL TILE CEILING

A. Products: Subject to compliance with requirements, provide one of the following:
   1. Armstrong World Industries, Inc: Prelude 15/16 inch Suspension System steel and aluminum - see tile types.

B. Perimeter Moldings: Same material and finish as grid.
   1. At Exposed Grid: Provide L-shaped molding for mounting at same elevation as face of grid.

PART 3 EXECUTION

3.01 EXAMINATION

A. Do not proceed with installation until all wet work such as concrete, terrazzo, plastering and painting has been completed and thoroughly dried out, unless expressly permitted by manufacturer's printed recommendations. (Exception: HumiGuard Max Ceilings).

3.02 PREPARATION

A. Measure each ceiling area and establish layout of acoustical units to balance border widths at opposite edges of each ceiling. Avoid use of less than half width units at borders, and comply with reflected ceiling plans. Coordinate panel layout with mechanical and electrical fixtures.

B. Coordination: Furnish layouts for preset inserts, clips, and other ceiling anchors whose installation is specified in other sections.

3.03 INSTALLATION

A. Follow manufacturer installation instructions.

B. Install suspension system and panels in accordance with the manufacturer's instructions, and in compliance with ASTM C 636 and with the authorities having jurisdiction.

C. Suspend main beam from overhead construction with hanger wires spaced 4-0 on center along the length of the main runner. Install hanger wires plumb and straight.

D. Install wall moldings at intersection of suspended ceiling and vertical surfaces. Miter corners where wall moldings intersect or install corner caps.

E. For reveal edge panels: Cut and reveal or rabbet edges of ceiling panels at border areas and vertical surfaces.

F. Install acoustical panels in coordination with suspended system, with edges resting on flanges of main runner and cross tees. Cut and fit panels neatly against abutting surfaces. Support edges by wall moldings.

3.04 ADJUSTING AND CLEANING

A. Replace damaged and broken panels.

B. Clean exposed surfaces of acoustical ceilings, including trim, edge moldings, and suspension members. Comply with manufacturer's instructions for cleaning and touch up of minor finish damage. Remove any ceiling products that cannot be successfully cleaned and or repaired. Replace with attic stock or new product to eliminate evidence of damage.

C. Before disposing of ceilings, contact the Armstrong Recycling Center at 877-276-7876, select option #1 then #8 to review with a consultant the condition and location of building where the ceilings will be removed. The consultant will verify the condition of the material and that it meets the Armstrong requirements for recycling. The Armstrong consultant with provide assistance to facilitate the recycle of the ceiling.

END OF SECTION

SECTION 095114
ACOUSTICAL FABRIC-FACED PANEL CEILINGS

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Non-Woven layered and formed polyester felt fiber ceiling panels.

1.02 REFERENCE STANDARDS

A. ASTM C423 - Standard Test Method for Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method; 2023, with Editorial Revision (2024).

B. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2026a.

C. ASTM E1264 - Standard Classification for Acoustical Ceiling Products; 2023.

D. ASTM E1477 - Standard Test Method for Luminous Reflectance Factor of Acoustical Materials by Use of Integrating-Sphere Reflectometers; 1998a (Reapproved 2022).

1.03 SUBMITTALS

A. See Section 013000 - Administrative Requirements, for submittal procedures.

B. Shop Drawings: Provide layout including panel type and components used in the assembly of the ceiling. Show locations of items that are to be coordinated with the ceiling.

C. Samples: Minimum 6 inch by 6 inch sample of colors selected in the ceiling design.

D. Product Data: Submit manufacturer's technical data for each type of ceiling unit.

E. Certificates: Manufacturer's certifications that products comply with specified requirements, including laboratory reports showing compliance with specified tests and standards.

1.04 QUALITY ASSURANCE

A. Single-Source Responsibility: Provide ceiling panel units.

B. Fire Performance Characteristics: Identify ceiling components with appropriate markings of applicable testing and inspecting organization.
   1. Surface Burning Characteristics: As follows, tested per ASTM E84 and complying with Class A products.
      a. Flame Spread: 25 or less.
      b. Smoke Developed: 450 or less.

C. Coordination of Work: Coordinate ceiling work with installers of related work including, but not limited to light fixtures, mechanical systems, electrical systems, and fire sprinklers.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Deliver acoustical ceiling units to project site in original, unopened packages and store them in a fully enclosed space where they will be protected against damage from moisture, direct sunlight, surface contamination, and other causes.

B. Before installing acoustical ceiling units, permit them to reach room temperature and a stabilized moisture content.

C. White gloves recommended for handling to avoid marring, especially on light color panels.

1.06 WARRANTY

A. Acoustical Panel: Submit a written warranty executed by the manufacturer, agreeing to repair or replace panels that fail within the warranty period.

