NORTHERN VIRGINIA VMF
NGDV/EV CHARGING

2935 PROSPERITY AVENUE,
FAIRFAX, VA 22031

USPS Project Number – K33601

SEPTEMBER 02, 2026

Project Manual

DOCUMENT 000010

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END OF SECTION

USPS MPF Specification Last Revised: 10/1/2023

SECTION 011000

SUMMARY OF WORK

PART 1 - GENERAL

1.1 SCOPE

A. The Contractor must provide all material, labor, tools, plant, supplies, equipment, transportation, superintendence, temporary construction of every nature, and all other services and facilities necessary to complete the construction of a postal facility for the Postal Service, including all incidental work described in the contract documents.

B. The scope of work is as follow but is limited to:

1. Remove and replace vehicle lifts – refer to contract drawings if the scope is by contractor or by USPS (others).
2. Install epoxy coating at repair bays – refer to plan.
3. Paint walls, door and frames and existing bollards – refer to plan for extent.
4. Install EV Chargers – refer to Site Plan and Electrical Drawings
5. Restripe parking markings – refer to Site Plan.
6. Power wash exterior of the building.
7. Overhead door shall be receiving new paint or replacement – refer to individual project site.
8. The Repair Shop Area can only be under construction to be discuss during bid walk. At the end of each shift all construction equipment, tools, tenting and materials need to be removed and all surfaces be free of dust and debris before being turned over to USPS personnel.
9. Any and all damages to finishes and pathways outside of the project scope will be repaired at no cost to the USPS and prior to final project acceptance. Particular attention is to be paid to the protection of sprinkler heads.
10. During construction operations a secure work zone will be set up to protect active USPS personnel and activities from exposure to the preparation of and painting of surfaces.
11. During construction operations and when available the contractor is responsible for the relocation, protection, and reinstallation of USPS equipment, furniture or fixtures to USPS designated areas outside the secure work zone.
12. At the end of each shift the construction area(s) will be restored and cleaned of all work debris, dust, and construction materials in order to turn area back over to USPS personnel.
13. Disconnection and reconnection of utilities as necessary to accomplish the project scope of work.
14. Preparation of all required technical and logistic submittals including but not limited to

- Contractors Work Plan
- Contractors Site Specific Work Plan
- Submittal Schedule
- Schedule of Values

15. The legal and safe disposal of all construction debris and materials.

- Proper documentation and certification indicating proper disposal will be provided to AECOM Construction Manager.

C. All work shall be in accordance with applicable codes and local regulations that may apply. In case of conflict in or between the Contract Documents and a governing code or ordinance, the more stringent standard shall apply.

1.3 MISCELLANEOUS CONTRACT EXPENSES

A. In accordance with the terms and conditions of the contract provisions and clauses, including those concerning *Permits and Responsibilities* and, *Building Codes, Fees and Charges*, the Contractor

must include in its price proposal a separate line item for the cost each of the of the following fees or charges payable to State, local, or special community development agencies:

Water service connection and meter fee	N/A
Electrical company required fees	N/A
Telephone company required fees	N/A
Off-site inspection fees	N/A
Sanitary sewer connection fee	N/A
Environmental Permits/Registrations	N/A
Other permits or fees	N/A

B. If the actual cost of any item identified above is more or less than the amount listed, the contract price will be adjusted accordingly by a contract modification. The adjustment will not include overhead and profit. The Contractor must, within 30 days after incurring the expenses, inform the Contracting Officer that the payment has been made. Evidence of the actual amount paid must be provided. The contract amount will be adjusted upward or downward as necessary to accommodate actual charges from the utilities. The Contractor must provide all coordination with the utilities in accomplishing their work and must make all payments to the utilities for their work.

C. The Contractor must include all additional fees, as required, in the price proposal.

PART 2 – PRODUCTS

NOT USED

PART 3 – EXECUTION

NOT USED

END OF SECTION

USPS Specification Last Revised: 05/30/2024

SECTION 011104

CONTRACT DOCUMENTS

A. The contract documents consist of the items included, or attached and incorporated by reference in:

1.2 DRAWING LIST

A. The contract drawings consist of the items included, or attached and incorporated by reference, in FRP solicitation package.

B.

DRAWINGS LIST		12/22/2023 – 30% SUBMISSION	01/29/2024 – BID SET SUBMISSION		
GENERAL SHEETS					
G0.00	COVER SHEET	●			
G0.01	DRAWINGS LIST, GENERAL NOTES AND ABBREVIATIONS	●			
G0.02	LIFE SAFETY PLAN	●			
CIVIL SHEETS					
C1.00	SITE PLAN	●			
C2.00	SITE DETAILS	●	●		
ARCHITECTURAL SHEETS					
A1.00	VMF DEMOLITION FLOOR PLAN	●			
A2.00	VMF FLOOR PLAN – NEW WORK & LIFT SCHEDULE	●			
ELECTRICAL SHEETS					
E0.01	ELECTRICAL GENERAL NOTES	●			
E1.00	VMF DEMOLITION PLAN – ELECTRICAL	●			
E2.00	VMF FLOOR PLAN – ELECTRICAL	●			
E3.00	ELECTRICAL ONE LINE DIAGRAM & DETAILS	●			

END OF SECTION

USPS Specification Last Revised: 10/1/2022

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SECTION 013200

CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 – GENERAL

1.1 SCHEDULING WORK

A. Before any of the work is started, the Contractor must confer with the COR and agree on a sequence of procedures: means of access to premises and building; delivery of materials and use of approaches; use of corridors, stairways, elevators, and similar means of communication; and the location of partitions, eating spaces for Contractor's employees, and the like.

B. No work can be done during the holiday mailing season between November 15 and January 5 without written permission from the COR.

C. No work can be scheduled between the hours of 2 AM and 10 AM, in the Post Office without written permission from the COR. The work room area can only be under construction between the hours of 10am and 7pm. At the end of each shift all construction equipment, tools, tenting and materials need to be removed and all surfaces be free of dust and debris before being turned over to USPS personnel area without written permission from the COR.

1.2 CONSTRUCTION PROGRESS CHART

A. In accordance with the terms and conditions of the contract provisions and clauses, including those concerning *Construction Progress Chart*, prepare and submit a progress chart within five (5) days after receipt of the Notice to Proceed to show the principal categories of work corresponding with those used in the Schedule of Values:
   1. The order in which the Contractor proposes to carry on the work.
   2. The date on which it will start each category of work.
   3. The contemplated dates for completion.

B. The chart must be in suitable scale to indicate graphically the total percentage of work scheduled to be in place at any time. At intervals as directed by the COR the Contractor must:
   1. Adjust the chart to reflect any changes in the contract work.
   2. Enter on the chart the total percentage of work actually in place.
   3. Submit six (6) copies of the chart to the Contracting Officer or their designated representative.

END OF SECTION

USPS Specification Last Revised: 10/1/2022

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UNITED STATES POSTAL SERVICE

Schedule of Values

Facility:

Contractor:

Date:

Item	Description of Work		Scheduled Value	Work Completed					Work Remaining	
				Previous Application	This Application		Total Completed and Stored	%	Balance to Finish	Retainage
					Work In Place	Stored Materials				
Division 01	**General Conditions**	%								
1.0	Overhead									
1.1	Profit									
1.2	Bonds & Insurance									
1.3	Bldg. Permits									
1.4	O.& M. manuals									
1.5	Training									
1.6	Subtotal, % only		-	-	-	-	-	-	-	-
Division 02	**Existing Conditions**									
2.0	Demolition									
2.1	Lead based paint testing and abatement allowance									
Division 03	**Concrete**									
3.0	Concret Forming and Accessories									
3.1	Concrete Reinforcement									
Division 05	**Metals**									
5.0	Structural Steel									
5.1	Steel Joists									
5.2	Steel Deck									
5.3	Metal Studs									
5.4	Handrails & Railings									
Division 08	**Openings**									
8.0	Doors & Frames									
8.1	Specialty & Grilles									
8.2	Storefronts									
8.3	Hardware									
8.4	Other Glazing									
8.5	Overhead Coiling Doors									
8.6	Sectional Sectional Doors									
Division 09	**Finishes**									
9.0	Gypsum Board									
9.1	Tile									
9.2	Acoustical Ceiling									
9.3	Resilient & Carpet									
9.4	**Painting**									
9.4.1	Walls									
9.4.2	Ceiling									
9.4.3	Doors/OH Doors and Frames									
9.4.4	Egress Floor Striping									
9.4.5	Resinuos Flooring									
9.4.6	Overhead Door Canopy/Fuel Island									

Item	Description of Work		Scheduled Value	Work Completed					Work Remaining	
				Previous Application	This Application		Total Completed and Stored	%	Balance to Finish	Retainage
					Work In Place	Stored Materials				
Division 14	**Conveying Equipment**									
14.1	Vehicle Lifts									
Division 26	**Electrical**									
26.0	Conduit									
26.1	Wire									
26.2	Transformers									
26.3	Panelboards									
26.4	Lighting									
Division 31	**Earthwork**									
31.0	Site Clearing									
31.1	Earthwork (develop.)									
31.2	Earthwork (finish)									
Division 32	**Exterior Improvements**									
32.0	Paving (off-site)									
32.1	Paving									
32.2	Chain Link Fence & Gates									
32.3	Landscaping									
32.4	Bollards									
	Subtotal			(without General Conditions)						
Subtotal	**Site Development**			(#2.0, #31.0, #31.1, #32.0 and #33.0) x (100% + #1.7 percentage)						
	Site Improvement			(#3.0, #10.2, #31.2, #32.1, #32.2, #32.3, #33.1 and #33.2) x (100% + #1.7 percentage)						
	Building			(Construction costs not including Sitework cost) x (100% + #1.6 percentage)						
	Total		$ -	$ -	$ -	$ -	$ -		$ -	$ -

SECTION 013300

SUBMITTAL PROCEDURES

PART 1 – GENERAL

1.1 SCHEDULE OF SUBMITTALS

A. In accordance with the terms and conditions of the contract provisions and clauses, including those concerning Shop Drawings, Coordination Drawings, *Record "As Built" Drawings, and Schedules;* within 30 days after receiving a Notice to Proceed, the Contractor must complete the Schedule of Submittals, in the format indicated below, in duplicate, listing all items that must be furnished for review and approval by the Postal Service. The schedule must indicate the type of items (such as sample, shop drawings, catalog cut, and so forth) and include the scheduled dates of submittal. In preparing the schedule, adequate time (10 business days or more, exclusive of time in the mails) must be allowed for review and approval and possible resubmittal. Also, the schedule must be coordinated with the approved construction progress chart. The Contractor must revise and/or update the schedule as directed. Such revised schedules must be made available to the COR for monitoring.

B. Within 30 days after receiving a Notice to Proceed, the Contractor must complete and submit to the COR a listing of all subcontractors, including subcontractor name, address, telephone number, fax number and email address. Include an updated list with each progress payment request.

C. Schedule of Submittals Format

Project _____

Contract No. _____

Project Description _____

Spec. Section	Spec. Description	Paragraph Number	*Submittal Type	Date		Action Taken	Assigned Number
				Submittal	Returned		

*Submittal Type:

C – Certificate
S – Sample
SD – Shop Drawing
CD – Catalog Data
PL – Spare Parts List
MM – Maintenance Manual

1.2 SHOP DRAWINGS AND RELATED DATA

A. Submittal of shop drawings, samples and related data must conform to the requirements of the terms and conditions of the contract provisions and clauses, including those concerning, *Record "As Build" Drawings*, and *Samples*. Prior to submittal, the Contractor must stamp the submittal to indicate that it has been reviewed and approved. The Contractor must make any corrections required by the COR. If the Contractor considers any correction indicated on the drawings to constitute a change to the contract drawings or specifications, notice, as required under the terms and conditions of the contract provisions and clauses, including those concerning Changes must be given to the COR. [Four] [ ] prints of all

approved shop drawings must be given to the COR. The approval of the drawings by the COR must not be construed as a complete check but indicates only that the general method of construction and detailing is satisfactory. Approval of the shop drawings does not relieve the Contractor of responsibility for any error that may exist because the Contractor is responsible for the dimensions and design of adequate connections and details and for satisfactory construction of all work. The submission by the Contractor must be accompanied by a transmittal letter of a type approved by the COR.

1. Each shop drawing must have a blank area of 5 by 5 inches, located adjacent to the title block. The title block must display:
   a. Number and title of drawing;
   b. Date of drawing or revision;
   c. Name of project building or facility;
   d. Name of Contractor and (if appropriate) of subcontractor submitting drawing;
   e. Clear identity of contents and location on the work; and
   f. Project title and contract number.
2. All drawings to be provided shall be clear and fully representative of the facility and fixed mechanization work.
3. Drawing files to be in .dwg and .pdf formats. .dwg files to be generated from Autocad revision 12 or other revision level concurred by USPS.
4. Documents other than drawings shall be provided in MicroSoft Word format.
5. Interim project documentation may be provide to USPS electronically
6. All final project documentation shall be provided to the USPS on a single CD or DVD media

1.3 CERTIFICATES OF COMPLIANCE

A. Any certificates required for demonstrating proof of compliance of materials with specification requirements, including mail certificates, statements of application, and extended guarantees, must be signed and submitted 4 copies to the COR at least 10 days before delivery. The Contractor must review all certificates before submissions are made to the COR, to ensure compliance with the contract specification requirements and to ensure that the affidavit is properly signed. Each certificate must be signed by an official authorized to certify on behalf of the manufacturing company and must contain the name and address of the Contractor, the project name and location, and the quantity and date or dates of shipment or delivery to which the certificates apply. Copies of laboratory test reports submitted with certificates must contain the name and address of the testing laboratory and the dates of tests to which the report applies. Certification must not be construed as relieving the Contractor from furnishing satisfactory material if, after tests are performed on selected samples, the material is found not to meet the specific requirements.

1.4 A-E'S REVIEW OF SUBMITTALS

A. When submittals are reviewed by the A-E on behalf of the COR, each submittal must be returned to the Contractor stamped or marked by the A-E in one of the following ways:
   1. A Action: The Contractor is advised that "A Action" means that fabrication, manufacture, or construction may proceed, provided the work complies with the contract documents.
   2. B Action: The Contractor is advised that "B Action" means that fabrication, manufacture, or construction may proceed, provided the work complies with the A-E's notations and the contract documents.
   3. C Action: The Contractor is advised that "C Action" means that no work may be fabricated, manufactured, or constructed and that the Contractor must make a new submittal to the A-E. Any submission marked "C Action" is not permitted on the site.

B. The A-E must return reproducibles stamped "A Action" or "B Action" to the Contractor, who is responsible for obtaining prints of them and for distributing them to the field and to subcontractors.

C. In the case of shop drawings in the form of manufacturers' descriptive literature, catalog cuts, and brochures stamped "A Action" or "B Action," the A-E must return the stamped copies to the Contractor,

who is responsible for distributing them to the field and to the subcontractors. If the shop drawings are stamped "C Action," the A-E will return stamped copies to the Contractor, who must submit new shop drawings to the A-E.

D. In the case of samples stamped "A Action" or "B Action," the A-E must return one of the samples to the Contractor. In the case of samples stamped "C Action," the A-E must return all of the submitted samples.

1.5 SPARE PARTS DATA

A. Spare parts data must be submitted in quadruplicate in accordance with the terms and conditions of the contract provisions and clauses, including those concerning *Spare Parts Data*.

1.6 SCHEDULE OF VALUES

A. In accordance with the terms and conditions of the contract provisions and clauses concerning, *Construction Cost Breakdown*, the Contractor must submit a construction cost breakdown using the attached Schedule of Values.

B. Submit the construction cost breakdown after contract award to the COR. A Sample Schedule of Values and Definitions is attached to this Section, as Attachment A.

C. Do not delete items from the Schedule of Values form. The number of items provided on the Schedule of Values form are the minimum required; additional subdivision of these items may be provided by the Contractor.

D. If the contract price changes, the Schedule of Values must be revised to reflect the change(s) and forwarded to the COR.

E. A current Schedule of Values must accompany all Contractor Requests for Payment.

END OF SECTION

USPS Specification Last Revised: 10/1/2022

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SECTION 013543

ENVIRONMENTAL PROCEDURES

PART 1 – GENERAL

1.1 SCOPE

A. This section is required in accordance with the terms and conditions of the contract provisions and clauses, including those concerning Safety & Health Standards, Accident Prevention, Protection of the Environment, Existing Vegetation, Structures, Utilities and Improvements, and Handling Asbestos and other Hazardous Materials. The work covered by this section consists of furnishing all labor, material, and equipment and performing all work required for compliance with environmental regulations and preventing pollution during, and as a result of, construction operations under this contract, in addition to those measures set forth in other technical provisions of these specifications.

B. The Contractor and subcontractors must comply with all applicable federal, state and local laws and regulations related to the environment, health and safety.

1.2 NOTIFICATION

A. The Contractor must, after receiving a notice of noncompliance with the foregoing provisions, immediately take corrective action. The notice, when delivered to its Contractor or its authorized representative at the site of the work, is deemed sufficient for this purpose. If the Contractor fails or refuses to comply promptly, the Contracting Officer may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No part of the time lost because of any such stop orders may be made the subject of a claim for extension of time or for excess costs or damages by the Contractor unless it is subsequently determined that the Contractor was in compliance and the Contractor demonstrates that it is otherwise entitled to an extension of time, excess costs or damages, under the applicable terms and conditions of the contract provisions and clauses.

1.3 ENVIRONMENTAL REGULATORY COMPLIANCE

A. Within 30 days after receiving the notice to proceed or not less than 15 days prior to commencing on-site work, the Contractor must submit any environmental documents that are required by federal, state or local environmental regulations. Plans must be approved by the COR prior to commencing on-site work and must describe and include, but is not limited to, the following
   1. Erosion Control and Stormwater Management Plan that describes erosion control methods, surface drainage, storm water permitting requirements, and if applicable, protection of site wetlands and/or compliance with wetland permits. This must ensure any federal, state or local permitting requirements for site preparation, erosion control or surface drainage are met.
   2. Landscape Management and Protection Plan that ensures any site-specific beneficial landscaping requirements are met. The plan shall describe the prevention and restoration of landscape damage, temporary roads and embankments, and post construction cleanup as prescribed in the terms and conditions of the contract provisions and clauses, including those concerning *Protection of the Environment, Existing Vegetation, Structures, Utilities and Improvements*.
   3. Waste Minimization and Management Plan must describe how natural resources potentially impacted by construction will be protected or managed; construction wastes will be stored and disposed of or recycled; and pollutants associated with building materials will be controlled. The waste minimization and management section of the plan must also list materials and construction debris to be recycled, and address the disposal

of solid and hazardous wastes and materials, including asbestos and lead-based paint. It must also include tables applicable to the reclamation of chlorofluorocarbons (CFCs) and hydrochlorofluorocarbons (HCFCs) in accordance with 1.4 (B) below.

4. Environmental Compliance Plan must document NEPA compliance by describing mitigation measures to address environmental concerns/sensitive receptors identified in the National Environmental Policy Act (NEPA) document(s) in Section B. 1500, *Attachments*, of the contract.
5. The construction specifications in this contract must include mitigation measures to avoid or minimize potential environmental impacts identified in the NEPA document(s).

1.4 ENVIRONMENTAL SITE CONTROLS

A. Location of Hazardous Materials: The location of the Contractor's temporary storage of any hazardous materials and/or wastes must be appropriately marked and included in the health and Safety Plan (see Section 1.5 below).

B. Refrigerant Recovery, Recycling, and Disposal: Any work involving the replacement or repair of equipment containing refrigerant shall meet the following requirements:
1. Recover and recycle or dispose of refrigerant from equipment according to 40 CFR 82 and local regulations.
2. The work shall be completed by a certified refrigerant recovery technician, per 40 CFR 82 and local regulations.
3. Provide a statement signed by the certified refrigerant recovery technician that the work was completed per 40 CFR 82 and local regulations. Include the name and address of technician and date refrigerant was recovered.

C. Post-construction Cleanup or Obliteration: The Contractor must remove and properly dispose of all signs of temporary construction facilities such as haul roads, work area, structures, foundations of temporary structures, excess or waste materials, or any other vestiges of construction as directed by the COR. No separate or direct payment may be made for post-construction cleanup and all associated costs must be considered included in the contract price.

D. Historical and Archeological: Monuments, markers, and works of art must be protected. Items discovered that have potential historical or archeological interest must be preserved. The Contractor must leave the archeological find undisturbed and must immediately report the find to the COR so that the proper authority may be notified.

E. Dust Control: The Contractor must keep the site free from dust in accordance with applicable federal, state and/or local regulations.

F. Noise Minimization: The Contractor must perform demolition and construction operations to minimize noise including conducting work during less sensitive hours of the day in accordance with applicable noise control regulations.

1.5 HEALTH AND SAFETY

A. Prior to commencing on-site work, the Contractor must submit an Occupational Safety and Health Administration (OSHA) Emergency Action Plan (EAP) to the Contracting Officer to demonstrate compliance by the Contractor and subcontractors with applicable OSHA regulations. If the Contractor is not required by OSHA to develop a written EAP, i.e. if 10 or fewer are employed for the construction project or any other specific regulations identified by OSHA, then the Contractor shall submit to the Contracting Officer a signed letter stating the Contractor shall meet OSHA's EAP requirements in a verbal communication to all employees.

B. The Postal Service has provided a *Safety and Health Guide for Contractors*, as Attachment A to this section. Prior to commencing on-site work, Contractor must read the *Safety and Health*

Guide for Contractors and must sign the attached Certificate of Understanding acknowledging and accepting the requirements stated therein.

C. Prior to commencing on-site work, the Contractor must submit a project-specific Project Safety Plan to the Contracting Officer. The plan must include, but is not limited to, hazard communication, labeling, emergency response and preparedness and training.

D. Copies of Material Safety Data Sheets (MSDSs) for any hazardous material(s), as defined by OSHA's Hazard Communications Standard, must be included whenever such materials arrive on-site. MSDSs must be kept together and maintained centrally on-site through to project completion. Provide a copy of each MSDS in the Operating and Maintenance Manual. The use of asbestos containing materials, in excess of one percent as defined by US Environmental Protection Agency regulations, is prohibited in the construction of this project. Provide an executed copy of the “Certificate of Asbestos and Lead-Based Paint (New Work)” in the Operating and Maintenance Manual and include a copy with the final payment request.

E. The use of lead-based paint is prohibited in the construction of this project.

F. The use of lead-containing solder for plumbing and plumbing fixtures is prohibited in the construction of this project.

G. In accordance with the terms and conditions of the contract provisions and clauses, including those concerning *Asbestos Free and Lead-Based Paint Free Certification*, the Contractor must sign and submit to the Contracting Officer the attached “Certification of Asbestos and Lead-Based Paint” for this project. The signed certificate is required to be included in the final payment request.

H. Do not use any of the USPS targeted chemicals (see regulated and prohibited materials identified under Safety and Health and related environmental requirements).

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

NOT USED

END OF SECTION

USPS Specification Last Revised: 10/1/2022

Safety and Health Guide for Contractors

Certificate of Understanding

This *Safety and Health Guide for Contractors* was developed by the Postal Service to provide guidance for contractors hired to perform repair, alteration, renovation, demolition, equipment installation, and other work requiring access to postal-owned or -leased property.

Distribution

A copy of this Certificate of Understanding should be signed by the Contractor's representative at the post award orientation conference or before the commencement of work. A copy of this guide should be readily accessible where the work is being performed. The contracting officer's representative (COR) should thoroughly brief the Contractor's representative on the Contract Safety and Health Requirements contained herein.

Contractor's Verification Statement

As a representative of _____ (Contractor's name), I have received the *Safety and Health Guide for Contractors* prepared by the Postal Service. As the Contractor's representative, I understand and accept the requirements contained herein, and I have reviewed each of the required sections of the guide with the COR and/or the designated Postal Service representative. I agree to review the contents of this guide with all subcontractors hired to perform work on postal property.

Contractor's Representative

Printed Name: _____ Contact Number: _____

Signature: _____ Date: _____

Designated Postal Service Representative

Printed Name: _____ Contact Number: _____

Signature: _____ Date: _____

Safety Representative (If Required by COR)

Printed Name: _____ Contact Number: _____

Signature: _____ Date: _____

Postal Service CO, COR, or Project Manager

Printed Name: _____ Contact Number: _____

Signature: _____ Date: _____

Maintain a copy of this signed form in the Postal Service and Contractor's project files.

Safety and Health and Related Environmental Requirements

The Contractor is required to meet all applicable OSHA, federal, state, and local safety, health, and related environmental requirements in addition to the US Postal Service requirement listed in this table.

Issue	Postal Requirements
Asbestos	*Review of Facility Asbestos Survey:* Before any building maintenance, equipment installation, renovation, alteration, demolition, or other project begins, determine whether ACBM will be disturbed. Proper Work Practices: If ACBM is present, follow proper control procedures and work practices. *Consultation With Facility Asbestos Coordinator:* Consult with the facility manager or his or her designee before the start of any work likely to disturb ACBM. Disturbance means activities that crumble or pulverize ACBM or presumed asbestos-containing material (PACM) or generate visible debris. Operations may include drilling, abrading, cutting a hole, pulling cable, and crawling through tunnels or attics and spaces above the ceiling where asbestos is actively disturbed or asbestos-containing debris is actively disturbed. *Asbestos Work Authorization:* You must have an approved Form 8210, *Work Authorization - Asbestos,* before work begins within any building containing asbestos.
Barricades, Barriers, and Warnings	Your barricades must meet the OSHA requirements. In addition, you assume control of your work area during your activities unless otherwise specified in writing by the contracting officer (CO) or contracting officer's representative (COR).
Confined Spaces	Confined space work must meet the OSHA requirements. You must have a comprehensive confined space program that includes a written program, employee training, entry and testing equipment, and rescue capabilities. If you require access to confined space requiring a permit, then the trained, designated Postal Service representative must review and approve the project and permit. Entry into other confined spaces must be in accordance with OSHA regulations.
Electrical Work	Lock or rope off work areas involving exposed energized equipment or have an attendant present to prevent accidental contact by unqualified people. Refer to the Barricade section of this guideline for additional information.
Elevated Work and Fall Protection	Follow strictly the applicable OSHA fall protection requirements.
Excavation	All excavations 4 feet or more in depth must be properly shored or sloped and meet all OSHA requirements. Before any digging or drilling commences, inform the Postal Service COR and call Dig Safe or its local equivalent to determine whether any underground utilities are located in the work area. Submit documentation that these notifications have been performed. You must not begin digging or drilling until you have verified that underground utilities have been identified and are properly marked so that work may be accomplished in a safe manner.
Fire Protection	Do not block, remove, or otherwise prevent Postal Service fire extinguishers from being immediately accessible and usable. If a system must be impaired by a scheduled shutdown, notify the appropriate Postal Service representative and do not proceed without Postal Service authorization.
Hazard Communication	Inform the Postal Service before any chemicals are used. Before materials are brought on site, provide material safety data sheets (MSDSs) and an inventory of materials. For projects that are anticipated to use substantial quantities of hazardous materials, you may be required to provide a routing, storage, and waste disposal plan. Upon request, the Postal Service will make available to you MSDSs for hazardous materials the Postal Service uses in the Contractor work area.
Hazardous Materials	Follow all OSHA requirements regarding hazardous materials. Hazardous materials include, but are not limited to, flammable and combustible liquids, gasoline, diesel fuel, motor oil, lubricating oil, hydraulic oil, corrosive cleaners, and battery acid. Provide secondary containment for all containers of liquids that are over 5 gallons in capacity. Immediately report all hazardous material releases ("spills"), regardless of how small or where they occur, to the designated Postal Service representative. Releases include solids, liquids, and gases.
Hot Work	Do not begin any hot work until a Postal Service qualified person has completed and signed a Postal Service Hot Work Permit. The permit will be valid for only a single work shift. You must display the permit at the work site.

	You are prohibited from performing hot work (a) when the Postal Service has not authorized it, (b) in locations in which fire protection systems have been impaired, (c) in the presence of explosive or flammable atmospheres, or (d) in locations were large quantities of flammable and combustible materials are unprotected.
Powered Industrial Trucks	Powered industrial trucks and other mobile equipment must follow all traffic rules of the postal facility. The maximum speed limit for in-plant powered vehicles is 5 miles per hour. Many work areas have posted speed limits that you must strictly follow. Perform refueling only in authorized locations following safe procedures. As a general rule, the Postal Service does not allow gas- or diesel-powered industrial equipment inside postal facilities. Coordinate exceptions to the rule through the servicing safety office.
Ladders	Strictly follow all OSHA requirements regarding ladders. Barricade the ladder use area to prevent contact with mobile equipment and employees.
Lead-Based Paint	*Review of Facility Lead Survey:* Before any construction, alterations, and/or repair activities begin, determine whether LBP will be disturbed. If the painted surface has not been tested, you must have it tested before beginning any activities that could potentially disturb LBP. *Proper Work Practices:* If LBP is present, follow proper control procedures and work practices. *Consultation With Facility Manager:* Consult with the facility manager or his or her designee before the start of any work likely to disturb LBP. Examples of activities that may affect LBP include paint removal by scraping, sanding, power tools, or heat guns; alterations that include removing drywall, structural steel, or other building materials coated with LBP; welding, cutting, or other hot work on coated metal surfaces; abrasive blasting of mail boxes and other equipment; and moving or cleaning of abrasive blasting enclosures.
Lockout/Tagout	Provide a copy of your lockout/tagout procedures, which must meet or exceed the OSHA Lockout/Tagout standard. You will be given access to and must review the Postal Service lockout/tagout program. If you encounter a Postal Service lockout/tagout device that prevents the continuation of work, do not make any attempts to remove, tamper with, or bypass the devices. Contact a Postal Service Maintenance official and make arrangements to have the lockout device removed in accordance with Postal Service lockout removal policies.
Machinery and Equipment	Postal facilities use state-of-the-art mail handling machinery, some of which may operate automatically. Hazards may include, but are not limited to, moving parts and power transmission apparatus, pinch points, electrical contact, and hot surfaces. Do not use machine surfaces as work platforms. Contact the designated Postal Service representative concerning facility machinery.
Personal Protective Equipment	Before beginning work, evaluate the work area for hazards, determine whether contract employees will be required to use personal protective equipment (PPE) to protect themselves from these hazards, and document the hazard assessment. Wear the PPE required by the postal facility in which you are working, regardless of your perception of hazard potential.
Regulated And Prohibited Materials	*Pesticides.* The Postal Service has restricted the use of pesticides. Obtain prior approval of the district environmental compliance coordinator for special cases that may require the use of pesticide treatments. *Chemical Prohibition.* Adhere to the Postal Service Hazard Communication Program and chemical prohibition policies. Do not use on postal property any of the chemicals prohibited by EPA unless a Postal Service person authorizes its use (each of these chemicals must be authorized separately). The USPS Office of Sustainability can supply the list. *Asbestos-Free Products.* Install no asbestos-containing products or materials in postal facilities. *Lead.* Apply no lead-based paint in postal facilities.
Scaffolding	Follow strictly the applicable OSHA scaffolding requirements. Provide adequate barrier protection around the scaffolding to prevent hazards to postal workers.
Walking and Working Surfaces	If the project requires temporary modifications to the means of egress, inform the designated Postal Service representative before performing such actions, provide appropriate alternative means of egress, and communicated these to all employees.

Emergency Procedures

Preparations for Emergency	Be prepared for emergency situations. Ensure that emergency telephone numbers are site specific, readily available, easily read, and communicated to all employees. Train and authorize employees to implement emergency procedures.
Medical Emergencies	Have procedures and medical supplies to provide emergency medical services for your own personnel. Determine how to contact emergency medical services before work begins, and have on-site capabilities to contact such services immediately.
Fires	See Fire Protection above. In the event of a fire, you must: - Immediately remove personnel from the area or building following Postal Service evacuation procedures. - Immediately contact the nearest postal employee and inform him or her of the fire. You may also activate an emergency alarm in the area. If no postal employees are on-site, immediately contact the local fire department. Personnel trained in the use and limitations of fire extinguishers may attempt to extinguish the fire if it is safe to do so.
Chemical Releases	See Hazardous Materials above. If the event of a hazardous material release, you must: - Immediately remove personnel from the area or building following Postal Service evacuation procedures. - Immediately contact the designated Postal Service representative and inform him or her of the release. You may also activate an emergency alarm in the area. If no postal employees are on-site, immediately contact the local fire department. Contractor personnel should not respond to the release unless specifically trained and protected to perform hazardous material response.
Power Outages	In the event of a power outage, you must: - Immediately stop work and assemble for a head count and possible facility egress. - Inform all contract employees that equipment may automatically restart when power resumes. - Immediately contact the designated Postal Service representative and inform him or her of the status of contract work and personnel head count. Relay at this time all hazards created due to the power outage. When power resumes evaluate the status of operations that were being performed relative to hazard potential. For example, the interruption of ventilation in confined spaces may generate atmospheric hazards.
Accident Investigation and Reporting	As soon as is practical after an accident, investigate and document an accident investigation. The documentation must describe the incident and identify the causes and the corrective actions that will prevent future incidents. Report all accidents, whether or not they result in injury. Give the written report to the Postal Service COR within 24 hours of the accident or incident.

Certificate of Asbestos and Lead-Based Paint

(New Work)

To: Contracting Officer, United States Postal Service

Subject: Certification for new construction

Postal facility name: _____

Postal facility address: _____

Certification for new construction:
This Contractor/Owner hereby certifies that no asbestos-containing material in excess of 1 percent as defined by applicable US Environmental Protection Agency regulations, and no lead-based paint has been furnished or installed at the referenced project.

Contractor/Owner name: _____

Signature: _____

Address: _____

_____

Telephone: _____ Date executed: _____

The penalty for making a false statement is prescribed by 18 USC 1001.

SECTION 014000

QUALITY REQUIREMENTS

PART 1 – GENERAL

1.1 CONTRACTOR QUALITY CONTROL

A. Contractor Quality Control: The Contractor is responsible for the overall quality of all its own work and the work performed by their subcontractors working under this contract. The quality of any part of the work installed must not be less than that required by the technical divisions of this specification. If the COR determines that the quality of work does not conform to the applicable specifications and drawings, the Contractor will be advised in writing of the areas of nonconformance, and within 7 days the Contractor must correct the deficiencies and advise the COR in writing of the corrective action taken.

B. Noncompliance with Quality Control Requirements: Failure of the Contractor to comply with the above requirements may be cause for termination for default as defined in the terms and conditions of the contract provisions and clauses, including those concerning, *Termination for Convenience or Default*, of the general contract clauses.

1.2 SUBMITTALS

A. Prior to the start of on-site work, the Contractor must submit to the Contracting Officer a Contractor Quality Control Plan that includes the following information:
   1. Quality Control Organization: In chart form, showing relationship of Quality Control organization to other elements of Contractor's organization.
   2. Names and qualifications of personnel in Quality Control organization, including Contractor Quality Control Representative, inspectors, Independent Testing and Inspection Laboratory, and Independent HVAC Test and Balance Agency.
   3. Procedures for reviewing coordination drawings, shop drawings, certificates, certifications, or other submittals.
   4. Testing and inspection schedule, keyed to Construction Schedule, indicating tests and inspections to be performed, names of persons responsible for inspection and testing for each segment of work including preparatory, initial, and follow-up.
   5. Proposed forms to be used including Contractor's Daily Report, Contractor Test and Inspection Report and Non-Compliance Check-Off List.

B. For independent testing and inspection laboratories, submit the following:
   1. Name.
   2. Address.
   3. Telephone number.
   4. Names of full time registered engineer.
   5. Responsible officer.
   6. Copy of report of laboratory facilities inspection made by Materials Reference Laboratory of National Bureau of Standards during most recent inspection, with memorandum of remedies of any deficiencies reported by inspection.

