



United States
Department of
Agriculture

Forest Service

Black Hills
National Forest

May, 2023



SUPERVISOR'S OFFICE ANNEX SIDING REPLACEMENT

Specifications

Construction Documents

SECTION 001500
BLACK HILLS NATIONAL FOREST

SUPERVISOR'S OFFICE ANNEX
SIDING REPLACEMENT
LIST OF DRAWINGS AND SPECIFICATIONS

PART 1 – GENERAL

1.1 DESCRIPTION

A. List of Contract Drawings:

1. Index of Sheets:

SHEET	SUB-SHEET	TITLE OF SHEET
1	T100	TITLE SHEET
2	A001	PROJECT NOTES
3	A021	EXTERIOR ELEVATIONS NORTH AND WEST
4	A022	EXTERIOR ELEVATIONS EAST AND SOUTH
5	A023	EXTERIOR PHOTOS NORTH AND WEST
6	A024	EXTERIOR PHOTOS EAST AND SOUTH

6 **Total Plan Sheets in this Contract**

B. List of Contract Specifications

1. Index of Specifications

DIVISION 1 - GENERAL REQUIREMENTS

Section 010150	General Requirements
Section 010250	Definition of Contract Items, and Measurement, and Payment
Section 014000	Quality Requirements

DIVISION 2 – EXISTING CONDITIONS

Section 024119	Selective Structure Demolition
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DIVISION 6 – WOOD AND PLASTICS

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DIVISION 7 – THERMAL AND MOISTURE PROTECTION

Section 072100	Thermal Insulation
Section 072500	Weather Barriers
Section 074619	Steel Siding
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Section 077100	Roof Specialties
Section 079200	Joint Sealants

DIVISION 9 – FINISHES

Section 099113	Exterior Painting
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END OF SECTION 001500

SECTION 010150
GENERAL REQUIREMENTS

PART 1 – SUMMARY OF WORK

1.1 DESCRIPTION

- A. Work for this project requires the contractor to be responsible for supplying all labor, materials, equipment, utilities, miscellaneous items, freight and delivery to complete work identified in Division 1, Section 010250: Definition of Contract Items and Measurement and Payment.

1.2 LOCATION

- A. This project is located at The Black Hills National Forest Supervisor's Office at 1019 North 5th Street, Custer, South Dakota, 57730.

1.3 GENERAL SITE CONDITIONS AND WEATHER

- A. The elevation of the site is approximately 5,500 feet above mean sea level. The project site is open year around.

1.4 USE OF PREMISES

- A. Use of Site: Confine constructions operations to immediate area of work. Do not disturb portions of Project site beyond areas in which the Work is indicated.
- B. Full Government Occupancy: Except as defined in "Work Restrictions" in this section, the government will occupy the site and buildings during entire construction period. Cooperate with Government during construction operations to minimize conflicts and facilitate Government usage. Perform the Work so as not to interfere with Government's day-to-day operations.
- C. Driveways and Entrances: Keep driveways, parking areas, loading areas and entrances serving premises clear and available to Government, Government's employees, and emergency vehicles at all times. Do not use these areas for parking or storage of materials. Do not close or obstruct walkways, corridors, or other occupied or used facilities without written permission from Government.
 - 1. Schedule deliveries to minimize use of driveways and entrances.
 - 2. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.

1.5 WORK RESTRICTIONS

- A. Nonsmoking Buildings: Smoking is not permitted within the buildings or within 25 feet (8 m) of entrances, operable windows, or outdoor air intakes.

- B. Do not schedule work during holidays, weekends, or between 6:00 PM to 7:00 AM without written approval from the Contracting Officer.
- C. Project Scheduling: Schedule work to minimize impacts to Government.
- D. The Contracting Officer will designate areas on the site for material storage. Confine storage of materials to areas as approved by the CO.

1.6 CONTRACTOR'S RESPONSIBILITIES

- A. Provide adequate signing and barricades and take necessary safety measures to protect the public during all construction operations. Minimize disturbance of all undisturbed areas.
- B. Protect trees and vegetation within project area from damage.
- C. Damage to areas adjacent to and/or within the project area that are not included as an element of the project, including lawns and landscape features, shall be repaired by the Contractor at no additional cost to the Government.
- D. Coordination of Trades: Coordinate construction operations included in the various sections of the Specifications to provide an efficient and orderly installation of each part of the Work. Coordinate construction operations included under different sections of the Specifications that depend on each other for proper installation, connection or operation.

1.7 FIELD VERIFICATION

- A. Field verify all new and existing dimensions affecting the work of this contract before ordering products.
- B. Contact "One-Call" at 811 prior to initiating excavation work to locate utility companies buried utilities. Additionally, obtain the services of a locating company to locate other buried utilities including government owned utilities. Do not initiate any excavation work until utilities have been located and marked.
- C. Existing buried utilities are shown on the drawings as accurately as existing records permit. Use caution when excavating in areas where buried utilities are anticipated. Repair any damage to buried utilities caused through work associated with this contract.

1.8 PERMITS AND INSPECTIONS

- A. Obtain permits for work required by County, State, or Federal laws or regulations.
- B. State electrical inspection is required for this project. Obtain permits for electrical work if the State Electrical Inspector requires a permit to perform the inspection.

2.1 DESCRIPTION

- A. This section consists of establishing an effective accident prevention plan and providing a safe environment for personnel and visitors. All work shall be performed in compliance with all applicable Federal, State, and Local Occupational Safety and Health regulations.

2.2 SUBMITTALS

- A. Accident Prevention Plan: Before on-site work begins, submit a company approved accident prevention plan. This plan will be posted in the contract file. Design the plan to address Federal, State, and Local Occupational Safety and Health requirements that apply to this project. Notice to Proceed will not be made until the plan is received. As a minimum the plan shall include:
 - 1. Name, position title and contact information of company executive responsible for approving the Accident Prevention Plan.
 - 2. Name and contact information of supervisor responsible to carry out the plan.
 - 3. Outline of each phase of the work, the hazards associated with each major phase, and the methods proposed to ensure property protection and safety of the public, government personnel, and the Contractor's employees. Identify the work included under each phase by reference to specification section or division numbers.
 - 4. Contingency plans for emergency situations such as medical, fire, hazard material spills and other contract assessed hazard prevention and abatement requirement needs that apply to this project.
- B. Certificates: Provide certificates from a mechanic that all mechanical equipment has been inspected and meets OSHA requirements.
- C. Submit a copy of test reports, as required by OSHA, for personnel working with hazardous materials.
- D. Submit a brief report of safety meetings and of inspections within 7 days of the meeting or inspection. Include a list of attendees.
- E. Upon request, submit proof of employees' qualifications to perform assigned duties in a safe manner.

2.3 ACCIDENT REPORTING

- A. Accidents: Report accidents immediately to the CO and assist the CO and other officials as required in the investigation and documentation of the accident.

2.4 FIRST AID FACILITIES

- A. Provide adequate facilities for the number of employees and the type of construction at

the site.

2.5 PERSONNEL PROTECTIVE EQUIPMENT

- A. Meet requirements of NIOSH and MSHA, where applicable, as well as ANSI.

2.6 EMERGENCY INSTRUCTIONS

- A. Post telephone numbers and reporting instructions for ambulance, physician, hospital, fire department, and police in conspicuous locations at the work site.

2.7 PROTECTIVE EQUIPMENT

- A. Inspect personal protective equipment daily and maintain in a serviceable condition. Clean, sanitize, and repair, as appropriate, personal items before issuing them to another individual.
- B. Inspect and maintain other protective equipment and devices before use and on a periodic basis to ensure safe operation.

2.8 SAFETY MEETINGS

- A. As a minimum, conduct weekly 15-minute "toolbox" safety meetings. These meetings shall be conducted by a foreman and attended by all construction personnel at the worksite.

2.9 HARD HATS AND PROTECTIVE EQUIPMENT AREAS

- A. Designate and post a hard hat area.
- B. It is the Contractor's responsibility to require all those working on or visiting the site to wear hard hats and other necessary protective equipment at all times. As a minimum, provide two hard hats for use by visitors. Change liners before reissuing hats.

2.10 TRAINING

- A. First Aid: Provide adequate training to ensure prompt and efficient first aid.
- B. Hazardous Material: Train and instruct each employee exposed to hazardous material in safe and approved methods of handling and storage. Hazardous materials are defined as explosive, flammable, poisonous, corrosive, oxidizing, irritating, or otherwise harmful substances that could cause death or injury.

PART 3 – SUBMITTAL PROCEDURES

3.1 DESCRIPTION

- A. This section includes administrative, procedural, and construction schedule requirements for submittals.

3.2 DEFINITIONS

- A. Action Submittals: Written and graphic information that requires Contracting Officer's (CO's) responsive action.
- B. Informational Submittals: Written information that does not require CO's approval.

3.3 PROCEDURES

- A. Processing Time: Allow enough time for submittal review, including time for re-submittals, as follows. Time for review shall commence on CO's receipt of submittal.
 - 1. Initial Review: Allow 10 working days for initial review of each submittal. Allow additional time if processing must be delayed to permit coordination with subsequent submittals. CO will advise Contractor when a submittal being processed must be delayed for coordination.
 - 2. If intermediate submittal is necessary, process it in same manner as initial submittal.
 - 3. Allow 10 working days for processing each re-submittal.
 - 4. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing.
- B. Identification: Stamp each submittal with a uniform approval stamp. Place a permanent label or title block on each submittal for identification.
 - 1. Indicate name of firm or entity that prepared each submittal on label or title block.
 - 2. Provide a space approximately 2 by 3 inches on label or beside title block to record Contractor's review and approval markings and action taken by CO.
 - 3. Include the following information on label for processing and recording action taken:
 - a. Project name.
 - b. Date.
 - c. Name and address of Contractor.
 - d. Name of manufacturer.
 - e. Unique identifier, including revision number.
 - f. Number and title of appropriate Specification Section.
 - g. Drawing number and detail references, as appropriate.
 - h. Other necessary identification.
- C. Deviations: Highlight, encircle, or otherwise identify deviations from the Contract Documents on submittals.
- D. Additional Copies: Unless additional copies are required for final submittal, and unless CO observes noncompliance with provisions of the Contract Documents, initial submittal may serve as final submittal.
- E. Use for Construction: Use only final submittals with mark indicating action taken by

CO in connection with construction.

- F. Review each submittal and check for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to CO.
- G. 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.
- H. CO will not review submittals that do not bear Contractor's approval stamp and will return them without action.
- I. Submittals not required by the Contract Documents will not be reviewed and may be discarded.

3.4 ACTION SUBMITTALS

- A. General: Prepare and submit Action Submittals required by individual Specification Sections.
 - 1. Number of Copies: Submit four copies or one electronic pdf copy of each submittal, unless otherwise indicated. CO will return two copies if hard copies are submitted. Mark up and retain one copy as a Project Record Document.
- 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 printed 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 written recommendations.
 - b. Manufacturer's product specifications.
 - c. Manufacturer's installation instructions.
 - d. Manufacturer's catalog cuts.
 - e. Wiring diagrams showing factory-installed wiring.
 - f. Compliance with recognized trade association standards.
 - g. Compliance with recognized testing agency standards.
- C. Shop Drawings: Prepare Project-specific information, drawn accurately to scale in electronic format. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data.
 - 1. Include the following information, as applicable:
 - a. Dimensions.
 - b. Identification of products.

- c. Fabrication and installation drawings.
 - d. Roughing-in and setting diagrams.
 - e. Wiring diagrams: Differentiate between manufacturer installed and field installed wiring. Show field-installed wiring, including power, signal, and control wiring.
 - f. Notation of dimensions established by field measurement.
- D. Requests for Information (RFI's): Immediately on discovery of the need for additional information or interpretation of the Contract Documents, prepare and submit an RFI in electronic form.
- 1. RFI's submitted by entities other than the Contractor shall not be accepted.
 - 2. Coordinate and submit RFIs in a prompt manner so as to avoid delays in Contractor's work or work of subcontractors.
 - 3. Content of the RFI: Include a detailed, legible description of item needing information or interpretation and the following:
 - a. Project name.
 - b. Project number.
 - c. Date.
 - d. Name of Contractor.
 - e. Name of Contracting Officer.
 - f. RFI number, numbered sequentially.
 - g. RFI subject.
 - h. Specification Section number and title and related paragraphs, as appropriate.
 - i. Drawing number and detail references, as appropriate.
 - j. Field dimensions and conditions, as appropriate.
 - k. Contractor's suggested resolution. If Contractor's solution(s) impacts the Contract Time or the Contract Sum, Contractor shall state impact in the RFI.
 - l. Contractor's signature.
 - m. Attachments: Include sketches, descriptions, measurements, photos, Product Data, Shop Drawings, coordination drawings, and other information necessary to fully describe items needing interpretation.
 - 1) Include dimensions, thicknesses, structural grid references, and details of affected materials, assemblies, and attachments on attached sketches.
 - 4. CO's Action: CO will review each RFI, determine action required, and respond. Allow seven (7) working days for CO's response for each RFI. RFIs received by CO after 1:00 p.m. will be considered as received the following working day.
 - a. CO's action may include a request for additional information, in which case CO's time for response will date from time of receipt of additional information.
 - b. CO'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 Contracting Section "Contract Modification Procedures."
 - 1) If Contractor believes the RFI response warrants change in the

Contract Time or the Contract Sum, notify CO in writing within 10 days of receipt of the RFI response.