B. Warranty Period:

C. Acoustical Panels: One (1) year from date of substantial completion.

1.07 MAINTENANCE

A. Ceiling Panel Units: Furnish quality of full-size units equal to 2.0 percent of amount installed.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Basis-of-Design: FELTWORKS Ceiling Panels:
   1. ArmstrongWorld Industries; www.armstrongceilings.com.
   2. Substitutions: See Section 016000 - Product Requirements.

2.02 CEILING UNITS

A. Ceiling Panels:
   1. Surface Texture: Soft.
   2. Composition: Non-woven layered and formed Polyester felt (PET) fiber.
   3. Color: Beige.
   4. Edge Profile: Square, Long Edges.
   5. Light Reflectance (LR) Cotton Panel: ASTM E1477; 0.78.
   6. Sizes:
      a. Item: 8246 - 48" x 96" x 1".
   7. Acoustical Performance is tested per ASTM C423.
      a. Ceiling Panel:
         1) Adhesive: 0.75 NRC.
         2) Screw to 7/8: metal furring: 0.85 NRC.
         3) Screw to metal furring: 0.90 NRC.
   8. Flame Spread: Class A.
   9. Dimensional Stability: humiGuard Plus.
   10. Acceptable Product: FELTWORKS as manufactured by Armstrong World Industries.

2.03 SUSPENSION SYSTEM

A. Metal Furring: Steel channel/hat channel 20-gauge 7/8" galvanized steel.

B. Accessories: Ordered Separately based on Layout:
   1. Item 6488: Washers mill Finish (paintable), Black.
   2. Item 6489: #8 x 1-7/8" Screws for washer installation mill finish (paintable, black.

PART 3 EXECUTION

3.01 EXAMINATION

A. Do not proceed with installation until all wet work such as concrete, terrazzo, plastering and painting has been completed and thoroughly dried out.

3.02 PREPARATION

A. Measure each ceiling area, establish layout of FELTWORKS acoustical units. Coordinate panel layout with mechanical and electrical fixtures.

3.03 INSTALLATION OF ACOUSTICAL PANELS

A. Install in accordance with the manufacturer's FELTWORKS Ceiling installation instructions.

3.04 ADJUSTING AND CLEANING

A. Replace damaged or broken FELTWORKS panels.

B. Clean exposed surfaces of ceiling panels. Comply with manufacturer's instructions for cleaning and touch up of minor finish damage.

END OF SECTION

SECTION 096500
RESILIENT WALL BASE

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Resilient wall base.

1.02 REFERENCE STANDARDS

A. ASTM F710 - Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring; 2022.

B. ASTM F1344 - Standard Specification for Rubber Floor Tile; 2021a.

C. ASTM F1861 - Standard Specification for Resilient Wall Base; 2021 (Reapproved 2025).

1.03 SUBMITTALS

A. See Section 013000 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data on specified products, describing physical and performance characteristics; including sizes, patterns and colors available; and installation instructions.

C. Product Schedule: For resilient products. Use same designations indicated on the drawings.

D. USA Certificate of Origin: Manufacturer shall supply with first submittal, an example of their Certificate of Origin declaring rubber base is wholly manufactured and assembled specifically in the United States, including city and state locations. A notarized Certificate of Origin shall be provided with closeout documents.

E. Maintenance Data: Include maintenance procedures, recommended maintenance materials, and suggested schedule for cleaning, stripping, and re-waxing.

F. Maintenance Materials: Furnish the following for Contracting officer's use in maintenance of project.
   1. See Section 016000 - Product Requirements, for additional provisions.
   2. Extra Rubber Base: 20 lineal feet of each product and color.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Store all materials off of the floor in an acclimatized, weather-tight space.

B. Maintain temperature in storage area between 55 degrees F (13 degrees C) and 90 degrees F (72 degrees C).

PART 2 PRODUCTS

2.01 RESILIENT BASE

A. **RB1 Resilient Base:** ASTM F1861, Type TS rubber, vulcanized thermoset; top set Style B, Cove:
   1. Height: 6" high base.
   2. Thickness: 0.125 inch thick.
   3. Style: Coved.
   4. Premolded Inside and Outside Corners.
   5. Finish: Satin.
   6. Length: Roll.
   7. Color:
   8. Manufacturer:
      a. Johnsonite, a Tarkett Company; www.johnsonite.com..com.
      b. Burke Flooring; www.burkemercer.com.
      c. Roppe Corp.; www.roppe
      d. Substitutions: See Section 016000 - Product Requirements.