1.3 QUALITY CONTROL PROCEDURES

A. Monitor quality control over Contractor staff, subcontractors, suppliers, manufacturers, products, services, site conditions, and workmanship.

B. Comply fully with manufacturer's published instructions, including each step in sequence of installation.

C. Should manufacturer's published instructions conflict with Contract Documents, request clarification from COR before proceeding.

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

E. Perform work by persons who are thoroughly qualified and trained in their respective trade, to produce workmanship of specified quality.

F. Perform tests required by governing authorities having jurisdiction and utilities having jurisdiction.

1.4 TESTING AND INSPECTION LABORATORY SERVICES

A. Selection and Payment:
1. The Contractor shall pay for services of an Independent Testing and Inspection Laboratory to perform specified testing and inspection.
2. Employment of Independent Testing and Inspection Laboratory in no way relieves Contractor of obligation to perform work in accordance with requirements of Contract Documents.

B. Quality Assurance:
1. Comply with requirements of all applicable ASTM standards.
2. Laboratory: Authorized to operate in State in which Project is located.
3. Laboratory Staff: Maintain a full time registered engineer on staff to review services.
4. Testing Equipment: Calibrated at reasonable intervals with devices of and accuracy traceable to either National Bureau of Standards or accepted values of natural physical constraints.

C. Laboratory Responsibilities. Contractor shall ensure the Laboratory has the following responsibilities and limits on authority:
1. Test samples of mixes submitted by Contractor.
2. Provide qualified personnel at Project site. Cooperate with COR and Contractor in performance of services.
3. Perform specified sampling, testing, and inspection of Products in accordance with specified standards.
4. Determine compliance of materials and mixes with requirements of Contract Documents.
5. Promptly notify Contractor Quality Control Representative and COR of observed irregularities or non-conformance of work or Products.
6. Submit one copy of all test results directly to the COR.
7. Perform additional tests as required by COR.
8. Attend appropriate preconstruction meetings and progress meetings.

D. Limits on Authority. Contractor shall ensure the Laboratory has the following limits on authority:
1. Laboratory may not release, revoke, alter, or expand on requirements of Contract Documents.
2. Laboratory may not approve or accept any portion of work.
3. Laboratory may not assume any duties of Contractors.
4. Laboratory has no authority to stop work.

1.5 CONTRACTOR FIELD INSPECTION AND TESTING

A. Contractor: Test and Inspect work provided under this Contract to ensure work is in compliance with Contract requirements. Required tests and inspections are indicated in each individual Specification Section.

B. Preparatory Inspection: Performed prior to beginning work and prior to beginning each segment of work and includes:
   1. Review of Contract requirements.
   2. Review of shop drawings and other submittal data after return and approval.
   3. Examination to assure materials and equipment conform to Contract requirements.
   4. Examination to assure required preliminary or preparatory work is complete.

C. Initial Inspection: Performed when representative portion of each segment of work is completed and includes:
   1. Performance of required tests.
   2. Quality of workmanship.
   3. Review for omissions or dimensional errors.
   4. Examination of products used, connections and supports.
   5. Approval or rejection of inspected segment of work.

D. Follow-Up Inspections: Performed daily, and more frequently as necessary, to assure non-complying work has been corrected.

E. Testing and Inspection: Perform testing and inspection in accordance with requirements in individual Specification Sections.

1.6 CONTRACTOR'S DAILY REPORT

A. In accordance with the terms and conditions of the contract provisions and clauses, including those concerning *Performance and Superintendence of Work by Contractor*, the Contractor shall submit daily report to COR, for days that work was performed. Include the following information:
   1. Date, weather, minimum and maximum temperatures, rainfall, and other pertinent weather occurrences.
   2. Daily workforce of Contractor and subcontractors, by trades.
   3. Description of work started, ongoing work, and work completed by each subcontractor.
   4. Coordination implemented between various trades.
   5. Approval of substrates received from various trades.
   6. Nonconforming and unsatisfactory items to be corrected.
   7. Remarks, to include at a minimum, any potential delays, schedule changes, workplace incidents or other items of note. However, nothing reported herein shall relieve the Contractor of the separate responsibility under other terms and conditions of the Contract provisions and clauses to provide specific notice to the Contracting Officer,

1.7 CONTRACTOR'S TEST AND INSPECTION REPORTS

A. Prepare and submit, to COR, a written report of each test or inspection signed by Contractor Quality Control Representative performing inspection within 2 days following day inspection was made.

B. Include the following on written reports of inspection:
   1. Cover sheet prominently identifying that inspection "CONFORMS" or "DOES NOT CONFORM" to Contract Documents.
   2. Date of inspection and date of report.
   3. Project name, location, solicitation number, and Contractor.
   4. Names and titles of individuals making inspection, if not Contractor's Project Field Superintendent.
   5. Description of Contract requirements for inspection by referencing Specification Section.
   6. Description of inspection made, interpretation of inspection results, and notification of significant conditions at time of inspection.
   7. Requirements for follow-up inspections.

1.8 NON-COMPLIANCE CHECK-OFF LIST

A. Maintain check-off list of work that does not comply with Contract Documents, stating specifically what is non-complying, date faulty work was originally discovered, and date work was corrected. No requirement to report deficiencies corrected same day it was discovered. Submit copy of Non-Compliance Check-Off List of non-complying work items to COR on a weekly basis.

1.9 COMPLETION AND INSPECTION OF WORK

A. Prior to final acceptance by Contracting Officer, submit a certification signed by Contractor to Contracting Officer stating that all work has been inspected and all work, except as specifically noted, is complete and in compliance with Contract Documents.

PART 2 – PRODUCTS

NOT USED

PART 3 – EXECUTION

NOT USED

END OF SECTION

USPS Specification Last Revised: 10/1/2022

SECTION 015000

TEMPORARY FACILITIES AND CONTROLS

PART 1 – GENERAL

1.1 SUMMARY

A. Provide all temporary facilities and services required to complete the Work and to comply with OSHA and other applicable regulations.

B. Maintain temporary facilities in a proper, safe, operating and sanitary condition for the duration of this Contract. Upon completion of this Contract, all such temporary work and facilities shall be removed in their entirety and the premises will be restored to its prior condition.

1.2 CONSTRUCTION-USE UTILITIES

A. Arrange with the local utility companies for gas, water, and electricity required for construction under this project and pay all costs in connection with them. The Contractor to, at its own expense, make all temporary connections and install distribution lines. All temporary lines to be maintained by the Contractor in a manner satisfactory to the COR and to be removed by in like manner before final acceptance of the construction.

1.3 TEMPORARY ELECTRIC

A. Costs: Make arrangements with the serving utility for power, pay deposits, and install equipment, poles, wiring, switches, and outlets necessary to provide adequate supply for lighting and power for construction purposes. Pay for power used during construction and for removal of all temporary equipment.

B. Service Required: Provide temporary electric power throughout the construction period so that power can be secured at any desired point with no more than a 100-foot extension cord; power centers for miscellaneous tools and equipment used in the construction work (not less than one per 2,000 square feet of floor space, consisting of a weatherproof distribution box with a minimum of four 20-amp, 120-volt grounded outlets with a circuit breaker protection for each outlet); lighting for safe and adequate working conditions throughout buildings and stairways (at least 1/4 watts of incandescent lighting per square foot, with a socket voltage of at least 110 volts and using 100 watt lamps minimum); power for construction site offices and other temporary storage and construction building; and power for testing and checking equipment welding units, and terrazzo grinders.

C. Safety: Provide and maintain lights and signs to prevent damage or injury and illuminate all hazardous areas. Safety lights to be kept burning from dusk to dawn.

D. Requirements of Regulatory Agencies: Obtain permits as required by local government authorities; obtain easements as required across private property other than that of the owner for temporary power service; and comply with the National Electrical Code, applicable local codes, and utility regulations.

E. Use of Permanent System: Regulate all parts of the permanent electrical system that is used for construction purposes in order to prevent interference with safety and with the orderly progress of the Work. Leave permanent electrical services in a condition as good as new.

F. Materials: Materials may be new or used but will be adequate in capacity for the purposes intended and will not create unsafe conditions or violate the requirements of applicable codes. At the Contractor's option, patented specialty materials may be used if UL-approved.

G. Conductors: Use wire, cable, or busses of appropriate type, sized in accordance with the National Electrical Code for the applied loads. Use only UL-approved wire.

H. Equipment: In compliance with NEMA standards, provide an appropriate enclosure for the environment in which the equipment is used.

I. Installation: Provide all required facilities, including transformers, conductors, poles, conduits, raceways, fuses, switches, fixtures, and lamps, located so as to avoid interference with cranes and materials-handling equipment, storage areas, traffic areas, and work under other contracts. All work to have a neat and orderly appearance and be structurally sound throughout, and properly maintained to give continuous service and to provide safe working conditions. Modify the service as required by the progress of the Work.

J. Removal: Remove all temporary equipment and materials upon completion of construction, repair all damage caused by the installation, and restore the premises to its prior condition.

1.4 TEMPORARY HEATING AND VENTILATION

A. Provide cold weather protection and temporary heat and fuel as required to carry on the Work expeditiously during inclement weather, protect all work and materials against damage from dampness and cold, dry out the building, and provide suitable working conditions for the installation and curing of materials until final acceptance by the Contracting Officer. Refer to requirements in detailed specifications for temperatures to be provided and maintained for installation and curing of work under the various trades.

B. Provide temporary heat consisting of smokeless heating appliances satisfactory to the COR. Furnish and pay for all necessary fuel and attendants in any trade and maintain temporary heat at temperatures adequate for the intended purpose.

C. When the permanent heating system is operable and the Contractor elects to use it, the Contractor to provide all fuel, labor, materials, services, equipment, and attendants necessary to operate the permanent heating system for temporary heat and to maintain a minimum temperature as specified in the terms and conditions of the contract provisions and clauses, including those concerning *Heat*. If the permanent system is used to provide temporary heating and ventilation, the Contractor to replace all filters and restore the system to a condition satisfactory to the COR.

1.5 TEMPORARY FIRE PROTECTION

A. Install and maintain temporary fire-protection facilities and equipment of sufficient size and types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 241.

B. Prohibit smoking outside of areas designated by USPS.

C. Supervise welding operations, combustion-type temporary heating units, and similar sources of fire ignition according to requirements of authorities having jurisdiction.

D. Develop and supervise an overall fire-prevention and -protection program for personnel at Project site. Review requirements with USPS personnel and local fire department and establish procedures to be followed. Instruct personnel in methods and procedures. Post warnings and information.

E. Take all precautions to prevent possibility of fire resulting from construction operations. Particularly avoid hazardous accumulations of rubbish and unsecured, flammable materials.

F. Provide emergency fire extinguishing equipment of adequate type and quantity, readily available and properly maintained.

1.6 TEMPORARY FIRST AID FACILITIES

A. Provide adequate first aid facilities and equipment for construction personnel.

1.7 TEMPORARY WATER

A. Provide and maintain a temporary water supply system for building purposes, extending branches to convenient points and terminating them with a proper stop and hose connection. Before any paving is laid, the temporary supply to be removed and the tap in the main supply properly capped.

1.8 SANITARY PROVISIONS

A. Provide and keep in neat and sanitary condition conveniences and accommodations for the use of the construction personnel necessary to comply with the requirements and regulations of the local department of health and of other bodies having jurisdiction.

1.9 APPROACHES AND EXITS

A. Provide all necessary approaches and exits required to properly execute the Work.

1.10 PROJECT PHOTOS

A. Provide photographs of the Work with the intended purpose of illustrating, generally, the work in place at specific points in time.
   1. Frequency: every payment application.
   2. Media: Digital JPG format on USB
   3. Number: Minimum of 2, separate viewpoints.
   4. Content: Interior and exterior of each dock (Photo should have include the dock number).

END OF SECTION

USPS Specification Last Revised: 10/1/2022

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SECTION 016000

PRODUCT REQUIREMENTS

PART 1 – GENERAL

1.1 PRODUCT OPTIONS AND SUBSTITUTIONS

A. Refer to contract provisions and clauses:
   1. Provision 2-7, Brand Name or Equal.
   2. Clause F-401, Optional Materials or Methods.

B. Provide Products that comply with Contract Documents, which are undamaged and new at time of installation.

C. Provide Products complete with accessories, fasteners, trim, finish, safety guards, and other devices and details needed for complete installation and intended use and effect.

D. Substitutions may be considered if:
   1. An equal product was proposed during the solicitation and was accepted, in writing, by the Postal Service prior to award of the Contract.
   2. During the course of the Work a Product becomes unavailable and the Contractor:
      a. Represents that the proposed substitute Product has been investigated and it has been determined that it is equal or superior in all respects to that specified;
      b. Will provide the same guarantee for the substitution that he would for that specified; and
      c. Will coordinate the installation of the accepted substitute, making such changes as may be required for the Work to be complete in all respects, at no additional cost to the Postal Service and at no extension to Contract Time.

1.2 PRODUCT DELIVERY REQUIREMENTS

A. Transport and handle Products in accordance with manufacturer's instructions, using means and methods that will prevent damage, deterioration, and loss, including theft.

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

C. Coordinate Product delivery with installation schedule to assure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.

D. Deliver Products to Project site in undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.

E. Promptly inspect shipments to ensure that Products comply with project requirements, quantities are correct, Products are undamaged, and properly protected.

F. Provide equipment and personnel to handle Products by methods to prevent soiling, disfigurement, or damage.

1.3 PRODUCT STORAGE AND HANDLING REQUIREMENTS

A. Store and protect Products in accordance with manufacturers' published instructions, with seals and labels intact and legible.

B. Store Products subject to damage by elements above ground, under cover in weathertight enclosure, with ventilation adequate to prevent condensation. Maintain temperature and humidity within range required by manufacturer's published instructions.

C. For exterior storage of fabricated Products, place on sloped supports, above ground.

D. Provide off-site storage and protection when Project site does not permit on-site storage or protection.

E. Cover Products subject to deterioration with impervious sheet covering. Provide ventilation to avoid condensation or potential degradation of Products.

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

G. Provide equipment and personnel to store Products by methods to prevent soiling, disfigurement, or damage.

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

END OF SECTION

USPS Specification Last Revised: 10/1/2022

SECTION 017300

EXECUTION

PART 1 – GENERAL

1.1 LAYOUT OF WORK

A. The Contractor must lay out its work from Postal Service-established base lines and benchmarks indicated on the drawings and is responsible for all measurements based on them. The Contractor must furnish, at its own expense, all stakes, templates, platforms, equipment, tools, materials, and labor as may be required in laying out any part of the work from the base lines and benchmarks established by the Postal Service. The Contractor is responsible for the execution of the work to those lines and grades established or indicated by the COR.

1.2 CONTRACTOR'S TEMPORARY USE OF FACILITIES AND EQUIPMENT

A. No new facilities or equipment intended for the permanent installation, including materials-handling vehicles, may be used for temporary purposes unless specified in the Contract or unless the Contractor has the written permission of the COR.

1.3 FOR CONTRACT WORK PERFORMED IN AN EXISTING OCCUPIED POSTAL FACILITY

A. The Postal Service will continue to operate the facility during performance of the work. Accordingly, the Contractor must arrange and schedule contract work to facilitate such continued use of the site and building, with minimal disruption to Postal operations. Contract work that cannot be performed during normal Postal operating hours and must be performed after hours or during periods when the facility is normally closed, must be coordinated with the COR.

B. If contract work is being performed on the roof, or above or near electronic equipment or mail processing equipment, Contractor must provide temporary interior protection above and/or around such equipment as appropriate or as indicated in construction documents. Interior protection shall be anti-static 6-mil poly. Remove temporary protection upon completion of the work. Coordinate interior protection with local management.

1.4 CLEANING

A. Refer to the terms and conditions of the contract provisions and clauses, including those clauses *Debris and Clean Up*.

B. Cleaning During Construction:
   1. Maintain areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition.
   2. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces, prior to enclosing the space.
   3. Broom and vacuum clean interior areas prior to start of surface finishing, and continue cleaning to eliminate dust.
   4. Collect and remove waste materials, debris, and rubbish from site as specified in the Environmental Compliance and Management Plan as required in Section 013543 - Environmental Procedures.

C. Final Cleaning:

1. Use cleaning materials and agents recommended by manufacturer or fabricator of surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property, or that might damage finished surfaces.
2. Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit of Work to condition expected from a commercial building cleaning and maintenance program. Comply with manufacturer's published instructions.
3. Complete following cleaning operations before requesting COR inspection for Substantial Completion.
    a. Clean Project Site, yard and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste materials, litter and foreign substances. Sweep paved areas broom clean. Remove petro-chemical spills, stains and other foreign deposits. Rake grounds that are neither planted nor paved, to a smooth even-textured surface.
    b. Remove tools, construction equipment, machinery and surplus material from Project Site.
    c. Remove snow and ice to provide safe access to building.
    d. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
    e. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics and similar spaces.
    f. Broom clean concrete floors in unoccupied spaces.
    g. Provide final cleaning, waxing, and buffing of resilient tile, in accordance with manufacturer's requirements.
    h. Vacuum clean carpet and similar soft surfaces, removing debris and excess nap. Shampoo if required.
    i. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other substances that are noticeable vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials. Polish mirrors and glass, taking care not to scratch surfaces.
    j. Remove labels that are not permanent labels.
    k. Touch-up and otherwise repair and restore marred exposed finishes and surfaces. Replace finishes and surfaces that can not be satisfactorily repaired or restored, or that show evidence of repair or restoration. Do not paint over "UL" and similar labels, including mechanical and electrical name plates.
    l. Wipe surfaces of mechanical and electrical equipment, and other similar equipment. Remove excess lubrication, paint and mortar droppings and other foreign substances.
    m. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.
    n. Replace air disposable filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills. Clean ducts, blowers, and coils if units were operated without filters during construction.
    o. Clean light fixtures, lamps, globes and reflectors to function with full efficiency. Replace burned out bulbs, and defective and noisy starters in fluorescent and mercury vapor fixtures.
    p. Leave Project clean and ready for occupancy.
4. Engage an experienced licensed exterminator to make a final inspection, and rid Project of rodents, insects, and other pests. Comply with regulations of local authorities having jurisdiction.
5. Remove temporary protection and facilities installed during construction to protect previously completed installations during remainder of construction.
6. Comply with governing regulations and safety standards for cleaning operations. Remove waste materials from Project Site and dispose of in accordance with requirements of local authorities having jurisdiction.
7. Where extra materials of value remain after completion of construction, they become Postal Service property and these materials should be stored as directed by COR.

END OF SECTION

USPS Specification Last Revised: 10/1/2022

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SECTION 017419

CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes: Procedures for achieving the most environmentally conscious Work feasible within the limits of the Construction Schedule, Contract Sum, and available materials, equipment, and products.
   1. Participate in promoting efforts of Postal Service to create an energy-efficient and environmentally-sensitive structure.
   2. Use recycled-content, toxic-free, and environmentally-sensitive materials and equipment.
   3. Use environmentally-sensitive procedures.
      a. Protect the environment, both on-site and off-site, during demolition and construction operations.
      b. Prevent environmental pollution and damage.
      c. Effect optimum control of solid wastes.

B. Related Documents: The Contract Documents, as defined in Section 011000 - Summary of Work, apply to the Work of this Section. Additional requirements and information necessary to complete the Work of this Section may be found in other documents.

C. Related Sections:
   1. Section 013200 - Construction Progress Documentation.
   2. Section 014000 - Quality Requirements: Contractor's Daily Report.
   3. Section 015000 - Temporary Facilities And Controls: Temporary ventilation, progress cleaning and waste removal.
   4. Section 016000 - Product Requirements: Substitutions.
   5. Section 017704 – Closeout Procedures and Training: Record submittals.
   6. Section 024113 – Selective Site Demolition.

1.2 DEFINITIONS

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

B. Construction and demolition waste: Includes solid wastes, such as building materials, packaging, rubbish, debris, and rubble resulting from construction, remodeling, repair, and demolition operations.
   1. Rubbish: Includes both combustible and noncombustible wastes but excludes recyclable materials such as paper, boxes, glass, metal, lumber scrap and metal cans.
   2. Debris: Includes both combustible and noncombustible wastes, such as leaves and tree trimmings, stumps and rubble that result from construction or maintenance and repair work.

C. Chemical waste: Includes petroleum products, bituminous materials, salts, acids, alkalis, herbicides, pesticides, organic chemicals, and inorganic wastes.

D. Diversion: Redirection of waste ordinarily deposited in a municipal landfill to a recycling facility or to another destination for reuse.

E. Environmental pollution and damage: The presence of chemical, physical, or biological elements or agents, which adversely affect human health or welfare; unfavorably alter ecological balances; or degrade the utility of the environment for aesthetic, cultural, or historical purposes.

F. Hazardous materials: Includes pesticides, biocides, and carcinogens as listed by recognized authorities, such as the Environmental Protection Agency (EPA) and the International Agency for Research on Cancer (IARC).

G. Interior final finishes: Materials and products that will be exposed at interior, occupied spaces; including flooring, wallcovering, finish carpentry, and ceilings.

H. Municipal Solid Waste Landfill: A permitted facility that accepts solid, non-hazardous waste such as household, commercial, and industrial waste, including construction and demolition waste.

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

J. Sediment: Soil and other debris that has been eroded and transported by storm or well production runoff water.

K. Sanitary wastes:
1. Garbage: Refuse and scraps resulting from preparation, cooking, distribution, or consumption of food.
2. Sewage: Domestic sanitary sewage.

L. Wet products: Materials and products installed in wet form, including paints, sealants, adhesives, and special coatings.

1.3 SUBMITTALS

A. Solid Waste Management and Environmental Protection Plan: Prepare and submit at the Preconstruction Meeting a Solid Waste Management and Environmental Protection Plan including, but not limited to, the following:
1. Procedures for Recycling/Re-Use Program.
2. Schedule for application of interior finishes.
3. Revise and resubmit Solid Waste Management and Environmental Protection Plan as required by Postal Service.
a. Approval of the Contractor's Solid Waste Management and Environmental Protection Plan, will not relieve the Contractor of responsibility for adequate and continuing control of pollutants and other environmental protection measures.
4. Any permits required by local, state or federal agencies.

B. With each Contractor's Report as specified in Section 014000 – Quality Requirements, submit an updated Summary Of Solid Waste Disposal And Diversion. Submit on form in Appendix A of this Section. Include manifests, weight tickets, receipts, and invoices specifically identifying the Project and waste material for:
1. Municipal Solid Waste Landfills.
2. Recycling/Reuse Facilities.

C. With Record Submittals as specified in Section 017704 - Closeout Procedures and Training, submit the following:
1. Final Summary Of Solid Waste Disposal And Diversion. Submit on form in Appendix A of this Section.
2. Resource Conservation and Recovery Act Project Summary. Submit on form in Appendix B of this Section.

PART 2 – PRODUCTS

PART 3 – EXECUTION

3.1 RECYCLING AND REUSE

A. Collection: Implement a recycling/reuse program that includes separate collection of waste materials of the following types as appropriate to authorized local and regional recycling/reuse facilities:
   1. Asphalt.
   2. Concrete.
   3. Metal.
      a. Ferrous.
      b. Non-ferrous.
   4. Wood.
   5. Debris.
   6. Glass.
   7. Clay brick.
   8. Paper/Cardboard.
   9. Plastic.
   10. Gypsum.
   11. Paint.
   12. Carpet.
   13. Others as appropriate.

B. Recycling/reuse centers: Contact state and/or local governmental solid waste offices, Environmental Protection Agency (EPA) regional offices, and authorized applicable non-profit organizations.
   1. Asphalt
   2. Concrete.
   3. Metal.
   4. Wood.
   5. Debris.
   6. Glass.
   7. Clay brick.
   8. Paper/Cardboard.
   9. Plastic.
   10. Gypsum.
   11. Paint.
   12. Carpet.
   13. Others as appropriate.

C. Handling:
   1. Clean materials which are contaminated prior to placing in collection containers. Deliver materials free of dirt, adhesives, solvents, petroleum contamination, and other substances deleterious to recycling process.
   2. Arrange for collection by or delivery to the appropriate recycling or reuse facility.

D. Participate in re-use programs: identify local and regional re-use programs, including but not limited to non-profit organizations such as schools, local housing agencies, and public arts programs, that accept used materials. The following are examples for Contractor's information only.
   1. National materials exchange network, such as CAL-MAX, a free service provided by various state and regional offices, designed to help businesses find markets for materials

that traditionally would be discarded. The premise of the program is that material discarded by one business may be a resource for another business.

a. Items and regions covered by materials exchange programs may vary. Contact the applicable regional materials exchange program. In California, contact CAL-MAX at (916) 255-2369.

2. Habitat For Humanity, a non-profit housing organization that rehabilitates and builds housing for low income families.
   a. Sites requiring donated materials vary. Contact the national hotline (800) HABITAT.

E. Rebates, tax credits, and other savings obtained for recycled or re-used materials accrue to Contractor.

3.2 ENVIRONMENTAL CONTROLS

A. Protection of natural resources: Preserve the natural resources within the Project boundaries and outside the limits of permanent Work performed under this Contract in their existing condition or restore to an equivalent or improved condition as approved by Postal Service, upon completion of the Work.

1. Confine demolition and construction activities to work area limits indicated on the Drawings and as directed by COR.
   a. Temporary construction: As specified in Section 015000 - Temporary Facilities And Controls.
   b. Demolition and salvage operations: As specified in Section 024119 - Selective Structure Demolition.
   c. Disposal operations for demolished and waste materials that are not identified to be salvaged, recycled or reused:
      1) Remove debris, rubbish, and other waste materials resulting from demolition and construction operations, from site.
      2) No burning permitted.
      3) Transport materials with appropriate vehicles and dispose off-site to areas which are approved for disposal by governing authorities having jurisdiction.
      4) Avoid spillage by covering and securing loads when hauling on or adjacent to public streets or highways. Remove spillage and sweep, wash, or otherwise clean project site, streets, or highways.
      5) Comply with applicable federal, state and/or local regulations.
2. Water resources as follows:
   a. Comply with requirements of the National Pollutant Discharge Elimination System (NPDES) and the State Pollutant Discharge Elimination System (SPDES).
   b. Oily substances: Prevent oily or other hazardous substances from entering the ground, drainage areas, or local bodies of water.
      1) Store and service construction equipment at areas designated for collection of oil wastes.
   c. Mosquito abatement: Prevent ponding of stagnant water conducive to mosquito breeding habitat.
   d. Prevent run-off from site during demolition and construction operations.
3. Land resources: Prior to construction, identify land resources to be preserved within the Work area. Do not remove, cut, deface, injure, or destroy land resources including trees, shrubs, vines, grasses, top soil, and land forms without permission from Postal Service.
4. Air Resources: Prevent creation of dust, air pollution, and odors.
   a. Use water sprinkling, temporary enclosures, and other appropriate methods to limit dust and dirt rising and scattering in air to lowest practical level.

1) Do not use water when it may create hazardous or other adverse conditions such as flooding and pollution.

b. Do not use any hazardous chemicals on USPS property when it is a shared work space with USPS employees. If chemicals are authorized for use, store volatile liquids, including fuels and solvents, in closed containers.

c. Properly maintain equipment to reduce gaseous pollutant emissions.

d. Interior final finishes: Schedule construction operations involving wet products prior to packaged dry products to the greatest extent possible in accordance with Postal Service approved Solid Waste Management and Environmental Protection Plan.

e. Temporary Ventilation:

1) Provide adequate ventilation during and after installation of interior wet products and interior final finishes.

2) Provide adequate ventilation of packaged dry products prior to installation. Remove from packaging and ventilate in a secure, dry, well-ventilated space free from strong contaminant sources and residues. Provide a temperature range of 60 degrees F minimum to 90 degree F maximum continuously during the ventilation period. Do not ventilate within limits of Work unless otherwise approved by the COR.

f. Pre-occupancy ventilation: After final completion and prior to initial occupancy, provide adequate ventilation for minimum 5 days. Pre-occupancy ventilation procedures:

1) Use supply air fans and ducts only.

2) Temporarily seal exhaust ducts.

3) Temporarily disable exhaust fans.

4) Provide exhaust through operable windows or temporary openings.

5) Provide temporary exhaust fans as required to pull exhaust air from deep interior locations. Stair towers may be used for exhausting air from the building during the temporary ventilation.

6) After pre-occupancy ventilation and prior to final testing and balancing of HVAC system, replace air filters and make HVAC system fully operational.

5. Fish and Wildlife Resources: Manage and control construction activities to minimize interference with, disturbance of, and damage to fish and wildlife.

6. Noise Control: Perform demolition and construction operations to minimize noise. Perform noise producing work in less sensitive hours of the day or week as directed by Postal Service .

a. Repetitive, high level impact noise will be permitted only between the hours of 8:00 a.m. and 6:00 p.m. Do not exceed the following dB limitations:

Sound Level in dB	Time Duration of Impact Noise
70	More than 12 minutes in any hour
80	More than 3 minutes in any hour

b. Provide equipment, sound-deadening devices, and take noise abatement measures that are necessary for compliance.

END OF SECTION

Attachment A

SUMMARY OF SOLID WASTE DISPOSAL AND DIVERSION

Project Name: ____ FMS Project Number: ___

Contractor Name: _____ License Number: _____

Contractor Address: _____

Solid Waste Material	**Date Material** Disposed/ **Diverted**	**Amount Disposed/ Diverted** (ton or cu. yd)	**Municipal Solid Waste Facility** (name, address, & **phone number)**	**Recycling/Reuse Facility (name, address, & phone number)**	**Comments (if disposed, state why not diverted)**
Asphalt					
Concrete					
Metal					
Wood					
Debris					
Glass					
Clay brick					
Paper/ Cardboard					
Plastic					
Gypsum					
Paint					
Carpet					
Other:					

Signature: _____ Date: _____

Attachment B

RESOURCE CONSERVATION AND RECOVERY ACT - PROJECT SUMMARY

Project Name: ___ FMS Project Number: ___

Contractor Name: _____ License Number: _____

Contractor Address: _____

1.0 EPA GUIDELINE ITEMS

A. Fly Ash:

1. Total dollar amount of concrete and cement provided for this project.
   $_____.
2. Total dollar amount of concrete and cement containing fly ash provided for this project.
   $_____.
3. Were there any technical impediments to increasing the amount of concrete and cement containing fly ash provided for this project? _____.
   a. If yes, please explain. _____
   _____
   _____
   _____.

B. Building Insulation Products:

1. Total dollar amount of building insulation products provided for this project.
   $_____.
2. Total dollar amount of building insulation products containing recycled materials provided for this project. $_____.
3. Were there any technical impediments to increasing the amount of building insulation products containing recycled materials provided for this project? _____.
   a. If yes, please explain. _____
   _____
   _____
   _____.

C. Carpet:

1. Total dollar amount of carpet provided for this project. $_____.
2. Total dollar amount of carpet containing recycled materials provided for this project.
   $_____.
3. Were there any technical impediments to increasing the amount of carpet containing recycled materials provided for this project?_____.
   a. If yes, please explain. _____
   _____
   _____
   _____.

D. Floor Tiles (resilient):

1. Total dollar amount of floor tile (resilient) provided for this project. $_____.
2. Total dollar amount of floor tile (resilient) containing recycled materials provided for this project. $_____.
3. Were there any technical impediments to increasing the amount of floor tile (resilient) containing recycled materials provided for this project? _____.
   a. If yes, please explain. _____
   _____
   _____
   _____.

E. Floor Tiles (ceramic):

1. Total dollar amount of floor tile (ceramic) provided for this project. $_____.
2. Total dollar amount of floor tile (ceramic) containing recycled materials provided for this project. $_____.
3. Were there any technical impediments to increasing the amount of floor tile (ceramic) containing recycled materials provided for this project? _____.
   a. If yes, please explain. _____
   _____
   _____
   _____.

F. Hydraulic Mulch:

1. Total dollar amount of hydraulic mulch provided for this project. $_____.
2. Total dollar amount of hydraulic mulch containing recycled materials provided for this project. $_____.
3. Were there any technical impediments to increasing the amount of hydraulic mulch containing recycled materials provided for this project? _____.
   a. If yes, please explain. _____
   _____
   _____
   _____.

G. Compost:

1. Total dollar amount of compost provided for this project. $_____.
2. Total dollar amount of compost containing recycled materials provided for this project. $_____.
3. Were there any technical impediments to increasing the amount of hydraulic mulch containing recycled materials provided for this project? _____.
   a. If yes, please explain. _____
   _____
   _____
   _____.

2.0 SPECIFICATIONS

NOT USED

3.0 SOLID WASTE PREVENTION

A. Total dollar amount of solid waste disposed (landfill) for this project. $_____.

B. Total weight of solid waste disposed (landfill) for this project. $_____.

4.0 RECYCLING

A. Total dollar value of solid waste diverted from landfill and recycled or reused for this project. (Express as total dollar amount for solid waste disposal in landfill for equivalent type and amount of diverted waste.)
$_____.

B. Total weight of solid waste diverted from landfill and recycled or reused for this project. (Express as total weight for solid waste disposal in landfill for equivalent type and amount of diverted waste.)
Tons_____.

5.0 COMMENTS

A. Comments and suggestions for increasing amount of recycled materials used in construction materials.
_____
_____
_____
_____
_____
_____.

B. Comments and suggestions for improving solid waste prevention and recycling efforts during construction.
_____
_____
_____
_____
_____
_____.

Signature: _____ Date: _____

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SECTION 017704

CLOSEOUT PROCEDURES AND TRAINING

PART 1 – GENERAL

1.1 MANUALS

A. Purpose: Operation and maintenance manuals are for the training of, and use by, Postal Service employees in the operation and maintenance of the systems and related equipment as specified below. The manuals must consist of instruction on systems and equipment. A separate manual or chapter must be prepared for each of the following classes of equipment or system:
1. EV Chargers
2. Overhead Doors

B. Content: Unless otherwise indicated, each chapter must contain the following, as applicable:
Introduction.
Table of contents.
Description of system (including design intent and considerations).

C. Preparation: The outline below is intended as a general guide for preparing the manuals. The manuals must be prepared to provide for the optimum operation and maintenance of the various systems. The description of systems and general operating instructions for plumbing and electrical manuals may cover only complicated or unusual parts of these systems, such as sewage ejectors, transformers, high tension switchgear, and signal and alarm systems. Manufacturer's literature and data must be those of the actual equipment installed under contract for the particular facility. Further guidance is available in the ASHRAE Handbook, 1984, Systems Volume, Chapter 39, Mechanical Maintenance.

D. Suggested Outline for Operation and Maintenance (O&M) Manuals: This is a suggested outline, with general requirements of O&M manuals. The outline is presented to indicate the extent of material to be covered and the individual items required in manuals for Mail Processing Facilities. The outline may be modified to suit specific installations; however, the purpose of the manual must be fulfilled. The manual is not intended to duplicate manufacturers' data, but proper references must be made in the text of the O&M manual to indicate that that information is applicable and where it is located.
1. Part I. Description and Design Intent
    a. Introduction
        1) Provide a brief description of project and purpose of the maintenance manual. The following statements must be included: "Operation and maintenance of this equipment must be performed in accordance with this manual and posted instructions, subject to compliance with applicable technical guides and standards issued by USPS. It is recognized that minor changes in control points and settings will be required, based on actual operating experience, to correct varying conditions and improve operation. When such changes appear necessary, they must be submitted to the maintenance manager for consideration. Upon approval of any changes, the applicable portions of all copies of the manual and proposed instructions must be revised and reissued, and any change in operating procedure brought to the attention of all operating personnel."
        2) "This manual is specifically developed to assist the Postal official in charge at the facility to operate and maintain the building systems and equipment. Manufacturers' recommendations set forth for certain

components must be followed during the complete warranty period for that equipment."