5. On receipt of CO's action, update the RFI log and immediately distribute the RFI response to affected parties. Review response and notify CO within seven days if Contractor disagrees with response.
 6. RFI Log: Prepare, maintain, and submit a tabular log of RFIs organized by the RFI number. Submit log weekly. Include the following:
 - a. Project name.
 - b. Name and address of Contractor.
 - c. Name and address of Contracting Officer.
 - d. RFI number including RFIs that were dropped and not submitted.
 - e. RFI description.
 - f. Date the RFI was submitted.
 - g. Date CO's response was received.
 - h. Identification of related Minor Change in the Work, Construction Change Directive, and Proposal Request, as appropriate.
 - i. Identification of related Field Order, Work Change Directive, and Proposal Request, as appropriate.
- E. Contractor Quality Control Submittals: Provide electronic Quality Control submittals, including design data, certifications, manufacturer's instructions, manufacturer's field reports, and other quality-control submittals as required under other Sections of the Specifications.
1. Certifications: Where other Sections of the Specifications require certification that a product, material or installation complies with specified requirements, submit a notarized certification from the manufacturer certifying compliance with specified requirements.
 - a. Signature: Signed by an officer of the manufacturer or other individual authorized to sign documents on behalf of the company.
 2. Inspection and Test Reports: Requirements for submittal of inspection and test reports from independent testing agencies are specified in other Sections of the Specifications.
- F. Contractor Quality Control Plan: At the time of the preconstruction conference, submit for approval a written Contractor Quality Control (CQC) plan.
1. The plan shall include:
 - a. A list of personnel responsible for quality control and assigned duties. Include each person's qualifications.
 - b. A copy of a letter of direction to the Contractor's Quality Control Supervisor outlining assigned duties.
 - c. Names, qualifications, and descriptions of laboratories to perform sampling and testing, and samples of proposed report forms.
 - d. Methods of performing, documenting, and enforcing quality control of all work.
 - e. Methods of monitoring and controlling environmental pollution and

- contamination as required by regulations and laws.
 2. If the plan requires any revisions or corrections, the Contractor shall resubmit the plan within 10 days.
 3. The Government reserves the right to require changes in the plan during the contract period as necessary to obtain the quality specified.
 4. No change in the approved plan may be made without written concurrence by the Contracting Officer (CO).
- G. Quality Control Documentation:
1. Maintain Quality Control Daily Reports and Daily Test Report Information Sheets (samples attached) of quality control activities and tests.
 2. Quality Control Daily Reports may not be substituted for other written reports required under clauses of the contract, such as Disputes, Differing Site Conditions, or Changes.
- H. Application for Payment: Comply with requirements specified in the Contract Clauses and Division 01 Section "Definition of Items & Measurement and Payment". Provide in electronic format.

3.5 INFORMATIONAL SUBMITTALS

- A. General: Prepare and submit Informational Submittals required by other Specification Sections.
1. Number of Copies: Submit two copies or one electronic pdf of each submittal, unless otherwise indicated. CO will not return copies.
 2. Certificates and Certifications: Provide a notarized statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity.
- B. Contractor's Quality Control Daily Construction Reports: Prepare a daily construction report recording the following information concerning events at the site, and submit in electronic format to the CO at weekly intervals:
1. List of subcontractors at the site.
 2. Approximate count of personnel at the site.
 3. High and low temperatures, general weather conditions.
 4. Accidents and unusual events.
 5. Meetings and significant decisions.
 6. Stoppages, delays, shortages, and losses.
 7. Meter readings and similar recordings.
 8. Emergency procedures.
 9. Orders and requests of governing authorities.
 10. Change Orders received, implemented.
 11. Services connected, disconnected.

12. Equipment or system tests and startups.
 13. Partial Completions, occupancies.
 14. Substantial Completions authorized.
- C. Cost Breakdown: Following award, provide a cost breakdown schedule listing main types of work with associated costs. Provide in electronic format.
- D. Schedule of Values: Comply with requirements specified in the Contract Clauses. Provide in electronic format.
- E. Accident Prevention Plan: Comply with requirements specified in paragraph in Division 1 Section "General Requirements." Provide in electronic format.
- F. Material Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements. Provide in electronic format.
- G. Field Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements. Provide in electronic format.
- H. Manufacturer's Instructions: Prepare written or published information that documents manufacturer's recommendations, guidelines, and procedures for installing or operating a product or equipment. Include name of product and name, address, and telephone number of manufacturer. Provide in electronic format.

3.6 CONSTRUCTION SCHEDULE

- A. General: This section includes preparation and submittal of Construction Schedules.
1. Number of Copies: Submit two copies or one electronic pdf of each submittal, unless otherwise indicated. CO will not return copies.
- B. Procedures:
1. Within ten calendar days after date of Notice to Proceed, submit a detailed Construction Schedule setting forth requirements for complete execution of the work. Provide schedules in electronic format.
 - a. Include a written summary narrative to explain basis of approach to work.
 2. With each Progress Payment Request, submit an Updated Construction Schedule reflecting work progress to the end of the Progress Payment Request period. On each Updated Construction Schedule indicate:
 - a. Actual start dates for work items started during the report period.
 - b. The percent complete on activities that have actual start dates.
 - c. Actual completion dates for work items completed during report period.
 - d. Estimated remaining duration for work items in progress.
 - e. Estimated start dates for work items scheduled to start during month

- following report period.
- f. Changes in duration of work items.

C. Schedule Requirements:

1. Schedule contract work and monitor progress using a Critical Path Method (CPM) or similar type scheduling system. Break the schedule into sub-activities to include, as a minimum, major suppliers, submittal approvals, and major trades.
2. Clearly indicate sequence of construction activities, grouped by base and optional items.
 - a. For each base and contract awarded optional item show the start and completion of work items, their major components, and interim milestones.
 - b. Identify and show activities for procurement, delivery, and installation of equipment and materials.
 - c. Identify interdependence of procurement and construction activities.
 - d. Identify dates for testing and inspections.
3. Prepare construction Schedule to complete the Work within the contract time requirement.

- D. Reviews: The government will review and return the initial Construction Schedule submittal and subsequent schedules with comments. If revisions are noted or required, make revisions based upon comments and resubmit the Schedule.

PART 4 – TEMPORARY FACILITIES AND CONTROLS

4.1 DESCRIPTION

- A. This section consists of requirements for temporary facilities and controls, including utilities, support facilities, and security and protection facilities.

4.2 UTILITIES

- A. Water Service: Use of Government existing water service facilities will be permitted without metering and without payment of use charges, as long as facilities are cleaned and maintained in a condition acceptable to CO. At Substantial Completion, restore these facilities to condition existing before initial use.
- B. Sanitary Facilities: Contractor shall provide temporary sanitary facilities for the duration of the project.
- C. Electric Power and Lighting Service: Use of Government's existing electric power and lighting service will be permitted without metering and without payment of use charges, as long as equipment is maintained in a condition acceptable to CO.
- D. Telephone Service: The Contractor is responsible for providing telephone service deemed necessary for the duration of the construction.

4.3 CONSTRUCTION WASTE DISPOSAL

- A. Provide waste-collection containers in sizes adequate to handle waste from construction operations. Containerize and clearly label hazardous, dangerous, or unsanitary waste materials separately from other waste.
- B. Cleanup construction debris at the completion of each day's work. Do not use existing on-site trash receptacles for disposal or interim storage of construction debris.
- C. Burning of construction debris is not allowed on lands administered by the Forest Service.
- D. Dispose construction debris at an established Sanitary Landfill. Schedule disposal frequency to ensure waste containers are not overflowing.

4.4 STAGING AND SUPPORT FACILITIES INSTALLATION

- A. Staging: An area at the project site will be made available for use as a staging area. Refer to drawings, but if not shown, coordinate size and location of staging area with Contracting Officer prior to storing materials. Security and clean-up of staging and support facilities is the responsibility of the Contractor.
- B. Storage: Confine storage of materials to storage areas. Coordinate on-site storage requirements with the Contracting Officer.
- C. Field Offices: An area within the staging area can be used for locating a temporary field office. Temporary facilities to this office can remain on site during construction. Coordinate size and location of office with Contracting Officer prior to bringing in field office. Security and clean-up of temporary facility location is the responsibility of the Contractor.

4.5 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. Barricades, Warning Signs, and Lights: Comply with standards and code requirements for erecting structurally adequate barricades. Paint with appropriate colors, graphics, and warning signs to inform personnel and public of possible hazard. Where appropriate and needed, provide lighting, including flashing red or amber lights.
- C. Fire Protection:
 - 1. Store combustible materials in containers in fire-safe locations.
 - 2. Maintain unobstructed access to fire extinguishers, fire hydrants, fire-protection facilities, stairways, and other access routes for firefighting. Prohibit smoking in hazardous fire-exposure areas.

3. Supervise welding operations, combustion-type temporary heating units, and similar sources of fire ignition.

PART 5 – EXECUTION REQUIREMENTS

5.1 DESCRIPTION

- A. This section consists of general procedural requirements governing execution of the Work including, but not limited to, the following:
 1. General installation of products.
 2. Progress cleaning.
 3. Protection of installed construction.
 4. Correction of the Work.

5.2 EXAMINATION

- A. Existing Conditions: Before beginning work, investigate and verify the existence and location of mechanical and electrical systems and other construction affecting the Work.
- B. Acceptance of Conditions: Examine areas, and conditions, with Installer. Record observations.
 1. Examine roughing-in for electrical systems to verify actual locations of connections before equipment and fixture installation.
 2. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of substrates, surfaces and conditions.

5.3 PREPARATION

- A. Field Measurements: Take field measurements as required to fit the Work properly.
- B. 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 CO. Include a detailed description of problem encountered, together with recommendations for changing the Contract Documents.

5.4 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 wiring in finished areas, unless otherwise indicated.

4. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by CO.
- B. Comply with manufacturer's written instructions and recommendations for installing products.
- C. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.

5.5 PROGRESS CLEANING

- A. General: Clean Project site and work areas daily, including common areas. 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 (27 deg C).
 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.
- D. 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. Legally dispose all waste off Government Lands.

5.6 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.

5.7 CORRECTION OF THE WORK

- A. Repair or remove and replace defective construction. Restore damaged substrates and finishes.
 1. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment.

PART 6 – OPERATIONS AND MAINTENANCE MANUALS

6.1 DESCRIPTION

- A. This Section consists of administrative and procedural requirements for operation and maintenance manuals.

6.2 SUBMITTALS

- A. Submit two hard copy manuals or one electronic copy manual in final form at least 15 working days before final inspection.

6.3 OPERATION AND MAINTENANCE MANUALS

- A. Assemble a complete set of operation and maintenance data indicating the operation and maintenance of each system, subsystem, and piece of equipment not part of a system. Include operation and maintenance data required in individual Specification Sections and as follows:
 - 1. Operation Data: Include emergency instructions and procedures, system and equipment descriptions, operating procedures, and sequence of operations.
 - 2. Maintenance Data: Include manufacturer's information, list of spare parts, maintenance procedures, maintenance and service schedules for preventive and routine maintenance, and copies of warranties and bonds.
- B. 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 a title page, table of contents, and manual contents.
- C. Title Page: Enclose title page in transparent plastic sleeve. Include the following information:
 - 1. Subject matter included in manual.
 - 2. Name and address of Project.
 - 3. Name and address of Forest.
 - 4. Date of submittal.
 - 5. Name, address, and telephone number of Contractor.
 - 6. Cross-reference to related systems in other operation and maintenance manuals.
- D. Table of Contents: List each product included in manual, identified by product name, indexed to content of volume, and cross-referenced to Specification Section.
- E. 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.
 - 1. Binders: Heavy-duty, 3-ring, vinyl-covered, loose-leaf 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, and subject matter of contents. Indicate volume number for multiple-volume sets.
2. Dividers: Heavy-paper dividers with plastic-covered tabs for each section. 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. 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.
- F. Content: Include operation and maintenance data required in individual Specification Sections and equipment descriptions, operating standards, operating procedures, operating logs, wiring and control diagrams, and license requirements.
- G. Descriptions: Include the following:
1. Product name and model number.
 2. Manufacturer's name.
 3. Equipment identification with serial number of each component.
 4. Equipment function.
 5. Operating characteristics.
 6. Performance curves.
 7. Engineering data and tests.
 8. Complete nomenclature and number of replacement parts.
- H. Source Information: For each product, list name, address, and telephone number of Installer or supplier.
- I. Operating Procedures: Include startup, break-in, and control procedures; stopping and normal shutdown instructions; routine, normal, seasonal, and weekend operating instructions; and required sequences for electric or electronic systems.
- J. Systems and Equipment Controls: Describe sequence of operation, and diagram controls as installed.
- K. Maintenance Procedures: For each system, subsystem, and piece of equipment not part of a system, include manufacturers' maintenance documentation, maintenance procedures, maintenance and service schedules, drawings and diagrams for maintenance, nomenclature of parts and components and recommended spare parts for each component part or piece of equipment.
- L. 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.

- M. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds. Organize warranty documents into an orderly sequence based on the table of contents of the Project Manual.
 - 1. 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.

PART 7 – CLOSEOUT PROCEDURES

7.1 DESCRIPTION

- A. This section consists of administrative and procedural requirements for contract closeout, including, but not limited to, the following:
 - 1. Inspection procedures.
 - 2. Project Record Documents.
 - 3. Final cleaning.

7.2 SUBSTANTIAL COMPLETION

- A. Definition of Substantial Completion: The Date certified by the Contracting Officer when construction is sufficiently complete, in accordance with the Contract Documents, so the Government can occupy or utilize the Work or designated portion thereof for the use for which it is intended, as expressed in the Contract Documents.
- B. Preliminary Procedures: Before requesting inspection for determining date of Substantial Completion, complete the following. List items below that are incomplete in 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 (CO) of pending insurance changeover requirements.
 - 3. Submit specific warranties, workmanship bonds, final certifications, and similar documents.
 - 4. Obtain and submit releases permitting Government 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 photographs and photographic negatives, and similar final record information.
 - 6. Deliver tools, spare parts, extra materials, and similar items to location designated by Government. Label with manufacturer's name and model number where applicable.

7. Complete startup testing of systems.
 8. Complete final cleaning requirements, including touchup painting.
 9. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.
- C. Inspection: Submit a written request for inspection for Substantial Completion. On receipt of request, CO will either proceed with inspection or notify Contractor of unfulfilled requirements. CO 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 CO, 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.

7.3 FINAL COMPLETION

- A. Preliminary Procedures: Before requesting final inspection for determining date of Final Completion, complete the following:
1. Submit certified copy of CO's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by CO. The certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
 2. Instruct Government personnel in operation, adjustment, and maintenance of products, equipment, and systems.
- B. Inspection: Submit a written request for final inspection for acceptance. On receipt of request, CO will either proceed with inspection or notify Contractor of unfulfilled requirements. CO will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.
1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

7.4 LIST OF INCOMPLETE ITEMS (PUNCH LIST)

- A. Preparation: Submit three hard copies or one electronic copy 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.

7.5 PROJECT RECORD DOCUMENTS

- A. General: Do not use Project Record Documents for construction purposes. Protect

Project Record Documents from deterioration and loss. Provide access to Project Record Documents for CO's reference during normal working hours.

- B. Submit hard copies or electronic copies of record documents for review prior to request for final inspection.
- C. Record Drawings: Maintain and submit one set of blue- or black-line white prints of Contract Drawings and Shop Drawings.
 - 1. 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 prepare the marked-up Record Prints.
 - a. Give particular attention to information on concealed elements that cannot be readily identified and recorded later.
 - b. Record data as soon as possible after obtaining it. Record and check the markup before enclosing concealed installations.
 - 2. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at the same location.
 - 3. Note Construction Change Directive numbers, Change Order numbers, alternate numbers, and similar identification where applicable.
 - 4. Identify and date each Record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location. Organize into manageable sets; bind each set with durable paper cover sheets. Include identification on cover sheets.