2.02 INSTALLATION MATERIALS

A. Adhesives: As recommended by manufacturer to meet site conditions.

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.

B. 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.

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

3.02 PREPARATION

A. Prepare substrates according to manufacturer's written instructions to ensure adhesion of resilient wall base.

B. Move resilient products and installation materials into spaces where they will be installed at leat 48 hours in advance of installation.

3.03 INSTALLATION

A. Comply with Johnsonite'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 a long as practical without gaps at seams with tops of adjacent pieces aligned.

D. Do not stretch resilient base during installation.

3.04 CLEANING

A. Remove excess adhesive from floor, base, and wall surfaces without damage.

B. Clean in accordance with manufacturer's written instructions.

END OF SECTION

SECTION 096516.23
LVT FLOORING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Flooring and accessories as shown on the drawings and schedules and as indicated by the requirements of this section.

1.02 REFERENCES

A. ASTM International:
   1. ASTM E 648 Standard Test Method fr Critical Radiant Flux or Floor-Covering Systems Using a Radiant Heat Energy Source.
   2. ASTM E 662 Standard Test Method for Specific Optical Density of Smoke Generated by Solid Materials.
   3. ASTM F 710 Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring.
   4. ASTM F 1913 Standard Specification For Sheet Vinyl Floor Covering without Backing.
   5. ASTM F 1482 Standard Guide to Wood Underlayment Products Available for use Under Resilient Flooring.
   6. ASTM F 1861 Standard Speciation for Resilient Wall Base.
   7. ASTM F 1869 Standard Test Method for Measuring Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride.
   8. ASTM F 2170 Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs using in Situ Probes.

B. NFPA 23 Standard Method of Test for Critical Radiant Flux of Floor Covering Systems using a Radiant Heat Energy Source.

C. NFPA 258 Standard Test Method for Measuring the Smoke Generated by Solid Materials.

1.03 SYSTEM DESCRIPTION

A. Performance Requirement: Provide flooring which has been manufactured, fabricated, and installed to performance criteria certified by manufacturer without defects, damage, or failure .

1.04 SUBMITTALS

A. See Section 013000 - Administrative Requirements for submittal procedures.

B. Submit shop drawings, seaming plan, coving detail and manufacturer's technical data, installation and maintenance instructions for flooring and accessories.

C. Submit Safety data Sheets (SDS) available for adhesives, weld rod, moisture mitigation systems, primers, patching/leveling compounds, floor finishes (polishes) and cleaning agents and Material Information Sheets for flooring products.

D. If required, submit the manufacturer's certification that the flooring has been tested by an independent laboratory and complies with the required fire tests.

E. USA Certificate of Origin: Manufacturer shall supply with first submittal, an example of their Certificate of Origin declaring thermal insulation is wholly manufactured and assembled specifically in the United States, including city and state locations. A notarized Certificate of Origin shall be provided with closeout documents.

1.05 QUALITY ASSURANCE

A. Single Source Responsibility: Provide types of flooring and accessories supplied by one manufacturer, including moisture mitigation systems, primers, leveling and patching compounds and adhesives.

B. Fire Performance Characteristics: Provide resilient vinyl sheet flooring with the following fire performance characteristics as determined by testing material in accordance with ASTM test

methods indicated below by a certified testing laboratory or other testing agency acceptable to authorities having jurisdiction.

1. ASTM E 648 Critical Radiant Flux of 0.4, watts per sq. cm. or greater, Class 1.
2. ASTM E 662 (Smoke Generation) Maximum Specific Optical Density of 450 or less.
3. CAN/ULC-S10.2 - Flame Spread Rating and Smoke Developed - Results as tested.

1.06 FIELD CONDITIONS

A. Maintain a minimum temperature in the spaces to receive the flooring and accessories of 65 degrees F and a maximum temperature of 100 degrees F for at least 48 hours before, during, and not less than 48 hours after installation. Thereafter, maintain a minimum temperature of 55 degrees F in areas where work is completed. Protect all materials from the direct flow of heat from hot-air registers, radiators, or other heating fixtures and appliances. Refer to product installation recommendations for a complete guide on project conditions.

1.07 WARRANTY

A. See Section 017800 - Closeout Submittals for additional warranty requirements.

B. Resilient Flooring System: Submit a written warranty executed by the manufacturer, agreeing to repair and replace system (subfloor preparation products, adhesive, and floor covering) that fails within teh warranty period.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. LVT Flooring:
   1. Interface, Inc.; www.interface.com.
   2. Shaw Contract; www.shawcontract.com.
   3. Mannington; www.maningtoncommercial.com.