3) Contents of Manual. This portion of the introduction must explain that the manual is to contain complete operating, maintenance, and safety instructions for all equipment listed. It must also contain any other appropriate references as required to outline an explanation of the manuals and major categories of reference material required with the manuals.

b. Table of Contents

1) The table of contents must list numbers and titles of chapters, sections, and main paragraphs, with their page numbers. Each volume in a set of manuals must contain its own table of contents. Publications containing 10 or more illustrations or tables must include a list of illustrations or tables, as applicable. These lists must show number, title, and page number of each illustration and table. Following is a typical table of contents:

a. Miscellaneous Building Equipment

1.) Dock equipment

2. Part II. Operating Sequence and Procedures

a. Contents: Each chapter must describe the procedures necessary for Postal Service personnel to operate the system and equipment covered in that chapter.

b. Operating Procedures: The operating procedures must be divided into four subsections: Startup, Operation, Emergency Operation, and Shutdown.

1) Startup: Give complete instructions for energizing the equipment and making initial settings and adjustments whenever applicable. If equipment is fully automatic, a statement to that effect is all that is required. If a specific sequence of steps must be performed, give step-by-step instructions in the proper sequence. If timing- (such as warm-up between power-on and adjustment) is important, clearly state the specific minimum time required at the proper point in the procedure. Refer to controls and indicators by panel; make references consistent with the nomenclature used in illustrations and tables of controls and indicators. If preliminary settings differ for different modes of operations, give procedures for each mode.

2) Operation: Give detailed instructions in proper sequence for each mode of operation. When, for a given action on the part of the operator, alternate equipment responses are possible, give the appropriate operation reaction to each.

3) Emergency Operation: If some functions of the equipment can be operated while other functions are disabled, give instructions for operations under these conditions. Include here only those alternate methods of operation (from normal) that the operator can follow when there is a partial failure or malfunctioning of components, or other unusual condition.

4) Shutdown: Include instructions for stopping and securing the equipment after operation. If a particular sequence is required, give step-by-step instructions in that order.

3. Part III. Maintenance Instructions and Requirements

a. Contents: Each chapter must describe the procedures necessary for Postal Service personnel to perform the maintenance on the systems and equipment covered in that chapter. Emphasis must be placed on the method of mechanical control of systems and equipment from a maintenance standpoint. References must be made, as appropriate, to drawings, schematics, and sequences of operation included as part of the construction Contract drawings and

specifications that show piping and equipment arrangements and items of control. Prints of these drawings must be reduced to 11 inches x 17 inches for insertion in the manuals. Drawings must represent the "as-built" condition.

b. Maintenance Procedures: The maintenance procedures must be divided into two categories: Preventive Maintenance and Corrective Maintenance.
   1. Preventive Maintenance
      a. Provide a schedule for preventive maintenance. State, preferably in tabular form, the recommended frequency of performance for each preventive maintenance task (cleaning, inspection, and scheduled overhauls).
      b. Provide instruction and schedules for all routine maintenance cleaning and inspection, with recommended lubricants.
      c. If periodic inspection of equipment is required for operation, cleaning, or other reasons, indicate the items to be inspected and give the inspection criteria for, but not limited to, the following:
         1.) Motors
         2.) Controls
         3.) Filters
         4.) Heat exchangers
   2. Provide instruction for minor repairs or adjustments required for preventive maintenance routines. Minor repair and adjustment must be limited to repairs and adjustments that may be performed without special tools or test equipment and that require no special training or skills. Identify test points and give values for each.

c. Corrective Maintenance
   1. Corrective Maintenance: Corrective maintenance instructions must be predicated upon a logical effect-to-cause troubleshooting philosophy and a rapid replacement procedure to minimize equipment downtime. Instructions and data must appear in the normal sequence of corrective maintenance, for example, troubleshooting first, repair and replacement of parts second, and then the parts list.
   2. Troubleshooting: This information must describe the general procedure for locating malfunctions and must give, in detail, any specific remedial procedures or techniques. The data shown are intended to isolate only the most common equipment deficiencies. Troubleshooting tables, charts, or diagrams may be used to present specific procedures. A guide to this type must be a three-column chart. The columns must be entitled Malfunction, Probable Cause, and Recommended Action. The information must be alphabetically arranged by component, and each component must, in turn, list deficiencies that may be expected. Each deficiency must contain one or more problems with a recommended correction.
   3. Repair and Replacement: Indicate the repair and replacement procedures most likely to be required in the maintenance of the equipment. Information included here must consist of step-by-step instructions for repair and replacement of defective items. Include all information required to accomplish repair or replacement, including information such as torque values. Identify all tools, special equipment, and materials that may be required. Identify uses for maintenance equipment. The paragraphs must contain headings to identify the topics covered.
   4. Safety Precautions: This subsection must comprise a listing of safety precautions and instructions to be followed before, during, and after repairs or adjustments are made or routine maintenance is performed.

d. Manufacturers' Brochures: Include manufacturers' descriptive literature covering devices used in the system, together with illustrations, exploded views, and renewal parts lists. This section must also include special devices manufactured by the Contractor.

e. Special Maintenance: Provide information of a maintenance nature covering warranty items that have not been discussed elsewhere.

f. Shop Drawings: Provide a copy of all approved shop drawings covering approval of equipment for the project with the manufacturers' brochures.

g. Spare Parts Lists: Include a recommended spare parts list for all equipment furnished for the project. The parts list must include a tabulation of descriptive data for all the electrical-electronic spare parts and all the mechanical spare parts proposed for each type of equipment or system. Each part must be properly identified by part number and manufacturer.

h. Warranty: Include a copy of the “special” or extended warranty in the operation and maintenance manual.

E. Submittal, In both “hard” and electronic DVD or CD-ROM format (flash drives are not permitted):

1. Preliminary Submittal: Two draft copies of the completed manuscript for items in this outline must be submitted to the COR for review within 60 days after approval of equipment to be provided. One copy will be returned to the Contractor within 30 days after submittal and, if required, must be revised and resubmitted within 30 days.
2. Final Submittal: four complete sets of manuals must be furnished to the COR not later than 30days before completion of the project.
3. Final Submittal must be accepted by the COR before training can begin.

1.2 POSTED OPERATING INSTRUCTIONS

A. General. Operating instructions and diagrams must be prepared for posting near the equipment. Posted operating instructions must be photographic or equal non-fading reproductions framed under glass or encased in non-discoloring plastic and must be mounted in locations as directed. Copies of the posted operating instructions must also be used with the O&M manuals as a basis for training Postal Service personnel in the operation and maintenance of systems and related equipment installed under contract at the facility.

B. Posted operating instructions must consist of simplified, consolidated equipment, control, and power diagrams graphically representing the entire system and actual equipment installed, including concise written instructions on how to start and stop systems, what settings and conditions are to be observed, and what control adjustments are to be made or maintained by the operation. Posted operating instructions must include, but are not limited to the following:

1. Boiler and burner controls.
2. Refrigeration controls.
3. Heating, ventilating, and air-conditioning controls for each system.
4. Controls for dust collection systems.
5. One-line schematic diagrams of water supply (plumbing).
6. One-line diagrams of steam distribution and hot water and chilled water systems, including risers, main shutoff valves, balancing cocks, and the like.
7. One-line isometric diagrams of sanitary drainage.

1.3 TRAINING

A. The Contractor must train Postal Service personnel in the operation and maintenance of mechanical and electrical equipment. Coordination must be maintained with systems designers for developing the hours of instruction and scope of material to be covered. Training of Postal Service personnel must not begin until the COR has approved the final submittal copy of each O&M manual.

B. Schedule Submittal: The proposed scope of training and materials and instruction schedule must be submitted for review and approval approximately 30 days before the scheduled completion of the buildings. Mutually agreeable dates for training must be arranged with the COR, but the training must be completed before final acceptance of the facility.

C. Scope of Training: Training must include classroom and on-the-job instructions by qualified installation and maintenance personnel having the necessary knowledge, experience, and teaching skills. The use of recording on digital media (DVD or CD discs; flash drives are not permitted) during the instruction period is required. Discs must be turned over to the COR after training has been completed.

D. Time Period of Training: The minimum specific hours of training time required for each category of major equipment and systems is indicated below. Past experience indicates a workable ratio in the vicinity of approximately 25 percent classroom to 75 percent application, except that the ratio may be reversed for control systems. The COR must have the option of redistributing the training times, subject to the total time specified. Training must be presented on an 8-hour per day, 5-day per week schedule, with all reading assignments and review to be within this period.

1.4 TRAINING PERIOD

Item	Time (Hours)
3. Dock Equipment	4 Hours

1.5 TRAINING PARTICIPATION SHEETS

A. Submit to the COR sign-in sheets with the dates and names of all training participants. Training sheets must be reviewed and certified by an authorized facility manager.

1.6 OTHER CLOSEOUT SUBMITTALS

A. Additional requirements for Systems Manuals, Operating Instructions, Training and other deliverables are contained in individual Specification Sections. All closeout requirements must be provided to and accepted by the COR prior to requesting final payment. Examples of additional closeout requirements include, but are not limited to, the following
   1. Final Punch-List with all items certified as complete.
   2. In accordance with the terms and conditions of the contract provisions and clauses, including those concerning *Record "As Built" Drawings*, the Contractor shall submit certified As-Built Record Drawings and Specifications in the quantities and media specified.
   3. In accordance with the terms and conditions of the contract provisions and clauses, including those concerning *Warranty*, the Contractor shall submit all transferable guarantees and warranties for equipment, materials and installations furnished by any manufacturer, supplier, or installer.
   4. Signed Asbestos and Lead-Based Paint Certificate.
   5. RE-4 Certification of Accessibility (CoA) and Facility Accessibility Survey Report.
   6. Material Safety Data Sheets.
   7. Signed and sealed Contractor Release of Claims.

END OF SECTION

USPS Specification Last Revised: 10/1/2022

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SECTION 024119

SELECTIVE STRUCTURE DEMOLITION

1.1 SUMMARY

A. Section Includes:
1. Procedures for demolition and removal of existing building elements.
2. Removal of designated building equipment and fixtures.
3. Salvaged items.
4. Salvaged material.
5. Salvaged items for re-use.

B. Related Documents: The Contract Documents, as defined in Section 011000- Summary of Work, apply to the Work of this Section. Additional requirements and information necessary to complete the Work of this Section may be found in other documents.

C. Related Sections:
1. Section 013543 - Environmental Procedures: Recycling and reuse of waste materials.

1.2 SYSTEM DESCRIPTION

A. The extent of Selective Demolition Work is that Work necessary, and required to facilitate the new construction indicated.

B. Demolition shall be such that all construction, new and existing, can be performed, and completed in accordance with the construction documents.

C. The contractor shall visit the project site and familiarize himself with the existing conditions and project requirements.

D. Verify the scope of the Work under this Section including salvage material. The United States Postal Service will be responsible for removing all materials and equipment which the United States Postal Service wishes to salvage prior to the beginning of this Work.

E. The existing fire protection sprinkler system shall remain in place.

1.3 QUALITY ASSURANCE

A. Engage only personnel who can demonstrate not less than five years successful experience in Work of similar character.

B. Performance Criteria:
1. Requirements of Structural Work: Do not cut structural work in a manner resulting in a reduction of load-carrying capacity of load/deflection ratio.
2. Operational and Safety Limitations: Do not cut operational elements and safety-related components in a manner resulting in a reduction of capacities to perform in a manner intended or resulting in a decreased operational life, increased maintenance or decreased safety.
3. Visual Requirements: Do not cut work which is exposed on the exterior or exposed in occupied spaces of the building in a manner resulting in a reduction of visual qualities or resulting in substantial evidence of the demolition work judged by the Architect to be cut and patched in a visually unsatisfactory manner.

4. Loading: Do not superimpose loads at any point upon existing structure beyond design capacity including loads attributable to materials, construction equipment, demolition operations and shoring and bracing.
5. Vibration: Do not use means, methods, techniques or procedures which would induce vibration into any element of the structure.
6. Fire: Do not use means, methods, techniques or procedures which would produce any fire hazard unless otherwise approved by Contracting Officer.
7. Water: Do not use means, methods, techniques or procedures which would produce excessive water run-off, and water pollution.
8. Air Pollution: Do not use means, methods, techniques or procedures which would produce uncontrolled dust, fumes or other damaging air pollution.

1.4 PROJECT SITE

A. Indicated "Existing Construction" was obtained from existing drawings or other information which may not reflect actual conditions. The Contractor shall verify all existing conditions and notify the Contracting Officer of discrepancies before proceeding with the Work.

B. Perform the removal, cutting, drilling, etc., of existing work with extreme care, and using small tools in order not to jeopardize the structural integrity of the building.

C. Occupancy: Contractor shall not have full use of the facility during construction.

D. Condition of Structure: The United States Postal Service assumes no responsibility for the actual condition of portions of the structure to be demolished.

E. Partial removal: Items of salvageable value to the Contractor may be removed from the structure as the work progresses if not claimed by the United States Postal Service. Salvaged items must be transported from the site as they are removed.

F. Protection: Make sure that the safe passage of persons around the area of demolition is maintained during the demolition operation. Conduct operations to prevent injury to adjacent buildings, structures, other facilities, and persons.

1.5 PROTECTION OF EXISTING CONSTRUCTION

A. Provide temporary protection of existing construction (floors, roof, and walls) when adjoining new work and in traffic areas.

B. Provide temporary construction, constructed of framing and plywood, to protect existing construction and surrounding surfaces from damage by movement of materials and personnel.

C. The contractor is responsible for all damage to existing structure and shall replace or repair all areas of damage.

D. Repair, replace, or rebuild existing construction as required or as directed which has been removed, altered, or disrupted to allow for new construction. Existing construction shall be corrected to match adjacent construction, new or existing.

E. Perform cutting of existing concrete and masonry construction with saws and core drills. Do not use jack-hammers or explosives.

1.6 SHORING AND BRACING

A. Provide temporary shoring of existing construction to allow removal of existing structural elements. Maintain shoring until new structural elements are in place and accepted.

PART 2 - PRODUCTS

2.1 SALVAGED ITEMS

A. The Contract Documents indicate the existing materials that are to be reinstalled in the new construction. The Contractor shall remove, protect and reinstall these items as indicated.
   1. Items for "Reinstallation" will be indicated as such within the Contract Documents.

B. Materials scheduled for reinstallation which are damaged by the Contractor to the extent that they cannot be reinstalled shall be replaced by the Contractor with equal quality material at no additional cost to the United States Postal Service.

C. Coordinate with the Contracting Officer on disposition of salvage items note scheduled for reinstallation, demolished materials, and equipment. Salvaged materials, not reinstalled, shall be delivered, as directed, to the United States Postal Service.

2.2 SALVAGED MATERIALS

A. Removed and salvaged materials of value not designated for reinstallation, unless claimed as salvage by the United States Postal Service, shall become the property of the Contractor and shall be removed from the premises by the Contractor and recycled, reused or disposed of as specified in Section 013543- Environmental Procedures.

B. The United States Postal Service will remove or, under separate contract, have all materials and equipment which the United States Postal Service requires removed prior to Work under this Section begins.

2.3 SALVAGED ITEMS FOR RE-USE

A. Materials and items scheduled for re-use which are damaged by the contractor to the extent which they cannot be re-used shall be replaced by the Contractor at no additional cost to the United States Postal Service.

B. Contractor shall remove and salvage the existing roof hatch and access ladder for re-use. Store on site in protected area for reinstallation as indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Section 017300 - Execution: Verification of existing conditions before starting work.

B. Verification of Conditions: Verify that field measurements, surfaces, substrates and conditions are as required, and ready to receive Work.

C. Report in writing to Contracting Officer prevailing conditions that will adversely affect satisfactory execution of the Work of this Section. Do not proceed with Work until unsatisfactory conditions have been corrected.

D. By beginning Work, Contractor accepts conditions and assumes responsibility for correcting unsuitable conditions encountered at no additional cost to the United States Postal Service.

3.2 PREPARATION

A. Temporary Support: Provide adequate temporary support for work to be cut to prevent failure. Do not endanger other work.

B. Provide adequate protection of other work during selective demolition to prevent damage and provide protection of the work from adverse weather exposure.

3.3 PROCEDURE

A. Employ only skilled tradesmen to perform selective demolition.

B. Cut work by methods least likely to damage work to the retained and work adjoining.

C. In general, where physical cutting action is required, cut work with sawing and grinding tools, not with hammering and chopping tools. Core drill openings through concrete and masonry work.

D. Patch with seams which are durable and as invisible as possible. Comply with specified tolerances for the work.

E. Where selective demolition terminates at a surface or finish to remain, completely remove all traces of material selectively demolished, including mortar beds. Provide smooth, even, substrate transition.

3.4 POLLUTION CONTROLS

A. Use temporary enclosures and other suitable methods to limit the amount of dust and dirt rising and scattering in the air to the lowest practical level.

B. Comply with governing authorities pertaining to environmental protection.
   1. Protect natural resources as specified in Section 013543 - Environmental Procedures.

C. Clean adjacent portion of the structure and improvement of dust, dirt and debris caused by demolition operations, as directed by Contracting Officer and governing authorities. Return adjacent areas to conditions existing prior to the start of the work.

3.5 DISPOSAL OF DEMOLISHED MATERIALS

A. Collect, recycle, reuse, and dispose of demolished materials as specified in Section 013543 - Environmental Procedures and as approved by the U.S. Postal Service in the Solid Waste Management and Environmental Protection Plan.

3.6 SCHEDULE OF SELECTIVE DEMOLITION

A. Dock Equipment:
   1. Demo existing dock seals and bumpers, typical.

2. For selective demolition – refer to plans.
3. Remove all concrete pieces within removed area down to the existing subgrade.

B. Electrical Service:
1. All electrical circuits within the existing structure shall be abandoned from the existing service entrance section, beyond.
2. Remove all abandoned electrical conduit, boxes, and wiring back to the existing electrical service which is to remain.

C. Provide additional selective demolition as indicated and required by the Contract Documents and as required for indicated new construction.

END OF SECTION

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SECTION 031000

CONCRETE FORMING AND ACCESSORIES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes
   1. Formwork for cast-in place concrete, with shoring, bracing and anchorage.
   2. Openings for other work.
   3. Form accessories.
   4. Form stripping.

B. Related Documents: The Contract Documents, as defined in Section 011000 - Summary of Work, apply to the Work of this Section. Additional requirements and information necessary to complete the Work of this Section may be found in other documents.

C. Related Sections:
   1. Section 032000 - Concrete Reinforcement: Coordination between formwork and reinforcement.
   2. Section 033000 - Cast-in-Place Concrete: Supply of concrete accessories for placement by this section.

1.2 REFERENCES

A. American Concrete Institute (ACI) Codes and Standards latest editions:
   1. ACI 301 - Structural Concrete for Buildings.
   2. ACI 318 - Building Code Requirements for Reinforced Concrete.
   3. ACI 347 - Recommended Practice for Concrete Formwork.

B. United States Department of Commerce Product Standard (PS):
   1. PS 1 - Construction and Industrial Plywood.

1.3 SUBMITTALS

A. Section 013300 - Submittal Procedures: Procedures for submittals.
   1. Product Data: Provide data on void form materials and installation requirements. Submit data on form-coating materials.
   2. Shop Drawings: Indicate pertinent dimensions, materials, required installation and removal of bracing, shoring [, and reshoring] and arrangement of joints and ties.

1.4 QUALITY ASSURANCE

A. Perform Work in accordance with ACI 347.

B. Where necessary, design formwork, shoring [, and reshoring] under direct supervision of a Professional Engineer experienced in design of formwork and licensed in State where Project is located.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Section 016000 - Product Requirements: Transport, handle, store, and protect products.

B. Deliver void forms and installation instructions in manufacturer's packaging.

C. Store off ground in ventilated and protected manner to prevent deterioration from moisture.

1.6 ENVIRONMENTAL REQUIREMENTS

A. Environmental Impact:
   1. Formwork: Reuse forms to greatest extent possible without damaging structural integrity of concrete and without damaging aesthetics of exposed concrete.

PART 2 - PRODUCTS

2.1 WOOD FORMS

A. Forms for Exposed Finish Concrete: Plywood panels, to provide continuous, straight, smooth, exposed surfaces. Furnish in largest practicable sizes to minimize number of joints and to conform to joint system shown on drawings.
   1. Plywood complying with U.S. Product Standard PS-1 "B-B (Concrete Form) Plywood," Class I, Exterior Grade or better, mill-oiled and edge-sealed, with each piece bearing legible inspection trademark.

B. Forms for Unexposed Finish Concrete: Plywood, lumber, metal, or other acceptable material. Provide lumber dressed on at least 2 edges and one side for tight fit.

C. Lumber: Construction grade; with grade stamp clearly visible.

2.2 PREFABRICATED FORMS

A. Preformed Steel Forms: Minimum 16 gage, well matched, tight fitting, stiffened to support weight of concrete without deflection detrimental to tolerances and appearance of finished surfaces.

B. Void Forms (Carton Forms): Moisture resistant treated paper faces, biodegradable, structurally sufficient to support weight of wet concrete mix until initial set. Thickness indicated on drawings.

C. Tubular Column Type: Metal or fiberglass-reinforced plastic. Provide units with sufficient wall thickness to resist wet concrete loads without deformation.

D. Forms for Textured Finish Concrete: Units of face design, size, arrangement, and configuration to match Architect's control sample. Provide solid backing and form supports to ensure stability of textured form liners.

2.3 ACCESSORIES

A. Form Ties: Factory-fabricated, removable or snap-off type, metal, of fixed or adjustable length as applicable, with cone ends. Designed to prevent form deflection and to prevent spalling concrete upon removal. Back break dimension, 1-1/2 inch from exposed concrete surface. Provide ties that, when removed, will leave holes not larger than 1 inch diameter in concrete surface.

B. Form Release Agent: 100 percent biodegradable colorless agent which will not stain concrete, or absorb moisture, or impair natural bonding or color characteristics of subsequent coatings intended for use on concrete surfaces. Zero VOC.
   1. Envirolux by Conspec, Kansas City, KS, (800) 348-7351 or (913) 287-1700.
   2. SMD-10 Soy Form Release by Strategic Market Development (800) 959-1071 or (815) 935-0863.
   3. Bio-Form by Leahy-Wolf, Franklin Park, IL, (888) 873-5327 or (847) 455-5710.
   4. Section 016000 - Product Requirements: Product options and substitutions. Substitutions: Permitted.

C. Corners: Chamfered, wood strip 3/4 x 3/4 inch size; maximum possible lengths.

D. Dovetail Anchor Slot: Galvanized steel, 22 gage thick, foam filled, release tape sealed slots, anchors for securing to concrete formwork.

E. Nails, Spikes, Lag Bolts, Through Bolts, and Anchorages: Sized as required, of sufficient strength and character to maintain formwork in place while placing concrete.

F. Waterstops (Rubber/PVC): Rubber or Polyvinyl chloride, minimum 1,750 tensile strength, minimum 50 degrees F to plus 175 degrees F working temperature range, width as indicated on Drawings, maximum possible lengths, ribbed profile, preformed corner sections, heat welded jointing.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Section 017300 - Execution: Verification of existing conditions before starting work.

B. Verification of Conditions: Verify that field measurements, surfaces, and conditions are as required, and ready to receive Work.
   1. Verify lines, levels and centers before proceeding with formwork. Ensure that dimensions agree with Drawings.

C. Report in writing to Contracting Officer prevailing conditions that will adversely affect satisfactory execution of the Work of this Section. Do not proceed with Work until unsatisfactory conditions have been corrected.

D. By beginning Work, Contractor accepts conditions and assumes responsibility for correcting unsuitable conditions encountered at no additional cost to United States Postal Service.

3.2 EARTH FORMS

A. Hand trim sides and bottom of earth forms. Remove loose soil prior to placing concrete.

3.3 FORMWORK INSTALLATION

A. Install formwork, shoring and bracing to achieve design requirements, in accordance with requirements of ACI 347R.

B. Provide bracing to ensure stability of formwork. Shore or strengthen formwork subject to overstressing by construction loads.

C. Arrange and assemble formwork to permit dismantling and stripping. Do not damage concrete during stripping. Permit removal of remaining principal shores upon approval by the Professional Engineer responsible for their design.

D. Align joints and make watertight. Furnish in largest available sizes to minimize number of joints and to conform to joint system indicated on Drawings.

E. Obtain approval from the Engineer or Architect before framing openings in structural members which are not indicated on Drawings.

F. Provide chamfer strips on external corners of concrete members, to produce uniform, smooth lines and tight edge joints.

G. Install void forms in accordance with manufacturer's published instructions. Protect forms from moisture or crushing.

3.4 FORM RELEASE AGENT APPLICATION

A. Apply form release agent on formwork in accordance with manufacturer's published instructions.

B. Apply prior to placement of reinforcing steel, anchoring devices, and embedded items.

C. Do not apply form release agent where concrete surfaces will receive special finishes or applied coverings which are effected by agent. Soak inside surfaces of untreated forms with clean water. Keep surfaces coated prior to placement of concrete.

3.5 INSERTS, EMBEDDED PARTS, AND OPENINGS

A. Provide formed openings where required for items to be embedded in passing through concrete work.

B. Locate and set in place items which will be cast directly into concrete.

C. Coordinate with work of other sections in forming and placing openings, slots, recesses, sleeves, bolts, anchors, other inserts, and components of other Work.

D. Install accessories in accordance with manufacturer's published instructions, straight, level, and plumb. Ensure items are not disturbed during concrete placement.

E. Provide temporary ports or openings in formwork where required to facilitate cleaning and inspection. Locate openings at bottom of forms to allow flushing water to drain.

F. Close temporary openings with tight fitting panels, flush with inside face of forms, and neatly fitted so joints will not be apparent in exposed concrete surfaces.

G. Install waterstops in accordance with manufacturer's published instructions continuous without displacing reinforcement. Seal joints watertight.

3.6 FORM CLEANING

A. Clean forms as erection proceeds, to remove foreign matter within forms.

B. Clean formed cavities of debris prior to placing concrete.

C. Flush with water or use compressed air to remove remaining foreign matter. Ensure that water and debris drain to exterior through clean-out ports.

D. During cold weather, remove ice and snow from within forms. Do not use de-icing salts. Do not use water to clean out forms, unless formwork and concrete construction proceed within heated enclosure. Use compressed air or other means to remove foreign matter.

3.7 CONSTRUCTION

A. Site Tolerances:
   1. Construct formwork to maintain tolerances required by ACI 301 and ACI 347.
   2. Camber slabs and beams 1/4 inch per 10 feet in accordance with ACI 301.

3.8 FIELD QUALITY CONTROL

A. Section 014000 - Quality Requirements: Field inspection and testing.

B. Inspect erected formwork, shoring [, and reshoring], and bracing to ensure that work is in accordance with formwork design, and that supports, fastenings, wedges, ties, and items are secure.

3.9 FORM REMOVAL

A. Do not remove forms or bracing until concrete has gained sufficient strength to carry its own weight and imposed loads.
B. Do not remove shoring without approval from the Professional Engineer responsible for their design.

C. Loosen forms carefully. Do not wedge pry bars, hammers, or tools against finish concrete surfaces scheduled for exposure to view.

D. Store removed forms in manner that surfaces to be in contact with fresh concrete will not be damaged. Discard damaged forms.

END OF SECTION

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SECTION 032000

CONCRETE REINFORCEMENT

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
1. Reinforcing steel bars.
2. Steel wire mesh.
3. Reinforcement accessories.

B. Related Documents: The Contract Documents, as defined in Section 011000 - Summary of Work, apply to the Work of this Section. Additional requirements and information necessary to complete the Work of this Section may be found in other documents.

C. Related Sections:
1. Section 316329 - Drilled Concrete Piers and Shafts: Reinforcement for drilled pier foundations.
2. Section 031000 - Concrete Forming and Accessories: Coordination between formwork and reinforcing.
3. Section 033000 - Cast-in-Place Concrete: Coordination between concrete placement and reinforcing.

1.2 REFERENCES

A. American Concrete Institute (ACI):
1. ACI 301 - Structural Concrete for Buildings.
2. ACI 318 - Building Code Requirements For Reinforced Concrete.
3. ACI SP-66 - American Concrete Institute - Detailing Manual.

B. American Society for Testing and Materials (ASTM):
1. ASTM A 184 - Fabricated Deformed Steel Bar Mats for Concrete Reinforcement.
2. ASTM A 615 - Deformed and Plain Billet Steel Bars for Concrete Reinforcement.
3. ASTM A 704 - Welded Steel Plain Bar or Rod Mats for Concrete Reinforcement.

C. American Welding Society (AWS):
1. AWS D1.4 - Structural Welding Code for Reinforcing Steel.

D. Concrete Reinforcing Steel Institute (CRSI):
1. CRSI - Manual of Practice.
2. CRSI 63 - Recommended Practice For Placing Reinforcing Bars.
3. CRSI 65 - Recommended Practice For Placing Bar Supports, Specifications and Nomenclature.

1.3 SUBMITTALS

A. Section 013300 – Submittal Procedures: Procedures for submittals.
1. Shop Drawings: Indicate bar sizes, spacings, locations, and quantities of reinforcing steel [and wire fabric, bending and cutting schedules, and supporting and spacing device. Include special reinforcement required for openings through concrete structures.
2. Assurance/Control Submittals;
a. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

b. Submit certified copies of mill test report of reinforcement materials analysis.
c. Welder's Certificates.

1.4 QUALITY ASSURANCE

A. Perform Work in accordance with CRSI 63, 65 and Manual of Practice ACI 301, ACI SP-66, ACI 318, and ASTM A 184.

B. Design reinforcement under direct supervision of a Professional Structural Engineer experienced in design of this work and licensed in the State where the Project is located.

C. Welders' Certificates: Submit certificate, certifying welders employed on the Work, verifying AWS qualification within the previous 12 months.

PART 2 - PRODUCTS

2.1 STEEL REINFORCEMENT

A. Reinforcing Steel: ASTM A 615, 60 ksi yield grade; deformed billet steel bars, unfinished.

B. Reinforcing Steel Mat: ASTM A 704, ASTM A 615, 60 ksi yield grade; steel bars or rods, unfinished.

C. Reinforcing Steel Mesh: ASTM A185; 6X6, w 1.4 X w 1.4.

D. Dowels at Construction Joints: 1/4" x 4.5" Diamond Dowels by PNA Construction Technologies or approved equal.

2.2 ACCESSORIES

A. Tie Wire: Minimum 16 gage annealed type.

B. Chairs, Bolsters, Bar Supports, Spacers: Sized and shaped for strength and support of reinforcement during concrete placement conditions including load bearing pad on bottom to prevent vapor barrier puncture.

C. Special Chairs, Bolsters, Bar Supports, Spacers Adjacent to Weather Exposed Concrete Surfaces: Plastic coated steel type(CRSI, Class 1) or stainless steel protected(CRSI, Class 2); size and shape as required.

2.3 FABRICATION

A. Fabricate concrete reinforcing in accordance with ACI SP-66 and ACI 318.

B. Weld reinforcement in accordance with AWS D1.4.

C. Locate reinforcing splices not indicated on drawings, at point of minimum stress. Review location of splices with Contracting Officer.

3.1 EXAMINATION

A. Section 017300 - Execution: Verification of existing conditions before starting work.

B. Verification of Conditions: Verify that field measurements, surfaces, and conditions are as required, and ready to receive Work.

C. Report in writing to Contracting Officer prevailing conditions that will adversely affect satisfactory execution of the Work of this Section. Do not proceed with Work until unsatisfactory conditions have been corrected.

D. By beginning Work, Contractor accepts conditions and assumes responsibility for correcting unsuitable conditions encountered at no additional cost to United States Postal Service.

3.2 PLACEMENT

A. Place, support and secure reinforcement against displacement. Do not deviate from required position.

B. Do not displace or damage vapor barrier.

C. Accommodate placement of formed openings.

D. Maintain concrete cover around reinforcing in accordance with ACI 318.

3.3 FIELD QUALITY CONTROL

A. Section 014000 - Quality Requirements: Field inspection.

B. Inspect reinforcing locations, bar types and sizes, wire ties, and welding (if applicable).

END OF SECTION

SECTION 033000

CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 SUMMARY

A. Includes all labor, materials and appliances, and perform all operations in connection with the installation of Concrete Work, and all related work incidental to the completion thereof, as shown on the drawings, complete, in strict accordance with the drawings and as specified herein. Section Includes:

1. Cast-in-place (CIP) concrete in building frame elements, walls, foundations, foundation walls, slabs-on-grade, and mechanical equipment pads.
2. Finishing of concrete floor slabs and toppings. Concrete liquid surface treatment, sealer, and slip-resistant coatings.
3. Expansion and contraction, control joints in CIP concrete.
4. Concrete curing and protection.
5. Non-shrink grout including installation and forming.
6. Testing related services.

B. Related Documents: The Contract Documents, as defined in Section 011000 - Summary of Work, apply to the Work of this Section. Additional requirements and information necessary to complete the Work of this Section may be found in other Documents and References in Section 1.2.

C. Related Sections: Related work specified elsewhere includes but may not be limited to
1. Section 031000: Concrete Forming and Accessories
2. Section 032000: Concrete Reinforcement

1.2 REFERENCES

A. American Concrete Institute (ACI) Codes and Standards latest editions:
1. ACI 117, “Standard Specification for Tolerances for Concrete Construction and Materials.”
2. ACI 301, “Specification for Structure /Concrete.”
3. ACI 302.1R, “Guide for Concrete Floor and Slab Construction.”
4. ACI 304R, “Guide for Measuring, Mixing, Transporting, and Placing Concrete.”
5. ACI 305, “Hot Weather Concreting.”
6. ACI 306, “Cold Weather Concreting.”
7. ACI 311, “Recommended Practice for Concrete Inspection.”
8. ACI 315, “Details and Detailing of Concrete Reinforcement.”
9. ACI 318, “Building Code Requirements for Structural Concrete.”
10. ACI 347, “Guide to Formwork for Concrete.”

B. American Welding Society (AWS)
1. AWS D1.4, "Structural Welding Code Reinforcing."

C. American Society for Testing and Materials (ASTM).
1. ASTM A615, "Standard Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement."
2. ASTM C33, "Standard Specification for Concrete Aggregates."
3. ASTM C94, "Standard Specification for Ready-Mixed Concrete."
4. ASTM C150, "Standard Specification for Portland Cement."

5. ASTM C260, "Standard Specification for Air Entraining Admixtures for Concrete."
6. ASTM C309, "Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete."
7. ASTM C494, "Standard Specification for Chemical Admixtures for Concrete."
8. ASTM C618, "Standard Specification for Fly Ash and Raw or Calcined Natural Pozzolan for Use as a Mineral Admixture in Portland Cement Concrete."
9. ASTM C989, "Standard Specification for Ground Granulated Blast-Furnace Slag for Use in

D. Concrete Reinforcing Steel Institute (CRSI),
   1. CRSI "Manual of Standard Practice."

1.3 SUBMITTALS

A. Section 013300 - Submittal Procedures: Procedures for submittals.
   1. Product Data: Provide data technical, testing, and source for mix design materials and additives, steel reinforcement, joint sealant [, and other products as specified on the drawings.]
   2. Shop Drawings: Provide shop drawings for reinforcement, layout, detailing, and placing prior to fabrication, site delivery, and installation.
      a. Mix design submittals.
      b. Rebar placing drawings (ACI 315, "Detailing Manual SP-66-(04)" or CRSI "Manual of Standard Practice MSP-2-81"): Show bar sizes, bending, placing, spacing, locations, and quantities of reinforcing and wire fabric and supporting and spacing accessories. Provide steel order lists including bending and cutting details for all reinforcement shown on the structural design drawings.
      c. Form construction details, including jointing, special formed joints or reveals, location and pattern of form tie placement [, and other items that affect exposed concrete visually.]
      d. Calculations and layout drawings for formwork, shoring and/or reshoring [, and other submittals indicated on the drawings.] Work shall be prepared and signed and sealed by a Professional Engineer.