7.6 FINAL CLEANING

- A. General: Provide 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 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.
- C. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a portion of Project:
 - 1. 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.
 - 2. Remove tools, construction equipment, machinery, and surplus material from Project site.
 - 3. 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.

- D. Comply with safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on Government property. Do not discharge volatile, harmful, or dangerous materials into drainage systems. Remove waste materials from Project site and dispose of lawfully.

END OF SECTION 010150

SECTION 010250
DEFINITION OF CONTRACT ITEMS AND MEASUREMENT AND PAYMENT

PART 1 - GENERAL

1.1 SUMMARY

- A. The intent of this section is to explain, in general; what is and what is not included in a contract item; the limits or cut-off points where one item ends and another begins; and method of measurements and basis of payment for work items listed in the Schedule of Items.
- B. Work: Furnishing all labor, materials, equipment, and other incidentals necessary to successfully complete the project or any portion of it and carrying out all duties and obligations imposed by the contract on the Contractor.
- C. Payment: For each individual item listed here and in the Schedule of Items, payment shall be full compensation for all work related to the particular item in accordance with these specifications and as shown on the drawings.
- D. Measurement and payment for contract work shall be made only for and under those pay items included in the Schedule of Items. All other work and materials shall be considered incidental or as included in the payment for items shown.

1.2 UNITS OF MEASUREMENT

- A. Payment shall be by units defined and determined according to U.S. Standard measure and by the following:
- B. Lump Sum: Do not measure directly. The bid amount is complete payment for all work described in the contract and necessary to complete the work for that item.
- C. Sheet: A measurement of plywood, OSB, or similar sheathing material equal to nominal 32 square feet.

PART 2 - METHOD OF MEASUREMENT

2.1 DESCRIPTION

- A. This section explains what is and what is not included in each pay item: the limits or cut-off points where one item ends and another begins; and basis of payment for work items listed in the Schedule of Items.
- B. Payment: For each individual item listed here and in the Schedule of Items, payment shall be full compensation for all work related to the particular item in accordance with these specifications, and as shown on the drawings.

PART 3 – DEFINITION OF CONTRACT ITEMS

3.1 SCHEDULE OF ITEMS

- A. The project Schedule of Items includes several sections to organize the contract items into Base Items and Optional Items. When a pay item is described as a Base Item, the description will be the same when that item or a similar item is included as an Optional Item.
 - 1. Provide item pricing for all items listed in the Schedule of Items.
 - 2. Contract award will be made for all Base Items.
 - 3. Option Items are identified below as possible items that may be awarded based on available project funding. The Optional Items may be awarded in any order and in any combination.
- B. The project Schedule of Items includes several sections to organize the contract items.

3.2 DEFINITION OF BASE ITEMS

- A. Base Items:
 - 1. Base Item No. 1 – Mobilization, Demobilization, and Insurance
 - a. Measurement: This item is measured as a Lump Sum quantity.
 - b. Payment: The contract lump sum price shown in the Schedule of Items includes all materials, equipment, labor and incidentals required to perform all operations necessary for the movement of personnel, equipment, supplies and incidentals to the project site, and other work that must be performed or that cause costs to be incurred prior to beginning work on the various items on the project site.
 - 2. Base Item No. 2 – Demolition
 - a. Measurement: This item is measured as a Lump Sum quantity.
 - b. Payment: The contract lump sum price shown in the Schedule of Items includes all materials, equipment, labor and incidentals required to remove and dispose of all siding materials indicated for demolition, including downspouts. Perform all operations necessary for completion of work as specified and as shown in the construction documents.
 - 3. Base Item No. 3 – Provide and Install New Metal Siding.
 - a. Measurement: This item is measured as a Lump Sum quantity.
 - b. Payment: The contract lump sum price shown in the Schedule of Items includes all materials, equipment, labor and incidentals required to provide and install new metal siding and associated appurtenances and accessories and components including but not limited to siding, trim, soffit, fascia, flashing, insulation, weather-resistive barrier, fasteners and connections

necessary for completion of work as specified and as shown in the construction documents. This item also include re-installation of items removed for siding installation, such as light fixtures, escutcheons, vents, and the like. This Base Item includes remove, provide, and replace an estimate of 10 sheets (4'x8') of ½" plywood sheathing.

4. Base Item No. 4 – Provide and Install New Downspouts.

- a. Measurement: This item is measured as a Lump Sum quantity.
- b. Payment: The contract lump sum price shown in the Schedule of Items includes all materials, equipment, labor and incidentals required to provide and install new steel downspouts to be attached to existing steel gutters. This item includes all materials, fasteners, and connections necessary for completion of work as specified and as shown in the construction documents.

5. Base Item No. 5 – Painting Existing Exterior Doors and Railings

- a. Measurement: This item is measured as a Lump Sum quantity.
- b. Payment: The contract lump sum price shown in the Schedule of Items includes all materials, equipment, labor and incidentals required to prepare, prime, and paint both sides of exterior personnel doors and railings at stairs, ramps, and loading dock as specified and as shown in the construction documents.

3.3 DEFINITION OF OPTION ITEMS

A. Option Items:

- 1. Option Item No. 1 – Painting Existing Concrete Masonry Unit Walls
 - a. Measurement: This item is measured as a Lump Sum quantity.
 - b. Payment: The contract lump sum price shown in the Schedule of Items includes as materials, equipment, labor, and incidentals required to prepare, prime and paint existing Concrete and Concrete Masonry Unit (CMU) walls as specified and as shown in the construction documents.

3.4 DEFINITION OF INCREASE/DECREASE ITEMS

- A. The following are Increase/Decrease Items that may or may not be used. They are intended to provide a unit pricing for additional work that may be necessary as the existing Siding panels are removed and damaged Sheathing is discovered. The Base Items shall include an estimated amount of damaged Sheathing to be removed and replaced. The Increase/Decrease Items will be used at the unit price rate in the event the Actual Quantity of damage Sheathing is greater than or less than the Estimated Quantity for each building.

B. Increase/Decrease Items (ID):

1. Increase/Decrease Item No. 1 – Increase/Decrease in Quantity to Replace Damaged ½” Sheathing from Quantity identified in Base Bid Item No. 3.
 - a. Measurement: This item is measured as Actual Quantity in-place per sheet of ½’ plywood sheathing replaced.
 - Actual Quantity for increase/decrease shall be in relation to the stated estimated quantities included in the Base Items.
 - For bidding purposes, Contractor shall assume to replace up to 10 sheets of ½” sheathing (sheets nominal 4’ x 8’)
 - b. Payment: This Increase/Decrease Item shall be paid for Actual Quantity of ½” sheathing replaced at unit price provided and includes all materials, equipment, labor, and incidentals to remove and disposed damaged sheathing and provide, and replace new sheathing sheathing as stated.
 1. The Increase/Decrease Quantities shall be determined and paid. Quantities below that stated shall be deducted at the unit price provided from final payment.
 2. NO minimum or maximum amounts are established. This item may or may not be awarded.

END OF SECTION 010250

SECTION 014000
QUALITY REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes administrative and procedural requirements for quality assurance and quality control including preparing and executing a quality control program.

1.2 DEFINITIONS

- A. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and ensure that proposed construction complies with requirements.
- B. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that completed construction complies with requirements. Services do not include contract enforcement activities performed by CO.

1.3 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 CO 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 with reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to CO for a decision before proceeding.

1.4 SUBMITTALS

- A. As specified in Division 1 Section "Submittal Procedures".
- B. Testing Agencies Qualification Data: Submit proof of qualifications and experience in the form of a recent report on the inspection of the testing agency by a recognized authority.
- C. Quality Control Plan: At the time of the preconstruction conference, submit for approval a written Contractor Quality Control (CQC) plan.
 - 1. The plan shall include:

- a. A list of personnel responsible for quality control and assigned duties. Include each person's qualifications.
 - b. A copy of a letter of direction to the Contractor's Quality Control Supervisor outlining assigned duties.
 - c. Names, qualifications, and descriptions of laboratories to perform sampling and testing, and samples of proposed report forms.
 - d. Methods of performing, documenting, and enforcing quality control of all work.
 - e. Methods of monitoring and controlling environmental pollution and contamination as required by regulations and laws.
2. If the plan requires any revisions or corrections, the Contractor shall resubmit the plan within 10 days.
 3. The Government reserves the right to require changes in the plan during the contract period as necessary to obtain the quality specified.
 4. No change in the approved plan may be made without written concurrence by the Contracting Officer (CO).
- D. Contractor's Quality Control Daily Reports: Submit showing all inspections and tests on the first workday following the date covered by the report.
- E. Test Reports:
1. Submit Daily Test Information Sheets with Quality Control Daily Reports.
 2. Submit failing test results and proposed remedial actions within four hours of noted deficiency.
 3. Submit three copies of complete test results not later than three calendar days after the test was performed.
 4. Test Reports shall be certified and include the following:
 - a. Date of issue.
 - b. Project title and number.
 - c. Name, address, and telephone number of testing agency.
 - d. Dates and locations of samples and tests or inspections.
 - e. Names of individuals making tests and inspections.
 - f. Description of the Work and test and inspection method.
 - g. Identification of product and Specification Section.
 - h. Complete test or inspection data.
 - i. Test and inspection results and an interpretation of test results.
 - j. Ambient conditions at time of sample taking and testing and inspecting.
 - k. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
 - l. Name and signature of laboratory inspector.
 - m. Recommendations on retesting and reinspecting.
- F. Off-Site Inspection Reports: Submit prior to shipment.
- G. Permits, Licenses, and Certificates: For CO's records, submit copies of permits, li-

censes, 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.

1.5 QUALITY ASSURANCE

- A. 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.
- B. 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.
- C. 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.
- D. 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.
- E. Testing Agency Qualifications: An agency with the experience and capability to conduct testing and inspecting indicated, as documented by ASTM E 548, and that specializes in types of tests and inspections to be performed.
- F. Testing Laboratory and Equipment: All measuring devices, laboratory equipment, and instruments shall be calibrated at established intervals against certified standards in accordance with NBS requirements. Upon request, measuring and testing devices shall be made available for use by the Government for verification tests.

1.6 QUALITY CONTROL

- A. Designate a Quality Control Supervisor with the following responsibilities:
 - 1. Quality Control Supervisor shall be on the project site whenever contract work is in progress. The Contractor's Quality Control Supervisor may also perform the duties of Project Superintendent,
 - 2. Complete Quality Control Daily Reports.
 - 3. Have all work inspected and tested often enough to ensure that the quality of materials, workmanship, construction, finish, and functional performance is in compliance with applicable specifications and drawings.
 - 4. Where testing services are indicated as Contractor's responsibility, engage

- a qualified testing agency to perform these quality-control services.
 5. Notify testing agencies at least 48 hours in advance of time when Work that requires testing or inspecting will be performed.
 6. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.
 7. Testing and inspecting requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
 8. Cooperate with testing agencies performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Provide the following:
 - a. Access to the Work.
 - b. Incidental labor and facilities necessary to facilitate tests and inspections.
 - c. Adequate quantities of representative samples of materials that require testing and inspecting. Assist agency in obtaining samples.
 - d. Facilities for storage and field-curing of test samples.
 - e. Preliminary design mix proposed for use for material mixes that require control by testing agency.
 - f. Security and protection for samples and for testing and inspecting equipment at Project site.
- B. Testing Agency Responsibilities: Cooperate with CO and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.
1. Notify CO and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
 2. Submit a certified written report, in duplicate, of each test, inspection, and similar quality-control service through Contractor. Interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from requirements.
 3. Retest and re-inspect corrected work.
 4. Do not release, revoke, alter, or increase requirements of the Contract Documents or approve or accept any portion of the Work.
 5. Do not perform any duties of Contractor.
- C. 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.
- D. Retesting/Reinspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspecting, for construction that revised or replaced Work that failed to comply with requirements established by the Contract Documents.

PART 2 - PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.1 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 Sections of these Specifications. Restore patched areas and extend restoration into adjoining areas in a manner that eliminates evidence of 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.

3.2 OFF-SITE CONTROL

- A. Inspect items that are fabricated or assembled off-site for quality control at the place of fabrication.

3.3 ON-SITE CONTROL

- A. Notification:
 - 1. Notify the CO at least 48 hours in advance of the preparatory phase meeting.
 - 2. Notify the CO at least 24 hours in advance of the initial and follow-up phases.
- B. Preparatory Phase: Perform before beginning each feature of work.
 - 1. Review control submittal requirements with personnel directly responsible for the quality control work. As a minimum, the Contractor's Quality Control Supervisor and the foreman responsible for the feature of work shall be in attendance.
 - 2. Review all applicable specifications sections and drawings related to the feature of work.
 - 3. Ensure that copies of all referenced standards related to sampling, testing, and execution for the feature of work are available on site.
 - 4. Ensure that provisions have been made for field control testing.
 - 5. Examine the work area to ensure that all preliminary work has been completed.
 - 6. Verify all field dimensions and advise the CO of discrepancies with contract documents.
 - 7. Ensure that necessary equipment and materials are at the project site and that they comply with approved shop drawings and submittals.
 - 8. Prepare a report on all preparatory phase activities and discussions. Attach re- port to Contractor's Quality Control Daily Report.

C. Initial Phase:

1. As soon as work begins, inspect and test a representative portion of a particular feature of work for quality of workmanship.
2. Review control-testing procedures to ensure compliance with contract requirements.
3. Prepare a report on all initial phase activities and discussions. Attach report to Contractor's Quality Control Daily Report. Exact location of initial phase shall be indicated for future reference and comparison with follow-up phases.

D. Follow-Up Phase: Inspect and test as work progresses to ensure compliance with contract requirements until completion of work.

E. Additional Preparatory and Initial Phases: Additional preparatory and initial phases may be required on the same feature of work for the following reasons:

1. Quality of on-going work is unacceptable.
2. Changes occur in the applicable quality control staff, on-site production supervision, or work crew.
3. Work on a particular feature of work is resumed after a substantial period of in- activity.

3.4 DOCUMENTATION

- A. Maintain Quality Control Daily Reports and Daily Test Report Information Sheets (samples attached) of quality control activities and tests.
- B. Quality Control Daily Reports may not be substituted for other written reports required under clauses of the contract, such as Disputes, Differing Site Conditions, or Changes.

3.5 ENFORCEMENT

- A. Stop work on any item or feature pending satisfactory correction of any deficiency noted by the quality control staff or the CO. The CO may designate locations of tests.