B. Substitutions: See Section 016000 - Product Requirements.

2.02 LVT FLOORING MATERIALS

A. **Basis of Design: LVT1:** Provide LVT flooring manufactured by Interface, Inc.
   1. Product: Ridge A023.
   2. Collection: Fresco Valley Collection.
   3. Color: Agate.
   4. Product Construction: High Performance Luxury Vinyl Tile.
   5. Class/ASTM F1700: Class III Printed Vinyl Tile.
   6. Wear Layer Thickness: 22 mil.
   7. Total Thickness: 4 mm.
   8. Backing Class: Commercial Grade.
   9. Finish: Ceramor.
   10. Adhesive: Type recommended by manufacturer.
   11. Size: 19.69 inches by 19.69 inches.
   12. Installation: Monolithic.

2.03 ACCESSORIES

A. For patching, smoothing, and leveling concrete subfloor, provide Armstrong S-194 Cement Based Patch Underlayment and Embossing Leveler/S-195 Underlayment Additive.

B. Provide transition/reducing strips tapered to meet abutting materials.

PART 3 EXECUTION

3.01 EXAMINATION

A. Site Verification of Conditions: Verify substrate conditions are acceptable for product installation in accordance with manufacturer's instructions (i.e. moisture tests, bond test, pH test, etc.).

B. Visually inspect flooring materials, adhesives, and accessories prior to installation. Flooring material with visual defects shall not be installed and shall not be considered as a legitimate claim.

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 the 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, mildew.

E. Report conditions contrary to contact requirements that would prevent a proper installation. Do not proceed with the installation until unsatisfactory conditions have been corrected.

F. Failure to call attention to defects or imperfections will be construed as acceptance and approval of the subfloor. Installation indicates acceptance of substrates regarding conditions existing at the time of installation.

3.02 PREPARATION

A. Smooth concrete surfaces, removing rough areas, projections, ridges and bumps, and filling low spots, control and construction joints, and other defects with Armstrong Flooring S-194 Cement Based Patch Underlayment and Embossing Leveler S-195 Underlayment Additive.

3.03 INSTALLATION OF FLOORING

A. Install flooring in strict accordance with the latest edition of the flooring installation recommendations. Failure to comply may result in voiding the manufacturer's warranty.

B. Install flooring wall to wall before the installation of floor-set cabinets, casework, furniture, equipment, movable partitions, etc. Extend flooring into toe spaces, door recesses, closets, and similar openings as shown on the drawings.

C. Adhere flooring to the subfloor without cracks, voids, raising and puckering at the seams. Roll with a 100 pound roller in the field areas. Hand roll flooring at the perimeter and the seams to assure adhesion. Refer to specific rolling instructions of the flooring manufacturer.

D. Lay flooring to provide a minimum number of seams. Avoid cross seams, filler pieces, and strips. Match edges for color shading and pattern at the seams in compliance with the manufacturer's recommendations.

E. Install flooring with adhesives, tools, and procedures in strict accordance with the manufacturer's written instructions. Observe the recommended adhesive trowel notching, open times, and working times.

3.04 INSTALLATION OF ACCESSORIES

A. 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.

B. 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.

3.05 CLEANING

A. Perform initial and on-going maintenance according to the latest edition of the maintenance recommendations for Homogeneous Sheet Flooring.

END OF SECTION

SECTION 096813
TILE CARPETING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Carpet tile, fully adhered.

1.02 RELATED REQUIREMENTS

A. Section 016116 - Volatile Organic Compound (VOC) Content Restrictions.

B. Section 09 6513.13 - Resilient Wall Base.

1.03 REFERENCE STANDARDS

A. ASTM D2859 - Standard Test Method for Ignition Characteristics of Finished Textile Floor Covering Materials; 2016 (Reapproved 2021).

B. ASTM E648 - Standard Test Method for Critical Radiant Flux of Floor-Covering Systems Using a Radiant Heat Energy Source; 2017.

C. ASTM F710 - Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring; 2022.

D. ASTM F1869 - Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride; 2023.

E. ASTM F2170 - Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes; 2019a.

F. CRI (GLP) - Green Label Plus Testing Program - Certified Products; Current Edition.

G. CRI 104 - Standard for Installation of Commercial Carpet; 2015.

H. CRI 105 - Standard for Installation of Residential Carpet; 2015.

I. NFPA 253 - Standard Method of Test for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source; 2015.

1.04 SUBMITTALS

A. See Section 013000 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data on specified products, describing physical and performance characteristics; sizes, patterns, colors available, and method of installation.

C. USA Certificate of Origin: Manufacturer shall supply with first submittal, an example of their Certificate of Origin declaring carpet tile is wholly manufactured and assembled specifically in the United States, including city and state locations. A notarized Certificate of Origin shall be provided with closeout documents.