   3. Assurance/Control Submittals:
      a. Test Reports: Prepare reports in conformance with Section 014000 - Quality Requirements
      b. Submit laboratory test reports for concrete materials and mix designs for each strength and type of concrete proposed for use.
      c. Certificates: Manufacturer's certificate that Products meet or exceed specified requirements.
   4. Delivery Tickets:
      a. Copies of delivery tickets for each load of concrete delivered to site.
      b. Indicate on each ticket the exact time that the mix is batched.
      c. Mix identification number on ticket shall match number on submitted and approved mix design
      d. Submit copies to Testing Laboratory for verification of compliance with placing time.

1.4 QUALITY ASSURANCE

A. Perform work in accordance with the Codes and Standards referenced in section 1.2 of this specification.
   1. Provide qualification data for manufacturers and installers.

B. Pre-Installation Conference:
   1. Conduct a pre-installation conference prior to commencing Work of this Section.

C. Crack Prevention:

1. Submit quality control plan that incorporates provisions for concrete crack prevention at least 60 days prior to any slab on grade placement. The quality control plan shall be reviewed in the pre-installation conference. If wire mesh is used, the construction manager shall employ a full time 3rd party inspector to monitor this element during all concrete placement operations to ensure that mesh is maintained in the proper position. This inspection is in addition to the other concrete material testing.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Section 016000 - Product Requirements: Transport, handle, store, and protect Products.

B. Deliver materials in unopened containers with labels identifying contents.

C. Store powdered materials in dry area and in manner to prevent damage. Protect liquid materials from freezing or exceeding maximum storage temperatures set by product manufacturer.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Subject to compliance with project requirements, manufacturers offering Products which may be incorporated in the Work include the following:

1. Applied Concrete Technology, Inc., Post Office Box 548, Grayslake, IL 60030, Toll Free: 800-228-6694, Phone: 847-548-2444, Fax: 847-548-2555. www.protecrete.com
2. The Euclid Chemical Company, 19218 Redwood Road, Cleveland, OH 44110, Phone: 216-1-9222, Toll Free: (800) 321-7628, Fax: 216-531-9596 www.euclidchemical.
3. Fortifiber Corporation, 419 W. Plumb Lane, Reno, NV 89509, Toll Free: 800-773-4777, Fax: 775-333-6411, Website: www.fortifiber.com.
4. ChemRex Inc., Shakopee, Minnesota 55379, Toll Free: 800-433-9517, Fax: 800-496-6067.
5. BASF Construction Chemicals North America (former Master Builders), 23700 Chagrin Boulevard, Cleveland, OH 44122, Phone: 216-839-7500, Fax: 216-839-8821.
6. W.R. Meadows, Inc., PO Box 338, Hampshire, Illinois 60140-0338, Toll Free: 800-342-5976, Phone: 847-683-4500.
7. Reef Industries, 9209 Almeda Genoa, Houston, Texas 77075, Phone: 713-507-4251, Toll Free: 800-231-6074, Fax: 713-507-4295.
8. Stego Industries LLC, 27442 Calle Arroyo Suite A, San Juan, Capistrano, CA 92675, Phone: 877-464-7834, Fax: 949-493-5165, www.stegoindustries.com.
9. L & M Construction Chemicals, Inc. 14851 Calhoun Rd., Omaha, NE 68152-1140; Phone: 402-453-6600, Fax: 402-453-0244.
10. Curecrete Chemical Company, Inc., 1203 W. Spring Creek Pl., Springville, UT Phone: 801- 489-5663.
11. Midwest Floor Care Inc., 17202 Princeton Rd, Adams, NE 68301, Phone: 402-788-2820.
12. General Resource Technology, Inc., 2978 Center Court, Eagan, MN 55121, Phone: 800-324-8154, Fax: 651-454-4252, www.grtinc.com.

B. Section 016000 - Product Requirements: Product options and substitutions. Substitutions: Permitted.

2.2 CONCRETE MATERIALS

A. Portland Cement: ASTM C150 – Type [ ] [supplement with] [fly ash] [ground granulated blast-furnace slag].

B. Liquid admixtures: The following admixtures are permitted when approved in writing prior to use or are required as specified herein and shall be used in strict accordance with the manufacturer's specifications or recommendations:

1. Calcium chloride: Conform to ACI 301. The water soluble chloride ion level shall not exceed 0.3 percent by weight of cement.

2. Air-entraining admixtures: ASTM C260 for steel hard trowel interior slab finish, do not use air entrainment admixtures.
3. Water-reducing admixtures: Conform to ASTM C494, Type A.

4. Water-reducing/accelerating admixtures: Conform to ASTM C494, Type C or E.

5. Water-reducing/retarding admixtures: Conform to ASTM C494, Type D.
   a. High-range/water-reducing (HRWR) admixtures: Conform to ASTM C494, Type F or G super plasticizers. HRWR admixture shall be used in concrete with a maximum water/ cement ratio of 0.50 or less.

C. Aggregates:
1. Normal-weight concrete - ASTM C33.
2. Light-weight concrete – ASTM C330.
3. Aggregates shall be from a single source.

D. Water:
1. Clean, potable, and free of injurious amounts of oil, acid, alkali, organic or other deleterious matter not detrimental to concrete; drinkable.

2.3 GROUT/MORTARS

A. Cement grout: Conform to ASTM C387 "Dry packaged mixtures”.

2.4 CURING/SEALING/HARDENERS

A. Dissipating liquid membrane-forming compounds for curing concrete; Conform to ASTM C309, Type 1. Curing compound shall be compatible with floor sealer or finish used. Low VOC.

B. Method of curing shall be approved by the finish flooring applicator where finishes are indicated.

C. Exterior Sealers: applied to horizontal concrete surfaces permanently exposed to salts, deicer chemicals and moisture, including parking decks. The manufacturer shall provide a five-year labor and materials warranty on performance of the sealer. Sealer shall be compatible with the curing compound used.

D. Liquid Densifier/Sealer/Hardener: to be applied on exposed concrete floors cured with dissipating membrane forming curing compound to harden and densify concrete surfaces. Sealers are to be clear, chemically reactive, a waterborne solution of silicate or siliconate materials and proprietary components, odorless, and colorless.

2.5 JOINTS AND EMBEDDED ITEMS:

A. Construction and Contraction Joints: Sealant shall be two-part semi- rigid epoxy and shall have minimum Shore A Hardness of 80 when measured with ASTM D2240.

B. Isolation Joints: Fillers shall consist of 1/8-inch width strips of neoprene, synthetic rubber, or approved substitute, extending the full depth of the slab. Sealant shall be two-part elastomeric type, polyurethane base.

2.6 VAPOR BARRIER/RETARDER

A. Provide cover over prepared soil, above aggregate subbase material at slabs-on-grade, where shown on the plans with a minimum thickness of 10 mils. Use only materials which are resistant to decay.

2.7 PROPORTIONING

B. Prepare design mixes for each type and strength of concrete by either laboratory trial batch or field experience methods as specified in ACI 301. If laboratory trial batch method is used, use an independent testing facility acceptable to Contracting Officer for preparing and reporting proposed mix designs. The testing facility shall not be the same as used for field quality control testing and inspection unless otherwise acceptable to Contracting Officer.

C. Submit written reports to the testing laboratory of each proposed mix for each class of concrete. Do not begin concrete production until mixes have been reviewed and approved.

D. Concrete types and strengths: Minimum 28 Day Compressive Strength shall be per design requirements but not less than:
1. Paving base, columns, beams, walls, foundations, and footings: 3,500 psi.
2. Slab-on-grade:4,000 psi.
3. Normal or Lightweight concrete on metal deck: 3,000 psi.
4. All concrete exposed to weather shall be air entrained (ASTM C260).
5. All concrete shall be normal weight except as noted above.

E. Durability: Conform to ACI 301.
1. All concrete exposed to potentially destructive weathering, such as freezing and thawing, or to de-icer chemicals is to be air-entrained, [ ] ±1percent.,
2. Water-cement ratio: For concrete subject to freezing and thawing or deicer chemicals, the water-cement ratio shall not exceed 0.53 by weight including any water added.

F. Slump: Conform to ACI 301 and to specific project mix requirements.

G. Production of concrete: Conform to ACI 301:
1. Cast-in-place concrete used in the work shall be produced at a single off-site batching plant or may be produced at an on-site batch plant.
2. All concrete shall be proportioned conforming to the approved mix designs and of the materials contained in those approved mixes.
3. Prior to adding a high-range water reducer (super plasticizer), slump shall not exceed the working limit.
4. Ready-mixed and on-site batched concrete shall be batched, mixed, and transported in accordance with ASTM C94.
    a. The concrete producer shall furnish duplicate delivery tickets, one for the Contractor and one given to the Owner’s Representative for each batch of concrete. The information provided on the delivery ticket shall include the quantity of materials batched including the amount of free water in the aggregate and any water added onsite. Show the date, time of day batched, and if ready-mixed the time of discharge from the truck. The quantity of water that can be added at the site without exceeding the maximum water-cementitious ratio specified shall be noted on the delivery ticket.

5. For concrete produced on site with a central batch plant, mixing shall be done in an approved batch mixer concrete shall be batched, mixed, and transported in accordance with ASTM C94.
6. Variations in consistency during the discharge of a single batch shall not exceed 1 inch of slump, except that a greater variation will be permitted if the slump of the concrete decreases and no water is added.
7. All other concrete: Conform to ACI 301
8. When improved workability, pumpability, lower water-cement ratio, or high ultimate and/or early strength is required, the HRWR admixture (super plasticizer) may be used.
9. Ensure air content for slabs with steel trowel finish is less than 3.0 percent.
10. No water shall be added to concrete except under the direct awareness of the project inspector.
11. Adjustments to concrete mixes: Mix design adjustments may be requested by Contractor for approval by the Engineer at no additional cost to Contracting Officer. Laboratory test data for revised mix design and strength results must be submitted and accepted before using in work.

2.8 FORMWORK

A. Section 031000: Concrete Forming and Accessories

2.9 REINFORCING MATERIALS

A. Section 032000: Concrete Reinforcement

PART 3 - EXECUTION

3.1 EXAMINATION

A. Section 017300 - Execution: Verification of existing conditions before starting work.

B. Verification of Conditions: Verify that field measurements, surfaces, substrates and conditions are as required, and ready to receive Work.

C. Report in writing to Contracting Officer prevailing conditions that will adversely affect satisfactory execution of the Work of this Section. Do not proceed with Work until unsatisfactory conditions have been corrected.

D. By beginning Work, Contractor accepts conditions and assumes responsibility for correcting unsuitable conditions encountered at no additional cost to the United States Postal Service.

3.2 INSTALLATION - GENERAL

A. Install all cast-in-place concrete work in accordance with ACI 301 except as herein specified.

B. All bearing materials shall be inspected by the Geotechnical Engineer prior to placing concrete. The Geotechnical Engineer specify site preparation requirements and provide recommendations to the Architect/Engineer prior to placing concrete.

C. Immediately before placing concrete, spaces to be occupied by concrete shall be free from standing water, ice, mud, and debris.

D. Concrete shall not be deposited under water or where water in motion may injure the surface finish of the concrete.

E. Forms and the reinforcement shall be thoroughly cleaned of ice and other coatings. Remove surplus form releasing agent from the contact face of forms.

F. Notify all trades concerned and the Owner's Representative sufficiently in advance of the scheduled time for concrete placement to permit installation of all required work by other trades.

G. Before placing concrete, all required embedded items, including dovetail anchor slots, anchors, inserts, curb angles, metal frames, fixtures, sleeves, drains, stair nosings, accessory devices for Mechanical and Electrical installations shall be properly located, accurately positioned and built into the construction, and maintained securely in place.

H. Build into construction all items furnished by the Owner and other trades. Provide all offsets, pockets, slabs, chases and recesses as job conditions require.

I. Place and properly support reinforcing steel and anchor bolts.

J. The alignment, orientation, spacing, and embedment length of mechanical load transfer devices in slab-on-grade and pavements shall conform to dimensions and tolerances shown on the drawings.

3.3 INSTALLATION - FORMWORK

A. Section 031000 Concrete Forming and Accessories

B. Construction and Contraction Joints: Conform to ACI 301 and recommendations of ACI 302.1R.

3.4 REINFORCEMENT

A. Placement: Section 032000 Concrete Reinforcement

3.5 METHODS OF PLACEMENT AND PLACING CONCRETE

A. Placement: Conform to ACI 301:
   1. Concrete shall be placed within 90 minutes after the water has been added to the cement and aggregates. Concrete shall be placed prior to initial concrete set.
   2. Placing of concrete will not be permitted during rainfall or when rain appears imminent. If rain should fall subsequent to placement, the concrete shall be completely protected until curing is complete.
   3. Cold-Weather Placement: Comply with provisions of ACI 306.1 "Standard Specifications for Cold-Weather Concreting" for placement at temperatures below 40 deg F (4 deg C).
      a. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise accepted in mix designs.
      b. Concrete shall not be placed on frozen ground or placed when the ambient temperature is 40 deg F or less and dropping.
      c. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures using vented heaters and insulating blankets.
      d. Concrete temperatures shall be maintained above 50 degrees F for the first 7 days of curing.
   4. Hot-Weather Placement: When hot weather conditions exist that would impair quality and strength of concrete, place concrete complying with ACI 305R "Standard Specification for Hot-Weather Concreting" for placement at temperatures above 90 deg F (32 deg C).
      a. Reject any concrete that has a temperature at the point of placement above 90 deg F unless approved otherwise by the Engineer. When air temperatures are between 80 and

90 deg F the maximum mixing and delivery time is reduced to 75 minutes. When air temperatures exceed 90 deg F, the maximum mixing and delivery time is reduced to 60 minutes.

b. Use water-reducing retarding admixture when required by high temperatures, low humidity, or other adverse placing conditions, as acceptable to the Engineer.

B. Depositing Concrete

1. Deposit concrete as near its final position as possible to avoid segregation due to rehandling or flowing.
2. The number, type, position, and design of joints shall be approved by the Engineer prior to concrete placement.
3. Place floor slabs-on-grade in alternating strips, waiting a minimum of 3 days before placing any slab adjacent to previously placed slab.
4. The concreting shall be carried on at such a rate that the concrete is plastic at all times and flows readily into the spaces between reinforcing bars. No concrete that has partially hardened or been contaminated by foreign materials shall be deposited in the work
5. When concreting is started, it shall be carried on as a continuous operation until the placing of the section is completed.
6. Except as intercepted by joints, concrete shall be placed in continuous layers.
7. Field records shall be kept of the time and date of the placing of each concrete pour. Locations where concrete test cylinders are made shall also be recorded. Records shall be kept on file at the job until its completion and shall be subject to the inspection of the Owner's Representative at all times.

C. Joints

1. Joints shall be vertical in walls and horizontal in slabs [unless otherwise specified on the drawings].
2. Dowel bars and tie bars shall be inspected
3. Control joints for controlling concrete shrinkage shall be provided in floor slabs, walls, decks, conduits, and channels as shown on the plans or approved by the Engineer.
4. Joint spacing and sawcut depth for slab-on-grade and concrete pavement shall conform to that shown on the pour sequencing plan and/or drawings.
   a. Sawed control (contraction) joints for pavements and slab-on-grade shall be installed as soon as practical so as not to ravel the concrete but less than 12 hours.
   b. Joint spacing shall not exceed 15 feet on center each way unless otherwise approved by the Engineer.
5. Joints in slabs shall align with column lines and joints in adjoining walls unless otherwise approved by the Architect/Engineer or shown in the drawings. Joints shall also line up with architectural reveals and form lines. All corners shall be relieved by cutting joint to adjacent control joint.
6. If there is a delay in casting but prior to concrete initial set, the concrete placed after the delay shall be thoroughly spaded and consolidated at the edge of that previously placed to avoid cold joints.
7. Where placing concrete is interrupted long enough for the concrete to take its initial set, the working face shall be made a construction joint.
   a. Preparation and disposition of unplanned cold joints in walls shall be approved by the Engineer.
   b. For slab-on-grade, pavements, sidewalk, and curb and gutter, concrete shall be removed back to the nearest planned joint and a construction joint installed.
8. Unless otherwise noted on the drawings, where concrete is to be placed against existing concrete, except in the case of expansion joints, the joint face of the existing concrete shall be roughened.
9. Corner sections of walls shall not be placed until the adjoining wall sections have cured at least 14 days.

D. Consolidation

1. All concrete shall be thoroughly consolidated by internal mechanical vibrators during the placing operation and shall be thoroughly worked around the reinforcement and embedded fixtures and into corners of the forms.
2. Consolidation shall be carried on continuously with the placing of concrete.
3. Slabs shall be placed using vibrating screed.
4. The vibrator shall be kept in nearly a vertical position as practical. The use of vibrators to shift or drag concrete after deposition will not be permitted. Vibrators shall not be laid horizontally or laid over.
5. Concrete shall not be placed until the previous layer has been vibrated.
6. Unless directed otherwise by the Engineer, the top 2 feet of walls shall be re-vibrated approximately 1 hour after placement of concrete and while a running vibrator will still sink under its own weight into the concrete and liquefy it momentarily.

E. Protection of cast concrete: Conform to ACI 301.

F. Repair of surface defects: Conform to ACI 301.

3.6 FINISHING

A. Finishing of formed surfaces: ACI 301:
   1. Tops of forms:
      a. Strike concrete smooth at tops of forms.
      b. Float to texture comparable to formed surfaces.
   2. Formed surfaces:
      a. Finished formed surfaces shall conform accurately to the shape, alignment, grades, and sections shown on the drawings or prescribed by the Engineer.
      b. Surfaces shall be free from fins, bulges, ridges, honeycombing, or roughness of any kind and shall present a finished, smooth, continuous hard surface.
      c. Rough form finish at unfinished areas unexposed to public view. Smooth form finish at surfaces exposed to public view.

B. Slabs: Minimum slab surface tolerance must satisfy ACI 301 and ACI 302.1R.
   1. Slabs-on-grade:
      a. For exposed slabs, install semi-rigid epoxy sealant in construction and contraction joints after slab has a minimum of 60 days or otherwise approved by the Engineer.
      b. Allowable tolerance for slab on grade surfaces, measured in accordance with ACI 117 shall meet or exceed an overall value of FF35/Fl25, with minimum local value of FF24/FL17.
   2. Suspended Floor Slab:
      a. Minimum surface tolerances: FF25 & FL20 overall and FF20 & FL15 local.
   3. Concrete Finishes:
      a. Floor Slabs: Steel trowel finish unless otherwise noted on the plans.
      b. Exposed concrete slabs sealed or sealed and hardened using a liquid compound compatible with the curing method used.
      c. Exterior Concrete Finishes: Unless otherwise noted on the drawings, floors, walkways, and roof finishes shall be sloped a minimum 0.125 inch per foot to drain water. A light steel trowel with broom finish unless otherwise noted on the plans. Apply exterior sealer to surfaces exposed to deicer chemicals that is compatible with the curing method used.
      d. Exposed Ramps, Landings and Stair Treads: A light steel trowel with broom finish unless otherwise noted on the plans. Surfaces shall be sealed or sealed and hardened using a liquid compound compatible with the curing method used.
      e. A heavy broom finish shall be provided on disabled person ramps, utility ramps, and around exterior loading docks.

3.7 CURING, PROTECTION, LIQUID HARDNERS AND SEALERS

A. Temperature, Wind, and Humidity

1. When concrete slabs and other unformed concrete is placed in warm, dry, dusty, or windy conditions, concrete surfaces shall be protected from rapid drying by use of windbreaks, shading, fogging with properly designed nozzles, or a combination of these measures. Hot weather concreting procedures provided in ACI 305R shall be used when ambient conditions dictate.
2. Cold weather concreting procedures provided in ACI 306R shall be used when ambient conditions dictate.

B. Curing Compound
1. Apply curing compound to all interior and exterior flat slab and vertical surfaces. After curing period has elapsed, remove curing compound without damaging concrete surfaces by method recommended by curing compound manufacturer.
2. All curing methods shall be placed [within two hours] after final finishing. All exposed surfaces of concrete including floor slabs, whether or not they receive a finish flooring, shall be protected from premature drying for a minimum of seven days.
3. Apply the specified curing compound in accordance with manufacturer's written instructions.
4. When used on an unformed concrete surface, application of the first coat of curing compound shall commence immediately after finishing operations have been completed. When curing compound is used on a formed concrete surface, the surface shall first be moistened with a fine spray of water immediately after the forms have been removed.
    a. Surfaces shall be sprayed uniformly with 2 coats of curing compound. As soon as the first coat has become dry, a second coat shall be applied in the same manner. The direction of application of the second coat shall be perpendicular to the first coat.

C. Hardner
1. Apply liquid densifier/sealer/hardener to all workroom, interior and exterior mail platform, and dock, BMEU, and similar floor surfaces.
2. Apply in accordance with manufacturer instructions.

D. Exterior Sealer
1. Apply to all exterior horizontal traffic and pedestrian surfaces that are exposed to salts, deicer chemicals, and moisture, including parking decks.
2. Apply in accordance with manufacturer's instructions.

E. Protection
1. Freshly placed concrete shall be protected against wash by rain.
2. Dust control shall be provided in the surrounding areas during placement.
3. During the first 2-day period of curing, no traffic on or loading of the floors will be permitted unless otherwise approved by the Engineer.
4. The contractor shall allow no traffic and take precautions to avoid damage to the membrane of the curing compound for a period of not less than 28 days. Damage shall be repaired immediately.
5. Self-supporting structures shall not be loaded in such a way to overstress the concrete.

F. All floor slabs shall be cured using products and methods compatible with selected floor adhesives, toppings, and other finish materials.

3.8 PATCHING AND REPAIR

A. All repairs of defective areas shall conform to ACI 301. On areas requiring treatment of defects and until such repairs have been completed, only water cure will be permitted

B. At any time prior to final acceptance, concrete found to be defective, damaged, or not in accordance with the specifications shall be repaired or removed and replaced with acceptable concrete.

C. Repair or replace concrete with excessive honeycombing due to improper placement.
1. If approved, a bonding admixture, bonding compound, or epoxy adhesive may be used in accordance with the manufacturer's preparation and application recommendations. Comply with

ACI 301 and ACI 503.2 for standard specifications for bonding plastic concrete to hardened concrete with a multiple component epoxy adhesive.

2. The repair concrete shall be thoroughly consolidated in place and struck off so as to leave the patch slightly higher than the surrounding surface. The concrete shall be left undisturbed for at least 1 hour to permit initial shrinkage then finished.
3. The patched area shall be kept damp for 7 days.
4. The color of the patch material shall match the color of the surrounding concrete. Repairs shall be made promptly while the base concrete is less than 28 days old

D. Areas showing excessive defects as determined by the Architect/Engineer shall be removed and replaced.

E. High spots identified in the floor flatness and levelness survey may be removed with bump grinding. Areas to be ground shall not exceed more than 10 percent of any one slab nor more than 5 percent of the total slab-on-grade area.

F. Random hairline cracks in up to 3% of the slab panels will be accepted. Cracks in these panels shall be routed and filled with semi-rigid joint filler. If more than 3% of panels contain cracks, the number of panels exceeding the 3% limit shall be demolished and replaced at the direction of the Contracting Officer, crack repairs will not be accepted. Any panels that contain cracks wider than 0.022” shall be demolished and replaced.

G. Interior slab-on-grade hairline cracks allowed to be repaired that are subjected to powered industrial truck traffic shall be routed and sealed with a semi-rigid epoxy sealant. Exterior slabs may be routed and sealed with the flexible joint sealant to be installed in pavement joints.

3.9 GROUTING

A. After steel columns have been installed and leveled, grout the space between the bottom of the plate and concrete, using cement grout completely filling the space and forming solid bearing for the column base plate.

3.10 EVALUATION AND ACCEPTANCE OF CONCRETE

A. Comply with ACI 301, ACI 318-Chapter 5 and ACI 311 for compressive strength, slump, and frequency of testing.

B. The frequency of testing indicated in the aforementioned codes and standards shall be increased if concrete fails to meet the acceptance criteria or if deemed by the Engineer to be too variable.

3.11 ACCEPTANCE OF STRUCTURE

A. Comply with ACI 301 and modifications in this section.

B. Completed concrete work, which meets all applicable requirements, will be accepted without qualification.

C. Completed concrete work which fails to meet one or more requirements, but which has been repaired to bring it into compliance will be accepted without qualification.

D. Completed concrete work which fails to meet one or more requirements, and which cannot be brought into compliance may be accepted or rejected by the Contracting officer. In this event, modifications may be required to assure that remaining work complies with the requirements.

E. The costs of any additional tests or analysis, including additional architectural and engineering services, performed to prove the adequacy of the concrete work, shall be borne by the Contractor without extension of contract time.

3.12 MISCELLANEOUS CONCRETE

A. Curbs: Provide monolithic finish to interior surface of curbs by stripping forms while concrete is still green and steel-troweling surfaces to a hard, dense finish with corners, intersections, and terminations slightly rounded.

B. Equipment bases and foundations: Provide machine and equipment bases and foundations as shown on drawings. Set anchor bolts for machines and equipment with template at correct elevations, complying with certified diagrams or templates of manufacturer furnishing machines and equipment.

3.13 FIELD QUALITY CONTROL

A. Section 014000 - Quality Requirements: Field testing and inspection.

B. Requirements:
   1. Provide and maintain an adequate program of quality control for the materials, production methods, and workmanship to assure conformance of all work to the project contract documents.
   2. Testing and Evaluation:
      a. Furnish and pay for the services of an independent Testing Laboratory satisfactory to the Contracting Officer. The testing laboratory shall have prime responsibility for review, verification inspection, and testing of the concrete producer's materials, operations, facilities, and quality control procedures and evaluating the results for conformance with these specifications.
      b. In addition to the requirements and duties in ACI 301 the testing laboratory shall provide the following:
         a. One or more additional test cylinders shall be taken during cold weather concrete placement and cured on the job site under conditions of concrete represented to determine safe form-stripping period.
         b. Inspect concrete batching, mixing, and delivery operations periodically or as directed by the Contracting Officer.
         c. Submit to the Contracting Officer and concrete producer, during construction, the results of concrete tests.
      c. The Testing Laboratory shall assess and report floor flatness and levelness in accordance with the requirements of this specification.
      d. Field and concrete plant inspections are to be made by a competent representative of the Testing Laboratory during all structural concreting operations including periodic audit and spot check of the Producer's and/or Contractor's quality control procedures to assure proper and adequate control. When it appears that any material furnished fails to fulfill specification requirements, the Testing Laboratory is to report such deficiency immediately to the Contracting Officer and appropriately record it in his report.

END OF SECTION

USPS MPF Specification Last Revised: 10/1/2022

SECTION 055000

METAL FABRICATIONS

PART 1 – GENERAL

1.1. SUMMARY

A. Miscellaneous steel that is not covered in Section 051200.

B. Pipe bollards.

1.2 SUBMITTALS

A. Shop Drawings: Required

B. Samples: Required

C. Product Data: Required

1.3 QUALITY ASSURANCE

A. Quality Standards: Comply with ASTM and AISC requirements.

B. Regulatory Requirements:
1. Design stair assembly to support live load of 100 pounds per square foot with deflection of stringer or landing framing not to exceed 1/240 of span.
2. Design guardrail system for the following loads applied to the top rail:
   a. Uniform load of 50 pounds per linear foot applied horizontally and concurrently with uniform load of 100 pounds per linear foot applied vertically downward.
   b. Concentrated load of 250 pounds applied at any point and in any direction.
   c. Concentrated and uniform loadings shall not be applied simultaneously.
3. Design handrails for the following loads:
   a. Uniform load of 50 pounds per linear foot applied in any direction.
   b. Concentrated load of 250 pounds applied at any point and in any direction.
   c. Concentrated and uniform load shall not be applied concurrently.
4. Conform to applicable Building Code and OSHA requirements.

PART 2 – PRODUCTS

2.1 MATERIALS

A. Structural Steel Members: Conform to ASTM A 36.

B. Tubing, Pipe: Conform to ASTM A 53.

C. Sheet: Conform to ASTM A 568.

D. Welding: Conform to AWS D1.1 “Structural Welding Code.”

E. Bolts, Nuts and Washers: Conform to ASTM A 307.

F. Handrail Fittings: Cast or Machined steel.

G. Pipe Bollard: 6” dia., Schedule 40 pipe, concrete filled with end cap.

H. Extruded Aluminum: ASTM B 221

I. Anchors and Fasteners for Aluminum: Stainless Steel, ASTM A 304

2.2 FABRICATION

A. Shop/Factory Finishing:
1. Interior components: Prime painted.
2. Exterior components: Galvanized.

B Stairs and Landings:
1. Closed risers and concrete filled metal pan treads construction.
2. Form treads, landings, and riser of sheet steel stock.
3. Form stringers with rolled steel channels or rectangular hollow sections.

C. Handrails:
1. Form posts and railings from steel pipe sections.

2.3 FIELD QUALITY CONTROL

A. Field Test: If required by Local codes.

B. Field Inspection: If required by Local codes.

2.4 SCHEDULES

A. Pipe bollards: Primed finish for interior and galvanized finish for exterior.

PART 3 – EXECUTION

3.1 Install all products in accordance with manufacturer’s guidelines and printed instructions.

END OF SECTION

USPS Specification Last Revised: 10/1/2023

SECTION 096723 - RESINOUS FLOORING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes: High solids, pigmented slip-resistant resinous coating for use on floors with integral cove base.

1. Application Method: Metal, power or hand troweled

1.3 RELATED SECTIONS

A. Section 016000 - Product Requirements: Product options and substitutions.

1.4 REFERENCES

A. ASTM E84 Standard Test Method for Surface Burning Characteristics of Building Materials

B. ASTM D2369 Standard Test Method for Volatile Content of Coatings

C. ASTM C579 Standard Test Methods for Compressive Strength of Chemical-Resistant Mortars, Grouts, Monolithic Surfacing, and Polymer Concretes.

D. ASTM C580 Standard Test Method for Flexural Strength and Modulus of Elasticity of Chemical- Resistant Mortars, Grouts, Monolithic surfacing, and Polymer Concretes

E. ASTM D2240 Standard Test Method for Rubber Property-Durometer Hardness

F. ASTM D4060 Test Method for Abrasion Resistance of Organic Coatings

G. ASTM E648 Standard Test Method for Critical Radiant Flux of Floor-Covering Systems Using a Radiant Heat Energy Source

1.5 SUBMITTALS

A. Product Data: Indicate product components, compliance with physical characteristics, application method, required substrate moisture content, required storage conditions, and permitted disposal method for unused product.

B. Product Safety Data Sheets.

C. Applicator Qualifications: Evidence of certification by manufacturer and years of experience.

D. Samples:

1. Floors : Product applied to each type of substrate, 12 by 12-inch square applied to a rigid backing. Submit sample to USPS VMF manager. Quantity of samples: (3) three. E. Provide 5-year material/2-year warranty documentation.

F. Product Schedule: Use resinous flooring designations indicated in Part 2 and room designations indicated on Drawings in product schedule.

G. Maintenance Data: Provide a maintenance manual and a cleaning training video after p r o d u c t installation. Both the manual and the video shall include the following recommendations:

1. Cleaning machine equipment (walk-behind scrubber, walk-behind sweeper, etc.)
2. Manual/hand cleaning supplies (soft bristle brooms, mops, hand brushes, etc.)
3. Cleaning products
4. Step by step maintenance plan

H. ASTM Concrete Humidity Testing ASTM F-2170 results.

1.6 QUALITY ASSURANCE

A. No request for substitution shall be considered that would change the generic type of floor system specified (i.e. epoxy mortar-based system). Equivalent materials of other manufactures may be substituted only on approval of Architect or Engineer. Request for substitution will only be considered only if submitted 10 days prior to bid date. Request will be subject to specification requirements described in this section.

B. Installer Qualifications: Engage an experienced installer (applicator) who is experienced in applying resinous flooring systems similar in material, design, and extent to those indicated for this Project, whose work has resulted in applications with a record of successful in-service performance, and who is acceptable to resinous flooring manufacturer with minimum 5 years of experience installing manufacturer's product.

1. Engage an installer who is certified in writing by resinous flooring manufacturer as qualified to apply resinous flooring systems indicated.
2. Contractor shall have completed at least 10 projects of similar size and complexity.

C. Source Limitations: Obtain primary resinous flooring materials, including primers, resins, hardening agents, cove products, grouting coats, and topcoats, through one source from a single manufacturer, with not less than ten years of successful experience in manufacturing and installing principal materials described in this section. Provide secondary materials, including patching and fill material, joint sealant, and repair materials, of type and from source recommended by manufacturer of primary materials.

D. Field Technical Service Representatives: Resinous flooring manufacture shall retain the services of Field Technical Service Representatives who are trained specifically on installing the system to be used on the project.

1. Field Technical Services Representatives shall be employed by the system manufacture to assist in the quality assurance and quality control process of the installation and shall be available to perform field problem solving issues with the installer.
2. Submit a Quality Assurance Pan document by the manufacturer.

1.7 DELIVERY STORAGE AND HANDLING

A. In accordance with manufacturer instruction for components.

B. Deliver materials in original packages and containers, with unbroken seals, bearing manufacturer's labels indicating brand name and directions for storage and mixing with other components.

C. Store materials to prevent deterioration from moisture, heat, cold, direct sunlight, or other detrimental effects. Store material per product data sheet.

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D. All materials used shall be factory pre-weighed and pre-packaged in single, easy to manage batches to eliminate on site mixing errors: No on-site weighing or volumetric measurements are allowed.

1.8 SITE CONDITIONS

A. Substrate: Conditions of substrate materials and surfaces, including moisture content, to meet manufacturer's requirements. Concrete substrate shall be properly cured. A vapor barrier must be present for concrete subfloors on or below grade. Otherwise, refer to Res 2 system components

A. Environmental Limitations: Comply with resinous flooring manufacturer's written instructions for substrate temperature, ambient temperature, moisture, ventilation, and other conditions affecting resinous flooring application.

1. Maintain material and substrate temperature between 65 and 85 deg F (18 and 30 deg C) during resinous flooring application and for not less than 24 hours after application

1.9 WARRANTY

A. Manufacturer shall furnish a single, written warranty covering both material and workmanship for a period of (5) full years for material and (2) Two full years for workmanship from date of installation or provide a joint and several warranty signed on a single document by material manufacturer and applicator jointly and severally warranting the materials and workmanship for a period of (5) full years and (2) full years respectively from date of substantial completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers:

1. Stonhard Inc., Maple Shade, NJ (800) 257-7953.

B. Floor Coating:

1. Provide a High-Performance Multi-Component Resinous Floor Coating System with totalsolids, and a high-gloss finish. The system shall cure hard, slip-resistant finish that is seamless, non-porous, and resistant to wear, chemicals, stains, and abrasion. It must be suitable for application over concrete.

2. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, Stonclad UR, Stonclad GS, Stonproof OP2, Stonkote HT4, Stonseal SK6-GT.

Build of broadcast or liquid rich systems will not be accepted and will result in a disqualification from bid.

3. System characteristics:
   a. Color and Pattern: Pewter.
   b. Wearing Surface: Textured per site conditions.
   c. Cove Base: Integral, seamless, 6 inches high.

d. Overall System Thickness: Nominal 1/4".

RES 1 Stonclad UR/Stonkote HT4/Stonseal SK6-GT

A. System Components: Manufacturer's standard components that are compatible with each other and as follows:

1. Primer:

a. Material design basis: Stonhard Urethane Primer
b. Resin: Urethane
c. Formulation Description: 100 percent solids
d. Application Method: squeegee and back roll method.
e. Number of Coats: (1) one.