END OF SECTION 014000

CONTRACTOR'S QUALITY CONTROL DAILY REPORT

REPORT NO. _____

SHEET 1 OF _____

PROJECT				CONTRACT NO.		DATE	
FOREST				CONTRACTOR'S REPRESENTATIVE ON THE JOB			
WEATHER (Rain, Snow, Cloudy, Windy, etc.)		RAINFALL Inches	TEMPERATURE		GROUND CONDITIONS (Dry, Damp, Wet, Frozen, etc.)		
			MAX.	MIN.			
1. PRIME CONTRACTOR							
NO. EMPLOYEES BY JOB CATEGORIES			Hours	HEAVY EQUIPMENT ON JOB		NO. UNITS	HRS. WORKING
							YES NO Comments
WORK PERFORMED BY PRIME CONTRACTOR:							
MATERIALS DELIVERED				OFFICIAL VISITORS TO SITE			
2A. SUBCONTRACTOR, _____: (If more than one subcontractor use copies of following page.)							
NO. EMPLOYEES BY JOB CATEGORIES			Hours	HEAVY EQUIPMENT ON JOB		NO. UNITS	HRS. WORKING
							YES NO Comments
WORK PERFORMED BY SUBCONTRACTOR:							
3. SPECIFIC INSPECTIONS: (Inspections performed, results, and corrective actions)							
4. TESTING: <input type="checkbox"/> 1 Check if any testing was performed today. (Complete and attach Test Report Information Sheets.)							
Type and Location of Testing: _____							
5. VERBAL INSTRUCTION RECEIVED FROM GOVERNMENT ON CONSTRUCTION DEFICIENCIES OR RE-TESTING REQUIRED:							
6. REMARKS:							
7. CERTIFICATION:							
I certify that the above report is complete and correct and that I, or my authorized representative, have inspected all work performed this day by the prime contractor and each subcontractor and determined that all materials, equipment, and workmanship are in strict compliance with the plans and specifications except as may be noted above.							
Contractor's Quality Control Representative							

BLACK HILLS NATIONAL FOREST
SUPERVISOR'S OFFICE ANNEX
SIDING REPLACEMENT

014000-31
QUALITY REQUIREMENTS

SUBCONTRACTOR WORK CONTINUED:			CONTRACT NO.		REPORT NO. _____ SHEET ____ OF ____	
2 SUBCONTRACTOR,						
NO. EMPLOYEES BY JOB CATEGORIES	Hours	HEAVY EQUIPMENT ON JOB	NO. UNITS	HRS. WORKING		
				YES	NO	Comments
WORK PERFORMED BY SUBCONTRACTOR:						
2 SUBCONTRACTOR,						
NO. EMPLOYEES BY JOB CATEGORIES	Hours	HEAVY EQUIPMENT ON JOB	NO. UNITS	HRS. WORKING		
				YES	NO	Comments
WORK PERFORMED BY SUBCONTRACTOR:						
2 SUBCONTRACTOR,						
NO. EMPLOYEES BY JOB CATEGORIES	Hours	HEAVY EQUIPMENT ON JOB	NO. UNITS	HRS. WORKING		
				YES	NO	Comments
WORK PERFORMED BY SUBCONTRACTOR:						
2 SUBCONTRACTOR,						
NO. EMPLOYEES BY JOB CATEGORIES	Hours	HEAVY EQUIPMENT ON JOB	NO. UNITS	HRS. WORKING		
				YES	NO	COMMENTS
WORK PERFORMED BY SUBCONTRACTOR:						

DAILY TEST REPORT INFORMATION SHEET

CONTRACT NO. _____

REPORT NO. _____
SHEET _____ OF _____

1. Individual Making Inspection or Test:	
2. Testing Laboratory; Name:	Phone #:
Address:	
3. Description of Work and Test Method: _____	
4. Location of Samples and Tests or Inspections: _____	
5. Specification Section:	
6. Inspection or Test Data: _____	
7. Test Results and Interpretations of Test Results: _____	
8. Comments or Professional Opinion About Compliance of Inspected Work or Tested Work with contract Document Requirements:	
9. Recommendations: _____	
10. Corrective Actions Taken: _____	
CERTIFICATION: I certify that the above testing report is complete and correct and that all testing performed this day for this contract is in strict compliance with the plans and specifications except as noted above.	
Signature of Inspector	

SECTION 024119
SELECTIVE STRUCTURE DEMOLITION

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes the following:
 - 1. Demolition and removal of selected portions of building or structure.

1.2 DEFINITIONS

- A. Remove: Detach items from existing construction and legally dispose of them off-site, unless indicated to be removed and salvaged or removed and reinstalled.
- B. Remove and Salvage: Detach items to be salvaged from existing construction and deliver them to Government.
- C. Remove and Reinstall: Detach items to be reinstalled from existing construction, prepare them for reuse, and reinstall them where indicated.
- D. Existing to Remain: Existing items of construction that are not to be removed and that are not otherwise indicated to be removed and salvaged, or removed and reinstalled.

1.3 MATERIALS OWNERSHIP

- A. Historic items, relics, and similar objects including, but not limited to, cornerstones and their contents, commemorative plaques and tablets, sports memorabilia, and other items of interest or value to Government that may be encountered during selective demolition remain Government's property. Carefully remove and salvage each item or object in a manner to prevent damage and deliver promptly to the Government.
 - 1. Coordinate with the Government, who will establish special procedures for removal and salvage.

1.4 SUBMITTALS

- A. Qualification Data: For demolition firm.
- B. Schedule of Selective Demolition Activities: Indicate the following:
 - 1. Detailed sequence of selective demolition and removal work, with starting and ending dates for each activity. Ensure Government's on-site operations are uninterrupted.
 - 2. Interruption of utility services. Indicate how long utility services will be

- interrupted.
 - 3. Coordination for shutoff, capping, and continuation of utility services.
 - 4. Locations of proposed dust- and noise-control temporary partitions and means of egress.
 - 5. Coordination of Government's continuing occupancy of portions of existing building and of Government's partial occupancy of completed Work.
 - 6. Means of protection for items to remain and items in path of waste removal from building.
- C. Inventory: After selective demolition is complete, submit a list of items that have been removed and salvaged.

1.5 QUALITY ASSURANCE

- A. Demolition Firm Qualifications: An experienced firm that has specialized in demolition work similar in material and extent to that indicated for this Project.
- B. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.
- C. Standards: Comply with ANSI A10.6 and NFPA 241.
- D. Predemolition Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination." Review methods and procedures related to selective demolition including, but not limited to, the following:
 - 1. Inspect and discuss condition of construction to be selectively demolished.
 - 2. Review structural load limitations of existing structure.
 - 3. Review and finalize selective demolition schedule and verify availability of materials, demolition personnel, equipment, and facilities needed to make progress and avoid delays.
 - 4. Review requirements of work performed by other trades that rely on substrates exposed by selective demolition operations.
 - 5. Review areas where existing construction is to remain and requires protection.

1.6 PROJECT CONDITIONS

- A. The Government will occupy portions of building immediately adjacent to selective demolition area. Conduct selective demolition so Government's operations will not be disrupted.
- B. Conditions existing at time of inspection for bidding purpose will be maintained by the Government as far as practical.

- C. Before selective demolition, the Government will remove the following items:
 - 1. Items blocking access to the building for erecting ladders and scaffolding.
- D. Notify Contracting Officer of discrepancies between existing conditions and Drawings before proceeding with selective demolition.
- E. Hazardous Materials: It is not expected that hazardous materials will be encountered in the Work.
 - 1. If materials suspected of containing hazardous materials are encountered, do not disturb; immediately notify Contracting Officer and Government. Government will remove hazardous materials under a separate contract.
- F. Storage or sale of removed items or materials on-site is not permitted.
- G. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.
 - 1. Maintain fire-protection facilities in service during selective demolition operations.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that utilities have been disconnected and capped.
- B. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.
- C. Inventory and record the condition of items to be removed and reinstalled and items to be removed and salvaged.
- D. When unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure the nature and extent of conflict. Promptly submit a written report to Contracting Officer Representative.
- E. Perform surveys as the Work progresses to detect hazards resulting from selective demolition activities.

3.2 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS

- A. Existing Services/Systems: Maintain services/systems indicated to remain and protect them against damage during selective demolition operations.
- B. Service/System Requirements: Locate, identify, disconnect, and seal or cap off indicated utility services and mechanical/electrical systems serving areas to be selectively demolished.
 - 1. Arrange to shut off indicated utilities with utility companies.
 - 2. If services/systems are required to be removed, relocated, or abandoned, before proceeding with selective demolition provide temporary services/systems that bypass area of selective demolition and that maintain continuity of services/systems to other parts of building.
 - 3. Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit after bypassing.
 - a. Where entire wall is to be removed, existing services/systems may be removed with removal of the wall after bypassing.

3.3 PREPARATION

- A. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
 - 1. Comply with requirements for access and protection specified in Division 01 Section "Temporary Facilities and Controls."
- B. Temporary Facilities: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.
 - 1. Provide protection to ensure safe passage of people around selective demolition area and to and from occupied portions of building.
 - 2. Provide temporary weather protection, during interval between selective demolition of existing construction on exterior surfaces and new construction, to prevent water leakage and damage to structure and interior areas.
 - 3. Protect walls, ceilings, floors, and other existing finish work that are to remain or that are exposed during selective demolition operations.
 - 4. Comply with requirements for temporary enclosures, dust control, heating, and cooling specified in Division 01 Section "Temporary Facilities and Controls."
- C. Temporary Shoring: Provide and maintain shoring, bracing, and structural supports as required to preserve stability and prevent movement, settlement, or collapse of construction and finishes to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.

1. Strengthen or add new supports when required during progress of selective demolition.

3.4 SELECTIVE DEMOLITION, GENERAL

A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:

1. Proceed with selective demolition systematically, from higher to lower level. Complete selective demolition operations above each floor or tier before disturbing supporting members on the next lower level.
2. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping, to minimize disturbance of adjacent surfaces. Temporarily cover openings to remain.
3. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
4. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain fire watch and portable fire-suppression devices during flame-cutting operations.
5. Maintain adequate ventilation when using cutting torches.
6. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.
7. Remove structural framing members and lower to ground by method suitable to avoid free fall and to prevent ground impact or dust generation.
8. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
9. Dispose of demolished items and materials promptly. Comply with requirements in Division 01 Section "Construction Waste Management."

B. Removed and Salvaged Items: Gutters and Light Fixtures.

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 Government.
4. Transport items to Government's storage area designated by Government.
5. Protect items from damage during transport and storage.

C. Removed and Reinstalled Items: Gutters and Light Fixtures.

1. Clean and repair items to functional condition adequate for intended reuse.
2. Pack or crate items after cleaning and repairing. Identify contents of containers.
3. Protect items from damage during transport and storage.

4. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.
- D. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by Contracting Officer Representative, items may be removed to a suitable, protected storage location during selective demolition and cleaned and reinstalled in their original locations after selective demolition operations are complete.

3.5 DISPOSAL OF DEMOLISHED MATERIALS

- A. General: Except for items or materials indicated to be reused, salvaged, reinstalled, or otherwise indicated to remain Government's property, remove demolished materials from Project site and legally dispose of them in an EPA-approved landfill.
 1. Do not allow demolished materials to accumulate on-site.
 2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
 3. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.
 4. Comply with requirements specified in Division 01 Section "Construction Waste Management."
- B. Burning: Do not burn demolished materials.
- C. Disposal: Transport demolished materials off Government's property and legally dispose of them.

3.6 CLEANING

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

END OF SECTION 024119

SECTION 061600 SHEATHING

PART 1 – GENERAL

1.1 SUMMARY

A. Section Includes:

1. Sheathing.
2. Sheathing joint and penetration treatment.

1.2 DELIVERY, STORAGE, AND HANDLING

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

PART 2 – PRODUCTS

2.1 WOOD PANEL PRODUCTS

- ##### A.
- Exterior Wood Sheathing shall be provided to match existing materials.
- ##### B.
- Emissions: Products shall meet the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."
- ##### C.
- Plywood: Either DOC PS 1 or DOC PS 2 unless otherwise indicated.
- ##### D.
- Oriented Strand Board: DOC PS 2.
- ##### E.
- Thickness: As needed to comply with requirements specified, but not less than thickness indicated on drawings including original building drawings and to match existing sheathing materials.
- ##### F.
- Factory mark panels to indicate compliance with applicable standard.

2.2 FASTENERS

- ##### A.
- General: Provide fasteners of size and type indicated that comply with requirements specified in this article for material and manufacture.
1. For roof and wall sheathing, provide fasteners with hot-dip zinc coating complying with ASTM A 153.
- ##### B.
- Nails, Brads, and Staples: ASTM F 1667.

- C. Power-Driven Fasteners: NES NER-272.
- D. Wood Screws: ASME
B18.6.1.

PART 3 – EXECUTION

3.1 INSTALLATION, GENERAL

- A. Do not use materials with defects that impair quality of sheathing or pieces that are too small to use with minimum number of joints or optimum joint arrangement. Arrange joints so that pieces do not span between fewer than three support members.
- B. Cut panels at penetrations, edges, and other obstructions of work; fit tightly against abutting construction unless otherwise indicated.
- C. Securely attach to substrate by fastening as indicated, complying with the following:
 - 1. NES NER-272 for power-driven fasteners.
 - 2. Table 2304.9.1, "Fastening Schedule," in ICC's "International Building Code."
- D. Use common wire nails unless otherwise indicated. Select fasteners of size that will not fully penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections. Install fasteners without splitting wood.
- E. Coordinate wall sheathing installation with flashing and joint-sealant installation so these materials are installed in sequence and manner that prevent exterior moisture from passing through completed assembly.
- F. Do not bridge building expansion joints; cut and space edges of panels to match spacing of structural support elements.
- G. Coordinate sheathing installation with installation of materials installed over sheathing so sheathing is not exposed to precipitation or left exposed at end of the workday when rain is forecast.

3.2 WOOD STRUCTURAL PANEL INSTALLATION

- A. General: Comply with applicable recommendations in APA Form No. E30, "Engineered Wood Construction Guide," for types of structural-use panels and applications indicated.
- B. Fastening Methods: Fasten panels as indicated below:
 - 1. Wall Sheathing: Nail wall sheathing to framing as indicated.
 - 2. Space panels 1/8 inch apart at edges and ends.

END OF SECTION 061600

SECTION 072100
THERMAL INSULATION

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Polyisocyanurate foam-plastic board insulation.

1.2 ACTION SUBMITTALS

A. Product Data: For the following:

1. Polyisocyanurate foam-plastic board insulation.

B. Sustainable Design Submittals:

1. Polyisocyanurate foam insulation: 9 percent recovered material.

1.3 INFORMATIONAL SUBMITTALS

A. Installer's Certification: Listing type, manufacturer, and R-value of insulation installed in each element of the building thermal envelope.