D. Samples: Submit two carpet tiles illustrating color and pattern design for each carpet color selected.

E. Manufacturer's Installation Instructions: Indicate special procedures and perimeter conditions requiring special attention.

F. Maintenance Data: Include maintenance procedures, recommended maintenance materials, and suggested schedule for cleaning.

G. Maintenance Materials: Furnish the following for Contracting officer's use in maintenance of project.
   1. See Section 016000 - Product Requirements, for additional provisions.
   2. Extra Carpet Tiles: Quantity equal to 5 percent of total installed of each color and pattern installed.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Tile Carpeting: (CT1, CT2)
   1. Interface, Inc: www.interfaceinc.com/#sle.
   2. Shaw Contract Carpet; www.shawcontract.com.
   3. Mohawk Group: www.mohawkgroup.com/#sle.
   4. Substitutions: See Section 016000 - Product Requirements.

2.02 MATERIALS

A. **CPT1**
   1. Basis of Design: Manufacturer: Interface, Inc.
   2. Product: Step It Up 1473802500.
   3. Collection: Look Both Ways.
   4. Color: Ash
      a. Tile Size: 19.69 inches by 19.69 inches.
      b. Construction: Tufted Textured Loop.
      c. Yarn System: 100% Recycled Content Nylon.
      d. Backing: GlasBac
      e. Dye Method: 100% Solution Dyed.
      f. Pile Thickness: 0.08 in.
      g. Preservative Protective: InterSept.
      h. Adhesive: TacTiles
      i. Installation: Ashlar.

2.03 ACCESSORIES

A. Schluter Systems: VINPRO-S at carpet to LVT locations. Satin Anodized Aluminum.

B. Resilient Edge Strips shall be homogeneous rubber composition with a tapered or bull nose edge no less than 1" wide, colored to match flooring or as selected by Architect from standard colors available.
   1. To be used at carpet to concrete edge locations.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that sub-floor surfaces are smooth and flat within tolerances specified for that type of work and are ready to receive carpet tile.

B. Verify that wall surfaces are smooth and flat within the tolerances specified for that type of work, are dust-free, and are ready to receive carpet tile.

C. Verify that sub-floor surfaces are dust-free and free of substances that could impair bonding of adhesive materials to sub-floor surfaces.

3.02 PREPARATION

A. Prepare floor substrates for installation of flooring in accordance with Section 090561.

3.03 INSTALLATION

A. Install carpet tile in accordance with manufacturer's instructions.

B. Blend carpet from different cartons to ensure minimal variation in color match.

C. Cut carpet tile clean. Fit carpet tight to intersection with vertical surfaces without gaps.

D. Lay carpet tile in square pattern, with pile direction parallel to next unit, set parallel to building lines.

E. Trim carpet tile neatly at walls and around interruptions.

F. Complete installation of edge strips, concealing exposed edges.

3.04 CLEANING

A. Remove excess adhesive without damage, from floor, base, and wall surfaces.

B. Clean and vacuum carpet surfaces.

END OF SECTION

SECTION 099000
PAINTING AND COATING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Surface preparation.

B. Field application of .

1.02 REFERENCE STANDARDS

A. 40 CFR 59, Subpart D - National Volatile Organic Compound Emission Standards for Architectural Coatings; U.S. Environmental Protection Agency; Current Edition.

B. ASTM D16 - Standard Terminology for Paint, Related Coatings, Materials, and Applications; 2024.

C. ASTM D4442 - Standard Test Methods for Direct Moisture Content Measurement of Wood and Wood-Based Materials; 2020 (Reapproved 2025).

D. GreenSeal GS-11 - Standard for Paints, Coatings, Stains, and Sealers; 2025, with Editorial Revision (2026).

E. SSPC (PM1) - Good Painting Practice: SSPC Painting Manual, Vol. 1; Society for Protective Coatings.

F. USGBC LEED-NC - LEED Green Building Rating System for New Construction and Major Renovations; 2016.

1.03 SUBMITTALS

A. See Section , for submittal procedures.

B. Product Data: Provide complete list of all products to be used, with the following information for each:
   1. Manufacturer's name, product name and/or catalog number, and general product category (e.g. "alkyd enamel").
   2. MPI product number (e.g. MPI #47).
   3. Cross-reference to specified paint system(s) product is to be used in; include description of each system.
   4. Manufacturer's installation instructions.
   5. If proposal of substitutions is allowed under submittal procedures, explanation of all substitutions proposed.