2. Mortar Base:

a. Material design basis: Stonclad UR
b. Resin: Polyurethane.
c. Formulation Description: (4) four component,100 percent solids. Low VOC.
d. Application Method: Metal Trowel.
1) Thickness of Coats: 3/16” (5 mm).
2) Number of Coats: One.
e. Integral cove base: 6”

3. First Topcoat:

a. Material design basis: Stonkote HT4
b. Resin: Epoxy.
c. Formulation Description: (2) two component 100 percent solids.
d. Type: Pigmented.
e. Finish: Textured.
f. Number of coats: Two.

4. Second Topcoat:

a. Material design basis: Stonseal SK6-GT
b. Resin: Urethane.
c. Formulation Description: (2) two-component 100 percent solids.
d. Type: clear.
e. Finish: Gloss textured.
f. Number of Coats: one

Components listed above are the basis of design intent; all bids will be compared to this standard including resin chemistry, color, wearing surface, thickness, and installation procedures, including number of coats. Contractor shall be required to comply with all the requirements of the Specifications and all of the components required by the Specifications, whether or not such products are specifically listed above.

B. System Physical Properties: Provide a resinous flooring system with the following minimum physical property requirements when tested according to test methods indicated:

1. Compressive Strength: 5,000 psi after 7 days per ASTM C 579.
2. Tensile Strength: 1,750 psi per ASTM C 307.
3. Flexural Strength: 4,000 psi per ASTM C 580.
4. Water Absorption: < 1% per ASTM C 413.
5. Impact Resistance: > 160 in. lbs. per ASTM D 2794.
6. Flammability: Class 1 per ASTM E-648.
7. Hardness: .85 to .90, Shore D per ASTM D 2240.
8. Flexural Modulus of Elasticity: $2.0x10^{6}$ psi per ASTM C-580
9. Thermal Coefficient of Linear Expansion: $1.4x10^{-5}$ in./in. F per ASTM C-531.

RES 2 Stonclad GS/Stonkote HT4/Stonseal SK6-GT

C. System Components: Manufacturer's standard components that are compatible with each other and as follows:

1. Primer:

a. Material Basis: Stonhard Standard Primer
   i. Where moisture mitigation is determined to be required per 3.1.C below, Stonfil OP2 is required prior to installing Standard Primer.
   ii. Where new high-early concrete is added under lift bays, this concrete must cure for a minimum of 5 days and Stonhard Primer 150 must be installed. After 28 days, standard primers are sufficient.

b. Resin: Epoxy
c. Formulation Description: (2) two component, 100 percent solids.
d. Application Method: Squeegee and roller.
e. Number of Coats: (1) one.

2. Mortar Base:

a. Material design basis: Stonclad GS
b. Resin: Epoxy.
c. Formulation Description: (3) three component, 100 percent solids.
d. Application Method: Metal Trowel.
   1) Thickness of Coats: nominal 1/4 inch
   2) Number of Coats: One.
e. Aggregates: Pigmented Blended aggregate.
f. Integral cove base: 6"

3. First Topcoat:

a. Material design basis: Stonkote HT4.
b. Resin: Epoxy.
c. Formulation Description: (2) two component 100 percent solids.
d. Type: Pigmented.

e. Finish: Textured
f. Color: Pewter
g. Number of Coats: one.

4. Second Topcoat:

a. Material design basis: Stonseal SK6-GT.
b. Resin: Aliphatic polyurethane/polyurea.
c. Formulation Description: (2) two component 92 percent solids.
d. Type: Clear
e. Finish: Gloss Textured
f. Number of Coats: One.

Components listed above are the basis of design intent; all bids will be compared to this standard including resin chemistry, color, wearing surface, thickness, and installation procedures, including number of coats. Contractor shall be required to comply with all the requirements of the Specifications and all of the components required by the Specifications, whether or not such products are specifically listed above.

D. System Physical Properties: Provide a resinous flooring system with the following minimum physical property requirements when tested according to test methods indicated:

1. Compressive Strength: 10,000 psi after 7 days per ASTM C 579.
2. Tensile Strength: 1,750 psi per ASTM C 307.
3. Flexural Strength: 4,000 psi per ASTM C 580.
4. Water Absorption: < 1% per ASTM C 413.
5. Impact Resistance: > 160 in. lbs. per ASTM D 2794.
6. Flammability: Class 1 per ASTM E-648.
7. Hardness: .85 to .90, Shore D per ASTM D 2240.
8. Flexural Modulus of Elasticity: $2.0x10^6$ psi per ASTM C-580
9. VOC Content: 4 g/l.
10. Cure Profile: 24 hours.

PART 3 – EXECUTION

3.1 PREPARATION

A. General: Prepare and clean substrates according to resinous flooring manufacturer's written instructions for substrate indicated. Provide clean and dry substrate for resinous flooring application.

B. Concrete Substrates: Provide sound concrete surfaces free of laitance, glaze, efflorescence, curing compounds, form-release agents, dust, dirt, grease, oil, and other contaminants incompatible with resinous flooring.

1. Mechanically prepare substrates as follows:

a. Shot-blast surfaces with an apparatus that abrades the concrete surface, contains the dispensed shot within the apparatus, and recirculates the shot by vacuum pickup or Diamond grind with a dust free system.
b. Clean the substrate with a manufacturer’s approved degreaser. Rinse the substrate thoroughly with clean water to remove residue.

2. Repair damaged and deteriorated concrete according to resinous flooring manufacturer's written recommendations.

C. Perform in situ probe test, ASTM F 2170. Verify substrate moisture content meets manufacturer's requirements and take corrective action as necessary for moisture mitigation. Proceed with application only after substrates do not exceed a maximum potential equilibrium relative humidity threshold of 85%. Otherwise, OP2 or equivalent moisture mitigation grout must be applied.

D. Use patching and filling material to fill holes and depressions in substrates according to manufacturer's written instructions.

E. Treat control joints and other nonmoving substrate cracks to prevent cracks from reflecting through resinous flooring according to manufacturer's written recommendations. Allowances should be included for joint filling material, and concrete crack treatment.

F. An expansion/control joint must be created between the existing slab and the new slab along the service bay perimeter. A polyethene backer rod and joint treatment should be applied along the new joint prior to installing the epoxy system. Sealant depth (D) shall be equal to one-half of the joint width (W) after placement of the backer rod.

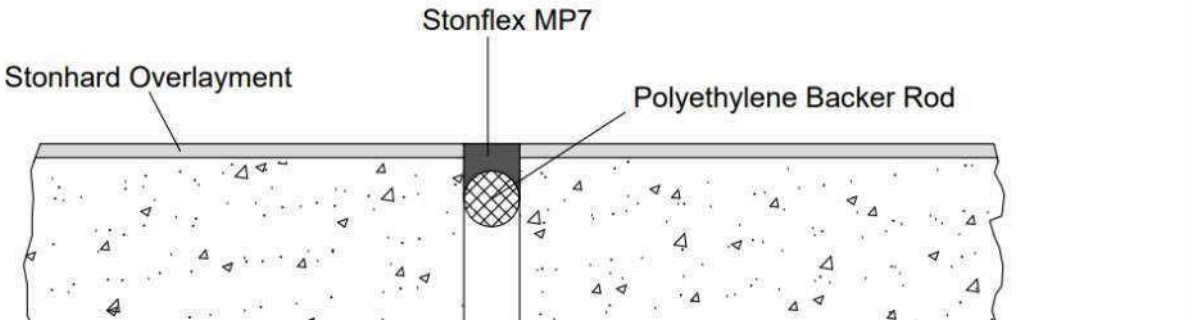


Figure 1. Expansion/Isolation Joint Treatment Detail

3.2 APPLICATION

A. General: Apply coating system in accordance with manufacturer instructions for material and substrate involved.

1. Coordinate application of components to provide optimum adhesion of resinous flooring system to substrate, and optimum intercoat adhesion.

2. Cure resinous flooring components according to manufacturer's written instructions. Prevent contamination during application and curing processes.

3. At substrate expansion and isolation joints, provide joint in resinous flooring to comply with resinous flooring manufacturer's written recommendations.
   a. Apply joint sealant to comply with manufacturer's written recommendations.

B. Apply each component in compliance with manufacturer's directions to produce a uniform monolithic coating, uninterrupted except at divider strips or at joints indicated or required.

C. Floor Material:

1. Apply each component in compliance with manufacturer's directions to produce a uniform monolithic coating, uninterrupted except at divider strips or at joints indicated or required.

2. At substrate expansion and isolation joints, provide joint in resinous flooring to comply with resinous flooring manufacturer's written recommendations. Apply joint sealant to comply with manufacturer's written recommendations.

D. Primer: Mix and apply material according to manufacturer's procedures.

E. Apply metal trowel single mortar coat in thickness indicated for flooring system. Hand or power trowel and grout to fill voids. When cured, sand to remove trowel marks and roughness. F. Topcoat: Mix and apply material according to manufacturer's procedures.

G. Integral Cove Base: Apply cove base mix to wall surfaces before applying flooring. Apply according to manufacturer's written instructions and details including those for taping, mixing, priming, troweling, sanding, of cove base. Round internal and external corners

3.3 TERMINATIONS

A. Chase edges to "lock" the flooring system into the concrete substrate along lines of termination.

B. Penetration Treatment: Lap and seal resinous system onto the perimeter of the penetrating item by bridging over compatible elastomer at the interface to compensate for possible movement.

C. Trenches: Continue flooring system into trenches to maintain monolithic protection. Treat cold joints to assure bridging of potential cracks.

E. Treat floor drains by chasing the flooring system to lock in place at point of termination.

3.4 JOINTS AND CRACKS

Treat control joints to bridge potential cracks and to maintain monolithic protection.

A. Treat control joints to bridge potential cracks and to maintain monolithic protection.

B. Treat cold joints and construction joints and maintain monolithic protection on horizontal and vertical surfaces as well as horizontal and vertical interfaces.

C. Vertical and horizontal contraction and expansion joints are treated by installing backer rod and compatible sealant after coating installation is completed. Provide sealant type recommended by manufacturer for traffic conditions and chemical exposures to be encountered.

3.5 FIELD QUALITY CONTROL

A. Prevent floor material from pooling or puddling at the cove base.

B. Material Sampling: Owner may at any time and any numbers of times during resinous flooring application require material samples for testing for compliance with requirements.

1. Owner will engage an independent testing agency to take samples of materials being used. Material samples will be taken, identified, sealed, and certified in presence of Contractor.
2. Testing agency will test samples for compliance with requirements, using applicable referenced testing procedures or, if not referenced, using testing procedures listed in manufacturer's product data.
3. If test results show applied materials do not comply with specified requirements, pay for testing, remove noncomplying materials, prepare surfaces coated with unacceptable materials, and reapply flooring materials to comply with requirements.

3.6 PROTECTION AND CLEANING

A. Cure materials in compliance with manufacturer's directions, taking care to prevent contamination during stages of application and prior to completion of curing process. Close area of application for a minimum of 24 hours.

B. Prevent contamination during stages of application and prior to completion of curing process.

C. Protect resinous flooring materials from damage and wear during construction operation. Where temporary covering is required for this purpose, comply with manufacturer's recommendations for protective materials and method of application. General Contractor is responsible for protection.

D. After curing, clean surfaces just prior to final inspection using cleaning materials and procedures recommended by manufacturer.

1. Cleaning: Remove temporary covering and clean resinous flooring just prior to final inspection. Use cleaning materials and procedures recommended by resinous flooring manufacturer. General contractor responsible for cleaning prior to inspection.

2. Training: In person training to be performed after the first phase of construction is completed.

E. Dispose of unused materials in accordance with manufacturer's directions and local regulations.

END OF SECTION

SECTION 099100

PAINTING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
1. Surface preparation and field application of paints and finishes for interior and exterior surfaces.
2. Schedule of Items to be painted.
3. Exterior painting and finishing schedule.
4. Interior painting and finishing schedule.

B. Related Documents: The Contract Documents, as defined in Section 011000 - Summary of Work, apply to the Work of this Section. Additional requirements and information necessary to complete the Work of this Section may be found in other Documents.

C. Related Sections:
1. Section 055000 - Metal fabrications
2. Section 055213 - Pipe and Tube Railings
3. Section 081100 - Metal Doors and Frames: Shop priming.

1.2 REFERENCES

A. American Society for Testing and Materials (ASTM):
1. ASTM E 84 - Test Method for Surface Burning Characteristics of Building Materials.

1.3 SUBMITTALS

A. Section 013300 - Submittals: Procedures for submittals.
1. Product Data: Submit product data for each type of paint specified.
a. Technical data sheets indicating manufacturer's catalog number, paint type description, and VOC content.
b. Painting Schedule listing surfaces to be painted with cross reference to the specific painting and finishing system and application. Identify each paint material by manufacturer's catalog number and general classification.
2. Samples: Submit color brush-out sample for each paint color and sheen specified.
a. Three samples on 8 1/2-inch x 11-inch card stock for color and sheen verification.
b. Identify each sample by paint manufacturer, paint type, color, and sheen.
3. Assurance/Control Submittals:
a. Test Reports: Submit manufacturer's Safety Data Sheets (SDS) for each paint type proposed.

1.4 QUALITY ASSURANCE

A. Applicator Qualifications: Company specializing in performing Work of this Section with minimum five years documented experience.

B. Regulatory Requirements:
1. Surface Burning Characteristics in Accordance with ASTM E-84 for Class I or A finish:

a. Flame Spread (Non-Combustible Surfaces): Less than 25.
b. Smoke Density (Non-Combustible Surfaces): Less than 450.

2. Provide paint and coating materials that conform to Federal, State, and Local restrictions for Volatile Organic Compounds (VOC) content.

1.5 DELIVERY, STORAGE AND HANDLING

A. Section 016000 - Product Requirements: Transport, handle, store, and protect products.

B. Deliver paint materials in sealed original labeled containers, bearing manufacturer's name, type of paint, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and/or reducing.

C. Store paint materials at minimum ambient temperature of 45 degrees F and a maximum of 90 degrees F, in ventilated area, and as required by manufacturer's published instructions.

D. Prevent fire hazards and spontaneous combustion.

1.6 PROJECT CONDITIONS OR SITE CONDITIONS

A. Environmental Requirements:
1. Apply paint finishes only when moisture content of surfaces is within manufacturer's acceptable ranges for type of finish being applied.
2. Surface temperatures or surrounding air temperature to be above 40 degrees F before applying alkyd finishes; above 45 degrees F for interior latex, and 50 degrees F for exterior latex work. Minimum for varnish and transparent finishes is 65 degrees F.
3. Provide continuous ventilation and heating facilities to maintain temperatures above 45 degrees F for 24 hours prior to, during and 48 hours after application of finishes.
4. Do not apply paint in areas where dust is being generated.
5. Provide lighting level in areas being painted of 80-foot candles measured mid-height at substrate surface.

1.7 MAINTENANCE

A. Section 017704 - Closeout Procedures and Training: Procedures for closeout submittals.

B. Extra Materials:
1. Provide one gallon of each color, type and sheen to USPS Project Manager.
2. Label each container with color, type, texture, room locations, in addition to the manufacturer's label.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Subject to compliance with project requirements, manufacturers offering specified items which may be incorporated in the work include the following:
1. Benjamin Moore and Company, Montvale, NJ (201) 573-9600.
2. PPG Paints, Pittsburgh, PA (800) 441-9695.
3. Sherwin-Williams Company, Cleveland, OH (800) 321-8194.

B. Section 016000 - Product Requirements: Product options and substitutions. Substitutions: Permitted.

2.2 MATERIALS

A. Paints:
1. Manufacturer's "Best Grade" for each type specified.
2. Ready-mixed; pigments fully ground maintaining a soft paste consistency, capable of readily and uniformly dispersing to a complete homogeneous mixture.
3. Providing good flowing and brushing properties and be capable of drying or curing free of streaks or sags.
4. VOC limits (g/L) for exterior and interior paint applications:
   a. Exterior- Steel-Shop Primed
      1) Top Coat – Non-Flat: 150
      2) Top Coat - Gloss: 250
   b. Exterior- Steel - Galvanized
      1) Primer Coat: 200
      2) Top Coat - Non-Flat: 150
      3) Top Coat - Gloss: 250
   c. Interior Wood – Transparent
      1) Stain: 250
      2) Varnish: 350
   d. Interior Concrete, Concrete Block
      1) Block filler: 300
      2) Top Coat – Flat: 100
      3) Top Coat – Non-Flat: 150
      4) Top Coat – Gloss: 250
   e. Interior Steel – Unprimed
      1) Rust Prime Coat: 400
      2) Top Coat – Non-Flat: 150
      3) Top Coat – Gloss: 250
   f. Interior Steel – Primed
      1) Top Coat – Flat: 100
      2) Top Coat – Non-Flat: 150
      3) Top Coat – Gloss: 250
   g. Interior Steel – Galvanized
      1) Top Coat – Non-Flat: 150
      2) Top Coat – Gloss: 250
   h. Interior Plaster, Gypsum Board
      1) Undercoater: 200
      2) Top Coat - Flat: 100
      3) Top Coat – Non-Flat: 150
      4) Top Coat – Gloss: 250

B. Primers and Undercoaters: Manufactured by same manufacturer as finish coat materials.

C. Paint Accessory Materials: Linseed oil, shellac, turpentine and other materials not specifically indicated herein but required to achieve the finishes specified of high quality and approved manufacturer.

2.3 EXTERIOR PAINT SYSTEMS

A. Benjamin Moore:
1. Ferrous Metal: Semi-Gloss, Water Base, Alkyd Primer/Acrylic Latex.
   a. Primer: V110 Acrylic Metal Primer, 3.5-4.6 mils wet, 1.4-1.9 mils dry.
   b. Each Finish Coat: V331 Acrylic DTM Enamel Semi-Gloss; 4.6-5.3 mils wet, 1.9-2.3 mils dry.
2. Galvanized Metal: Semi-Gloss, Water Base, Alkyd Primer/Acrylic Latex.
   a. Primer: V110 Acrylic Metal Primer; 3.5-4.6 mils wet, 1.4-1.9 mils dry.

b. Each Finish Coat: V331 Acrylic DTM Enamel Semi-Gloss; 4.6-5.3 mils wet, 1.9-2.3 mils dry.

B. PPG Paints:
1. Ferrous Metal: Semi-Gloss, Water Base, Alkyd Primer/Acrylic Latex.
a. Primer: 4020 PF Pitt-Tech Plus DTM Interior/Exterior Primer; MDF 3.0 mils.
b. Each Finish Coat: 90-1110 Series Acrylic Enamel Satin; MDF 3.0 mils.
2. Galvanized Metal: Semi-Gloss, Water Base, Alkyd Primer/Acrylic Latex.
a. Primer: 4020 PF DTM Interior/Exterior Primer; MDF 3.0 mils.
b. Each Finish Coat: 90-1110 Acrylic Enamel Satin; MDF 3.0 mils.
3. Concrete/Masonry Semi-Gloss Acrylic Latex MDF 1.5 mil.
a. Primer: 4-22 Perma Crete High Build 100% Acrylic Primer 7.0 mil.
b. Each Finish Coat: 4-22 Perma Crete High Build Acrylic Top Coat 1.5 mil.

C. Sherwin-Williams:
1. Ferrous Metal: Semi-Gloss, Low VOC, Alkyd Primer/Acrylic Latex.
a. Primer: Pro-Cryl Universal Water-Based Primer, B66-1310 Series, MDF 3.0 mils.
b. Each Finish Coat: DTM Acrylic B66 Series; MDF 3.0 mils.
2. Galvanized Metal: Semi-Gloss, Water Base, Alkyd Primer/Acrylic Latex.
a. Primer: Pro-Cryl Universal Water Based Primer, B66-1310 Series, MDF 3.0 mils.
b. Each Finish Coat: DTM Acrylic B66 Series; MDF 3.0 mils.
3. Concrete/Masonry Semi-Gloss Acrylic Latex MDF 1.5 mil.
a. Primer: Loxon Concrete & Masonry Primer MDF 3.0 mils.
b. Each Finish Coat: A-100 Exterior Acrylic, A8 Series MDF 3.0 mils.

2.4 INTERIOR PAINT SYSTEMS

A. Benjamin Moore:
1. Gypsum Board: Eggshell, Water Base, Acrylic Latex.
a. Primer: N534 Interior Latex Primer; 4.3 mils wet, 1.4 mils dry.
b. Each Finish Coat: Moorecraft Super-Hide Eggshell 286.
2. Masonry: Eggshell, Water Base, Acrylic Latex.
a. Primer: 571 Ultra Spec Hi-Build Masonry Block Filler; 16-21 mils wet, 8.5-11.4 mils dry
b. Each Finish Coat: 485 Ultra Spec Scuff-X Interior Eggshell; 4.0-4.5 mils wet, 1.6-1.8 mils dry.
3. Metal: Satin, Water Base, Acrylic Latex.
a. Each Finish Coat: WH25 Ultra Spec HP DTM Acrylic Low Lustre Enamel; 5.2 mils wet, 2.3 mils dry.
4. Wood: Satin, Water Base, Acrylic Latex.
a. Primer: AQ-0400 Aqua Lock Plus 100% Acrylic Primer Sealer; 4.0-5.3 mils wet, 1.6-2.2 mils dry.
b. Each Finish Coat: 485 Ultra Spec Scuff-X Interior Eggshell; 4.0-4.5 mils wet, 1.6-1.8 mils dry.
5. Concrete: Semi-Gloss, Water Base, Acrylic Latex.
a. Primer: 571 Ultra Spec Hi-Build Masonry Block Filler, 16-21 mils wet, 8.5-11.4 mils dry.
b. Each Finish Coat: 487 Ultra Spec Scuff-X Interior Semi-Gloss Finish, 4.3 mils wet, 1.6 mils dry.
6. Ferrous Metal: Semi-Gloss, Water Base, Acrylic Latex.
a. Primer: V110 Acrylic Metal Primer; 3.5-4.6 mils wet, 1.4-1.9 mils dry.
b. Each Finish Coat: 487 Ultra Spec Scuff-X Interior Semi-Gloss Finish, 4.3 mils wet, 1.6 mils dry.
7. Wood Cabinets and Wood Shelves: Semi-Gloss, Water Base, Acrylic Latex.
a. Enamel Undercoater: AQ-0400 Aqua Lock Plus 100% Acrylic Primer Sealer; 4.0-5.3 mils wet, 1.6-2.2 mils dry.
b. Each Finish Coat: CC-66 Cabinet Coat Trim & Cabinet Enamel Semi-Gloss; 3.6-4.6 mils wet, 1.3-1.6 mils dry.

B. PPG Paints:
1. Gypsum Board: Eggshell, Water Base, Acrylic Latex.
a. Primer: 6-2 Speedhide Latex Sealer; MDF 1.0 mils.
b. Each Finish Coat: 6-411 Speedhide Eggshell Latex; MDF 1.5 mils.
2. Masonry: Eggshell, Water Base, Acrylic Latex.
a. Primer: 6-7 Speedhide Block Filler; MDF 10.2 mils.
b. Each Finish Coat: 6-411 Speedhide Eggshell Latex; MDF 1.5 mils.
3. Metal: Satin, Water Base, Acrylic Latex.
a. Primer: 4020 PF DTM Waterborne Acrylic Prime MDF 2.2mils.
b. Each Finish Coat: 1110 HP Series DTM Acrylic Satin; MDF 1.5 mils.
4. Wood: Satin, Water Base, Acrylic Latex.
a. Primer: 17-921XI 100 Percent Acrylic Universal Primer; MDF 1.5 mils.
b. Each Finish Coat: 90-1110 DTM Acrylic Satin; MDF 1.5 mils.
5. Concrete: Semi-Gloss, Water Base, Acrylic Latex.
a. Primer: 6-7 Speedhide Block Filler; MDF 10.2 mils.
b. Each Finish Coat: 6-500 Speedhide Semi-Gloss Latex; MDF 1.2 mils.
6. Ferrous Metal: Semi-Gloss, Water Base, Acrylic Latex.
a. Each Finish Coat: 90-474 DTM Acrylic Satin; MDF 1.5 mils.
7. Wood Cabinets and Wood Shelves: Semi-Gloss, Water Base, Acrylic Latex.
a. Primer/Sealer: 17-921XI 100 Percent Acrylic Universal Primer; MDF 1.5 mils.
b. Each Finish Coat: 90-474 DTM Acrylic Satin; MDF 1.5 mils.

C. Sherwin Williams:
1. Gypsum Board: Zero VOC, Eg-shell, Water Base, Acrylic Latex.
a. Primer: ProMar 200 Zero VOC Primer, B28W2600, MDF 1.0 mils.
b. Each Finish Coat: Scuff Tuff Eg-Shel, S24-50 Series MDF 1.6 mils.
2. Masonry: Semi-Gloss, Water Base, Acrylic Latex.
a. Primer: PrepRite Interior/Exterior Block Filler, B25W25; MDF 3.0 mils.
b. Two Finish Coats: ProMar 200 HP Zero VOC Interior Latex Semi-Gloss, B31W1950 Series: MDF 1.5 mils.
3. Metal: Semi-Gloss, Water Base, Acrylic Latex.
a. Each Finish Coat: Pro Industrial DTM Acrylic S-G, B66-1151 Series; MDF 3.0 mils.
4. Wood: Semi-Gloss, Water Base, Acrylic Latex.
a. Primer: Wall & Wood Primer, B28W08111, MDF 1.6 mils.
b. Each Finish Coat: Pro Industrial Waterborne Alkyd Urethane S-G, B53-1150 Series MDF 1.4 mils.
5. Concrete: Semi-Gloss, Water Base, Acrylic Latex.
a. Primer: Loxon Concrete & Masonry Primer; MDF 10.0 mils.
b. Each Finish Coat: Pro Industrial Waterborne Alkyd Urethane S-G B53-1150 Series, MDF 1.4 mils.
6. Ferrous Metal: Semi-Gloss, Water Base, Acrylic Latex.
a. Primer: Pro-Cryl Universal Water Based Primer, B66-1310 Series, MDF 3.0 mils.
b. Each Finish Coat: Pro Industrial DTM Acrylic S-G, B66-01151 Series; MDF 3.0 mils.
7. Wood Cabinets and Wood Shelves: Semi-Gloss, Water Base, Acrylic Latex.
a. Primer/Sealer: Wall & Wood Primer, B2808111, MDF 1.6 mils.
b. Each Finish Coat: Pro Industrial Waterborne Alkyd Urethane S-G B53-1150 Series, MDF 1.4 mils.

2.5 INTERIOR LEAD ENCAPSULATING COATINGS

A. Product: Lead encapsulating coating as manufactured by Benjamin Moore.
1. Benjamin Moore: Insl-X Lead Block, Lead Encapsulating Coating, Eggshell EC-3210.
a. Base Coat: to be applied over properly prepared substrates of drywall, plaster, wood, masonry or metal surfaces for walls, trim and ceilings, MDF 14-16 mils wet. Do not use on

surfaces that may be exposed to friction wear. Compatible finish coats may be applied. Prepare and install base coat per manufacturer's recommendations.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Section 017300 - Execution: Verification of existing conditions before starting work.

B. Verification of Conditions: Verify that field measurements, surfaces, substrates and conditions are as required, and ready to receive Work.

C. Report in writing to USPS Project Manager prevailing conditions that will adversely affect satisfactory execution of the Work of this Section. Do not proceed with Work until unsatisfactory conditions have been corrected.

D. By beginning Work, Contractor accepts conditions and assumes responsibility for correcting unsuitable conditions encountered at no additional cost to the United States Postal Service.

3.2 PREPARATION

A. Do not paint over dirt, rust, scale, grease, moisture, scuffed surfaces, and conditions otherwise detrimental to formation of a durable paint film.

B. Perform preparation and cleaning procedures in accordance with paint manufacturer's published instructions for each particular substrate condition.
   1. Provide barrier coats over incompatible primers or remove and reprime as required.
   2. Remove hardware, hardware accessories, machined surfaces, plates, lighting fixtures, and similar items in place and not to be painted or provide surface applied protection prior to surface preparation and painting operations. Reinstall all removed items after completion of paint work.
   3. Clean surfaces to be painted before applying paint of surface treatment. Remove oil and grease prior to mechanical cleaning.

C. Ferrous Metals: Clean ferrous surfaces that are not galvanized or shop-coated, of oil, grease, dirt, loose mill scale and other foreign substances by solvent or mechanical cleaning.
   1. Touch-up shop-applied prime coats, where damaged or bare. Clean and touch-up with same type shop primer.

D. Galvanized Surfaces: Clean free of oil and surface contaminants with non-petroleum-based solvent. Apply coat of etching primer if required by paint manufacturer.

E. Cementitious Materials: Prepare cementitious surfaces to be painted by removing efflorescence, chalk, dust, dirt, grease, oils, and by roughening as required to remove glaze.
   1. Determine alkalinity and moisture content of surfaces to be painted by performing appropriate tests.
      a. If surfaces are found to be sufficiently alkaline to cause blistering and burning of finish paint, correct condition before application of paint.
   2. Do not paint over surfaces where moisture content exceeds that permitted in manufacturer's printed instructions.
   3. Clean floor surfaces scheduled to be painted with a commercial solution of muriatic acid, or other etching cleaner. Flush floor with clean water to neutralize acid and allow to dry before painting.

F. Wood: Clean wood surfaces to be painted of dirt, oil, and other foreign substances with scrapers, mineral spirits, and sandpaper, as required. Sandpaper smooth those finished surfaces exposed to

view and dust off. Scrape and clean small, dry, seasoned knots and apply a thin coat of white shellac or other recommended knot sealer, before application of priming coat. After priming, fill holes, and imperfections in finish surfaces with putty or plastic wood-filler. Sandpaper smooth when dried.

1. Prime, stain, or seal wood required to be job-painted immediately upon delivery to job. Prime edges, ends faces, undersides, and backsides of such wood, including cabinets and counters.
2. Seal tops, bottoms, and cut-outs with a heavy coat of varnish or equivalent sealer immediately upon delivery to job.

G. Gypsum Board: Fill minor defects with filler compound. Spot prime defects after repair.

3.3 APPLICATION

A. Apply paint products in accordance with manufacturer's published instructions using application procedures approved for the particular application and substrate to the specified Minimum Dry Film Thickness (MDF). Apply each coat to uniform finish.

B. Apply each coat slightly darker than preceding coat unless otherwise approved by USPS Project Manager. Sand lightly between coats to achieve specified finish.

C. Do not apply finishes on surfaces that are not dry.

D. Number of coats and film thickness required is same regardless of application method. Do not apply succeeding coats until the previous coat has cured as recommended by the manufacturer.

E. Apply additional coats when undercoats, stains, or other conditions show through final coat until paint film is of uniform finish, color, and appearance. Surfaces, including edges, corners, crevices, welds, and exposed fasteners to receive minimum dry film thickness equivalent to that of flat surfaces.

F. Minimum Coating Thickness: Apply materials at not less than manufacturer's recommended spreading rate. Provide minimum dry film thickness (MDF) of the entire coating system as indicated in Painting and Finishing Schedule at end of this Section.

G. Block Fillers: Apply block fillers to concrete masonry units at rate to provide complete coverage with pores filled.

H. Prime Coats: Before application of finish coats, apply a prime coat of material as recommended by manufacturer to material scheduled to be painted or finished that has not been shop primed. Recoat primed and sealed surfaces where evidence of suction spots or unsealed areas in first coat appears, to assure a finish coat with no burn through or other defects due to insufficient sealing.

I. Pigmented (Opaque) Finishes: Completely cover to provide an opaque, smooth surface of uniform finish, color, appearance, and coverage. Cloudiness, spotting, laps, brush marks, runs, sags, or other surface imperfections will not be acceptable.

J. Hollow Metal Doors: Paint each door edge.

K. Completed Work: Match USPS Project Manager approved field samples for color and sheen.

3.4 MECHANICAL AND ELECTRICAL EQUIPMENT

A. Clean or replace identification markings on mechanical or electrical equipment when painted over or spattered.

B. Paint both sides and edges of plywood backboards for electrical equipment before installing backboards and mounting equipment on them.

C. Pre-paint Gas piping prior to installation. (Touch-up paint after installation.)
   1. Color:
      a. Roof (Yellow): OSHA Standard "Safety Yellow."
      b. Other Areas: Match adjacent surfaces.

D. At Workroom locations, paint red background on wall and columns behind fire extinguisher extending 6 inches on both sides of the extinguisher and from floor to ceiling, or to 12 feet above floor, whichever is lower. Color is to be OSHA Standard "Safety Red" and in accordance with ANSI Z53.1.

3.5 FIELD QUALITY CONTROL

A. Section 014000 - Quality Requirements: Field testing and inspection.

B. Inspect painting and coating application for scheduled material, color, sheen, specified thickness (MDF), and coverage.

3.6 CLEANING

A. As work proceeds and upon completion, promptly remove paint where spilled, splashed, or spattered.

B. During progress of work keep premises free from any unnecessary accumulation of tools, equipment, surplus materials, and debris.

C. Collect waste, cloths, and material which may constitute a fire hazard, place in closed metal containers and remove daily from site.

D. Upon completion of work leave premises neat and clean.

3.7 PROTECTION

A. Protect other surfaces from paint and damage. Repair damage as a result of inadequate or unsuitable protection.

3.8 COLOR SCHEDULE

A. Any proposal to substitute a color is to include manufacturer’s certification that the color matches the specified Munsell notation, or Pantone Color Matching System (PMS) number.

B. P-1 White (Munsell notation: #5Y 9.25/0.5NN)
   1. Benjamin Moore: #968, Dune White.
   2. PPG Paints: #512-1, Winter Mood.
   3. Sherwin-Williams: #SW 7636, Origami White

C. P-2 Light Gray (Munsell notation: #N8.0)
   1. Benjamin Moore: #1612 Pelican Gray.
   2. Sherwin-Williams: #SW 7662, Evening Shadow

D. P-3 (Not Used)

E. P-4 Red (Match PMS 485C “Postal Red”) Custom Match

A. P-5 Blue (Match PMS 301C “Postal Blue”) Custom Match

B. P-6 Medium Gray (Munsell notation: #10B7/1)
   1. Sherwin Williams: SW#1232, Dublin Gray (custom mix)

C. P-7 Semi-gloss Black

3.9 SCHEDULE OF ITEMS TO BE PAINTED

A. Painted finishes shall be provided for, but not limited to, the following items. Refer to Drawings and Paint Color Schedule above for designated finishes and colors of areas.
   1. Exterior: All exterior surfaces including, but not limited to:
      a. Hollow metal doors and frames.
      b. Metal opening frames and trim.
      c. Metal flashing (if exposed from ground level) and downspout.
      d. Metal gravelstops (vertical face).
      e. Pipe Bollards, if not to receive plastic covers specified in Section 055000.
      f. Metal railings.
      g. Roof hatch.
      h. Canopy supporting steel structure.
      i. Wall louvers.
      j. Exposed concrete.
      k. Exposed concrete masonry.
      l. Stucco/cement plaster.
   2. Interior: All interior surfaces as scheduled on Drawings including, but not limited to:
      a. Hollow metal doors and frames.
      b. Hollow metal window frames.
      c. Metal opening frames and trim.
      d. Gypsum wallboard.
      e. Exposed concrete unit masonry.
      f. Pipe Bollards.
      g. Metal railings.
      h. Exposed structure columns.
      i. Metal stair stringers and handrails.
      j. Exposed wood trim.

B. Do not paint the following items:

   1. Pre-finished items:
      a. Aluminum, brass, bronze, stainless steel, and chrome plated steel.
      b. Pre-finished items, such as toilet compartments, acoustical ceiling materials, mechanical, and electrical equipment.
      c. UL, FM, and other code-required labels.
      d. Equipment identification, performance rating, and name plates.
      e. Finish hardware.
      f. Factory finished metal wall panels, metal wall panel trim, and metal gravel stops.
   2. Exposed items:
      a. Exposed mechanical ductwork, hangers, and supports.
      b. Exposed piping and conduit, hangers and supports.
      c. Exposed fire protection piping, hangers and supports.
      d. Exposed roof structure.
      e. Exposed roof deck.