1. Sign, date, and post the certification in a conspicuous location on Project site.

B. Product test reports.

C. Research reports.

1.4 STORAGE AND HANDLING

A. Store products indoors in dry, weathertight facilities.

B. Protect products from damage during handling and construction operations.

C. Protect polyisocyanurate foam-plastic board insulation from UV exposure.

PART 2 - PRODUCTS

2.1 POLYISOCYANURATE FOAM-PLASTIC BOARD INSULATION

A. Polyisocyanurate Board Insulation, Foil Faced: ASTM C1289, foil faced, Type I, Class 1 or 2.

1. Fire Propagation Characteristics: Passes NFPA 285 testing as part of an approved assembly.
2. Labeling: Provide identification of mark indicating R-value of each piece of insulation 12 inches (305 mm) and wider in width.
3. Thickness: nominal 1-inch (25-mm).

2.2 ACCESSORIES

- A. Insulation Anchors, Spindles, and Standoffs: As recommended by manufacturer.
- B. Adhesive for Bonding Insulation: Product compatible with insulation and air and water barrier materials, and with demonstrated capability to bond insulation securely to substrates without damaging insulation and substrates.
 - 1. Low VOC content adhesives.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Examine and verify substrate suitability for product installation.
- B. Protect existing construction and completed work from damage.
- C. Clean substrates of substances that are harmful to insulation, including removing projections capable of puncturing insulation or vapor retarders, or that interfere with insulation attachment.

3.2 INSTALLATION, GENERAL

- A. Comply with insulation manufacturer's written instructions applicable to products and applications.
- B. Install insulation that is undamaged, dry, and unsoiled and that has not been left exposed to ice, rain, or snow at any time.
- C. Install insulation with manufacturer's R-value label exposed after insulation is installed.
- D. Extend insulation to envelop entire area to be insulated. Fit tightly around obstructions and fill voids with insulation. Remove projections that interfere with placement.
- E. Provide sizes to fit applications and selected from manufacturer's standard thicknesses, widths, and lengths. Apply single layer of insulation units unless multiple layers are otherwise shown or required to make up total thickness or to achieve R-value.

3.3 INSTALLATION OF BOARD INSULATION

- A. Exterior Walls: Set units with facing the heated side, unless indicated otherwise by manufacturer's written instructions.
- B. Install board insulation with joints close and flush, in regular courses and with end joints staggered.
- C. Fit insulation tight against adjoining construction and penetrations, unless indicated otherwise.
- D. Bond polyisocyanurate board to surfaces with adhesive or other fasteners as recommended by manufacturers.

- E. Fill joints with adhesive cement.

3.4 PROTECTION

- A. Protect installed insulation from damage due to harmful weather exposures, physical abuse, and other causes.
- B. Provide temporary coverings or enclosures where insulation is subject to abuse and cannot be concealed and protected by permanent construction immediately after installation.

END OF SECTION 072100

SECTION 072500 WEATHER BARRIERS

PART 1 – GENERAL

1.1 SUMMARY

A. Section Includes:

1. Building Wrap
2. Flexible Flashing

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. 12-inch by 12-inch sample of each material for verification.

1.3 INFORMATINOAL SUBMITTALS

- A. Evaluatino Reports: For water-resistive barrier, ice and water shield and flexible flashing, from ICC-ES.

PART 2 – PRODUCTS

2.1 WATER-RESISTIVE BARRIER

- A. Building Wrap (Type 1): ASTM E 1677, Type I air barrier; with flame-spread and smoke-developed indexes of less than 25 and 450, respectively, when tested according to ASTM E 84; UV stabilized; and acceptable to authorities having jurisdiction.
 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. DuPont: (E. I. DuPont de Nemours and Company): Tyvek Commercial Wrap
 - b. Ludlow Coated Products; Barricade Building Wrap.
 - c. Pactiv, Inc.; GreenGuard Ultra Wrap.
 - d. Raven Industries Inc.; Fortress Pro Weather Protective Barrier.
 2. Water-Vapor Permeance: Not less than 50g through 1 sq. m of surface in 24 hours per ASTM E 96/E 96M, Desiccant Method (Procedure A).
 3. Locations: All locations unless noted otherwise.
- B. Building-Wrap Tape: Pressure-sensitive plastic tape recommended by building-wrap manufacturer for sealing joints and penetrations in building wrap.

2.2 MISCELLANEOUS MATERIALS

- A. Flexible Flashing: Self-adhesive butyl rubber or rubberized-asphalt compound, bonded to a high-density polyethylene film, aluminum foil, or spunbonded polyolefin to produce an overall thickness of not less than 0.025 inch.
 - 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. DuPont (E. I. du Pont de Nemours and Company); DuPont Flashing Tape.
 - b. Grace Construction Products, a unit of W. R. Grace & Co. - Conn.; Vycor Butyl Self Adhered Flashing.
 - c. Protecto Wrap Company; BT-25 XL.
 - d. Raven Industries Inc.; Fortress Flashshield.
 - e. Advanced Building Products Inc.; Wind-o-wrap.
 - f. Carlisle Coatings & Waterproofing; CCW-705-TWF Thru-Wall Flashing.

PART 3 – EXECUTION

3.1 WATER-RESISTIVE BARRIER INSTALLATION

- A. Cover sheathing with water-resistive barrier as follows:
 - 1. Cut back barrier 1/2 inch on each side of the break in supporting members at expansion- or control-joint locations.
 - 2. Apply barrier to cover vertical flashing with a minimum 4-inch overlap unless otherwise indicated.
- B. Building Wrap: Comply with manufacturer's written instructions.
 - 1. Seal seams, edges, fasteners, and penetrations with tape.
 - 2. Extend into jambs of openings and seal corners with tape.

3.2 FLEXIBLE FLASHING INSTALLATION

- A. Apply flexible flashing where indicated to comply with manufacturer's written instructions.
 - 1. Lap seams and junctures with other materials at least 4 inches except that at flashing flanges of other construction, laps need not exceed flange width.
 - 2. Lap flashing over water-resistive barrier at bottom and sides of openings.
 - 3. Lap water-resistive barrier over flashing at heads of openings.

END OF SECTION 072500

SECTION 074619
STEEL SIDING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes steel siding, soffits, fascia, and trim.

1.2 COORDINATION

- A. Coordinate siding installation with flashings and other adjoining construction to ensure proper sequencing.

1.3 PREINSTALLATION MEETINGS

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

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.
- B. Samples for Initial Selection: For steel siding, soffit, and fascia including related accessories.
- C. Samples for Verification: For each type, color, texture, and pattern required.
 - 1. 12-inch- (300-mm-) long-by-actual-width Sample of siding.
 - 2. 12-inch- (300-mm-) long-by-actual-width Sample of soffit.
 - 3. 12-inch- (300-mm-) long-by-actual-width Samples of fascia, trim, and accessories.

1.5 INFORMATIONAL SUBMITTALS

- A. Product Certificates: For each type of steel siding, soffit, and fascia including related accessories.
- B. Research/Evaluation Reports: For each type of steel siding required, from ICC-ES.
- C. Sample Warranty: For special warranty.

1.6 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For each type of product, including related accessories, to include in maintenance manuals.

1.7 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

- 1. Furnish full lengths of steel siding, including related accessories, in a quantity equal to 2 percent of amount installed.

- B. Maintenance Data: For each type of product, including related accessories, to include maintenance manuals.

1.8 QUALITY ASSURANCE

- A. Installer Qualifications: Minimum 5 years experience installing similar products.

- B. Renderings: Provide renderings to demonstrate aesthetic effects.

- 1. Renderings will be used to set quality standards for installation.
 - 2. Renderings shall demonstrate position of battens with specific attention to relation of battens to doors and windows.
 - 3. Approval of Renderings does not constitute approval of deviations from the Contract Documents unless Contracting Officer specifically approves such deviations in writing.

- C. Mockups: Build mockups to verify selections made under Sample submittals and to demonstrate aesthetic effects and to set quality standards for fabrication and installation.

- 1. Build mockup of typical wall area as shown on Drawings.
 - 2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
 - 3. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.9 DELIVERY, STORAGE, AND HANDLING

- A. Deliver and store packaged materials in original containers with labels intact until time of use.

- B. Store materials on elevated platforms, under cover, and in a dry location.

1.10 WARRANTY

- A. Special Warranty: Manufacturer agrees to repair or replace products that fail in materials or workmanship within specified warranty period.

- 1. Failures include, but are not limited to, the following:

- a. Structural failures including cracking and deforming.
 - b. Hail damage, including denting.
 - c. Deterioration of metals and other materials beyond normal weathering.
 - d. Deterioration of metal finishes, including chalking and fading.
2. Warranty Period: 50 years from date of Substantial Completion.
3. Warranty Period for Chalking and Fading: 35 years from date of Substantial Completion.
4. Fading is defined as loss of color, after cleaning with product recommended by manufacturer, of more than 5 Delta E color-difference units.
5. Provide 2 year installation warranty against water penetration and weather tightness.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Source Limitations: Obtain products, including related accessories, from single source from single manufacturer.
- B. Basis of Design: EDCO Products, Steel-Kore Steel Siding, Board and Batten EnduraGrain Vertical Panels with Entex finish System, color to be Cedarwood with HD Imaging, or approved equal. EDCP Products, 8700 Excelsior Blvd., Hopkins, MN 55343; 952-945-2680 and 800-596-2680; <https://edcoproducts.com>
- C. Substitutions: Approved Equal meeting requirements of specifications, as approved by Contracting Officer.

2.2 STEEL SIDING

- A. Steel Siding: Steel Siding shall be fabricated from nominal No. 28 gauge, 0.016 inch (0.41mm) galvanized steel coil complying with ASTM A653, with both sides zinc-coated by the continuous hot dipped galvanizing method G90(Z275) and finish system specified below. Product shall be formed at the factory with a nailing flange to interlock securely with successive courses.
 1. Tensile Strength: 50,000 psi (344.73 Mpa).
 2. Yield Strength: 35,000 psi (241.31 Mpa)
 3. Horizontal Clapboard shall be the following:
 - a. Exposure Dimension: 6 inch (150 mm), 12 feet 6 inch (3810 mm) long minimum length, 1/2 inch (12.7 mm) butt.
- B. Steel Siding: Formed product, in continuous lengths without end joints, made from galvanized steel complying with ASTM A653/A653M, G90 (Z275) coating.
- C. Vertical Pattern: 12-inch (300-mm) exposure in board-and-batten, single board style

1. Batten Width: 2-inch (50-mm)

D. Texture: Wood grain.

E. Finish: Manufacturer's standard primer, topcoat HD Imaging, and Back Coat.

1. Top Coat fil thickness: 1.0 mil
2. Colors: Basis of Design: Cedarwood HD.
3. Final Color Selection shall be approved by Contracting Officer from Manufacturer's full range of colors. F

2.3 SOFFIT

A. Aluminum soffits shall be compatible with Steel Siding. Basis of Design: Aluma-Kore Soffits by Edco Products, Inc. or approved equal.

1. Manufactured of nominal 0.019 inch (0.48 mm) thick aluminum, alloy 3105, hardness / temper H-15.
2. Tensile Strength: 26,000 psi (1.79 pascal).
3. Ultimate Shear Strength: 15,000 psi (1.03 pascal).
4. Yield Strength: 25,000 psi (1.72 pascal).
5. Standard Panel Dimensions: 16 inch (406 mm) wide by 12 feet (3.65 m) long.
6. Free Air Flow Vent style shall match existing vents.
7. Colors: As selected by Contracting Officer from manufacturer's full range of colors.

2.4 STEEL FASCIA

A. Steel Fascia: Shall be from same manufacturer as Steel Siding.

1. Manufactured of nominal 29 gauge galvanized steel, zinc coated by the continuous hot dipped galvanizing method to ASTM A653.
2. Tensile Strength: 50,000 psi (1.79 pascal).
3. Yield Strength: 35,000 psi (1.79 pascal).
4. Dimensions shall match existing width.
5. Colors: As selected by Contracting Officer from manufacturer's full range of colors.

2.5 ACCESSORIES

A. Siding Accessories:

1. Provide all necessary siding accessories to complete weather-tight building envelope. Such accessories shall be from same manufacturer as steel siding.

2. Siding accessories shall be manufactured of No. 28 gauge, 0.016 inch (0.397 mm) base metal thickness, galvanized steel sheets complying with ASTM A653, with G90 zinc coating. Color shall match steel siding.
- B. Decorative Accessories: Provide the following steel decorative accessories as indicated:
1. Door and window trim.
 2. Moldings and trim
 3. Colors for Decorative Accessories: As selected by Contracting Officer from manufacturer's full range of colors.
- C. Soffit Accessories:
1. Provide all necessary soffit accessories to complete weather-tight building envelope. Such accessories shall be from same manufacturer as aluminum soffit. Color shall match aluminum soffit. Accessories shall include, as needed:
 - a. F-Channel: 1 inch by 1-1/2 inch by 1-1/4 inch.
 - b. J-Channel: 7/8 inch by 7/16 inch by 1-3/8 inch.
 - c. Wide Face J-Channel: 7/16 inch by 1-1/4 inch by 2 inch.
 - d. Roof Drip Edge, Quick Start: 1-1/8 inch by 2-1/4 inch.
 - e. Roof Drip Edge, Style D: 1-1/2 inch by 2-7/8 inch.
 - f. Roof Drip Edge, NS: 7/8 inch by 2-7/8 inch.
 - g. Mitre Molding: 7/16 inch by 1-1/2 inch
 - h. Fascia Corner: 10-5/8 inch by 2 inch.
 - i. Snap-On Frieze Trim: 1-1/2 inch by 1-1/4 inch.
 2. Continuous Soffit Vents: Hat-channel shap with stamped louvers; 2-inches (51mm) wide and not less than 96-inches (24388mm long per 10 foot section).
 - a. Nef-Free Area: 4 sq. inch/linear foot (280 sq. cm/m).
 - b. Finish: Color to match Soffit, as approved by Contracting Officer from Manufacturer's full range of colors.
 3. Provide and install Insect Screening for Soffit Vents: PVC-coated, glass-fiber fabric, 18-by-14 or 18-by-16 mesh (1.4-by-1.8 or 1.4-by-1.6mm mesh).
- D. Flashing: As specified in Section 07620 – Metal Flashing and Edges.
1. Provide flashing at window and door heads and where indicated.
 2. Provide and install flashing in accordance with manufacturer's recommendations for weather-tight installation
- E. Fasteners:

1. For fastening to wood, use siding nails of sufficient length to penetrate minimum of 1 inch (25 mm) into substrate.
2. For fastening to metal, use ribbed bugle-head screws of sufficient length to penetrate a minimum of 1/4 inch (6 mm), or three screw-threads, into substrate.
3. For fastening galvanized steel, use hot-dip galvanized-steel fasteners. Where fasteners are exposed to view, use prefinished galvanized-steel fasteners in color to match item being fastened.