C. Samples: Submit paper "draw down" samples, in size, illustrating range of colors available for each finishing product specified.
   1. Where sheen is specified, submit samples in only that sheen.
   2. Where sheen is not specified, submit each color in each sheen available.
   3. Allow 14 for approval process, after receipt of complete samples by Contracting Officer.
   4. Paint color submittals will not be considered until color submittals for major materials not to be painted, such as siding, have been approved.

D. USA Certificate of Origin: Manufacturer shall supply with first submittal, an example of their Certificate of Origin declaring product is wholly manufactured and assembled specifically in the United States, including city and state locations. A notarized Certificate of Origin shall be provided with closeout documents.

E. Manufacturer's Instructions: Indicate .

F. Maintenance Data: Submit including .

G. Maintenance Materials: Furnish the following for Contracting officer's use in maintenance of project.
   1. Extra Paint and Coatings: of each ; store where directed.
   2. Label each container with in addition to the manufacturer's label.

1.04 QUALITY ASSURANCE

A. Applicator Qualifications: Company specializing in performing the type of work specified with minimum 5 years experience.

1.05 MOCK-UP

A. Mock-up: Provide a mock-up for evaluation of surface preparation techniques and application workmanship.
   1. Finish entire wall surface for each paint color specified for verification of products, colors and sheens.
   2. Mosaic Architecture will designate finish area walls.
   3. Do not proceed with remaining work until Mosaic Architecture approves the mock-ups.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Deliver products to site in sealed and labeled containers; inspect to verify acceptability.

B. Container Label: Include manufacturer's name, type of paint, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.

C. Paint Materials: Store at minimum ambient temperature of and a maximum of , in ventilated area, and as required by manufacturer's instructions.

1.07 FIELD CONDITIONS

A. Do not apply materials when surface and ambient temperatures are outside the temperature ranges required by the paint product manufacturer.

B. Follow manufacturer's recommended procedures for producing best results, including testing of substrates, moisture in substrates, and humidity and temperature limitations.

C. Do not apply exterior coatings during rain or snow, or when relative humidity is outside the humidity ranges required by the paint product manufacturer.

D. Minimum Application Temperatures for Latex Paints: for interiors; for exterior; unless required otherwise by manufacturer's instructions.

E. Minimum Application Temperature for Finishes: for interior or exterior, unless required otherwise by manufacturer's instructions.

F. Provide lighting level of measured mid-height at substrate surface.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Provide all paint and coating products used in any individual system from the same manufacturer; no exceptions.
   1. Sherwin-Williams; www.sherwinwilliams.com.
   2. Benjamin-Moore Company; www.benjaminmoore.com.
   3. Substitutions: See Section 01 6000 - Product Requirements.

2.02 PAINTS AND COATINGS - GENERAL

A. VOC Content of Field-Applied Interior Paints and Coatings: Provide products that comply with the following limits of VOC content, exclusive of colorants added to tint base, when calculated according to 40 CFR 59, Subpart D (EPA Method 24); these requirements do not apply to paints and coatings that are applied in a fabrication or finishing shop;
   1. Flat Paints, Coatings, and Primers: Zero VOC
   2. Nonflat Paints, Coatings and Primers: VOC content of not more than 150 g/L.
   3. Anti-Corrosive and Anti-Rust Paints applied to Ferrous Metals: VOC not more than 250 g/L.
   4. Floor Coatings: VOC not more than 100 g/L.

B. Volatile Organic Compound (VOC) Content for Exterior Paints and Coatings:

1. Provide coatings that comply with the most stringent requirements specified in the following:
    a. 40 CFR 59, Subpart D--National Volatile Organic Compound Emission Standards for Architectural Coatings.
    b. Ozone Transport Commission (OTC) Model Rule, Architectural, Industrial, and Maintenance Coatings; www.otcair.org; specifically:
        1) Opaque, Flat: g/L, maximum.
        2) Opaque, Nonflat: g/L, maximum.
        3) Opaque, High Gloss: g/L, maximum.
        4) Varnishes: g/L, maximum.

C. Chemical Content: The following compounds are prohibited:
    1. Aromatic Compounds: In excess of 1.0 percent by weight of total aromatic compounds (hydrocarbon compounds containing one or more benzene rings).
    2. Acrolein, acrylonitrile, antimony, benzene, butyl benzyl phthalate, cadmium, di (2-ethylhexyl) phthalate, di-n-butyl phthalate, di-n-octyl phthalate, 1,2-dichlorobenzene, diethyl phthalate, dimethyl phthalate, ethylbenzene, formaldehyde, hexavalent chromium, isophorone, lead, mercury, methyl ethyl ketone, methyl isobutyl ketone, methylene chloride, naphthalene, toluene (methylbenzene), 1,1,1-trichloroethane, vinyl chloride.