3.10 PAINTING AND FINISHING SCHEDULE

A. Interior Paint Systems:
   1. Interior Gypsum Wallboard:
      a. 1 coat Latex Wall Primer.
      b. 1 coat Latex Eggshell Enamel

   2. Interior Gypsum Wallboard Painted P-4 and P-5:
      a. 1 coat Latex Wall Primer
      b. 5 coats Latex Eggshell Enamel
   3. Interior Masonry:
      a. 1 coat Latex Block Filler
      b. 1 coat Latex Eggshell Enamel
   4. Interior Metal:
      a. 2 coats Latex Satin
   5. Interior Wood (painted):
      a. 1 coat Enamel Undercoat
      b. 2 coats Alkyd Semi-Satin Enamel
   6. Cast-In-Place Concrete:
      a. One coat of Latex Masonry Block Filler.
      b. Two tinted coats of Acrylic Latex Semi-Gloss Enamel.
   7. Wood Doors - Painted.
      a. One coat Enamel Undercoat.
      b. Two tinted coats of Latex Semi-Gloss Enamel.
   8. Ferrous Metals
      a. Touch up Prime Coat.
      b. Two tinted coats of Alkyd Enamel Semi-Gloss.
   9. Wood Cabinets, Shelves, etc. - exposed surfaces.
      a. One coat Primer-Sealer.
      b. One coat Enamel Undercoat.
      c. One coat Alkyd Enamel Semi-Gloss Enamel.
   10. Epoxy Concrete Floor System (VMF Service Bay)
      a. One coat Primer
      b. One coat Epoxy 100% solids
      c. Option One coat Urethane

B. Exterior Paint Systems:
   1. Galvanized Metal:
      a. Touch up Prime Coat.
      b. Two tinted coats Exterior Alkyd Enamel Semi-Gloss Enamel.
   2. Ferrous Metals:
      a. Touch up Prime Coat.
      b. Two tinted coats Exterior Alkyd Enamel Semi-Gloss Enamel.
   3. Concrete/Masonry/Stucco
      a. Prime Coat.
      b. Two tinted coats Exterior Acrylic Latex Semi-Gloss.

END OF SECTION

USPS MPF Specification Last Revised: 10/1/2022

SECTION 144500

VEHICLE LIFTS

PART 1 - GENERAL

1.1 SCOPE OF WORK

A. Furnishing and complete installation of new vehicle lifts. The lifts shall be provided with all necessary devices for satisfactory operation.

1.2 ACCEPTABLE MANUFACTURERS: Required characteristics and performance of vehicle lifts are based on products of the following manufacturers:

A. Multiple-post Lifts: Rotary Lift, Inc.

B. Scissors Lifts: Hunter Engineering Co.

1.3 WORK INCLUDED

A. Supply all labor and materials required to deliver and install the vehicle lift systems and make them full operational.

1.4 QUALITY ASSURANCE

A. Manufacturer's and Installer's Qualifications:
1. Materials and products shall be manufactured by a company continuously and regularly employed in the manufacture of similar materials, for a period of at least 5 consecutive years; and which can show evidence of these materials being satisfactorily used on at least six projects of similar size, scope, and type within such a period. At least three of the projects shall have been in successful use for three years or longer.
2. Installation shall be by an installer which has been in the business of installing similar systems for at least three consecutive years and is approved as an installer by the equipment manufacturer.

1.5 SUBMITTALS

A. Submit shop drawings showing lay-out, details of construction, anchorages, and accessories specific to this project.

1.6 WARRANTY

A. Provide manufacturer's 2-year parts and labor warranty.

PART 2 - PRODUCTS

2.1 VEHICLE LIFTS

A. Light Duty – 12,000 lb. load capacity
   1. Two-Post Lift (Symmetrical): floor-mounted and rigidly anchored: Design requirements are based on Model SPO12, by Rotary Lift, Inc.
   2.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Lifts shall be floor mounted and rigidly anchored and installed in strict accordance with manufacturer's recommendations, with all required appurtenances and connections to provide fully operational functionality.

3.2 FIELD TESTING

A. Upon completion and before final inspection of the work, each vehicle lift shall be operated under full rated capacity load and shall be tested as in-service to demonstrate compliance with the contract requirements. Piping shall be thoroughly flushed and cleaned before being placed into operation.

3.3 INSTRUCTING OPERATING PERSONNEL

A. The services of a manufacturer's technical representative to instruct Owner's personnel in operation and maintenance of the lifts shall be provided. Schedule with Owner at least 7 days in advance.

END OF SECTION

USPS Specification Last Revised: 10/1/2022

SECTION 260500

COMMON WORK RESULTS FOR ELECTRICAL

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes:
   1. Basic electrical methods.
   2. Grounding and bonding.
   3. Hangers and supports.
   4. Electrical identification.
   5. Electrical system testing and inspection.

B. Related Documents: The contract documents, as defined in Section 011000 – Summary of Work, apply to the work of this section. Additional requirements and information necessary to complete the work of this section may be found in other documents.

C. Related Sections:
   1. Section 078400 - Firestopping
   2. Section 260519 - Low-Voltage Electrical Power Conductors and Cables
   3. Section 260533 - Raceway and Boxes for Electrical Systems
   4. Section 262200 - Low Voltage Transformers
   5. Section 262416 - Panelboards
   6. Section 265100 - Interior Lighting (LED - Solid State)

1.2 REFERENCES

A. National Electrical Contractors Association (NECA):
   1. NECA SI - Standard of Installation.

B. National Electrical Manufacturers Association (NEMA):
   1. NEMA KS 1 - Enclosed Switches.

C. National Electrical Testing Association (NETA):
   1. NETA ATS - Acceptance Testing Specifications for Electrical Power Distribution Equipment and Systems.

D. National Fire Protection Association (NFPA):
   1. NFPA 70 - National Electrical Code.

1.3 SUBMITTALS

A. Section 013300 - Submittal Procedures: Procedures for submittals.
   1. Product Data:
      a. Grounding electrodes and connections.
      b. Starter electrical characteristics and connection requirements.
   2. Assurance/Control Submittals:
      a. Electrical System Test Reports: Submit report including the following directly to the USPS Project Manager from Testing Laboratory, with copy to Contractor. Prepare reports in conformance with Section 014000 - Quality Requirements.

b. Summary of project.
c. Description of equipment tested.
d. Description of test.
e. Test results.
f. Conclusions and recommendations.
g. Appendix, including appropriate test forms.
h. List of test equipment used and calibration date.
i. Signature of responsible Testing Laboratory Officer.
j. Certificates: Manufacturer's certificate that each Product specified meet or exceed specified requirements.
k. Qualification Documentation: Submit documentation of experience indication compliance with specified qualification requirements.

B. Section 017704 - Closeout Procedures and Training: Procedures for closeout submittals.
1. Project Record Documents: Accurately record the following.
a. Locations of components and grounding electrodes.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: Company specializing in performing Work of this Section with minimum 5 years documented experience.

B. Regulatory Requirements:
1. Products: Listed and classified by Underwriters Laboratories, Incorporated as suitable for the purpose specified and indicated.
2. Work herein shall conform to all applicable laws, ordinances and regulations in accordance with the latest applicable requirements of:
a. The National Electrical Code (NFPA 70).
b. National Electrical Manufacturer’s Associates.
c. Standards of National Fire Protection Association (NFPA 72, 90A and 101).
d. Underwriter’s Laboratories.
e. Occupational Safety and Health Agency Standards.
f. Illuminating Engineering Society Handbook.
g. The International Existing Building Code.
h. The International Electrical Code.
i. ASHRAE Standard 90.1.
j. The International Energy Conservation Code.

1.5 BASIC ELECTRICAL METHODS

A. Drawings are schematic and diagrammatic. Use judgment and care to install electrical Work to function properly and fit within building construction and finishes. Electrical conductors, conduit, components, not shown or specified, which are required for any device or system to produce a complete and operative system are required to be furnished and installed.

B. Exact location of outlets is determined from dimension on Drawings, manufacturer's shop drawings, or as may be determined at Project Site. Do not scale Drawings for exact location of any item. Verify item mounting heights as required by project conditions prior to rough-in.

C. Route conduits and wiring associated with new equipment and systems above ceilings, in existing chases, and concealed within building structure.

D. Surface mounted raceways or conduit permitted only at locations indicated on Drawings.

E. Circuit grouping, conduit or cable runs and home runs are indicated with number of conductors shown in each raceway to clarify operation and function of various systems. Provide proper number of conductors and conduits or cables to provide operative system as indicated on Contract Documents. Do not regroup any feeder circuits, branch circuits, home runs, and zone alarms at any point, from that shown on Contract Documents. Each conduit run shall contain no more than (6) current carrying conductors.

F. Branch and home run circuits are indicated as 2, 3, or 4 wire circuits unless otherwise noted. Do not connect two ungrounded conductors to same circuit breaker/fused switch in any panel. Circuit runs consist of a maximum of five conductors; 3 phase conductors, 1 neutral conductor, and 1 equipment ground conductor, unless otherwise noted. Do not splice branch circuit conductors in any panels, safety switches, or circuit breakers in separate enclosures.

G. The sharing of neutral conductors for multiwire branch circuits is prohibited. All branch circuits shall contain individual neutrals.

H. Proposed equipment, switches or devices, shown mounted on and/or adjacent to equipment, which if installed, would impair proper operation of existing or new equipment, shall be removed and relocated by Contractor as required so equipment will function properly. Notify Contracting Officer immediately if any such condition exists.

I. Seal and make permanently watertight penetrations by electrical raceways or equipment through ceilings, walls or floors.
   1. Seal penetrations in non-fire rated ceilings, walls or floors material specified in Section 079200 – Joint Sealants.
   2. Seal penetrations in fire rated walls with material specified in Section 078400 - Firestopping.

J. Tighten electrical connectors and terminals, including screws and bolts, in accordance with equipment manufacturer's published torque tightening values for equipment connectors. Where manufacturer's torqueing requirements are not indicated, tighten connectors and terminals to comply with tightening torques specified in UL 486A, and NFPA 70.

K. Install equipment and materials to provide required maintenance and code working clearance for servicing and maintenance. Coordinate final location of concealed equipment and devices requiring access with final location of required access panels and doors. Allow required space for removal of parts that require replacement or servicing.

L. Remove existing equipment, lighting fixtures, switches, and receptacles as required to facilitate proposed installation. Remove existing wiring and conduit serving items to be removed. Conduit in inaccessible areas shall be cut off below finished surfaces and existing surface patched to match existing. Provide blank plates on existing flush mounted outlet boxes that will be abandoned. Remove all abandoned conductors from raceways.

PART 2 - PRODUCTS

2.1 GROUNDING AND BONDING

A. Grounding System Resistance: Five ohm.

B. Rod Electrodes:
   1. Material: Copper.
   2. Diameter: 3/4 inch.
   3. Length: 10 feet.

C. Mechanical Connectors: Bronze.

D. Electrode Conductor:

1. Material: Bare stranded copper.
2. Grounding Electrode Conductor: Size to meet NFPA 70 requirements.

2.2 HANGERS AND SUPPORTS

A. Product Requirements: Furnish and install approved materials, sizes, and types of anchors, fasteners, and supports to carry loads of equipment and conduit, including weight of wire in conduit plus 300 pounds.

B. Materials and Finishes: Corrosion resistive.

C. Anchors and Fasteners:
1. Steel Structural Elements: Beam clamps and welded fasteners.
2. Concrete Surfaces: Self-drilling anchors and expansion anchors.
3. Hollow Masonry, Plaster, and Gypsum Board Partitions: Toggle bolts and hollow wall fasteners.
4. Solid Masonry Walls: Expansion anchors.
5. Sheet Metal: Sheet metal screws.
6. Wood: Wood screws.

2.3 ELECTRICAL IDENTIFICATION

A. Nameplates:
1. Engraved three-layer laminated phenolic plastic, white letters on black background.
2. Locations:
   a. Each electrical distribution and control equipment enclosure.
   b. Panelboards
   c. Transformers.
   d. Pull boxes.
   e. Switches and disconnects.
3. Letter Size:
   a. Use 1/8 inch letters for identifying individual equipment and loads.
   b. Use 1/4 inch letters for identifying grouped equipment and loads.
4. Nameplates shall indicate voltage of the equipment and the source of power from the upstream device or equipment.

B. Wire and Cable Markers:
1. Description: Cloth tape or tubing type wire markers.
2. Locations: Each conductor at panelboard gutters, pull boxes, outlet and junction boxes, and each load connection.
3. Identification:
   a. Power and Lighting Circuits: Branch circuit or feeder number indicated on Drawings.
   b. Control Circuits: Control wire number indicated on schematic and interconnection diagrams on Drawings.

C. Conduit Markers:
1. Underground conduit routings shall be marked utilizing magnetic marker tape set atop of the entire conduit run.
   a. Underground-Type Plastic Line Marker: Manufacturer’s standard detectable permanent, bright colored, continuous-printed plastic tape, intended for direct-burial service; not less than 6 inches wide by 4 mils thick. Provide tape with printing which most accurately indicates type of service of buried cable. Locate tape 12 inches above top of conduit.
2. Detectable marker tape cannot be installed atop of directionally bored underground conduits. Directionally bored conduits containing only fiber cabling shall therefore be equipped with a #12/AWG copper conductor to enhance detection.

D. Arc Flash Warning Signs: Furnish signs in accordance with NEC Article 110.16, warning of potential arc flash hazard and requiring suitable Personal protective equipment. Locate and install signs per INSTALLATION Section of this specification.

E. Confined space markings: Work within electrical manholes and underground vaults must comply with “confined space” OSHA requirements. Manhole covers and the entrance to underground vaults shall be stamped or marked as “CONFINED SPACE – PERMIT REQUIRED”.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Section 017300 - Execution: Verification of existing conditions before starting work.

B. Verification of Conditions: Verify that field measurements, surfaces, substrates and conditions are as required, and ready to receive Work.

C. Report in writing to the USPS Project Manager prevailing conditions that will adversely affect satisfactory execution of the Work of this Section. Do not proceed with Work until unsatisfactory conditions have been corrected.

D. By beginning Work, Contractor accepts conditions and assumes responsibility for correcting unsuitable conditions encountered at no additional cost to the United States Postal Service.

3.2 INSTALLATION - GROUNDING AND BONDING

A. Provide bonding and grounding in conformance with NFPA 70.

B. Equipment Grounding Conductor: Provide separate, insulated conductor within all lighting and power raceways. Terminate each end on suitable lug, bus, or bushing.

C. Testing and Inspection:
1. Inspect and test in accordance with NETA ATS, where applicable.
2. Perform inspections and tests listed in NETA ATS, Section 7.13.
3. Test ground resistance of system with clamp-on ground resistance tester. The resistance of the grounding system shall not exceed 5 ohms. Where tests show resistance-to-ground is over 5 ohms, take appropriate action to reduce resistance to 5 ohms, or less, by driving additional ground rods, lengthening the rods or installing ground enhancing materials; then retest to demonstrate compliance. Install rods at least 8 feet apart.

3.3 INSTALLATION - HANGERS AND SUPPORTS

A. Install products in accordance with manufacturer's published instructions.

B. Furnish and install anchors, fasteners, and supports in accordance with NECA SI.

C. Do not fasten supports to pipes, ducts, mechanical equipment, and conduit.

D. Do not use spring steel clips and clamps.

E. Do not use powder-actuated anchors.

F. Obtain permission from structural engineer before drilling or cutting structural members.

G. Fabricate supports from structural steel angle or structural steel channel. Rigidly weld members or use hexagon head bolts to present neat appearance with adequate strength and rigidity. Use spring lock washers under all nuts.

H. Install surface-mounted cabinets and panelboards with minimum of four anchors.

I. In wet and damp locations use structural steel channel supports to stand cabinets and panelboards one inch off wall.

J. Use sheet metal channel to bridge studs above and below cabinets and panelboards recessed in hollow partitions.

3.4 INSTALLATION - ELECTRICAL IDENTIFICATION

A. Install nameplate parallel to equipment lines.

B. Secure nameplate to equipment front using stainless steel screws. Use minimum two screws at each end of nameplate.

C. Secure nameplate to outside surface of door on panelboards and switchboards.

D. Install Arc Flash Warning Signs on switchboards, panelboards, control panels, meter socket enclosures, and motor control centers likely to require examination, adjustment, servicing, or maintenance while energized. Locate sign so as to be clearly visible to qualified persons before examination, adjustment, servicing, or maintenance of the equipment.

3.5 FIELD QUALITY CONTROL - ELECTRICAL TESTING AND INSPECTION

A. Section 014000 - Quality Requirements: Field testing and inspection.

B. Section 260800 - Commissioning of Electrical Systems: Requirements related to Division 26 Commissioning

C. Conduct testing to Determine that Electrical Equipment and Systems:
   1. Are in conformance with Contract Documents and applicable reference standards.
   2. Is properly installed without damage due either to installation or shipment.
   3. Operate correctly, meet design intent, and are performing at optimum level, in safe manner.

D. Provide a complete written record of operational values to be used as a baseline for future operational testing.

E. Instrumentation:
   1. Provide calibration program that assures applicable test instrumentation is maintained within rated accuracy and directly traceable to National Bureau of Standards.
   2. Calibrate instruments in accordance with following frequency schedule:
      a. Field Instruments:
      b. Analog - 6 months maximum.
      c. Digital - 12 months maximum.
      d. Leased Specialty Equipment: 12 months. (Where accuracy is guaranteed by lessor.)
   3. Dated Calibration Labels: Visible on test equipment.
   4. Keep records current; Show date and result of instruments calibrated or tested.
   5. Maintain current instrument calibration instruction and procedure for each test instrument.

6. Calibrating Standard: Higher accuracy than that of instrument being calibrated.

F. Regulatory Requirements:
   1. Safety Practices: Include, but not limited to, the following requirements:
      a. Occupational Safety and Health Act of 1970 - OSHA.
      b. Accident Prevention Manual for Industrial Operations, Seventh Edition, National Safety Council, Chapter 4.
      c. Applicable State and Local Safety Operating Procedures.
      d. NETA Safety/Accident Prevention Program.
      e. United States Postal Service Safety Practices.
      f. NFPA 70E - Electrical Safety Requirements for Employee Workplace.
      g. American National Standards for Personnel Protection, ANSI Z244.1.
   2. Perform tests with apparatus de-energized except where otherwise specifically required herein.
   3. Testing Laboratory: Provide a designated safety representative present at Project Site and supervise safety operations.
   4. Power Circuits: Conductors shorted to ground by a hot line grounded device approved for the purpose.
   5. Do not proceed until safety representative has determined that it is safe to do so.
   6. Testing Laboratory: Provide sufficient protective barriers and warning signs to conduct specified tests safely.

G. Tests and inspections include, but are not limited to the following:
   1. Proper operation of lights and equipment.
   2. Continuity of raceway system.
   3. Insulation leakage and impedances.
   4. Ground system resistance.
   5. Elimination of reverse rotation and single-phasing of motors.
   6. Sub-system tests indicated in other Sections.
   7. Proper operation of communications systems specified in Section 270500.
   8. Proper operation of intrusion detection systems specified in Section 281600.
   9. Proper operation of video surveillance system specified in Section 282305.
   10. Proper operation of fire alarm system specified in Section 283100.

H. Load balance all electrical phases, at device, panels, and switchboards.

I. Perform electrical system testing and inspection as specified in each related Section and as specified in this Section.

END OF SECTION

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SECTION 260519

LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

PART 1 - GENERAL

1.1 SUMMARY:

A. Section Includes:
   1. Building wire and cable.
   2. Branch-circuit cable.
   3. Wiring connectors and connections.

B. Related Documents: The Contract Documents, as defined in Section 011000 - Summary of Work, apply to the Work of this Section. Additional requirements and information necessary to complete the Work of this Section may be found in other documents.

C. Related Sections:
   1. As specified in Section 260500 - Common Work Results for Electrical: Basic electrical methods.

1.2 REFERENCES

A. As specified in Section 260500 – Common Work Results for Electrical.

1.3 SUBMITTALS

A. As specified in Section 260500 - Common Work Results for Electrical.

1.4 QUALITY ASSURANCE

A. As specified in Section 260500 – Common Work Results for Electrical.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Section 016000 - Product Requirements: Transport, handle, store, and protect products.

B. Deliver in accordance with NEMA WC 26.

PART 2 - PRODUCTS

2.1 BUILDING WIRE AND CABLE

A. Manufacturers: Subject to compliance with project requirements, manufacturers offering Products which may be incorporated in the Work include the following:
   1. Alcan Cable, Atlanta, GA (770) 392-2376.
   2. Anixter, Inc., Skokie, IL (800) ANIXTER.
   3. General Cable, Highland Heights, KY (800) 526-4391.
   4. General Electric, Plainville, CT (860) 747-7111.

5. Okonite, Ramsey, NJ (201) 825-0300.
6. Southwire Company, Carrollton, GA (800) 444-1700.
7. Section 016000 - Product Requirements: Product options and substitutions. Substitutions: Permitted.

B. Description: Single conductor insulated wire.

C. Conductor: Copper, except conductors #1/0 AWG and larger may be compact stranded aluminum if equipped with compression lugs and installed per manufacturer's recommendations and the National Electrical Code.

D. Insulation Voltage Rating: 600 Volts.

E. Insulation: NFPA 70, Type THHN/THWN or Type XHHW-2.

2.2 WIRING CONNECTORS

A. Manufacturers: Subject to compliance with project requirements, manufacturers offering Products which may be incorporated in the Work include the following:
1. Buchanan Construction Products, Hackettstown, NJ (800) 610-5201.
2. Thomas and Betts, Memphis, TN (800) 695-1901.
3. 3M, St. Paul, MN (800) 364-3577.
4. Section 016000 - Product Requirements: Product options and substitutions. Substitutions: Permitted.

B. Compression Connectors; Conductor sizes #12 through #6 AWG:
1. Buchanan: 2006S or 2011S.
2. Thomas and Betts: CTS.
3. 3M: Scotchlok.

PART 3 - EXECUTION

3.1 EXAMINATION

A. As specified in Section 260500 – Common Work Results for Electrical.

3.2 PREPARATION

A. Completely and thoroughly swab raceway before installing wire.

3.3 INSTALLATION - CONDUCTORS

A. Wiring methods:
1. Concealed Dry Interior Locations: Use only building wire, Type THHN/THWN or Type XHHW-2 insulation in metallic raceway or MC multiconductor cable.
2. Exposed Dry Interior Locations: Use only building wire, Type THHN/THWN or Type XHHW-2 insulation in metallic raceway or MC multiconductor cable.
3. Above Accessible Ceilings: Use only building wire, Type THHN/THWN or Type XHHW-2 insulation in metallic raceway or MC multiconductor cable.
4. Wet or Damp Interior Locations: Use only building wire, Type THW or THWN or Type XHHW-2 insulation in raceway.

B. Install products in accordance with manufacturers published instructions and NECA SI.

C. Use solid conductor for feeders and branch circuits 10 AWG and smaller.

D. Use stranded conductors for control circuits and final connections to all vibration equipment.

E. Use conductor not smaller than 12 AWG for power and lighting circuits.

F. Use conductor not smaller than 14 AWG for control circuits.

G. Use 10 AWG conductors for 20 ampere, 120 Volt branch circuits longer than 75 feet.

H. Use 10 AWG conductors for 20 ampere, 277 Volt branch circuits longer than 200 feet.

I. Pull all conductors into raceway at same time.

J. Use approved wire pulling lubricant for all building wire.

K. Protect exposed cable from damage.

L. Neatly train and lace wiring inside boxes, equipment, and panelboards in accordance with NECA Standards.

M. Clean conductor surfaces before installing lugs and connectors.

N. Make splices, taps, and terminations to carry full ampacity of conductors with no perceptible temperature rise.

O. For splices and taps, use only compression connectors for copper or aluminum conductors, 6 AWG and larger. Tape uninsulated conductors and connector with electrical tape to 150 percent of insulation rating of conductor.
   1. Splicing of copper feeder conductors #3 AWG and larger is prohibited.
   2. Splicing of aluminum feeder conductors #1 AWG and larger is prohibited.
   3. Splices within branch circuit or feeder conductors located underground or below grade shall not be provided. All splices shall be terminated above grade.

P. Use solderless pressure compression connectors with insulating covers for copper conductor splices and taps, 8 AWG and smaller.

Q. Use conductors rated 90 degrees C, inside a ballast compartment or within 6 inches of any ballast.

R. Conductor Sizes #8 and Larger: Class B stranding.

S. Install Drop Cords to building structure at locations indicated on Drawings as indicated on Drawings.

T. The sharing of neutral conductors for multiwire branch circuits is prohibited. All branch circuits shall contain individual neutral conductors.

3.4 CONSTRUCTION

A. Interface with Other Work:
   1. Identify wire and cable using Thomas and Betts type WM vinyl markers.
   2. Identify each conductor with its circuit number or other designation indicated on Drawings in all junction, pull, terminal boxes and cabinets. Identify neutrals with common circuit numbers in all junction, pull and terminal boxes, panels and cabinets.

3.5 WIRING COLOR CODE

A. Comply with the following color code for each voltage system.

B. 208Y/120 Volt System:
1. Phase A - Black.
2. Phase A Switch Leg - Black with “S” tag.
3. Phase B - Red.
4. Phase B Switch Leg - Red with “S” tag.
5. Phase C - Blue.
6. Phase C - Switch Leg - Blue with “S” tag.
7. Travelers - Yellow.
8. Neutral - White.
9. Equipment Ground - Green.

C. 240/120 Volt System:
1. Phase A - Black.
2. Phase A Switch Leg - Black with “S” tag.
3. Phase B - Orange (High-Leg).
4. Phase C - Blue.
5. Phase C Switch Leg - Blue with “S” tag.
6. Travelers - Yellow.
7. Neutral - White.
8. Equipment Ground - Green.

D. 480Y/277 Volt System:
1. Phase A - Brown.
2. Phase A Switch Leg - Brown with "S" Tag.
3. Phase B - Orange.
4. Phase B Switch Leg - Orange with "S" Tag.
5. Phase C - Yellow.
6. Phase C Switch -Leg- Yellow with "S" Tag.
7. Travelers - Yellow with "T" Tag.
8. Neutral - Grey.
9. Equipment Ground - Green with Yellow stripe.

E. Use same color for same phase throughout. Use same colors for switch legs. Travelers shall be yellow. Phase rotation shall be same in all panels. Identify large cables with colored tape.

F. Provide identification tags on each conductor entering panel, switch, junction box and pull box to identify conductor.

3.6 FIELD QUALITY CONTROL

A. As specified in Section 260500 – Common Work Results for Electrical.

B. Cables, 600 Volt or less and size no. 3 or larger, shall be meggered using an industry-approved “megger with a minimum of 500 Volt internal generating voltage. All inspection, cleaning and testing procedures shall be in compliance with the recommendations and standards outlined in the “maintenance testing specifications for electrical power distribution equipment and systems”, latest edition, published by International Electrical Testing Association (NETA). Insulation resistance test values shall be no less than 250 megaohms. A typewritten report of all readings shall be prepared and submitted.

END OF SECTION

USPS Specification Last Revised: 10/1/2022

SECTION 260533

RACEWAY AND BOXES FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Metal conduit.
2. Flexible metal conduit.
3. Electrical metallic tubing.
4. Fittings and conduit bodies.
5. Pull and junction boxes.

B. Related Documents: The Contract Documents, as defined in Section 011000 - Summary of Work, apply to the Work of this Section. Additional requirements and information necessary to complete the Work of this Section may be found in other documents.

C. Related Sections:
1. Section 260500 – Common Work Results for Electrical.

1.2 REFERENCES

A. American Society for Testing and Materials (ASTM):
1. ASTM A 123 - Specification for Zinc (Hot-Galvanized) Coatings on Iron and Steel Products.

B. American National Standards Institute (ANSI):
1. ANSI C80.1 - Rigid Steel Conduit, Zinc Coated.
2. ANSI C80.3 - Electrical Metallic Tubing, Zinc Coated.
3. ANSI C80.5 - Rigid Aluminum Conduit.

C. National Electrical Contractors Association (NECA):
1. NECA "Standard of Installation."

D. National Electrical Manufacturers Association (NEMA):
1. NEMA FB 1 - Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit and Cable Assemblies.
2. NEMA RN 1 - Polyvinyl Chloride (PVC) Externally Coated Galvanized Rigid Steel Conduit and Intermediate Metal Conduit.
3. NEMA TC 2 - Electrical Plastic Tubing (EPT) and Conduit (EPC-40 and EPC-80).
4. NEMA TC 3 - PVC Fittings for Use with Rigid PVC Conduit and Tubing.
5. NEMA VE 1 - Metallic Cable Tray Systems.

E. National Fire Protection Association (NFPA):
1. NFPA 70 - National Electrical Code.

1.3 SYSTEM DESCRIPTION

A. Design Requirements
1. Conduit Size: NFPA 70, unless indicated otherwise on Drawings.

1.4 QUALITY ASSURANCE

A. Regulatory Requirements:
   1. Conform to requirements of NFPA 70.
   2. Provide products listed and classified by Underwriters Laboratories, Incorporated.

1.5 PROJECT OR SITE CONDITIONS

A. Existing Utilities: Contact local utility companies and make arrangements to obtain utility company location and marking service prior to start of Work.
   1. Locate existing underground utilities in areas of Work using “Ground Penetrating Radar (GPR)” detection. If utilities are to remain in place, provide means of support and protection during trenching and excavation operations.
      a. Pothole and locate existing underground utilities at locations to assure that no conflict with Work of this Contract will occur and required clearance is available to prevent damage to existing utilities.
      b. Perform potholing minimum 10 days before start of excavation or underground work.
   2. Should uncharted, or incorrectly charted, piping or other utilities be encountered during excavation, consult utility company and Contracting Officer immediately for directions.
   3. Coordinate with Contracting Officer and utility companies to keep existing utility services and facilities in operation.
   4. Repair damaged utilities to satisfaction of utility company, at no additional cost to U.S. Postal Service.
   5. Do not interrupt existing utilities serving facilities occupied and used by U.S. Postal Service or others, during occupied hours, except when permitted in writing by Contracting Officer and then only after acceptable temporary utility services have been provided and approved by Contracting Officer.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Section 016000 - Product Requirements: Transport, handle, store, and protect products.

B. Accept conduit on site. Contractor inspect for damage prior to acceptance.

C. Protect conduit from corrosion and entrance of debris by storing above grade. Provide appropriate covering.

D. Protect PVC conduit from sunlight.

PART 2 - PRODUCTS

2.1 CONDUIT REQUIREMENTS

A. Where conduit is required by standards, codes, or required elsewhere, minimum size shall be as follows:
   1. 1/2 inch for power and branch circuit wiring, unless indicated otherwise. All homerun conduits shall be 3/4 inch, minimum.
   2. 3/4 inch for communications cable, unless indicated otherwise.
   3. 3/4 inch for low voltage, control, intercom, security and communications unless indicated otherwise.
   4. Underground conduits shall be sized 1 inch, minimum.

2.2 METAL CONDUIT

A. Manufacturers: Subject to compliance with project requirements, manufacturers offering specified items which may be incorporated in the Work include the following:
   1. Allied Tube & Conduit, Harvey, IL (800) 882-5543.
   2. Wheatland Tube Co., Collinswood, NJ (800) 257-8182.
   3. Republic Wire & Cable, Rocky Mount, NC (800) 533-8198.
   4. Section 016000 - Product Requirements: Product options and substitutions. Substitutions: Permitted.

B. Rigid Galvanized Steel Conduit (GRC): ANSI C80.1, UL6.

C. Intermediate Metal Conduit (IMC): UL1242.

D. Fittings and Conduit Bodies: NEMA FB1 Material to match conduit.

2.3 FLEXIBLE METAL CONDUIT (FMC)

A. Manufacturers: Subject to compliance with project requirements, manufacturers offering specified items which may be incorporated in the Work include the following:
   1. Hubbell, Millford, CT (203) 882-4800.
   2. Electriflex, Roselle, IL (800) 323-6174.
   3. 0-Z/Gedney, Farmington, CT (860) 677-5541.
   4. Section 016000 - Product Requirements: Product options and substitutions. Substitutions: Permitted.

B. Description: Interlocked steel and aluminum construction.

C. Fittings: NEMA FB 1.

2.4 ELECTRICAL METALLIC TUBING (EMT)

A. Manufacturers: Subject to compliance with project requirements, manufacturers offering specified items which may be incorporated in the Work include the following:
   1. Allied Tube & Conduit, Harvey, IL (800) 882-5543.
   2. Wheatland Tube Co., Collinswood, NJ (800) 257-8182.
   3. Republic Wire & Cable, Rocky Mount, NC (800) 533-8198.
   4. Section 016000 - Product Requirements: Product options and substitutions. Substitutions: Permitted.

B. Description: ANSI C80.3; galvanized tubing.

C. Fittings and Conduit Bodies: NEMA FB 1; steel set-screw type. Die-cut Zinc not permitted.

2.5 NONMETALLIC CONDUIT

A. Manufacturers: Subject to compliance with project requirements, manufacturers offering specified items which may be incorporated in the Work include the following:
   1. Carlon, Cleveland, OH (800) 322-7566.
   2. Section 016000 - Product Requirements: Product options and substitutions. Substitutions: Permitted.

B. Description: NEMA TC 2; Schedule 40 PVC.

C. Fittings and Conduit Bodies: NEMA TC 3.

2.6 FITTINGS

A. Manufacturer: Raco, Inc., South Bend, IN (219) 234-7151.
   1. Subject to compliance with project requirements, one of the following manufacturers may also be provided:
      a. Steel City.
      b. 0-Z/Gedney.
   2. Section 016000 - Product Requirements: Product options and substitutions. Substitutions: Permitted.

B. Conduits 1/2 inch thru 1 inch enter junction boxes, pull boxes, panels, cabinets, and gutters, provide the following:
   1. Rigid Conduit: Raco 1222, 1223, 1224.
   2. Flexible Metal Conduit: Raco 3302, 3303, 3304, 3305, 3306, 3308.
   3. Liquidtight Flexible Metal Conduit: Raco 3511, 3512, 3513, 3541, 3542, 3543.

C. Conduits 1-1/4 inch and larger entering junction boxes, pull boxes, panels, cabinets, and gutters, provide Insulated throat type bushings; Raco 1225, 1226, 1228, 1230, 1232, 1234, 1236.

D. Provide threaded joint connectors and malleable iron no thread compression box connectors on rigid conduit. Do not provide fittings requiring set screws or indentor type applications including BM connectors.

E. Provide only steel set-screw couplings and connectors on EMT conduit.

2.7 CONDUIT STRAPS AND HANGERS

A. Strap Manufacturer: Raco, Inc., South Bend, IN (219) 234-7151
   1. Subject to compliance with project requirements, one of the following manufacturers may also be provided:
      a. Steel City.
      b. Unistrut.
   2. Section 016000 - Product Requirements: Product options and substitutions. Substitutions: Permitted.

B. Hanger Manufacturer: Steel City/Thomas & Betts, Memphis, TN (800) 888-0211.
   1. Subject to compliance with project requirements, one of the following manufacturers may also be provided:
      a. Unistrut.
      b. Raco.
   2. Section 016000 - Product Requirements: Product options and substitutions. Substitutions: Permitted.

C. Straps: Two-hole push on stamped steel straps on surface areas such as concrete, masonry, wide flange beams, columns, and wood.
   1. Rigid Conduit: Raco 2232, 2233, 2234, 2235, 2336, 2238.
   2. Electrical Metallic Tubing: Raco 2092, 2093, 2094.