2.6 FINISHES

- A. Finishes shall be applied by manufacturer.
- B. Finish System for Steel Siding
 1. Basis of Design: Steel-Kore steel siding with Entex Finish, by Edco Products, or approved equal.
 2. Prime Coat: Akzo Nobel 60000 Universal corrosion resistant primer.
 3. Top Coat: Akzo Nobel CERAM-A-STAR 1050 with Azko Nobel Cool Chemistry Pigments, average film thickness 1.0 mil.
 4. HD Imaging: Akzo Nobel specialty formulated top coat finish.
 5. Back Coat: Polyester composition resisting backer coating.
 6. Color: Basis of Design color is Cedarwood HD by EDCO Products, Inc. Provide samples from manufacturer's full range of color. Government Contracting Officer shall select final color from manufacturer's full range.
- C. Finish System for Aluminum Soffit
 1. Finish shall be Enamel Finish system.
 2. Basis of Design: Alumal-Kore aluminum soffit with Enamel Finish, by Edco Products, or approved equal, designed to be compatible with provided Steel Siding.
 3. Prime Coat: Not required on aluminum.
 4. Top Coat: Kel Coatings or Akzo Nobel polyester enamel.
 5. Back Coat: Polyester composition resisting backer coating.
 6. Color: Provide samples from manufacturer's full range of color. Government Contracting Officer shall select final color from manufacturer's full range.

PART 3 - EXECUTION

3.1 EXAMINATION

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

3.2 PREPARATION

- A. Clean substrates of projections and substances detrimental to application.

3.3 INSTALLATION

- A. General: Comply with manufacturer's written installation instructions applicable to products and applications indicated unless more stringent requirements apply.
 - 1. Center nails in elongated nailing slots without binding siding to allow for thermal movement.
 - 2. Attach siding in place using manufacturer's recommended fasteners, sealants, and adhesives.
 - 3. Vertical Board and Batten: Work from corner to corner, adjust fields as recommended by manufacturer.
 - 4. Soffits, Fascia, and Accessories: As recommended by the Manufacturer.
- B. Set units true to line and plumb.
- C. Install joint sealants as specified in Section 079200 "Joint Sealants" and to produce a weathertight installation.
- D. Where steel siding contacts dissimilar metals, protect against galvanic action by painting contact surfaces with primer or by applying sealant or tape or installing nonconductive spacers as recommended by manufacturer for this purpose.
- E. Install siding with positive anchoring to the building and provide for thermal expansion.
- F. Coordinate installation with flashings and other components.
- G. Provide concealed fasteners except where recommended by Manufacturer and approved by Contracting Officer.

3.4 FIELD QUALITY CONTROL

- A. Inspect units as they are installed. Do not install cracked, broken, twisted, or damaged units.
- B. Do not scratch or mar installed units. Units damaged during installation shall be immediately removed and replaced. Remove damaged units from the project site.
- C. Inspect complete installation to ensure that it is weather tight in accordance with the manufacturer's instructions.

3.5 ADJUSTING AND CLEANING

- A. Remove damaged, improperly installed, or otherwise defective materials and replace with new materials complying with specified requirements.
- B. Clean finished surfaces according to manufacturer's written instructions and maintain in a clean condition during construction.
- C. Remove excess materials and debris from the project site.

3.6 PROTECTION

- A. Protect installed products until completion of project.
- B. Touch-up, repair, or replace damaged products before Substantial Completion. Remove damaged, improperly installed, or otherwise defective materials and

END SECTION 074619

SECTION 076200
SHEET METAL FLASHING AND TRIM

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Manufactured Products:
 - a. Manufactured through-wall flashing and counterflashing.
 - 2. Formed Products:
 - a. Formed wall sheet metal fabrications.

1.2 PERFORMANCE REQUIREMENTS

- A. General: Sheet metal flashing and trim assemblies as indicated shall withstand wind loads, structural movement, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Completed sheet metal flashing and trim shall not rattle, leak, or loosen, and shall remain watertight.
- B. Fabricate and install copings capable of resisting forces indicated on Structural Drawings according to recommendations in FMG Loss Prevention Data Sheet 1-49:
- C. Thermal Movements: Provide sheet metal flashing and trim that allows for thermal movements from ambient and surface temperature changes.
 - 1. Temperature Change (Range): 120 deg F, ambient; 180 deg F, material surfaces.

1.3 SUBMITTALS

- A. Product Data: For each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each manufactured product and accessory.
- B. Shop Drawings: Show fabrication and installation layouts of sheet metal flashing and trim, including plans, elevations, expansion-joint locations, and keyed details. Distinguish between shop- and field-assembled work. Include the following:
 - 1. Identification of material, thickness, weight, and finish for each item and location in Project.
 - 2. Details for forming sheet metal flashing and trim, including profiles, shapes, seams, and dimensions.
 - 3. Details for joining, supporting, and securing sheet metal flashing and trim,

- including layout of fasteners, cleats, clips, and other attachments. Include pattern of seams.
- 4. Details of termination points and assemblies, including fixed points.
- 5. Details of expansion joints and expansion-joint covers, including showing direction of expansion and contraction.
- 6. Details of special conditions.
- 7. Details of connections to adjoining work.
- C. Samples for Verification: For each type of exposed finish required, prepared on Samples of size indicated below:
 - 1. Sheet Metal Flashing: 12 inches long by actual width of unit, including finished seam and in required profile. Include fasteners, cleats, clips, closures, and other attachments.
 - 2. Trim, Metal Closures, Expansion Joints, Joint Intersections, and Miscellaneous Fabrications: 12 inches long and in required profile. Include fasteners and other exposed accessories.
 - 3. Accessories and Miscellaneous Materials: Full-size Sample.
- D. Qualification Data: For qualified fabricator.

1.4 QUALITY ASSURANCE

- A. Fabricator Qualifications: Shop that employs skilled workers who custom fabricate sheet metal flashing and trim similar to that required for this Project and whose products have a record of successful in-service performance.
- B. Sheet Metal Flashing and Trim Standard: Comply with SMACNA's "Architectural Sheet Metal Manual" unless more stringent requirements are specified or shown on Drawings.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Do not store sheet metal flashing and trim materials in contact with other materials that might cause staining, denting, or other surface damage. Store sheet metal flashing and trim materials away from uncured concrete and masonry.
- B. Protect strippable protective covering on sheet metal flashing and trim from exposure to sunlight and high humidity, except to the extent necessary for the period of sheet metal flashing and trim installation.

PART 2 - PRODUCTS

2.1 SHEET METALS

- A. General: Sheet metal flashing and trim shall be of same gauge as steel siding. Protect mechanical and other finishes on exposed surfaces from damage by applying a strippable, temporary protective film before shipping.

- B. Metallic-Coated Steel Sheet: Restricted flatness steel sheet, metallic coated by the hot-dip process and prepainted by the coil-coating process to comply with ASTM A 755/A 755M.
1. Zinc-Coated (Galvanized) Steel Sheet: ASTM A 653/A 653M, G90 coating designation; structural quality.
 2. Surface: Smooth, flat.
 3. Exposed Coil-Coated Finish:
 - a. Two-Coat Fluoropolymer: AAMA 621. Fluoropolymer finish containing not less than 70 percent PVDF resin by weight in both color coat and clear topcoat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
 4. Color: As indicated by manufacturer's designations or as selected by Contracting Officer Representative from manufacturer's full range.
 5. Concealed Finish: Pretreat with manufacturer's standard white or light-colored acrylic or polyester backer finish, consisting of prime coat and wash coat with a minimum total dry film thickness of 0.5 mil.

2.2 MISCELLANEOUS MATERIALS

- A. General: Provide materials and types of fasteners, solder, welding rods, protective coatings, separators, sealants, and other miscellaneous items as required for complete sheet metal flashing and trim installation and recommended by manufacturer of primary sheet metal or manufactured item unless otherwise indicated.
- B. Fasteners: Wood screws, annular threaded nails, self-tapping screws, self-locking rivets and bolts, and other suitable fasteners designed to withstand design loads and recommended by manufacturer of primary sheet metal or manufactured item.
1. General: Blind fasteners or self-drilling screws, gasketed, with hex-washer head.
 - a. Exposed Fasteners: Heads matching color of sheet metal using plastic caps or factory-applied coating.
 - b. Blind Fasteners: High-strength aluminum or stainless-steel rivets suitable for metal being fastened.
 - c. Spikes and Ferrules: Same material as gutter; with spike with ferrule matching internal gutter width.
 2. Fasteners for Zinc-Coated (Galvanized) Steel Sheet: Hot-dip galvanized steel according to ASTM A 153/A 153M or ASTM F 2329 or Series 300 stainless steel.
- C. Sealant Tape: Pressure-sensitive, 100 percent solids, gray polyisobutylene compound sealant tape with release-paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape 1/2 inch wide and 1/8 inch thick.
- D. Butyl Sealant: ASTM C 1311, single-component, solvent-release butyl rubber sealant; polyisobutylene plasticized; heavy bodied for hooked-type expansion joints with limited movement.

- E. Bituminous Coating: Cold-applied asphalt emulsion complying with ASTM D 1187.
- F. Asphalt Roofing Cement: ASTM D 4586, asbestos free, of consistency required for application.

2.3 FABRICATION, GENERAL

- A. General: Custom fabricate sheet metal flashing and trim to comply with recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to design, dimensions, geometry, metal thickness, and other characteristics of item indicated. Fabricate items at the shop to greatest extent possible.
 - 1. Fabricate sheet metal flashing and trim in thickness or weight needed to comply with performance requirements, but not less than that specified for each application and metal.
 - 2. Obtain field measurements for accurate fit before shop fabrication.
 - 3. Form sheet metal flashing and trim without excessive oil canning, buckling, and tool marks and true to line and levels indicated, with exposed edges folded back to form hems.
 - 4. Conceal fasteners and expansion provisions where possible. Exposed fasteners are not allowed on faces exposed to view.
- B. Fabrication Tolerances: Fabricate sheet metal flashing and trim that is capable of installation to a tolerance of 1/4 inch in 20 feet on slope and location lines as indicated and within 1/8-inch offset of adjoining faces and of alignment of matching profiles.
- C. Sealed Joints: Form nonexpansion but movable joints in metal to accommodate elastomeric sealant.
- D. Expansion Provisions: Where lapped expansion provisions cannot be used, form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with butyl sealant concealed within joints.
- E. Fabricate cleats and attachment devices from same material as accessory being anchored or from compatible, noncorrosive metal.
- F. Fabricate cleats and attachment devices of sizes as recommended by SMACNA's "Architect's Sheet Metal Manual" and by FMG Loss Prevention Data Sheet 1-49 for application, but not less than thickness of metal being secured.
- G. Seams: Fabricate nonmoving seams with flat-lock seams. Tin edges to be seamed, form seams, and solder.
- H. Do not use graphite pencils to mark metal surfaces.

2.4 ROOF-DRAINAGE SHEET METAL FABRICATIONS

- A. Hanging Gutters: Fabricate to cross section required, complete with end pieces, outlet

tubes, and other accessories as required. Fabricate in minimum 96-inch- (2400-mm-) long sections. Furnish flat-stock gutter brackets and gutter spacers and straps fabricated from same metal as gutters, of size recommended by cited sheet metal standard but with thickness not less than twice the gutter thickness. Fabricate expansion joints, expansion-joint covers, and gutter accessories from same metal as gutters. Shop fabricate interior and exterior corners.

- B. Downspouts: Fabricate rectangular downspouts to dimensions indicated, complete with mitered elbows. Furnish with metal hangers from same material as downspouts and anchors.
 - 1. Fabricate from the following materials:
 - a. Galvanized Steel: 0.022 inch (0.56 mm) thick.
 - b. Aluminum-Zinc Alloy-Coated Steel: 0.022 inch (0.56 mm) thick.

2.5 WALL SHEET METAL FABRICATIONS

- A. Through-Wall Flashing: Fabricate continuous flashings in minimum 96-inch- long, but not exceeding 12-foot- long, sections, under copings, at shelf angles, and where indicated. Fabricate discontinuous lintel, sill, and similar flashings to extend 6 inches beyond each side of wall openings. Form with 2-inch- high, end dams where flashing is discontinuous. Fabricate from the following materials:
 - 1. Stainless Steel: 0.016 inch (0.40 mm) thick.
- B. Opening Flashings in Frame Construction: Fabricate head, sill, and similar flashings to extend 4 inches beyond wall openings. Form head and sill flashing with 2-inch- high, end dams. Fabricate from the same material as flashing.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, to verify actual locations, dimensions and other conditions affecting performance of the Work.
 - 1. Verify compliance with requirements for installation tolerances of substrates.
 - 2. Verify that substrate is sound, dry, smooth, clean, sloped for drainage, and securely anchored.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION, GENERAL

- A. General: Anchor sheet metal flashing and trim and other components of the Work securely in place, with provisions for thermal and structural movement. Use fasteners, solder, welding rods, protective coatings, separators, sealants, and other miscellaneous items as required to complete sheet metal flashing and trim system.

1. Install sheet metal flashing and trim true to line and levels indicated. Provide uniform, neat seams with minimum exposure of solder, welds, and sealant.
 2. Install sheet metal flashing and trim to fit substrates and to result in watertight performance. Verify shapes and dimensions of surfaces to be covered before fabricating sheet metal.
 3. Space cleats not more than 12 inches apart. Anchor each cleat with two fasteners. Bend tabs over fasteners.
 4. Install exposed sheet metal flashing and trim without excessive oil canning, buckling, and tool marks.
 5. Install sealant tape where indicated.
 6. Torch cutting of sheet metal flashing and trim is not permitted.
 7. Do not use graphite pencils to mark metal surfaces.
- B. Metal Protection: Where dissimilar metals will contact each other or corrosive substrates, protect against galvanic action by painting contact surfaces with bituminous coating or by other permanent separation as recommended by SMACNA.
- C. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at a maximum of 10 feet with no joints allowed within 24 inches of corner or intersection. Where lapped expansion provisions cannot be used or would not be sufficiently watertight, form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with sealant concealed within joints.
- D. Fastener Sizes: Use fasteners of sizes that will penetrate wood sheathing not less than 1-1/4 inches for nails and not less than 3/4 inch for wood screws.
- E. Seal joints as shown and as required for watertight construction.
1. Where sealant-filled joints are used, embed hooked flanges of joint members not less than 1 inch into sealant. Form joints to completely conceal sealant. When ambient temperature at time of installation is moderate, between 40 and 70 deg F, set joint members for 50 percent movement each way. Adjust setting proportionately for installation at higher ambient temperatures. Do not install sealant-type joints at temperatures below 40 deg F.
 2. Prepare joints and apply sealants to comply with requirements in Division 07 Section "Joint Sealants."