D. Paints and Coatings: Provide products listed in Master Painters Institute Approved Product List, current edition available at www.paintinfo.com, for specified MPI Categories, except as otherwise indicated.
    1. Provide ready mixed paints and coatings, except field-catalyzed coatings.
    2. Provide materials that are compatible with one another and the substrates indicated under conditions of service and application, as demonstrated by manufacturer based on testing and field experience.

2.03 PAINT SYSTEM

A. Provide Premium Grade systems (2 top coats) as defined in MPI Architectural Painting Specification Manual, except as otherwise indicated.

B. Where a specified paint system does not have a Premium Grade, provide Custom Grade system.

C. Where sheen is not specified or more than one sheen is specified, sheen will be selected later by Mosaic Architecture from the manufacturer's full line.

D. Provide colors as scheduled on Drawings.

2.04 PAINT SYSTEMS - INTERIOR

A. Gypsum Board:
    1. Applications include but are not limited to walls, ceilings, soffits, and bulkheads.
    2. Eggshell: **(Walls and Ceilings):**
        a. 1st Coat: S-W Harmony Interior Latex Primer, B11 (4.0 mils wet, 1.3 mils dry).
        b. 2nd Coat: S-W Harmony Interior Latex Eg-Shel, B9 Series.
        c. 3rd Coat: S-W Harmony Interior Latex Eg-Shel, B9 Series (4.0 mils wet, 1.7 mils dry per coat).

2.05 ACCESSORY MATERIALS

A. Accessory Materials: Provide all primers, sealers, cleaning agents, cleaning cloths, sanding materials, and clean-up materials required to achieve the finishes specified whether specifically indicated or not; commercial quality.

B. Patching Material: filler.

C. Fastener Head Cover Material: filler.

PART 3 EXECUTION

3.01 SCOPE - SURFACES TO BE FINISHED

A. Paint all exposed surfaces except where indicated not to be painted or to remain natural; the term "exposed" includes areas visible through permanent and built-in fixtures when they are in place.

B. Paint the surfaces indicated on the Drawings, and as follows:
   1. If a surface, material, or item is not specifically mentioned, paint in the same manner as similar surfaces, materials, or items, regardless of whether colors are indicated or not.
   2. Paint surfaces behind movable equipment and furnishings the same as similar exposed surfaces.
   3. Paint surfaces to be concealed behind permanently installed fixtures, equipment, and furnishings, using primer only, prior to installation of the permanent item.
   4. Paint back sides of access panels and removable and hinged covers to match exposed surfaces.
   5. Finish top, bottom, and side edges of exterior doors the same as exposed faces.
   6. Paint all insulated and exposed pipes, conduit, boxes, insulated and exposed ducts, hangers, brackets, collars and supports, mechanical equipment, and electrical equipment occurring in finished areas to match background surfaces, unless otherwise indicated.

C. Do Not Paint or Finish the Following Items:
   1. Items fully factory-finished unless specifically noted; factory-primed items are not considered factory-finished.
   2. Items indicated to receive other finish.
   3. Fire rating labels, equipment serial number and capacity labels, and operating parts of equipment.
   4. Anodized aluminum.
   5. Polished and brushed stainless steel items.
   6. Concealed piping, ductwork, and conduit.

3.02 EXAMINATION

A. Verify that surfaces are ready to receive work as instructed by the product manufacturer.

B. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially affect proper application.

C. Test shop-applied primer for compatibility with subsequent cover materials.

D. Measure moisture content of surfaces using an electronic moisture meter. Do not apply finishes unless moisture content of surfaces are below the following maximums:
   1. Gypsum Wallboard: percent.
   2. Exterior Wood: percent, measured in accordance with ASTM D4442.

3.03 PREPARATION

A. Prepare surfaces as specified in MPI Architectural Painting Specification Manual and as follows for the applicable surface and coating; if multiple preparation treatments are specified, use as many as necessary for best results; where the Manual references external standards for preparation (e.g. SSPC standards), prepare as specified in those standards; comply with coating manufacturer's specific preparation methods or treatments, if any.

B. Comply with manufacturer's written instructions and recommendation in MPI Architectural Painting Specifications Manual applicable to substrates indicated.

C. Remove plates, machined surfaces, and similar items already in place that are not to be painted. If removal is impractical or impossible because of size and weight of item, provide surface applied protection before surface preparation and painting.
   1. After completing painting operation, use workers skilled in the trades involved to reinstall items that were removed. Remove surface applied protection if any.

2. Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.

D. Clean substrates of substances that could impair bond of paints, including dirt, oil, grease and incompatible paints and encapsulant.