D. Hangers: Lay-in pipe hanger.
   1. Conduits 1-1/4 Inch and Larger: Steel-City C-149.

E. Trapeze Hangers for Conduits Grouped Together: Hangers consisting of all thread rods sized as required and Kingdorff channel.

1. Steel City B-909, 1/2 inch x 1-7/8 inch (12 gauge) with single bolt channel pipe straps.
2. Steel City C-105, C-105-AL, or C-106, (no wire permitted for anchoring conduit).

2.8 SEAL-OFF AND EXPANSION FITTINGS

A. Seal-Off Fitting Manufacturer: Crouse-Hinds, Syracuse, NY (315) 477-5531.
   1. Subject to compliance with project requirements, one of the following manufacturers may also be provided:
      a. Killark.
      b. Appleton.
      c. O-Z/Gedney.
   2. Section 016000 - Product Requirements: Product options and substitutions. Substitutions: Permitted.

B. Expansion Fitting Manufacturer: OZ/Gedney, Farmington, CT (860) 677-5541
   1. Subject to compliance with project requirements, one of the following manufacturers may also be provided:
      a. Crouse-Hinds.
      b. Killark.
      c. Appleton.
   2. Section 016000 - Product Requirements: Product options and substitutions. Substitutions: Permitted.

C. Provide seal-off fittings where required by governing authority, code, or as indicated on Drawings.
   1. Vertical Runs: Crouse-Hinds Type EYS.
   2. Horizontal and Vertical Runs: Crouse-Hinds Type EZS.
   3. Elbows: Crouse-Hinds Type EYS.
   4. Sealing Compound: "Chico X" fiber and "Chico A".

D. Provide expansion fittings in conduits where indicated on Drawings or where required to pass through expansion joints embedded in concrete.
   1. O-Z/Gedney Type AX.

2.9 PULL AND JUNCTION BOXES

A. Sheet Metal Boxes: NEMA OS 1, galvanized steel.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Section 017300 - Execution: Verification of existing conditions before starting work.

B. Verification of Existing Conditions: Verify that field measurements, surfaces, substrates and conditions are as required, and ready to receive Work.
   1. Verify routing and termination locations of proposed conduit prior to rough-in.

C. Existing Utilities, Conduits and Piping:
   1. Locate the routings of the existing underground utilities, conduits and piping in the areas of the Work prior to the installation of the proposed conduit. Trace the locations of existing underground utilities, conduits, and piping using “Ground Penetrating Radar (GPR)” detection.

a. The routings of these existing underground utilities, conduits and piping shall be identified and marked to avoid any trenching conflicts. These routings shall be recorded on the As-Built drawings prepared by the Contractor for future reference.

2. Existing utilities, conduits and piping that are to remain shall be supported and protected during the trenching process.

D. Report in writing to the USPS Project Manager prevailing conditions that will adversely affect satisfactory execution of the Work of this Section. Do not proceed with Work until unsatisfactory conditions have been corrected.

E. By beginning Work, Contractor accepts conditions and assumes responsibility for correcting unsuitable conditions encountered at no additional cost to the United States Postal Service.

3.2 INSTALLATION - RACEWAYS

A. Install in accordance with the following schedule, unless indicated otherwise on Drawings: Plastic flexible PVC conduit shall not be permitted. Flexible metal conduit shall be permitted for electrical power and security wiring only and not permitted for fire alarm cables.

1. Above suspended ceilings: Galvanized or sherardised thick wall rigid steel (GRC) or electrical metallic tubing (EMT).
2. Metal stud walls: Galvanized or sherardised thick wall rigid steel (GRC) or electrical metallic tubing (EMT).
3. Exposed interior areas: Galvanized or sherardised thick wall rigid steel (GRC) or electrical metallic tubing (EMT).
4. Exposed exterior areas: Galvanized or sherardised thick wall rigid steel (GRC).
5. Underground or below slab areas: Rigid polyvinyl chloride conduit (PVC-Sched. 40).

B. Install conduit in accordance with NECA "Standard of Installation."

C. Install nonmetallic conduit in accordance with manufacturer's instructions. Nonmetallic conduit shall only be used under slabs or direct buried in earth. Conduit penetrations through slab including elbows shall be galvanized rigid conduit.

D. Conduit routing indicated on Drawings are approximate locations unless dimensioned. Route parallel and perpendicular to building construction for complete wiring system regardless whether exposed or concealed.

E. Arrange supports to prevent misalignment during wiring installation.

F. Support conduit using coated steel or malleable iron straps, lay-in adjustable hangers, clevis hangers, and split hangers.

G. Group related conduits; support using conduit rack. Construct rack using approved steel channel and provide space on each rack for 25 percent additional conduits.

H. Fasten conduit supports to building structure and surfaces under provisions of this section.

I. Do not support conduit with wire or perforated pipe straps in any type structure. Remove wire used for temporary supports. Steel tie wire may be used to anchor conduit down to reinforcing rods in concrete encasement only.

J. Do not attach conduit or boxes to ceiling support wires. Boxes shall be independently supported.

K. Arrange conduit to maintain headroom and present neat appearance. Maintain required clearance between conduit and piping.

L. Route all conduit, whether exposed or concealed, parallel and perpendicular to walls, ceilings, building structures, etc.

M. Maintain 12 inch clearance between conduit and surfaces with temperatures exceeding 104 degrees F.

N. Cut EMT conduit square using saw or pipe cutter; de-burr cut ends and ream. Bring conduit to shoulder of fittings; fasten securely.

O. Join nonmetallic conduit using cement as recommended by manufacturer. Wipe nonmetallic conduit dry and clean before joining. Apply full even coat of cement to entire area inserted in fitting. Allow joint to cure for 20 minutes, minimum.

P. Use conduit hubs or sealing locknuts to fasten conduit to sheet metal boxes in damp and wet locations and to cast boxes. Use Myers hub connectors on all conduit entering top or sides of all junction boxes, pull boxes, wiring gutters, exposed to weather.

Q. The number of conduit bends per box shall comply with NFPA 70, Article 360. Conduit bends for “SCS” installation shall not exceed two 90 degree bends or exceed a total of 180 degrees of bend between pull boxes or conduit ends. Pull boxes shall be sized per NEC codes per conduit installed. Use conduit bodies to make sharp changes in direction, as around beams. Use hydraulic one-shot bender to fabricate or use factory elbows for bends in metal conduit larger than 2 inch size.

R. Avoid moisture traps; provide junction box with drain fitting at low points in conduit system.

S. Provide suitable fittings to accommodate expansion and deflection where conduit crosses control and expansion joints.

T. Provide suitable nylon pull string or #14 AWG steel wire in each conduit excluding sleeves and nipples.

U. Ground and bond conduit per NFPA 70.

V. Coat all metallic conduit with "General Electric" RTV silicone sealer where conduit is installed in exterior areas or in contact with concrete or earth.

W. Conduits shall be sized as indicated on Drawings. Where sizes are not indicated, conduit shall be sized per NFPA 70.

X. Cap all upturned conduits during construction rough-in to prevent moisture or debris from entering. Pull through each and every conduit a dry swab of sufficient size to remove any and all moisture.

Y. Maximum length of flexible metal conduit (Greenfield), or flexible liquid-tight shall be 5 feet.

Z. Assure ground continuity on all branch circuitry conduits with two locknuts, one inside and one outside of all boxes, cabinets and gutters for rigid conduit. One locknut inside of all boxes, cabinets, and gutters for EMT.

AA. Provide conduit supports as follows:
1. Galvanized rigid thick wall conduit (GRC), intermediate grade rigid conduit (IMC) and electrical metallic conduit (EMT) within three feet of all outlet boxes, junction boxes, cabinets, gutters, or fittings. Horizontally anchored at 10 foot maximum intervals. Other spacings indicated on Drawings.
2. Flexible metal conduit (Greenfield) and liquid-tight flexible metal conduit, within 12 inches of all outlet boxes, junction boxes, cabinets, gutters, or fittings and bends or turns. Horizontally anchored at 4-1/2 foot intervals. 1/2 inch minimum size permitted.

BB. Overhead conduits shall be routed below the roof decking. Raceways shall not be routed between the decking flutes.

3.3 INSTALLATION - BOXES

A. Install boxes in accordance with NECA "Standard of Installation."

B. Install in locations as shown on Drawings, and as required for splices, taps, wire pulling, equipment connections and compliance with NFPA 70.

C. Set wall mounted boxes at elevations to accommodate mounting heights indicated or as required for specific project requirements. Orient boxes to accommodate wiring devices as specified in Section 262726.

D. Electrical boxes are indicated on Drawings in approximate locations unless dimensioned. Adjust box location up to 10 feet if required to accommodate intended purpose with no additional cost to contract. Coordinate mounting heights and locations of outlets mounted above counters, benches, and backsplashes.

E. Maintain headroom and present neat mechanical appearance.

F. Install pull boxes and junction boxes above accessible ceilings and in unfinished areas only. Install pull boxes in freezer and dock area above bottom chord of structural joist. Pullboxes sized in excess of 12 inches shall be equipped with hinged and hasped covers.

G. Install outlet and junction boxes within inaccessible ceiling areas, no more than 6 inches from ceiling access panel or from removable recessed luminaire.

H. Locate outlet boxes to allow luminaires positioned as indicated on Drawings.

I. Align adjacent wall mounted outlet boxes for switches, thermostats, and similar devices.

J. Locate flush mounted box in masonry wall to require cutting of masonry unit corner only. Coordinate masonry cutting to achieve neat opening. Use approved raised gang covers in masonry and stud walls.

K. Flush mounted boxes shall not be mounted back-to-back in walls; provide minimum 6 inches separation. Provide minimum 24 inches separation in acoustic rated walls.

L. Secure flush mounted box to interior wall and partition studs. Accurately position to allow for surface finish thickness. Use approved stamped steel bridges to fasten box between studs.

M. Install flush mounting box without damaging wall insulation or reducing its effectiveness.

N. Use approved adjustable steel channel fasteners spanning joist for hung ceiling outlet box.

O. Provide factory sectioned multi-gang boxes where more than one adjacent device is to be mounted. Sectional boxes shall not be permitted.

3.4 FIELD QUALITY CONTROL

A. Section 014000 - Quality Requirements: Field inspection.

B. Inspect conduit installation, types, sizes, fittings and attachment to structure.

C. Inspect box installation, locations, connection to conduit, and attachment to structure.

D. Inspect cable tray installation, locations, connection to conduit, and attachment to structure.

3.5 ADJUSTING

A. Adjust flush-mounting outlets to make front flush with finished wall material.

B. Install knockout closures in unused box openings.

3.6 CLEANING

A. Clean interior of boxes to remove dust, debris, and other material.

B. Clean exposed surfaces and restore finish like new.

END OF SECTION

USPS specification Last Revised: 10/1/2023

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SECTION 262200

SECONDARY DRY-TYPE TRANSFORMERS

PART 1 - GENERAL

1.1 SUMMARY

A. Work Included: The work specified in this Section includes, but shall not be limited to, the following:
   1. Transformers shall be manufactured in compliance with D.O.E. 10 CFR 431.192, April 2013.
   2. Transformer shall be UL 1561 listed to feed a mix of equipment load profiles such as computers without derating or significant degradation of efficiency.

B. Related Documents: The Contract Documents, as defined in Section 011000 - Summary of Work, apply to the Work of this Section. Additional requirements and information necessary to complete the Work of this Section may be found in other Documents.

C. Related Sections:
   1. Section 260500 - Common Work Results for Electrical.

1.2 REFERENCES

A. As specified in Section 260500 – Common Work Results for Electrical.

B. Institute of Electrical and Electronics Engineers, Inc. (IEEE):
   1. IEEE 1100, “IEEE Recommended Practice for Powering and Grounding Electronic Equipment.”
   2. ANSI/IEEE C57.1110, " Recommended Practice for Establishing Transformer Capability When Feeding Nonsinusoidal Load Currents."

C. International Code Council (ICC):
   1. ICC ES AC156, “Acceptance Criteria for Seismic Qualification by Shake Table Testing of Nonstructural Components and Systems.”
   2. ICC IBC, "International Building Code."

D. International Organization for Standardization (ISO):
   1. ISO 9001, "Quality Management Systems Requirements."
   2. ISO 14001, “Environmental Management Systems Requirements with Guidance for Use.”

E. National Electrical Manufacturers Association (NEMA):
   1. NEMA 250, "Enclosures for Electrical Equipment (1000 Volts Maximum)."
   2. NEMA ST 20, "Dry Type Transformers for General Applications."
   3. NEMA TP 1, "Standard for the Labeling of Distribution Transformer Efficiency.”
   4. NEMA TP 2, "Standard Test Method for Measuring the Energy Consumption of Distribution Transformers.”

F. National Fire Protection Association (NFPA):
   1. NFPA 70, "National Electrical Code," hereinafter referred to as NEC.
   2. NFPA 5000, “Building Construction and Safety Code.”

G. Underwriters Laboratories, Inc. (UL):
   1. UL 1561, "Standard for Dry Type General Purpose and Power Transformers."
   2. UL 250, “Enclosure for Electrical Equipment”.

H. 2005 Energy Act PUBLIC LAW 109-58-AUG. 8, 2005. Comply with all Rules from Department of Energy:
   1. 10 CFR 429
   2. 10 CFR 431

1.3 SUBMITTALS

A. As specified in Section 260500 – Common Work Results for Electrical.

B. Section 013300 - Submittal Procedures: Procedures for submittals.
   1. Product Data: Outline and support point dimensions of enclosures and accessories, unit weight, voltage, kVA, and impedance ratings and characteristics, tap configurations, insulation system type, and rated temperature rise.
   2. Manufacturer's Test Reports:
      a. Copy of ISO 9001 Certification of manufacturing operation.
      b. Copy of ISO 14001 Certification of manufacturing operation.
      c. Confirmation that transformers are UL 1561 listed with a K1 rating. Those requiring a k factor rating will be K13 rated.
      d. Construction details, including, but not limited to, enclosure dimensions, kVA rating, primary and secondary nominal voltages, voltage taps, approximate center of gravity, and unit weight.
      e. Basic performance characteristics, including, but not limited to, insulation class, temperature rise, core and coil materials, impedances and audible noise level, unit weight, and inrush value expressed in a multiplier of rated primary current RMS.
      f. Efficiency data shall be reported as described in the following sections. Reference temperatures shall be included when reporting efficiency.
         1) No load and full load losses shall be calculated per NEMA ST 20 test methods.
         2) Efficiency curves as follows:
            i. Linear loads.
            ii. Data per the non linear load test program.
      g. Sound level ratings.
   3. Assurance/Control Submittals:
      a. Certificates: Manufacturer's certificate that Products meet or exceed specified requirements.
      b. Manufacturer's Instructions: Indicate application conditions and limitations of use stipulated by Product testing agency. Include instructions for storage, handling, protection, examination, preparation, installation, and starting of Product.

C. Section 017704 - Closeout Procedures and Training: Procedures for closeout submittals:
   1. Project Record Documents: Record actual locations of transformers.
   2. Maintenance Data: Include recommended maintenance procedures and intervals.

1.4 QUALITY ASSURANCE

A. As specified in Section 260500 – Common Work Results for Electrical.

B. Regulatory Requirements: Comply with applicable requirements of the laws, codes, ordinances, and regulations of Federal, State, and local authorities having jurisdiction. Obtain necessary approvals from such authorities.
   1. Seismic Requirements:
      a. ICC IBC, NFPA 5000.
      b. Tri axial shake table test results conducted in accordance with the ICC ES AC156 test protocol 3 (Acceptance Criteria for Seismic Qualification Testing of Nonstructural Components).

2. Comply with D.O.E. Guidelines established for manufacture, January 1, 2016 (10 CFR 431.192, April 2013.

C. Compliance: Comply with applicable requirements of the following standards.
1. CSA 802.2.
2. CSA C22.2.
3. ASHRAE 90.1.

D. The manufacturer of this equipment shall have produced similar electrical equipment for a minimum period of 5 years.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Section 016000 - Product Requirements: Transport, handle, store, and protect Products.

B. Transformers shall be packaged for shipment using materials that shall have the least environmental impact.
1. Transformer Wrapping: Transformers shall be protected by cardboard protective material; all plastic wraps shall not be accepted.
2. Transformer Shipping Base: Transformers shall be shipped on a base that uses at least 50 percent less wood than traditional pallets. Comply with ISPM No. 15.

C. Store in a warm, dry location with uniform temperature. Cover ventilation openings to keep out dust, water, and other foreign material.

D. Handle transformers using lifting eyes and/or brackets provided for that purpose. Protect against unfavorable external environment such as rain and snow, during handling.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Subject to compliance with project requirements, manufacturers offering Products which may be incorporated in the Work include the following:
1. ABB/G.E. Industrial Solutions (ABB/GEIS), Mebane, NC (800) 431-7867.
2. Eaton/Cutler-Hammer Corporation, Pittsburgh, PA (800) 525-2000.
3. Siemens Energy & Automation, Inc., Alpharetta, GA (800) 964-4114.
4. Square D Company, Palatine, IL (800) 392-8781.

B. Basis of Design: Product specified shall be D.O.E. 10 CFR 431.192, April 2013 compliant transformers (“EX” Series) as manufactured by Square D Schneider Electric. Items specified are to establish a standard of quality for design, function, materials, and appearance. Equivalent products by other manufacturers are acceptable. The Architect/Engineer will be the sole judge of the basis of what is equivalent.

C. Section 016000 - Product Requirements: Product options and substitutions. Substitutions: Permitted.

2.2 TWO WINDING TRANSFORMERS

A. The transformer shall be UL 1561 listed and labeled with a K1 rating (per UL 1561 35.2.1 and 34.2). Provide K13 rated transformers to serve mail processing equipment and other non-linear loads.

B. Windings shall be continuous wound copper with brazed or welded terminations.

C. Insulation and varnish systems shall be Nomex-based UL recognized 220 degrees C class utilizing an epoxy polyester impregnation.

D. Maximum winding temperature rise for K1 rated units shall be 80 degrees C and K13 rated units shall be 130 degrees C rise.

E. Terminals, including, but not limited to, those for changing taps, shall be readily accessible by removing a front coverplate.

F. The transformers shall have a basic impulse level of 10 kV BIL.

G. Voltage taps shall be as follows:
   1. Primary 480 volts.
      a. For transformers 15 kVA to 300 kVA, provide two 2-1/2 percent full capacity taps above and four 2-1/2 percent below nominal primary voltage.
      b. For transformers 500 kVA to 750 kVA, provide two 2-1/2 percent full capacity taps above and two 2-1/2 percent below nominal primary voltage.

H. Impedance shall be the manufacturer’s standard.

I. Three phase transformer efficiency shall be as stated below (tested at 35 percent of the nameplate rating, per D.O.E. 10 CFR 431.192:
   1. 75 kVA: 98.97 percent.

J. Sound Levels shall be as follows:
   1. 45 and 75 kVA: 44 dB.

K. Transformers shall be designed for continuous operation at rated kVA, for 24 hours a day, 365 days a year operation, with normal life expectancy as defined in ANSI C57.96.

L. Where required for K13 rating, the neutral bus shall be configured to accommodate 200 percent of the rated current.

M. Ground core and coil assembly to enclosure by means of a visible flexible copper grounding strap in accordance with Article 250 of NFPA 70.

N. Mounting: Suitable for wall, floor, or trapeze mounting, except transformers larger than 75 kVA, suitable for floor mounting.

2.3 ENCLOSURE

A. The enclosure construction shall be ventilated, NEMA 2 drip-proof, with lifting holes. All ventilation openings shall be protected against falling dirt. On outdoor units, provide weather shields over ventilated openings.

B. Nameplate: Include transformer connection data and overload capacity based on rated allowable temperature rise.

2.4 SOURCE QUALITY CONTROL

A. Production test each transformer according to NEMA ST20.

PART 3 - EXECUTION

3.1 EXAMINATION

A. As specified in Section 260500 – Common Work Results for Electrical.

3.2 PREPARATION

A. Provide minimum 3 inch high concrete pad for floor mounted transformers.

3.3 INSTALLATION

A. Install transformers in accordance with NECA SI and manufacturer's published instructions, at locations and as indicated on Drawings.
   1. Use manufacturer approved mounting brackets for transformers supported from building structure.
   2. Securely anchor transformers to concrete pad for floor mounted transformers.
   3. Provide working clearances in conformance with NFPA 70 and manufacturer’s recommendations.
   4. Provide both primary and secondary protection using fuses or circuit breakers as indicated on Drawings.

B. Set transformers plumb and level.

C. Use minimum 2 foot length flexible conduit for connections to transformer case. Make conduit connections to side panel of enclosure.

D. Mount transformers on vibration isolating pads suitable for isolating transformer noise from building structure.

E. Provide grounding and bonding as specified in Section 260500.

F. Furnish and install engraved plastic nameplates to include the voltage and source of power upstream, as specified in Section 260500.

G. Furnish and install seismic restraints designed for type of mounting used.

3.4 FIELD QUALITY CONTROL

A. As specified in Section 260500 – Common Work Results for Electrical.

B. Section 014000 - Quality Control: Field testing and inspection.

C. Check for damage and tight connections prior to energizing transformer.

D. Measure primary and secondary voltages and make appropriate tap adjustments.

END OF SECTION

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SECTION 262416

PANELBOARDS

PART 1 - GENERAL

1.1 SUMMARY

A. This section includes:
   1. Panelboards.

B. Related Documents: The contract documents as defined in Section 011000 – Summary of Work, apply to the work of this section. Additional requirements and information necessary to complete the work of this section may be found in other documents.

C. Related Sections:
   1. Section 260500 – Common Work Results for Electrical.

1.2 REFERENCES

A. As specified in Section 260500 - Common Work Results for Electrical.

B. National Electrical Manufacturers Association (NEMA):
   1. NEMA AB 1 – Molded Case Circuit Breakers.
   2. NEMA ICS 2 – Industrial Control Devices, Controllers, and Assemblies.
   3. NEMA KS 1 – Enclosed Switches.
   4. NEMA PB 1 – Panelboards.
   5. NEMA PB 1.1 – Instructions for Safe Installation, Operation and Maintenance of Panelboards Rated 600 Volts or Less.

C. Underwriters Laboratories (UL):
   1. UL 486 – Molded Case Circuit Breakers.
   2. UL 67 – Heat Rise Test for Panelboards.
   3. UL 50 – Steel Gauge Requirements for Cabinets and Enclosures.
   4. UL 1449 4th Edition – Standard for Transient Voltage Surge Suppressors.

1.3 SUBMITTALS

A. As specified in Section 260500 – Common Work Results for Electrical.

   1. Shop Drawings: Indicate outline and support point dimensions, voltage, main bus ampacity, integrated short circuit ampere rating, circuit breaker and fusible switch arrangement and sizes.
   2. Manufacturer’s Installation Instructions: Indicate application conditions and limitations of use stipulated by Product testing agency. Include instructions for storage, handling, protection, examination, preparation, installation, and starting of Product.
   3. Shall include UL 1449 Listing documentation verifying the following:
      a. Short Circuit Current Rating (SCCR).
      b. Voltage Protection Ratings (VPRs) for all modes.
      c. Maximum Continuous Operating Voltage Rating (MCOV).
      d. I-nominal rating (I-n).

B. Section 017704 – Closeout Procedures and Training: Procedures for closeout submittals:

1. Project Record Documents: Record actual locations of Products; indicate actual branch circuit arrangement.
2. Operation and Maintenance Data: Include spare parts data listing; source and current prices of replacement parts and supplies; and recommended maintenance procedures and intervals.
3. Submit data showing compliance with UL 1449.

1.4 QUALITY ASSURANCE

A. As specified in Section 260500 - Common Work Results for Electrical

B. Panelboards shall be UL Listed and labeled and shall be designed in accordance with the applicable standards of ANSI and NEMA.

C. Qualifications
1. Manufacturer: Company specializing in manufacturing the Products specified in this section with minimum five years documented experience.

PART 2 - PRODUCTS

2.1 GENERAL CLASSIFICATION

A. Manufacturers: ABB/G.E. Industrial Solutions (ABB/GEIS) Catalog numbers are used to identify type of equipment specified. Equivalent products by the following manufacturers are acceptable:
1. Siemens
2. Square-D
3. Eaton/Cutler Hammer
   a. Branch Circuit Panels:
      1) 120/208V: ABB/GEIS Type ReliaGear.
4. No substitutions permitted.

2.2 BRANCH CIRCUIT PANELS

A. Cabinet: Construct cabinet with code gauge galvanized steel. Provide minimum 20 inch wide cabinets, and extra wiring space where incoming feed-through or parallel lines are required.

B. Doors: Provide single door construction, made of cold-rolled steel. Door shall have concealed hinges, flush catch, and lock. (Tee bar handles not acceptable). Secure top and bottom of door to cabinet by slotted steel bolts. Release shall be by one-half turn with a screwdriver. All panels shall be keyed alike.
1. Panelboards shall be equipped with “door within door” type trim.

C. Panels located adjacent to each other shall have identically sized enclosures and trims.

D. Finish: Finish exposed parts with one coat of primer and one coat of light gray enamel suitable for overpainting in field if desired.

E. Phase, neutral and ground bus bars shall be tin plated copper.

F. Provide all hardware for future breakers, identified on drawings as SPACES, or for the full length of usable bus, whichever is longer.

G. Provide ground bus with full complement of terminals in addition to insulated neutral bus.

H. Circuit Breakers:

1. Provide multi-pole units with common trip elements. Handle ties are not acceptable.
2. Provide circuit breakers equipped with padlockable handle attachments, padlocks and keys for padlocking the breaker in the “on” position when used to serve Fire Alarm. Security and CCTV Systems. Handle padlock attachment shall be similar to Square D types #QOHPL or #QO1PA with padlock and keys or Garvin Industries #UBL2-UPC. Key operated, circuit breaker attachments utilizing a screwdriver or allen wrench shall not be acceptable.
3. 120/208V branch circuit panelboards: Molded cast bolt-on type designed for 120/208V, three phase, four wire service with minimum 10,000 amperes rms short circuit rating.
4. 277/480V branch circuit panelboards: Molded cast bolt-on type designed for 277/480V, three phase, four wire service with minimum 14,000 amperes rms short circuit rating.

I. Main circuit breakers shall be individually mounted. The panelboard interior assembly shall be dead front with panelboard front removed. Main lugs or main breakers shall have barriers on five sides. The barrier in front of the main lugs shall be hinged to a fixed part of the interior. The end of the bus structure opposite the main shall have barriers.

J. Provide all panelboards with lockout/tagout devices; Circuit-Safe type as manufactured by Stranco, Inc. or approved equal.

K. Nameplates: Provide engraved plastic nameplate identification on outside of each panel to include the voltage and source of power upstream, as specified in section 260500.

L. Circuit directories: Provide a metal-framed circuit directory on inside of inner door, with plastic protector.

M. Provide two 3/4 inch and one 1 inch spare empty conduits routed above into accessible ceiling space from all flush mounted panelboards.

N. Panels serving electronic equipment and/or other harmonic producing loads shall be equipped with double neutral bus bars.

PART 3 - EXECUTION

3.1 EXAMINATION

A. As specified in Section 260500 – Common Work Results for Electrical.

3.2 CLEARANCES

A. Minimum code required clearances around panelboards must be maintained.

3.3 INSTALLATION

A. Install panelboards in accordance with NEMA PB 1.1.

B. Install panelboards plumb. Provide supports in accordance with Section 260500.

C. Provide filler plates for unused spaces in panelboards.

3.4 MOUNTING HEIGHT

A. Typically mount panel boards top at 6 feet above finished floor but no more than 6 feet 6 inches above finished floor to top of circuit breaker handle.

3.5 MOUNTING HARDWARE

A. Provide all necessary blocking, channels and other hardware for securing panelboards to wall, column, or other parts of building structure.

3.6 FIELD CONTROL

A. Section 014000 – Quality Requirements: Field Testing and Inspection.

B. Perform inspections and tests listed in NETA ATS, Section 7.6.

C. Measure steady state load currents at each panelboard feeder; rearrange circuits in the panelboard to balance the phase loads to within 20 percent of each other. Maintain proper phasing for multi-wire branch circuits.

D. Inspect for physical damage, proper alignment, anchorage, and grounding. Check proper installation and tightness of connections for circuit breakers.

END OF SECTION

USPS MPF Specification Last Revised: 10/1/2022

SECTION 265100

INTERIOR LIGHTING
(LED - SOLID STATE)

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
1. Interior luminaires and accessories.
2. Emergency lighting units.
3. Ballast/Light emitting diode (LED) drivers.
4. Light Sources.
5. Luminaire accessories.

B. Substitutions:
1. Section 016000 - Product Requirements: Product substitutions permitted by manufacturers listed in Paragraph 2.1A.

C. Related Documents: The Contract Documents, as defined in Section 011000 - Summary of Work, apply to the Work of this Section. Additional requirements and information necessary to complete the Work of this Section may be found in other Documents.

D. Related Sections:
1. Section 260500 - Common Work Results for Electrical: Basic electrical methods.

1.2 REFERENCES

A. As specified in Section 260500 – Common Work Results for Electrical.

B. Illuminating Engineering Society (IES):
1. IES LM-79 - (2008) Electrical and Photometric Measurements of Solid-State Lighting Products.
2. IES LM-80 - (2015) Measuring Lumen Maintenance of LED Light Sources.
3. IES TM-21 - (2011; Addendum B 2015) Projecting Long Term Lumen Maintenance of LED Light Sources.

C. National Fire Protection Association (NFPA):
1. NFPA 70 - National Electrical Code.
2. NFPA 101 - Life Safety Code.

D. National Electrical Manufacturers Association (NEMA):
1. NEMA ANSILG C78.377 – (2017) Electric Lamps— Specifications for the Chromaticity of Solid State Lighting Products.
2. NEMA SSL 1 – (2010) Electronic Drivers for Led Devices, Arrays, or Systems.
3. NEMA SSL 3 - (2011) High-Power White LED Binning for General Illumination.

E. Federal Communications Commission Parts 18.305, 18.307 (EMI RFI).

F. American Society of Heating, Refrigerating and Air Conditioning, Inc.
1. ANSI/ ASHRAE/ IES Standard 90.1.

G. Underwriters Laboratories (UL)
1. UL 1472 – (2015) UL Standard for Safety Solid-State Dimming Controls.
2. UL 1598 – (2008; Reprint Oct 2012) Luminaires.

3. UL 844 – (2012; Reprint Mar 2016) UL Standard for Safety Luminaires for Use in Hazardous (Classified) Locations.
4. UL 8750 – (2015; Reprint Feb 2018) UL Standard for Safety Light Emitting Diode (LED) Equipment for Use in Lighting Products.
5. UL 924 – (2016; Reprint Nov 2017) UL Standard for Safety Emergency Lighting and Power Equipment.

1.3 SUBMITTALS

A. As specified in Section 260500 - Common Work Results for Electrical.
   1. Product Data: Submit catalog cuts, drawings, descriptive matter and lighting performance characteristics as required to completely define the materials and construction details employed, finishes applied, dimensions, hinging, latching and relamping provisions, and electrical characteristics.
   2. Assurance/Control Submittals:
      a. Manufacturer's Instructions: Indicate application conditions and limitations of use stipulated by Product testing agency. Include instructions for storage, handling, protection, examination, preparation, and installation of Product.

B. Section 017704 - Closeout Procedures and Training: Procedures for closeout submittals:
   1. Operation and Maintenance Data: Submit manufacturer's operation and maintenance instructions for each type of luminaire.

1.4 DEFINITIONS

A. For LED luminaire light sources, “Useful Life” is the operating hours before reaching 70 percent of the initial rated lumen output (L70) with no catastrophic failures under normal operating conditions. This is also known as 70 percent “Rated Lumen Maintenance Life” as defined in IES LM-80.

B. For LED luminaires, “Luminaire Efficacy” (LE) is the appropriate measure of energy efficiency, measured in lumens/watt. This is gathered from LM-79 data for the luminaire, in which absolute photometry is used to measure the lumen output of the luminaire as one entity, not the source separately and then the source and housing together.

C. Total harmonic distortion (THD) is the root mean square (RMS) of all the harmonic components divided by the total fundamental current.

1.5 QUALITY ASSURANCE

A. As specified in section 260500 – Common Work Results for Electrical.

B. Products shall be tested, approved and labeled/listed by Underwriters Laboratories, Inc., or by a nationally recognized testing laboratory (NRTL).

C. Electrical equipment and materials shall be new and within one year of manufacture, complying with the latest codes and standards. Re-built, refurbished and/or re-manufactured electrical equipment and materials shall not be furnished on this project.

1.6 MAINTENANCE

A. Section 017704 - Closeout Procedures and Training: Procedures for closeout submittals.

B. Extra Products: At completion of installation, deliver to the USPS Project Manager.
   1. Two of each luminaire lens type.

2. Each component type: Provide quantity for each unique ballast/driver, and LED array equal to 2 percent of luminaire total, but not less than two of each type.

PART 2 - PRODUCTS

2.1 LUMINAIRE MANUFACTURERS

A. Subject to compliance with project requirements, manufacturers offering Products which may be incorporated in the Work include the following:
1. Alphabet Lighting, Tustin, CA (714) 259-9959.
2. Barron/Exitronix, Glendale, AZ (888) 533-3948.
3. Beghelli, Miramar, FL (954) 442-6600.
4. Chloride Systems, Burgaw, NC (910) 259-1000.
5. Cooper Lighting (Halo, Invue, Lumark, McGraw-Edison, Failsafe, Metalux, Portfolio, Sure-Lites), Peachtree City, GA (770)486-4800.
6. Current Lighting (Albeo, Columbia, Compass, Dual-Lite, Kurt Versen, Forum, Lite Control, Prescolite), Greenville, SC (866) 758-0116.
7. Day-Brite, Tupelo, MS (662) 842-7212.
8. Edison-Price Lighting, Long Island City, NY (718) 685-0700.
9. Elcast Lighting, Addison, IL (630) 543-5390.
10. Evenlight, Trevose, PA (800) 872-0879.
11. H.E. Williams, Carthage, MO (417) 358-4065.
12. Holophane, Newark, OH (740) 345-9631.
13. Indy Lighting, Fishers, IN (317) 849-1233.
14. Intense Lighting LLC, Anaheim, CA (800) 691-5321.
15. Isolite, Berwyn, PA (800) 888-5483.
16. Kenall Manufacturing, Gurnee, IL (847) 360-8200.
17. Killark Electric, Fenton, MO (314) 531-0460.
18. Kirlin Lighting, Detroit, MI (313) 259-6400.
19. Kramer Lighting, Sturtevant, WI (800) 236-6800.
20. Kurtzon Lighting, Chicago, IL (773) 277-2121.
21. LaMar Lighting, Farming Dale, NY (631) 777-7700.
22. LightAlarms (Thomas & Betts) Montreal, ON (888) 552-6467.
23. Lithonia Lighting (Gotham, Acuity, Sensor Switch), Conyers, GA (770) 922-9000.
24. LSI Industries, Cincinnati, OH (513) 793-3200.
25. Lumax Industries, Altoona, PA (814) 944-2537.
26. Mercury Lighting, Fairfield, NJ (800) 637-2584.
27. Omega Lighting, Tupelo, MS (800) 234-1890.
28. Orion Energy Systems, Inc., Manitowoc, WI (800) 660-9340.
29. Pheonix Products, Milwaukee, WI (414) 438-1200.
30. Prudential Lighting, Los Angeles, CA (213) 746-0360.
31. Solas Ray Lighting, Indianapolis, IN (800) 840-5635.
32. Vista Lighting, Tupelo, MS (662) 690-4105.
33. Zumtobel Staff, Highland, NY (800) 448-4131.