3.3 WALL FLASHING INSTALLATION

- A. General: Install sheet metal wall flashing to intercept and exclude penetrating moisture according to SMACNA recommendations and as indicated. Coordinate installation of wall flashing with installation of wall-opening components such as windows, doors, and louvers.
- B. Through-Wall Flashing: Installation of through-wall flashing is specified in Division 04 Section "Unit Masonry."

3.4 ROOF-DRAINAGE SYSTEM INSTALLATION

- A. General: Install sheet metal roof-drainage items to produce complete roof-drainage system according to cited sheet metal standard unless otherwise indicated. Coordinate installation of roof perimeter flashing with installation of roof-drainage system.
- B. Hanging Gutters: Join sections with riveted and soldered joints or joints sealed with sealant. Provide for thermal expansion. Attach gutters at eave or fascia to firmly anchor them in position. Provide end closures and seal watertight with sealant. Slope to downspouts.
 - 1. Install gutter with expansion joints at locations indicated, but not exceeding, 50 feet (15.24 m) apart. Install expansion-joint caps.
- C. Opening Flashings in Frame Construction: Install continuous head, sill, and similar flashings to extend 4 inches beyond wall openings.

3.5 ERECTION TOLERANCES

- A. Installation Tolerances: Shim and align sheet metal flashing and trim within installed tolerance of 1/4 inch in 20 feet on slope and location lines as indicated and within 1/8-inch offset of adjoining faces and of alignment of matching profiles.

3.6 CLEANING AND PROTECTION

- A. Clean exposed metal surfaces of substances that interfere with uniform oxidation and weathering.
- B. Clean and neutralize flux materials. Clean off excess solder.
- C. Clean off excess sealants.
- D. Remove temporary protective coverings and strippable films as sheet metal flashing and trim are installed unless otherwise indicated in manufacturer's written installation instructions. On completion of installation, remove unused materials and clean finished surfaces. Maintain in a clean condition during construction.
- E. Replace sheet metal flashing and trim that have been damaged or that have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION 076200

SECTION 077100
ROOF SPECIALTIES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Roof-edge specialties.
 - 2. Roof-edge drainage systems.

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Shop Drawings: For roof specialties.
 - 1. Include plans, elevations, expansion-joint locations, keyed details, and attachments to other work. Distinguish between plant- and field-assembled work.
- C. Samples: For each type of roof specialty and for each color and texture specified.

1.3 INFORMATIONAL SUBMITTALS

- A. Product Test Reports: For tests performed by a qualified testing agency.
- B. Sample warranty.

1.4 CLOSEOUT SUBMITTALS

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

1.5 WARRANTY

- A. Special Warranty on Painted Finishes: Manufacturer agrees to repair finish or replace roof specialties that show evidence of deterioration of factory-applied finishes within specified warranty period.
 - 1. Fluoropolymer Finish: Deterioration includes, but is not limited to, the following:
 - a. Color fading more than 5 Hunter units when tested according to ASTM D 2244.
 - b. Chalking in excess of a No. 8 rating when tested according to ASTM D 4214.
 - c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.
 - 2. Finish Warranty Period: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes to prevent buckling, opening of joints, hole elongation, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Provide clips that resist rotation and avoid shear stress as a result of thermal movements. Base calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.
 - 1. Temperature Change (Range): 120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces.

2.2 ROOF-EDGE DRAINAGE SYSTEMS

- A. Gutters: Manufactured in uniform section lengths not exceeding 12 feet (3.6 m), with matching corner units, ends, outlet tubes, and other accessories. Elevate back edge at least 1 inch (25 mm) above front edge. Furnish flat-stock gutter straps, gutter brackets, expansion joints, and expansion-joint covers fabricated from same metal as gutters.
 - 1. Zinc-Coated Steel: Nominal 0.034-inch (0.86-mm) thickness.
 - 2. Gutter Profile: Style K (Standard Residential Profile) according to SMACNA's "Architectural Sheet Metal Manual."
 - a. Gutter Dimension: Match Existing depth and height
 - 3. Corners: Factory mitered and mechanically clinched and sealed watertight.
 - 4. Gutter Supports: Gutter brackets with finish matching the gutters.
- B. Downspouts: Plain rectangular complete with machine-crimped or mitered elbows, manufactured from the following exposed metal. Furnish with metal hangers, from same material as downspouts, and anchors.
 - 1. Zinc-Coated Steel: Nominal 0.034-inch (0.86-mm) thickness.

2.3 MATERIALS

- A. Zinc-Coated (Galvanized) Steel Sheet: ASTM A 653/A 653M, G90 (Z275) coating designation.

2.4 MISCELLANEOUS MATERIALS

- A. Fasteners: Manufacturer's recommended fasteners, suitable for application and designed to meet performance requirements. Furnish the following unless otherwise indicated:
 - 1. Exposed Penetrating Fasteners: Gasketed screws with hex washer heads matching color of sheet metal.
 - 2. Fasteners for Copper Sheet: Copper, hardware bronze, or passivated Series 300 stainless steel.
 - 3. Fasteners for Aluminum: Aluminum or Series 300 stainless steel.

4. Fasteners for Stainless-Steel Sheet: Series 300 stainless steel.
 5. Fasteners for Zinc-Coated (Galvanized) Steel Sheet: Series 300 stainless steel or hot-dip zinc-coated steel according to ASTM A 153/A 153M or ASTM F 2329.
- B. Elastomeric Sealant: ASTM C 920, elastomeric silicone polymer sealant of type, grade, class, and use classifications required by roofing-specialty manufacturer for each application.
 - C. Butyl Sealant: ASTM C 1311, single-component, solvent-release butyl rubber sealant; polyisobutylene plasticized; heavy bodied for hooked-type joints with limited movement.
 - D. Bituminous Coating: Cold-applied asphalt emulsion complying with ASTM D 1187/D 1187M.

2.5 FINISHES

- A. Coil-Coated Galvanized-Steel Sheet Finishes:
 1. High-Performance Organic Finish: Prepare, pretreat, and apply coating to exposed metal surfaces to comply with ASTM A 755/A 755M and coating and resin manufacturers' written instructions.
 - a. Two-Coat Fluoropolymer: AAMA 621. Fluoropolymer finish containing not less than 70 percent PVDF resin by weight in color coat.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

- A. General: Install roof specialties according to manufacturer's written instructions. Anchor roof specialties securely in place, with provisions for thermal and structural movement. Use fasteners, solder, protective coatings, separators, underlayments, sealants, and other miscellaneous items as required to complete roof-specialty systems.
 1. Install roof specialties level, plumb, true to line and elevation; with limited oil-canning and without warping, jogs in alignment, buckling, or tool marks.
 2. Provide uniform, neat seams with minimum exposure of solder and sealant.
 3. Install roof specialties to fit substrates and to result in weathertight performance. Verify shapes and dimensions of surfaces to be covered before manufacture.
 4. Torch cutting of roof specialties is not permitted.
 5. Do not use graphite pencils to mark metal surfaces.
- B. Expansion Provisions: Allow for thermal expansion of exposed roof specialties.
 1. Space movement joints at a maximum of 12 feet (3.6 m) with no joints within 18 inches (450 mm) of corners or intersections unless otherwise indicated on Drawings.
 2. When ambient temperature at time of installation is between 40 and 70 deg F (4 and 21 deg C), set joint members for 50 percent movement each way. Adjust setting

proportionately for installation at higher ambient temperatures.

- C. Seal concealed joints with butyl sealant as required by roofing-specialty manufacturer.
- D. Seal joints as required for weathertight construction. Place sealant to be completely concealed in joint. Do not install sealants at temperatures below 40 deg F (4 deg C).

3.2 ROOF-EDGE SPECIALITIES INSTALLATION

- A. Install cleats, cants, and other anchoring and attachment accessories and devices with concealed fasteners.
- B. Anchor roof edgings with manufacturer's required devices, fasteners, and fastener spacing to meet performance requirements.

3.3 ROOF-EDGE DRAINAGE-SYSTEM INSTALLATION

- A. General: Install components to produce a complete roof-edge drainage system according to manufacturer's written instructions. Coordinate installation of roof perimeter flashing with installation of roof-edge drainage system.
- B. Gutters: Join and seal gutter lengths. Allow for thermal expansion. Attach gutters to firmly anchored gutter supports spaced not more than 24 inches (610 mm) apart. Attach ends with rivets and seal with sealant to make watertight. Slope to downspouts.
 - 1. Install gutter with expansion joints at locations indicated but not exceeding 50 feet (15.2 m) apart. Install expansion-joint caps.
- C. Downspouts: Join sections with manufacturer's standard telescoping joints. Provide hangers with fasteners designed to hold downspouts securely to walls and 1 inch (25 mm) away from walls; locate fasteners at top and bottom and at approximately 60 inches (1500 mm) o.c.
 - 1. Provide elbows at base of downspouts at grade to direct water away from building.
 - 2. Connect downspouts to underground drainage system where indicated.

3.4 CLEANING AND PROTECTION

- A. Clean exposed metal surfaces of substances that interfere with uniform oxidation and weathering.
- B. Clean and neutralize flux materials. Clean off excess solder and sealants.
- C. Remove temporary protective coverings and strippable films as roof specialties are installed.

END OF SECTION 077100

SECTION 079200
JOINT SEALANTS

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes joint sealants for the following applications, including those specified by reference to this Section:
 - 1. Exterior joints in the following vertical surfaces and horizontal non-traffic surfaces:
 - a. Joints between different materials listed above.
 - b. Perimeter joints between materials listed above and frames of doors and windows.
 - c. Control and expansion joints in overhead surfaces.
 - d. Other joints as indicated.
 - 2. Exterior joints in the following horizontal traffic surfaces:
 - a. Other joints as indicated.

1.2 PERFORMANCE REQUIREMENTS

- A. Provide elastomeric joint sealants that establish and maintain watertight and airtight continuous joint seals without staining or deteriorating joint substrates.
- B. Provide joint sealants for interior applications that establish and maintain airtight and water-resistant continuous joint seals without staining or deteriorating joint substrates.

1.3 SUBMITTALS

- A. Product Data: For each joint-sealant product indicated.
- B. Samples for Initial Selection: Manufacturer's color charts consisting of strips of cured sealants showing the full range of colors available for each product exposed to view.
- C. Samples for Verification: For each type and color of joint sealant required, provide Samples with joint sealants in 1/2-inch- (13-mm-) wide joints formed between two 6-inch- (150-mm-) long strips of material matching the appearance of exposed surfaces adjacent to joint sealants.
- D. Product Certificates: For each type of joint sealant and accessory, signed by product manufacturer.
- E. Qualification Data: For Installer.
- F. Warranties: Special warranties specified in this Section.

1.4 QUALITY ASSURANCE

- A. Installer Qualifications: Manufacturer's authorized Installer who is approved or licensed for installation of elastomeric sealants required for this Project.
- B. Source Limitations: Obtain each type of joint sealant through one source from a single manufacturer.
- C. Mockups: Build mockups incorporating sealant joints, as follows, to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution:
 - 1. Joints in mockups of assemblies specified in other Sections that are indicated to receive elastomeric joint sealants, which are specified by reference to this Section.

1.5 PROJECT CONDITIONS

- A. Do not proceed with installation of joint sealants under the following conditions:
 - 1. When ambient and substrate temperature conditions are outside limits permitted by joint-sealant manufacturer or are below 40 deg F (5 deg C).
 - 2. When joint substrates are wet.
 - 3. Where joint widths are less than those allowed by joint-sealant manufacturer for applications indicated.
 - 4. Contaminants capable of interfering with adhesion have not yet been removed from joint substrates.

1.6 WARRANTY

- A. Special Installer's Warranty: Installer's standard form in which Installer agrees to repair or replace elastomeric joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.
 - 1. Warranty Period: Two years from date of Substantial Completion.
- B. Special warranties specified in this Article exclude deterioration or failure of elastomeric joint sealants from the following:
 - 1. Movement of the structure resulting in stresses on the sealant exceeding sealant manufacturer's written specifications for sealant elongation and compression caused by structural settlement or errors attributable to design or construction.
 - 2. Disintegration of joint substrates from natural causes exceeding design specifications.
 - 3. Mechanical damage caused by individuals, tools, or other outside agents.
 - 4. Changes in sealant appearance caused by accumulation of dirt or other atmospheric contaminants.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, products listed in other Part 2 articles.

2.2 MATERIALS, GENERAL

- A. Compatibility: Provide joint sealants, backings, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by sealant manufacturer, based on testing and field experience.
- B. VOC Content of Interior Sealants: Provide interior sealants and sealant primers that comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):
 - 1. Sealants: 250 g/L.
 - 2. Sealant Primers for Nonporous Substrates: 250 g/L.
 - 3. Sealant Primers for Porous Substrates: 775 g/L.
- C. Colors of Exposed Joint Sealants: As selected by Architect from manufacturer's full range.

2.3 ELASTOMERIC JOINT SEALANTS

- A. Elastomeric Sealants: Comply with ASTM C 920 and other requirements indicated for each liquid-applied chemically curing sealant specified, including those referencing ASTM C 920 classifications for type, grade, class, and uses related to exposure and joint substrates.
- B. Stain-Test-Response Characteristics: Where elastomeric sealants are specified to be nonstaining to porous substrates, provide products that have undergone testing according to ASTM C 1248 and have not stained porous joint substrates indicated for Project.
- C. Multicomponent Nonsag Urethane Sealant ES-#1:
 - 1. Available Products:
 - a. Pecora Corporation; Dynatrol II.
 - b. Tremco; Dymeric 511.
 - c. Tremco; Vulkem 922.
 - 2. Type and Grade: M (multicomponent) and NS (nonsag).
 - 3. Class: 50.
 - 4. Uses Related to Exposure: NT (nontraffic) and T (traffic).
 - 5. Uses Related to Joint Substrates: M, G, A, and as applicable to joint substrates, O.