E. Concrete Substrates: Remove release agents, curing compounds, efflorescence and chalk. Do not paint surfaces if moisture content or alkalinity of surfaces to be painted exceeds that permitted in manufacturer's written instructions.

F. Concrete Masonry Substrates: Remove efflorescence and chalk. Do not paint surfaces if moisture content or alkalinity of surfaces to be painted exceeds that permitted in manufacturer's written instructions.

G. Steel Substrates: Remove rust and loosemill scale. Clean using methods recommended in writing by paint manufacturer.

H. Galvanized Metal Substrates: Remove grease and oil residue from galvanized sheet metal fabricated from coil stock by mechanical method to produce clean, lightly etched surfaces that promote adhesion of subsequently applied paints.

I. Gypsum Board Substrates: Do not begin paint application until finishing compound is dry and sanded smooth.

J. Uncoated Steel and Iron Surfaces to be Painted: Remove grease, mill scale, weld splatter, dirt, and rust. Where heavy coatings of scale are evident, remove by hand wire brushing or sandblasting; clean by washing with solvent. Apply a treatment of phosphoric acid solution, ensuring weld joints, bolts, and nuts are similarly cleaned. Prime paint entire surface; spot prime after repairs.

K. Shop-Primed Steel Surfaces to be Finish Painted: Sand and scrape to remove loose primer and rust. Feather edges to make touch-up patches inconspicuous. Clean surfaces with solvent. Prime bare steel surfaces. Re-prime entire shop-primed item.

L. Metal Doors to be Painted: Prime metal door top and bottom edge surfaces.

3.04 APPLICATION

A. Apply products in accordance with manufacturer's instructions and as specified or recommended by MPI Manual, using the preparation, products, sheens, textures, and colors as indicated.
   1. Remove, refinish, or repaint work not complying with requirements.

B. Do not apply finishes over dirt, rust, scale, grease, moisture, scuffed surfaces, or other conditions detrimental to formation of a durable coating film; do not apply finishes to surfaces that are not dry.

C. Use applicators and methods best suited for substrate and type of material being applied and according to manufacturer's instructions.
   1. Brush Application: Use brushes best suited for the type of material applied; use brush of appropriate size for the surface or item being painted; produce results free of visible brush marks.
   2. Roller Application: Use rollers of carpet, velvet back, or high-pile sheep's wool as recommended by manufacturer for material and texture required.
   3. Spray Application: Use airless spray equipment with orifice size as recommended by manufacturer for material and texture required.
   4. Where application method is listed in the MPI Manual for the paint system that application method is required; otherwise any application method recommended by manufacturer for material used and objects to be painted is acceptable.

D. Minimum Coating Thickness: Apply paint materials no thinner than manufacturer's recommended spreading rate; provide total dry film thickness of entire system as recommended by manufacturer.

1. Number of coats and film thickness required are the same regardless of application method.
2. If undercoats, stains, or other conditions show through final coat of paint, apply additional coats until paint film is of uniform finish, color, and appearance.
3. Give special attention to ensure edges, corners, crevices, welds, and exposed fasteners receive dry film thickness equivalent to that of flat surfaces.

E. Apply finish to completely cover surfaces with uniform appearance without brush marks, runs, sags, laps, ropiness, holidays, spotting, cloudiness, or other surface imperfections.
1. Before applying finish coats, apply a prime coat of material recommended by manufacturer, unless the surface has been prime coated by others; where evidence of suction spots or unsealed areas in first coat appear, recoat primed and sealed surfaces to ensure finish coat with no burn through or other defects due to insufficient sealing.
2. Apply first coat to surface that has been cleaned, pretreated, or otherwise prepared as soon as practical after preparation and before subsequent surface deterioration.
3. Do not apply succeeding coats until the previous coat has cured as recommended by manufacturer.
4. Do not recoat until paint has dried to where it feels firm, does not deform or feel sticky under moderate thumb pressure, and application of another coat will not cause the undercoat to lift or lose adhesion.
5. If manufacturer's instructions recommend sanding to produce a smooth, even surface, sand between coats.
6. Before applying next coat vacuum clean surfaces of loose particles. Use tack cloth to remove dust and particles just prior to applying next coat.
7. Pigmented (Opaque) Finishes: Provide smooth, opaque surface of uniform finish, color, appearance, and coverage.

3.05 CLEANING

A. Collect waste material that could constitute a fire hazard, place in closed metal containers, and remove daily from site.

B. After completing paint application, clean spattered surfaces. Remove spattered paints by washing, scraping, or other methods. Do not scratch or damage adjacent surfaces.

C. Protect work of other trades against damage from paint application. Correct damage work to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.

3.06 SCHEDULE

A. See drawings.

END OF SECTION