D. Single-Component Nonsag Urethane Sealant ES-#2:

1. Available Products:
 - a. Sika Corporation, Inc.; Sikaflex - 1a.
 - b. Sonneborn, Division of ChemRex Inc.; Ultra.
 - c. Sonneborn, Division of ChemRex Inc.; NP 1.
 - d. Tremco; Vulkem 116.
2. Type and Grade: S (single component) and NS (nonsag).
3. Class: 25.
4. Uses Related to Exposure: T (traffic) and NT (nontraffic).
5. Uses Related to Joint Substrates: M, G, A and as applicable to joint substrates O.

2.4 LATEX JOINT SEALANTS

A. Latex Sealant LS-#1: Comply with ASTM C 834, Type P, Grade NF.

B. Available Products:

1. Bostik Findley; Chem-Calk 600.
2. Pecora Corporation; AC-20+.
3. Schnee-Morehead, Inc.; SM 8200.
4. Sonneborn, Division of ChemRex Inc.; Sonolac.
5. Tremco; Tremflex 834.

2.5 JOINT-SEALANT BACKING

- A. General: Provide sealant backings of material and type that are non-staining; are compatible with joint substrates, sealants, primers, and other joint fillers; and are approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.
- B. Cylindrical Sealant Backings: ASTM C 1330, Type C (closed-cell material with a surface skin) and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance:
- C. Bond-Breaker Tape: Polyethylene tape or other plastic tape recommended by sealant manufacturer for preventing sealant from adhering to rigid, inflexible joint-filler materials or joint surfaces at back of joint where such adhesion would result in sealant failure. Provide self-adhesive tape where applicable.

2.6 MISCELLANEOUS MATERIALS

- A. Primer: Material recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.
- B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials, free of oily residues or other substances capable

of staining or harming joint substrates and adjacent nonporous surfaces in any way, and formulated to promote optimum adhesion of sealants to joint substrates.

- C. Masking Tape: Non-staining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine joints indicated to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting joint-sealant performance.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions and the following requirements:
 - 1. Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant, including dust, paints (except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by sealant manufacturer), old joint sealants, oil, grease, waterproofing, water repellents, water, surface dirt, and frost.
 - 2. Clean porous joint substrate surfaces by brushing, grinding, blast cleaning, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealants. Remove loose particles remaining after cleaning operations above by vacuuming or blowing out joints with oil-free compressed air. Porous joint substrates include the following:
 - a. Concrete.
 - b. Masonry.
 - c. Unglazed surfaces of ceramic tile.
 - d. Stone.
 - 3. Remove laitance and form-release agents from concrete.
 - 4. Clean nonporous surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants. Nonporous joint substrates include the following:
 - a. Metal.
 - b. Glass.
 - c. Porcelain enamel.
 - d. Glazed surfaces of ceramic tile.
- B. Joint Priming: Prime joint substrates, where recommended in writing by joint-sealant manufacturer, based on prior experience. Apply primer to comply with joint-sealant

manufacturer's written instructions. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.

- C. Masking Tape: Use masking tape where required to prevent contact of sealant with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

3.3 INSTALLATION OF JOINT SEALANTS

- A. General: Comply with joint-sealant manufacturer's written installation instructions for products and applications indicated, unless more stringent requirements apply.
- B. Sealant Installation Standard: Comply with recommendations in ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.
- C. Acoustical Sealant Application Standard: Comply with recommendations in ASTM C 919 for use of joint sealants in acoustical applications as applicable to materials, applications, and conditions indicated.
- D. Install sealant backings of type indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.
 - 1. Do not leave gaps between ends of sealant backings.
 - 2. Do not stretch, twist, puncture, or tear sealant backings.
 - 3. Remove absorbent sealant backings that have become wet before sealant application and replace them with dry materials.
- E. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and backs of joints.
- F. Install sealants using proven techniques that comply with the following and at the same time backings are installed:
 - 1. Place sealants so they directly contact and fully wet joint substrates.
 - 2. Completely fill recesses in each joint configuration.
 - 3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.
- G. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified below to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.
 - 1. Remove excess sealant from surfaces adjacent to joints.
 - 2. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.

3. Provide concave joint configuration per Figure 5A in ASTM C 1193, unless otherwise indicated.
 - a. Use masking tape to protect surfaces adjacent to recessed tooled joints.

H. Installation of Preformed Tapes: Install according to manufacturer's written instructions.

3.4 CLEANING

- A. Clean off excess sealant or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved in writing by manufacturers of joint sealants and of products in which joints occur.

3.5 PROTECTION

- A. Protect joint sealants during and after curing period from contact with contaminating substances and from damage resulting from construction operations or other causes so sealants are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated joint sealants immediately so installations with repaired areas are indistinguishable from original work.

3.6 JOINT-SEALANT SCHEDULE

- A. Joint-Sealant Application JS-#1: Exterior vertical joints between different materials.
 1. Joint Sealant: Single-component nonsag urethane sealant ES-#2.
 2. Joint-Sealant Color: As selected by Contracting Officer from manufacturer's full range.
- B. Joint-Sealant Application JS-#2: Exterior control and expansion joints in ceilings and other overhead surfaces.
 1. Joint Sealant: Multicomponent nonsag urethane sealant ES-#1.
 2. Joint-Sealant Color: As selected by Contracting Officer from manufacturer's full range.

END OF SECTION 079200

SECTION 099113
EXTERIOR PAINTING

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes surface preparation and field painting of exposed items and surfaces on the following substrates:
 - 1. Exterior:
 - a. Steel Doors
 - b. Metal Railings
 - c. Concrete
 - d. Masonry Concrete
 - 2. Paint all mechanical and electrical equipment exposed to public view, including but not limited to ducts, conduits, electrical panels, roof vents, louvers, pipes and meters.

1.2 DEFINITIONS

- A. General: Standard coating terms defined in ASTM D 16 apply to this Section.
 - 1. Flat refers to a lusterless or matte finish with a gloss range below 15 when measured at an 85-degree meter.
 - 2. Eggshell refers to low-sheen finish with a gloss range between 20 and 35 when measured at a 60-degree meter.
 - 3. Semigloss refers to medium-sheen finish with a gloss range between 35 and 70 when measured at a 60-degree meter.
 - 4. Full gloss refers to high-sheen finish with a gloss range more than 70 when measured at a 60-degree meter.

1.3 SUBMITTALS

- A. Product Data: For each type of product indicated.
 - 1. Manufacturer's Information: Manufacturer's technical information, including label analysis and instructions for handling, storing, and applying each coating material.
- B. Samples for Verification: For each type of paint system and each color and gloss of topcoat indicated.
 - 1. Submit Samples on rigid backing, 8 inches square.
 - 2. Step coats on Samples to show each coat required for system.
 - 3. Label each coat of each Sample.
 - 4. Label each Sample for location and application area.

- C. Product List: For each product indicated, include the following:
 - 1. Cross-reference to paint system and locations of application areas. Use same designations indicated on Drawings and in schedules.
- D. Certification by manufacturer that products supplied comply with the following regulations controlling use of volatile organic compounds (VOCs):

1.4 QUALITY ASSURANCE

- A. Mockups: Apply benchmark samples of each paint system indicated and each color and finish selected to verify preliminary selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.
 - 1. Contracting Officer will select one surface to represent surfaces and conditions for application of each paint system specified in Part 3.
 - a. Wall and Ceiling Surfaces: Provide samples of at least 100 sq. ft.
 - b. Other Items: Contracting Officer will designate items or areas required.
 - 2. Final approval of color selections will be based on benchmark samples.
 - 3. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.
- B. If preliminary color selections are not approved, apply additional benchmark samples of additional colors selected by Contracting Officer at no added cost to Government.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Store materials not in use in tightly covered containers in a well-ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F.
 - 1. Maintain containers in a clean condition, free of foreign materials and residue.
 - 2. Protect from freezing.
 - 3. Remove oily rags and waste daily.
 - 4. Ensure that workers and work areas are protected from fire and health hazards resulting from handling, mixing, and application.

1.6 PROJECT CONDITIONS

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

1.7 EXTRA MATERIALS

- A. Furnish extra paint materials described below that are from the same production run (batch mix) as materials applied and that are packaged for storage and identified with labels describing contents.

1. Quantity: Furnish an additional 5 percent, but not less than 1 gal. of each material and color applied.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Sherwin-Williams Co., Santa Fe Springs, CA (888) 792-2662, ext. 102; www.sherwin-williams.com.
2. Benjamin Moore & Co., Denver, CO (303) 294-9229; www.benjaminmoore.com.
3. KWAL Paint Company, Denver, CO. (303) 371-5600: www.kwalpaint.com

2.2 PAINT MATERIALS, GENERAL

- A. Material Compatibility:

1. Provide materials for use within each paint system that are compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
2. For each coat in a paint system, provide products recommended in writing by manufacturers of topcoat for use in paint system and on substrate indicated.

- B. Colors:

1. Provide colors for doors, railings, concrete, concrete masonry, equipment, pipes, and accessories to retain existing color scheme.
2. Provide colors as specified below and as approved by Contracting Officer from manufacturer's full range.
 - a. Tudor Brown
 - 1) Sherwin Williams A-100 Exterior Latex Semi-gloss or approved equal
 - 2) Formula:
 - a) B1 Black 6 oz. and 10/32 oz.,
 - b) R4 New Red 7/32 oz.,
 - c) N1 Raw Umber 20/32 oz.,
 - d) R2 Maroon 2 oz. and 31/32 oz.,
 - e) Y3 Deep Gold 2oz. and 24/32 oz.
 - f) R3 Magenta 12/32 oz.,
 - g) G2 New Green 58/32 oz.
 - b. Egg Nog
 - 1) Sherwin Williams A-100 Exterior Latex Semi-gloss or approved equal
 - 2) Formula:
 - a) W1 White 2 oz. and 32/32 oz.;

- b) Y3 Deep Gold 33/32 oz.;
- c) G2 New Green 3/32 oz

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of work.
- B. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter as follows:
 - 1. Concrete: 12 percent.
 - 2. Masonry (Clay and Concrete Masonry Units): 12 percent.
- C. Verify suitability of substrates, including surface conditions and compatibility with existing finishes and primers.
- D. Begin coating application only after unsatisfactory conditions have been corrected and surfaces are dry.
 - 1. Beginning coating application constitutes Contractor's acceptance of substrates and conditions.

3.2 STANDARDS

- A. Comply with manufacturer's written instructions and recommendations of the 2008 Industry Standards for "Painting and Decoration Contractors of America" (1-800-332-7322), applicable to substrates and paint systems indicated.

3.3 PREPARATION

- A. 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 or weight of item, provide surface-applied protection before surface preparation and painting.
 - 1. After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection if any.
 - 2. Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.
- B. Clean substrates of substances that could impair bond of paints, including dirt, oil, grease, and incompatible paints and encapsulants.

1. Remove incompatible primers and reprime substrate with compatible primers as required to produce paint systems indicated.
- C. 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.
- D. Concrete Masonry Surfaces: 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.
- E. Steel Substrates: Remove rust and loose mill scale. Clean using methods recommended in writing by paint manufacturer.
- F. Galvanized-Metal Substrates: Remove grease and oil residue from galvanized sheet metal fabricated from coil stock by mechanical methods to produce clean, lightly etched surfaces that promote adhesion of subsequently applied paints.

3.4 APPLICATION

- A. Apply paints according to manufacturer's written instructions.
 1. Use applicators and techniques suited for paint and substrate indicated.
 2. Paint surfaces behind movable items same as similar exposed surfaces. Before final installation, paint surfaces behind permanently fixed items with prime coat only.
 3. Paint front and backsides of access panels, removable or hinged covers, and similar hinged items to match exposed surfaces.
- B. If undercoats or other conditions show through topcoat, apply additional coats until cured film has a uniform paint finish, color, and appearance.
- C. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.
- D. Painting Mechanical and Electrical Work: Paint items exposed in equipment rooms and occupied spaces including, but not limited to, the following:
 1. Mechanical Work:
 - a. Uninsulated metal piping.
 - b. Uninsulated plastic piping.
 - c. Pipe hangers and supports.
 - d. Visible portions of internal surfaces of metal ducts, without liner, behind air inlets and outlets.
 - e. Mechanical equipment that is indicated to have a factory-primed finish for field painting.

2. Electrical Work:
 - a. Switchgear.
 - b. Panelboards.
 - c. Conduit and fittings.
 - d. Electrical equipment that is indicated to have a factory-primed finish for field painting.

3.5 CLEANING AND PROTECTION

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

3.6 EXTERIOR PAINT SCHEDULE

- A. Paint all interior and exterior exposed items and surfaces throughout the project, except prefinished items and as otherwise indicated.
- B. Ferrous Metal: Provide the following finish systems over exterior ferrous metal. Primer is not required on shop-primed items.
 1. Semi-Gloss Acrylic-Enamel Finish: Two finish coats over a rust-inhibitive primer.
 - a. Primer: Factory-formulated rust-inhibitive metal primer for exterior application.
 - 1) Kwal; 9210 Accu-Pro Alkyd Rust-Inhibiting Primer.
 - 2) Sherwin-Williams; Kem Kromik Universal Metal Primer B50NZ6 or B50WZ1.
 - b. Finish Coats: Factory-formulated semi-gloss waterborne 100 percent acrylic-latex enamel for exterior application.
 - 1) Kwal; 3200 Ambassador 100% Acrylic Semi-gloss Enamel.
 - 2) Sherwin-Williams; A-100 Exterior Latex Semi-gloss
- C. Zinc-Coated Metal: Provide the following finish systems over exterior zinc-coated metal surfaces:
 1. Semi-Gloss Acrylic-Enamel Finish: Two finish coats over a galvanized metal primer.

- a. Primer: Factory-formulated galvanized metal primer for exterior application.
 - 1) Kwal; 5810 Ambassador G-Prime 100% Acrylic Universal Primer.
 - 2) Sherwin-Williams; DTM Acrylic Primer B66W1.
 - b. Finish Coats: Factory-formulated semi-gloss waterborne 100 percent acrylic-latex enamel for exterior application.
 - 1) Kwal; 3200 Ambassador 100% Acrylic Semi-Gloss Enamel.
 - 2) Sherwin-Williams; A-100 Exterior Latex Semi-Gloss.
- D. Concrete Substrates: Provide the following finish systems over concrete substrates:
- 1. Latex System:
 - a. Prime Coat: Exterior, alkali-resistant water-based primer.
 - b. Intermediate Coat: Matching topcoat
 - c. Finish Coats: Exterior latex paint, semi-gloss.
- E. Concrete Masonry Unit Substrates: Provide the following finish systems over concrete substrates:
- 1. Latex System:
 - a. Prime Coat: Exterior, latex block filler
 - b. Intermediate Coat: Matching topcoat
 - c. Finish Coatst: Exterior latex paint, semi-gloss.

END OF SECTION 099113