2.2 LUMINAIRE TYPES

A. Type A: Lithonia #XIB-48-24000LM-GL-MVOLT-50K-90CRI.
1. Description: Surface Mount, 2 feet W x 4 feet L x 6 inch D LED type troffer and clear center lens non-air handling.
2. Lens: High performance extruded acrylic diffuser with curved linear prisms.
3. Housing:
a. 22 gauge steel body, flush steel door with mitered corners.
b. Frame and housing finished with baked white enamel or powder coated finish.

4. Ballast/Driver: LED high efficiency – 153W and 24,000 Lumen. Wattage based on lumen package selected.
5. Mounting:
   a. Surface mounted to hard deck.
6. Lamps: 24000 Lumen LED array; 5000K rated 60,000 hours at LLD = 0.8.
7. Marking: Luminaires are to be labeled on the interior side with lumen package used.
8. Emergency: If fixture is Emergency, Lithonia #XIB-48-12000LM-GL-MVOLT-50K-90CRI-IE18WCPHECW.
9. Alternate Manufacturers:
   a. Columbia.
   b. Metalux.
   c. Substitutions permitted: As listed in Paragraph 2.1A.

2.3 LUMINAIRES

A. Provide luminaires as indicated in luminaire schedule and details on project plans. Provide luminaires complete with light sources of quantity, type and wattage indicated. Provide all luminaires of the same type by the same manufacturer. Luminaires must be specifically designed for use with the driver or ballast and light source provided.

B. LED Luminaires:
1. Install ballast/drivers, LED arrays and specified accessories at the factory.
1. Luminaires must have a minimum 5 year manufacturer's warranty.
2. Luminaires must have a minimum L70 lumen maintenance value of 50,000 hours as calculated by IES TM-21, with data obtained per IES LM-80 requirements.
3. Luminaire drive current value must be identical to that provided by test data for luminaire in question.
4. Luminaires must be listed with the DesignLights Consortium 'Qualified Products List' when falling into category of "General Application" luminaires, i.e. Interior Directional, Display Case, Troffer, Linear Ambient, or Low/High Bay. Requirements are shown in the DesignLights Consortium "Technical Requirements Table" at https://data.energystar.gov/dataset/EPA-Recognized-Laboratories-For- Lighting-Products/jgwf-7qrr.
5. Provide Department of Energy 'Lighting Facts' label for each luminaire.

C. Luminaires for hazardous locations:
1. In addition to requirements stated herein, provide LED luminaires for hazardous locations which conform to UL 844 or which have Factory Mutual certification for the class and division indicated.

2.4 LED DRIVERS

A. NEMA SSL 1, UL 8750. LED drivers must be electronic, UL Class 1, constant-current type and comply with the following requirements:
1. Output power (watts)and luminous flux (lumens) as shown in luminaire schedule for each luminaire type to meet minimum luminaire efficacy (LE) value provided.
2. Power Factor (PF) greater than or equal to 0.9 over the full dimming range when provided.
3. Current draw Total Harmonic Distortion (THD) of less than 20 percent.
4. Class A sound rating.
5. Operable at input voltage of 120-277 volts at 60 hertz.
6. Minimum 5 year manufacturer's warranty.
7. RoHS compliant.
8. Integral thermal protection that reduces or eliminates the output power if case temperature exceeds a value detrimental to the driver.
9. UL listed for dry or damp locations typical of interior installations.
10. LED driver shall tolerate sustained open circuit and short circuit output conditions without damage.

11. LED driver shall comply with the requirements of the FCC rules and regulations, Title 47 CFR Part 15 Non-Consumer (Class A).

2.5 LIGHT SOURCES

A. NEMA ANSLG C78.377, NEMA SSL 3. Provide type and wattage as indicated in luminaire schedule on project plans.

B. LED arrays shall have a correlated color temperature (CCT) of 4000K; minimum color rendering index (CRI) value of 80.

C. High power, white light output utilizing phosphor conversion (PC) process or mixed system of colored LEDs, typically red, green and blue (RGB).

D. Provide light source color consistency by utilizing a binning tolerance within a 4 step McAdam ellipse.

E. Luminaire shall have door frame and lens compatible for use with LED arrays and integral airflow ventilation system.

2.6 LED EMERGENCY DRIVERS

A. Provide LED emergency driver with automatic power failure detection, test switch and LED indicator (or combination switch/indicator) located on luminaire exterior and provide self-diagnostic function integral to emergency driver. Integral nickel cadmium or lithium iron phosphate battery is required to supply a minimum of 90 minutes of emergency power at 700 Lumens (at 100 Lumens/Watt). Driver must be RoHS compliant, rated for installation in plenum-rated spaces and damp locations, and be warranted for a minimum of five years.

2.7 LUMINAIRE SUPPORT HARDWARE

A. Wire:
1. ASTM A641/A641M; Galvanized, soft tempered steel, minimum 0.11 inches in diameter, or galvanized, braided steel, minimum 0.08 inches in diameter.

F. Threaded Rods:
1. Threaded steel rods, 3/16 inch diameter, zinc or cadmium coated.

G. Straps:
1. Galvanized steel, one inch by 3/16 inch, conforming to ASTM A653/A653M, with a light commercial zinc coating or ASTM A1008/A1008M with an electrodeposited zinc coating conforming to ASTM B633, Type RS.

2.8 EQUIPMENT IDENTIFICATION

A. Each item of equipment must have a nameplate bearing the manufacturer's name, address, model number, and serial number securely affixed in a conspicuous place; the nameplate of the distributing agent will not be acceptable.

B. Provide labeled luminaires in accordance with UL 1598 requirements. All luminaires must be clearly marked for operation of specific light sources and ballasts or drivers. Note the following light source characteristics in the format "Use Only _____":
1. Correlated color temperature (CCT) and color rendering index (CRI) for all luminaires.

2. All markings related to light source type must be clear and located to be readily visible to service personnel, but unseen from normal viewing angles when light sources are in place. Ballasts or drivers must have clear markings indicating multi-level outputs and indicate proper terminals for the various outputs.

2.9 FACTORY APPLIED FINISH

A. Provide all luminaires and lighting equipment with factory-applied painting system that as a minimum, meets requirements of NEMA 250 corrosion-resistance test.

2.10 RECESS- AND FLUSH-MOUNTED LUMINAIRES

A. Provide access to lamp and ballast from bottom of luminaire. Provide trim for the exposed surface of flush-mounted luminaires as indicated on project drawings and specifications.

2.11 SUSPENDED LUMINAIRES

A. Provide hangers capable of supporting twice the combined weight of luminaires supported by hangers. Provide with swivel hangers to ensure a plumb installation. Provide cadmium-plated steel with a swivel-ball tapped for the conduit size indicated. Hangers must allow fixtures to swing within an angle of 45 degrees. Brace pendants 4 feet or longer to limit swinging. Single-unit suspended luminaires must have twin-stem hangers. Multiple-unit or continuous row luminaires must have a tubing or stem for wiring at one point and a tubing or rod suspension provided for each unit length of chassis, including one at each end. Provide rods in minimum 0.25 inch diameter.

PART 3 - EXECUTION

3.1 EXAMINATION

A. As specified in Section 260500 – Common Work Results for Electrical.

3.2 INSTALLATION

A. Electrical installations must conform to IEEE C2, NFPA 70, and to the requirements specified herein. Install luminaires to meet the requirements of ASHRAE 90.1 and ASHRAE 189.1. To encourage consistency and uniformity, install luminaires of the same manufacture and model number when residing in the same facility or building.

B. Luminaires:
1. Set luminaires plumb, square, and level with ceiling and walls, in alignment with adjacent luminaires and secure in accordance with manufacturers' directions and approved drawings. Installation must meet requirements of NFPA 70. Obtain approval of the exact mounting height on the job before commencing installation and, where applicable, after coordinating with the type, style, and pattern of the ceiling being installed.
2. Recessed and semi-recessed luminaires must be independently supported from the building structure by a minimum of four wires, straps or rods per luminaire and located near each corner of the luminaire. Ceiling grid clips are not allowed as an alternative to independently supported luminaires.
3. Round luminaires or luminaires smaller in size than the ceiling grid must be independently supported from the building structure by a minimum of two wires, straps or rods per luminaire,

spaced approximately equidistant around. Do not support luminaires by acoustical tile ceiling panels.

a. Where luminaires of sizes less than the ceiling grid are indicated to be centered in the acoustical panel, support each independently and provide at least two 3/4 inch metal channels spanning, and secured to, the ceiling tees for centering and aligning the luminaire. Provide wires, straps, or rods for luminaire support in this section.

C. Suspended Luminaires:

1. Provide suspended luminaires with swivel hangers so that they hang plumb and level. The stem, canopy and luminaire must be capable of 45 degree swing. Pendants, rods, or chains, 4 feet or longer excluding luminaire, must be braced to prevent swaying using three cables at 120 degree separation.
2. Suspended luminaires in continuous rows must have internal wireway systems for end to end wiring and must be properly aligned to provide a straight and continuous row without bends, gaps, light leaks or filler pieces.
3. Match supporting pendants with supported luminaire. Aircraft cable must be stainless steel. Canopies must be finished to match the ceiling and must be low profile unless otherwise shown.
4. Maximum distance between suspension points must be 10 feet or as recommended by the manufacturer, whichever is less.

D. Locate ceiling luminaires as indicated on reflected ceiling plan.

E. Install surface mounted luminaires and exit luminaire signs plumb and adjust to align with building lines and with each other. Secure to prevent movement. Mount exit signs to outlet box mounted flush in wall or ceilings. Outlet box for ceiling mounted exit signs: Connect to rigid conduit system.

F. Install recessed luminaires using accessories and firestopping materials to meet regulatory requirements for fire rating. In fire rated ceilings, recessed luminaires must carry 1 hour UL fire rating classification.

G. Install earthquake clips to secure recessed grid-supported luminaires in place.

H. Install wall mounted luminaires, emergency lighting units and exit luminaire signs at height as scheduled.

I. Install accessories furnished with each luminaire.

J. Bond products and metal accessories to branch circuit equipment grounding conductor.

K. Install specified light sources in each emergency lighting unit, exit luminaire sign, and luminaire.

L. Wire exit signs and emergency lighting units ahead of the local switch, to the normal lighting circuit located in the same room or area.

M. Luminaire whips shall be steel or aluminum. M/C cable shall be permissible for luminaire whips/connections. Luminaire whips/connections shall be made with a minimum of #12 AWG copper conductors. Equipment grounding conductors shall be provided in all luminaire whips and/or connections.

1. All luminaire whips shall be supported to luminaire support wire/cable with an approved fastener equal to an Erico “KX” flexible conduit hanger or other UL listed supports and fasteners.

N. Luminaires are not to be used as a raceway unless stamped for use as raceway by manufacturer. Single luminaire in lay-in ceilings shall not be used for raceway and shall be connected to an outlet box located within six feet (6’) of fixture with flexible conduit or luminaire whips.

3.3 FIELD QUALITY CONTROL

A. Section 014000 - Quality Requirements: Field testing and inspection.

B. Operate each luminaire after installation and connection. Inspect for proper connection and operation.

C. Final acceptance will be based on measurement of initial lighting levels after required hours of burn in as specified in USPS Mail Processing Facility Design Criteria, not maintained lighting levels.

3.4 WARRANTY

A. Provide a written 5 year on-site replacement warranty for material, luminaire finish, and workmanship. On-site replacement includes transportation, removal, and installation of new products.
   1. Include finish warranty to include failure and substantial deterioration such as blistering, cracking, peeling, chalking, or fading.
   2. Material warranty must include:
      a. All drivers.
      b. Replacement when more than 10 percent of LED sources in any lightbar or subassembly are defective or non-starting.

B. Warranty period must begin on date of beneficial occupancy. Provide the USPS Project Manager with signed warranty certificates prior to final payment.

3.5 ADJUSTING

A. Aim and adjust luminaires as directed by the USPS Project Manager.

B. Position exit luminaire sign directional arrows as indicated.

3.6 CLEANING

A. Section 017300 - Execution: Cleaning installed work.

B. Clean electrical parts to remove conductive and deleterious materials.

C. Remove dirt and debris from enclosures.

D. Clean photometric control surfaces as recommended by manufacturer.

E. Clean finishes and touch up damage.

END OF SECTION

USPS Specification Last Revised: 10/1/2023

SECTION 312300

EXCAVATION AND FILL

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
1. Excavating and backfilling for structures, utilities, and pavement.
2. Pipe bedding.
3. Compacting fill materials.
4. Borings and casings under roads.

B. Related Documents: The Contract Documents, as defined in Section 011000 - Summary of Work, apply to the Work of this Section. Additional requirements and information necessary to complete the Work of this Section may be found in other Documents.

C. Related Sections:
1. Section 312000 - Earth Moving: Cutting, filling, and grading for proposed site improvements.
2. Section 312317 - Rock Excavation: Removal of rock during excavation.
3. Section 313200 - Soil Stabilization: Lime, cement, fly ash, and geotextile subgrade stabilizers.

1.2 REFERENCES

A. American Society for Testing and Materials (ASTM):
1. ASTM D698 - Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort.
2. ASTM D1557 - Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort.

B. American Association of State Highway and Transportation Officials (AASHTO):
1. AASHTO T 180 - Moisture-Density relations of Soils Using a 10 Pound Rammer and an 18 Inch Drop.

C. American Water Works Association (AWWA):
1. AWWA C 200 - Steel Water Pipe, 6 Inch and Larger.
2. AWWA C 206 - Field Welding of Steel Water Pipe.

D. National Fire Protection Association (NFPA):
1. NFPA 70 - National Electric code.

1.3 DEFINITIONS

A. Building Area Subgrade Pad: Portion of site directly beneath and within a line 10 feet beyond building and appurtenances including limits of any future building expansion areas indicated on Drawings.

1.4 SUBMITTALS

A. Section 013300 - Submittal Procedures: Procedures for submittals.
1. Shop Drawings:

a. Submit drawings or details indicating proposed alternate earthwork procedures or proposed procedures not indicated in Contract Documents.
b. Shop Drawings or details pertaining to Site Utilities are not required unless required by regulatory authorities or unless use of materials, methods, equipment, or procedures are contrary to Drawings or these specifications are proposed. Do not perform work until required shop drawings have been approved by Contracting Officer.

2. Assurance/Control Submittals:
a. Material Source: Submit name of imported materials suppliers. Provide materials from same source throughout the work. Change of source requires Contracting Officer approval.
b. Test Reports: Submit the following reports directly to Contracting Officer from Testing Laboratory, with copy to Contractor:
1) Test reports on borrow material.
2) Verification of each footing subgrade.
3) Field density test reports.
4) Optimum moisture-maximum density curve for each type of soil encountered.
5) Report of actual unconfined compressive strength and bearing tests/results for each strata tested. Give "three-dimensional" description of each test location.
c. Certificates: Gradation and certification of aggregate material for Testing Laboratory review.
d. Qualification Documentation: Submit earthwork company documentation of experience indicating compliance with specified qualification requirements.

B. Section 017704 - Closeout Procedures and Training: Procedures for closeout submittals.
1. Project Record Documents: Accurately record the following.
a. Spot elevations for building area subgrade pad.
b. Location of existing utilities remaining, re-routed utilities, new utilities by horizontal dimensions, elevations or inverts, and slope gradients.

1.5 QUALITY ASSURANCE

A. Qualifications: Earthwork company specializing in performing the Work of this Section with minimum 5 years documented experience.

B. Regulatory Requirements: Perform earthwork in accordance with applicable requirements of governing authorities having jurisdiction.

1.6 PROJECT CONDITIONS OR SITE CONDITIONS

A. Existing Conditions: Requirements specified in Section 312000.

B. Existing Utilities: Requirements specified in Section 312000.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Stockpiled on-site fill and backfill material specified in Section 312000, tested by Testing Laboratory and approved by Contracting Officer.

B. Imported off-site fill and backfill material specified in Section 312000, tested by Testing Laboratory and approved by Contracting Officer.

C. Pipe Bedding Material: Processed sand and gravel free from clay lumps, organic, or other deleterious material complying with the following gradation requirements:

SIEVE SIZE	PERCENT PASSING
1 Inch	100
3/4 Inch	90 to 100
3/8 Inch	20 to 55
No. 4	0 to 10
No. 8	0 to 5

D. Steel Casing Pipe: AWWA C 200, minimum grade B; size and wall thickness as indicated on Drawings.

E. Stabilization Fabrics and Geogrids:
1. Mirafi 500X or 600X.
2. Amoco Style #2002 Woven.
3. Reemay Typar 3401 and 3601.
4. Trevira S1114 and S1120.
5. Tensar 1100 and 1200.

F. Filter/Drainage Fabrics:
1. Mirafi 140 N.
2. Amoco Style #4546.
3. Reemay Typar 3341.
4. Carthage Mills, Carthage 6%.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Section 017300 - Execution: Verification of existing conditions before starting work.

B. Verification of Conditions: Verify that field measurements, surfaces, and conditions are as required, and ready to receive Work.

C. Report in writing to Contracting Officer prevailing conditions that will adversely affect satisfactory execution of the Work of this Section. Do not proceed with Work until unsatisfactory conditions have been corrected.

D. By beginning Work, Contractor accepts conditions and assumes responsibility for correcting unsuitable conditions encountered at no additional cost to United States Postal Service.

3.2 PREPARATION

A. Identify required lines, elevations, levels, contours, grades, and datum necessary to perform earthwork operations as indicated on Drawings.

B. Verify that survey benchmark and intended elevations for the Work are as indicated on Drawings.

C. Locate, identify, and protect existing utilities to remain and previously installed utilities that may be damaged by construction operations.
1. The routing of existing underground utilities, conduit and piping shall be located using “Ground Penetrating Radar (GPR)” detection.
2. Notify Contracting Officer, municipality, and utility company immediately of utilities, not indicated on Drawings, encountered.
3. Maintain existing utilities, active utilities, and drainage systems in operating condition.

4. Comply with utility company requirements and directions of Construction Manager to keep utilities in operation.
5. Repair damage to utilities as directed by Contracting Officer.

D. Protect plant life, lawns, fences, existing structures, sidewalks, paving and curbs from earthwork operations, excavating equipment, and vehicular traffic.

E. Protect bench marks, property corners, and other survey monuments from damage or displacement. Where markers are required to be removed, provide removal and reinstallation by licensed land surveyor licensed in State where project is located.

F. Overexcavate areas of building subgrade found consisting of unsuitable materials as determined by Testing Laboratory and Contracting Officer. Prepare, fill with suitable material, and compact as specified. Stabilize areas as specified in Section 313200.

3.3 EXCAVATION

A. Excavation for filling and grading specified in Section 312000.

B. Rock excavation specified in Section 312317.

C. Excavation for Structures:
1. Excavate subbase for building foundations, slabs-on-grade and site structures to width and depth indicated on Drawings.
   a. Cut excavation banks vertically.
   b. Remove rocks, loose soil, and debris from bottom of excavation.
   c. Overexcavate wet or unsuitable soil from bottom of excavation.
   d. Provide stable base for concrete reinforcing installation and concrete placement.
   e. Hand trim to indicated lines and grades just prior to concrete reinforcing installation.
2. Provide protection for workers within trench areas in accordance with local, state, and national Occupational Safety and Health requirements and regulations.
   a. Trenches minimum 4 feet in depth.
3. During excavation, stockpile materials suitable for backfilling away from excavation to prevent overloading, slides, or cave-ins.
4. Remove material encountered in excavating operations that is unsuitable for backfilling, subgrade or foundation purposes as determined by Testing Laboratory and Contracting Officer. Dispose of materials off-site in an approved manner in accordance with requirements of authorities having jurisdiction.
5. Prevent surface water from flowing into excavations by temporary grading or other approved methods.
   a. Do not allow water to accumulate in excavations.
   b. Remove accumulated water in excavations.
   c. Provide and maintain pumps, well points, sumps, suction and discharge lines, and other dewatering system components required to remove water from excavations.

D. Excavation for Utilities:
1. Excavate trench width and depth required for laying pipe, conduit, or cable. Cut trench banks vertical. Remove stones from bottom of trench as required to avoid point-bearing. Over excavate wet or unstable soil, if encountered, from trench bottom as required to provide suitable base for continuous and uniform bedding.
2. During excavation, stockpile materials suitable for backfilling away from trench bank to prevent overloading, slides, or cave-ins.
3. Remove material encountered in trenching operations that is unsuitable for backfilling, subgrade or foundation purposes as determined by Testing Laboratory and Contracting Officer. Dispose of materials off-site in an approved manner in accordance with requirements of authorities having jurisdiction.

4. Prevent surface water from flowing into trenches or other excavations by temporary grading or other approved methods.
    a. Do not allow water to accumulate in excavations.
    b. Remove accumulated water in excavations.
    c. Provide and maintain pumps, well points, sumps, suction and discharge lines and other dewatering system components required to remove water from excavations.
5. Open cut excavation using trenching machine or backhoe. Do not use dirt clods for backfill created by use of machines other than ladder or wheel-type trenching machines.
6. Grade trench bottom to provide uniform bearing and support for each section of pipe on bedding material along entire trench length, except where necessary to excavate for bell holes, proper sealing of pipe joints, or other required connections. Dig bell holes and depressions for joints after trench bottom has been graded. Do not excavate trench deeper, longer, or wider than required to make proper joint connection.
7. Excavate trench width below the top of pipe minimum 300 mm wide and maximum 460 mm wider than outside surface of pipe or conduit installed to elevations and grades indicated on Drawings. Excavate trench width for other pipe, conduit, or cable to least practical width allowing for proper compaction of trench backfill.
8. Excavate trench depth measured from finished grade or paved surface to the following requirements or applicable codes and ordinances:
    a. Water Mains: 30 inches to top of pipe barrel or 6 inches below frost line established by local building official, whichever is deeper.
    b. Sanitary Sewer: Elevations, and grades indicated on Drawings.
    c. Storm Sewer: Depths, elevations, and grades indicated on Drawings.
    d. Electrical Conduits: 24 inches minimum to top of conduit or as required by NFPA 70, or local utility company requirements, whichever is deeper.
    e. TV Conduits: 18 inches minimum to top of conduit or as required by local utility company, whichever is deeper.
    f. Telephone Conduits: 18 inches minimum to top of conduit, or as required by local utility company, whichever is deeper.
    g. Gas Mains and Service: 30 inches minimum to top of pipe, or as required by local utility company, whichever is deeper.
9. Provide shoring, sheeting, and bracing, as required, in trenches and other excavations where protection of construction personnel is required. Sheeting may be removed after sufficient backfilling to protect against damaging or injurious caving.

E. Excavation for Pavement:
1. Excavate roadway and pavement areas to line and grade indicated on Drawings.
2. Stockpile excavated material suitable for backfilling on-site.
3. Remove excavated materials not required or not suitable for backfill from site.
4. Overexcavate areas of pavement subgrade found to contain unsuitable material. Prepare, fill with suitable material, and compact as specified. Stabilize areas as specified in Section 313200.

3.4 PIPE BEDDING

A. Excavate trenches, for pipe or conduit installed to elevations indicated on Drawings, 4 inches below bottom of pipe and to width as specified. Place 4 inches of bedding material, compact in bottom of trench, and shape to conform to lower portion of pipe barrel. After pipe installation, backfill and compact to top of trench.

B. Place geotextile fabric as indicated on Drawings.

3.5 BACKFILLING AND SUBGRADE PREPARATION

A. Backfilling:
1. Verify that imported off-site fill and stockpiled on-site fill is tested and approved.

2. Verify that foundation perimeter drainage installation is inspected and approved.
3. Verify that foundation or below grade structure walls are braced to support surcharge forces imposed by backfilling operations.
4. Verify that backfill areas are free of debris, snow, ice, or water, and that ground surfaces are not frozen.

B. Prepare building area subgrade pad in accordance with foundation subsurface preparation information indicated on Drawings and specified herein. Do not use rock larger than 6 inches for building subgrade fill.

C. Areas Exposed by Excavation or Stripping:
1. Scarify areas exposed by excavation or stripping on which building subgrade preparations are to be performed to minimum 24 inch depth.
2. Compact to minimum 95 percent optimum density in accordance with ASTM D1557 (Modified Proctor) at minimum moisture content 1 percent below and maximum 3 percent above optimum moisture content.
3. Proofroll to detect any areas of insufficient compaction by making minimum of 2 complete passes with fully-loaded tandem-axle dump truck, or Contracting Officer approved equivalent, in each of two perpendicular directions under supervision and direction of Contracting Officer.
4. Excavate and recompact areas failing to meet specified requirements.

5. Place in 8 inch maximum lifts compacted minimum 95 percent optimum density in accordance with ASTM D1557 (Modified Proctor) at minimum moisture content of 1 percent below and maximum moisture content 3 percent above optimum moisture content.
6. Maximum allowable values for plasticity index (PI) and liquid limit (LL) of suitable fill materials to be used as fill in the specified areas, unless indicated otherwise on Drawings:

LOCATION	PI	LL
Paving area, upper 4 feet of proposed subgrade elevation	20	30

D. Provide material imported from off-site with CBR (California Bearing Ratio) or LBR (Limerock Bearing Ratio) value equal to or above pavement design subgrade CBR or LBR value indicated on Drawings.

3.6 MAINTENANCE OF SUBGRADE

A. Verify finished subgrades for elevations indicated on Drawings and specified conditions for construction above subgrade.

B. Protect subgrade from excessive wheel loading during construction, including concrete trucks and dump trucks.

C. Remove areas of finished subgrade found to have insufficient compaction density. Replace in a manner that will comply with compaction requirements as directed by Contracting Officer. Provide hard, uniform, smooth, stable surface, true to grade and cross-section after completion of compaction.

3.7 BORINGS AND CASINGS UNDER ROADS

A. Install street, road, or highway crossings for utility mains by jacking and boring method in accordance with requirements of governing authorities having jurisdiction.

B. Locate approach pits and trenches within right- of-way of street, road, highway, or railroad distance from paving permitting traffic to pass without interference. Tamp backfill for approach pits and trenches within right- of-way in layers not greater than 6 inches thick for entire length and depth of trench or pit. Compact backfill to 95 percent of maximum density obtained at optimum moisture as determined by

AASHTO T 180, Method A (Modified Proctor). Mechanical tampers may be used after cover of 6 inches has been obtained over top of pipe barrel.

C. Use commercial type boring rig providing hole bored to proper alignment and grade within 2 inches of same diameter as largest outside joint diameter of pipe installed. Install pipe in hole immediately after bore has been made, and in no instance shall hole be left open while unattended.

D. Clean and prime interior and exterior of casing pipe; apply two coats of asphalt in accordance with requirements of governing authorities having jurisdiction.

E. Butt weld steel casing. Weld using full penetration single butt-welds in accordance with AWWA C 206.

F. Install casing and utility pipe with end seals, vent pipe, and other special equipment in accordance with requirements of governing authorities having jurisdiction.

G. Paving Damage Caused by Contractor Construction Operations:
   1. Repair paving where cracks occur on either side of line where pipe was installed by removing damaged paving between cracks, sawcutting paving in straight line at a point sufficiently beyond location of cracks for repair and placing new paving to match existing in areas where paving removed.
   2. Make repairs to the satisfaction of paving owner.
   3. Make repairs at no additional cost to United States Postal Service within one year from Date of Substantial Completion.

3.8 FIELD QUALITY CONTROL

A. Section 014000 - Quality Requirements: Field testing and inspection.

B. Excavation: Notify Testing Laboratory and Contracting Officer for visual inspection of bearing surfaces, 48 hours prior to backfilling and other subsequent Work.

3.9 PROTECTION

A. Protect building subgrade pad and building related earthwork from damage by construction operations and erosion.

B. Prohibit vehicles from entering building subgrade pad area. Vehicles not permitted.

C. Scarify surface, reshape, and compact areas damaged by construction operations or weather erosion.

END OF SECTION

USPS MPF Specification Last Revised: 10/1/2022

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SECTION 321216

ASPHALT PAVING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
1. Bituminous concrete paving.
2. Surface course.
3. Binder course.
4. Paving base course.

B. Related Documents: The Contract Documents, as defined in Section 011000 - Summary of Work, apply to the Work of this Section. Additional requirements and information necessary to complete the Work of this Section may be found in other Documents.

C. Related Sections:
1. Section 312000 - Earth Moving: Earthwork for Pavement..
2. Section 321723 - Pavement Markings: Painted pavement markings.

1.2 REFERENCES

A. Asphalt Institute (AI):
1. AI MS-2 - Mix Design Methods for Asphalt Concrete and Other Hot Mix Types.
2. AI MS-3 - Asphalt Plant Manual.
3. AI MS-8 - Asphalt Paving Manual.
4. AI MS-19 - Basic Asphalt Emulsion Manual.

B. American Society for Testing and Materials (ASTM):
1. ASTM D 242 - Specification for Mineral Fiber for Bituminous Paving Mixtures.
2. ASTM D 698 - Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures, Using 5.5 Pound Rammer and 12 inch Drop.
3. ASTM D 1188 - Method for Bulk Specific Gravity and Density of Compacted Bituminous Mixtures Using Paraffin-Coated Specimens.
4. ASTM D 1557 - Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 10 Pound Rammer and 18 inch Drop.
5. ASTM D 1560 - Test Method for Resistance to Deformation and Cohesion of Bituminous Mixtures by Means of Hveem Apparatus.
6. ASTM D 2397 - Specification for Cationic Emulsified Asphalt.
7. ASTM D 2399 - Practice for Selection of Cutback Asphalt.
8. ASTM D 2726 - Test Method for Bulk Specific Gravity and Density of Nonabsorbative Compacted Bituminous Mixtures.
9. ASTM D 3381 - Specification for Viscosity-Graded Asphalt Cement for Use in Pavement Construction.
10. ASTM D 3549 - Test Method for Thickness or Height of Compacted Bituminous Paving Mixture Specimens.
11. ASTM D 4318 - Test Method for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.

C. American Association of State Highway and Transportation Officials (AASHTO):
1. AASHTO T 88 - Particle Size Analysis of Soils.

1.3 SYSTEM DESCRIPTION

A. Design Requirements: Provide asphalt-aggregate mixture as recommended by local or state paving authorities to suit project conditions. Use locally available materials and gradations which meet standard state highway specifications and exhibit satisfactory records of previous installations.

1.4 SUBMITTALS

A. Section 013300 - Submittal Procedures: Procedures for submittals.
   1. Assurance/Control Submittals:
      a. Design Data:
         1) Submit design mix following format indicated Asphalt Institute Manual MS-2, Marshall Stability Method; including type/name of mix, gradation analysis, grade of asphalt cement used, Marshall Stability (pounds), flow, effective asphalt content (percent), and direct references to applicable state highway department specification sections for each material.
         2) Provide design mixture listed in current edition of applicable state highway department specifications.
         3) Use mix designs prepared within 3 years maximum.
         4) Provide documentation of state highway limitations, if any, on use of recycled content materials.
      b. Certificates: Submit materials certificate to Testing Laboratory signed by material supplier and Contractor, certifying that materials comply with, or exceed, the requirements specified herein.
      c. Qualification Documentation: Paving installer documentation of experience indicating compliance with specified qualification requirements.

1.5 QUALITY ASSURANCE

A. Perform Work in accordance with AI MS-8

B. Installer Qualifications: Company specializing in performing the Work of this Section with minimum 5 years documented experience.

C. Regulatory Requirements:
   1. Conform to applicable requirements for paving work on public property.
   2. Maintain access for vehicular and pedestrian traffic as required for other construction activities. Use temporary striping, flagmen, barricades, warning signs, and warning lights as required.

1.6 PROJECT CONDITIONS OR SITE CONDITIONS

A. Jobsite Requirements:
   1. Apply prime and tack coats when ambient temperature is above 40 degrees F, and when temperature has been above 35 degrees F for 12 hours immediately prior to application. Do not apply when base is wet, contains excess moisture, or during rain.
   2. Construct bituminous concrete paving when atmospheric temperature is above 40 degrees F.

1.7 ENVIRONMENTAL REQUIREMENTS

A. Resource Management:

1. Recycled Content: Provide aggregate fabricated from a minimum of 30% recycled rubble or concrete. Provide asphalt cement fabricated from recycled content asphalt.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Base Course: As indicated on Drawings, complying with applicable state highway specifications regarding source, quality, gradation, liquid limit, plasticity index and mix proportioning.
   1. Unless otherwise specified in applicable state highway specifications, provide base course aggregate fabricated from minimum 30 percent recycled rubble or concrete.

B. Asphalt Cement: Fabricated from minimum 15 percent recycled asphalt and complying with ASTM D 3381; Table 2 AC-10, AC-20, or AC-30, viscosity grade, depending on local mean annual air temperature as indicated below:

TEMPERATURE CONDITION	ASPHALT GRADES
Cold, mean annual air temperature at 45 degrees F or lower	AC-10, 85/100 pen.
Warm, mean annual air temperature between 45 degrees F and 75 degrees F	AC-20, 60/70 pen.
Hot, mean annual air temperature at 75 degrees F or higher	AC-30

C. Prime Coat: A medium curing cut-back asphalt or an asphalt penetrating prime coat consisting of either ASTM D 2397 or ASTM D 2399, MC- 30 or SS-1h.

D. Tack Coat: Emulsified asphalt; ASTM D 2397 or ASTM D 2399, SS-1h, CSS-1, or CSS-1h, diluted with one part water to one part emulsified asphalt.

E. Mineral Filler: Rock or slag dust, hydraulic cement, or other inert material complying with AASHTO M-17/ASTM D 242, if recommended by applicable state highway department standards.

F. Asphalt-Aggregate Mixture: Unless otherwise indicated on Drawings, the Design Mix shall have a minimum stability based on CALTRANS AR4000. The Design Mix shall be within sieve analysis and bitumen ranges below:

SIEVE ANALYSIS OF MIX

Square Sieve	Total Percent Passing	Percent Tolerance
1/2 inch	80 - 100	5
3/8 inch	65 - 93	4
No. 8	0 - 55	4
No. 50	2 - 27	2
No. 200	0 - 10	2

Percent Bitumen by Weight of Total Mix: 5.0 - 8.5.
Percent Air Voids: 3-6.
Percent Aggregate Voids Filled with Asphalt Cement: 70 - 82.
Allowable Variance of Percent Bitumen by Weight of Total Mix: 0.4.

2.2 EQUIPMENT

A. Maintain equipment in satisfactory operating condition and correct breakdowns in a manner that will not delay or be detrimental to progress of paving operations.

3.1 EXAMINATION

A. Section 017300 - Execution: Verification of existing conditions before starting work.

B. Verification of Conditions: Verify that field measurements, surfaces, substrates and conditions are as required, and ready to for earthwork operations to begin.
   1. Verify gradients and elevations of base are correct, and base is dry.

C. Report in writing to Contracting Officer prevailing conditions that will adversely affect satisfactory execution of the Work of this Section. Do not proceed with Work until unsatisfactory conditions have been corrected.

D. By beginning Work, Contractor accepts conditions and assumes responsibility for correcting unsuitable conditions encountered at no additional cost to the United States Postal Service.

3.2 BASE COURSE PLACEMENT

A. Perform base course construction in a manner that will drain surface properly at all times and at the same time prevent runoff from adjacent areas from draining onto base course construction.

B. Compact base material to not less than 98 percent of optimum density as determined by ASTM D 698 or 95 percent of optimum density, as determined by ASTM D 1557, unless otherwise indicated on the Drawings.

C. Granular Base: Construct to thickness indicated on Drawings. Apply in lifts or layers not exceeding 8 inches, measured loose.

D. Sand/Shell Base: Construct to thickness indicated on Drawings. Apply in lifts or layers not exceeding 4 inches, measured loose.

E. Asphalt Institute Type IV Mix for Full Depth Asphalt Base: Construct to thickness indicated on Drawings in lifts or layers not exceeding 3 inches, measured loose.

F. Asphalt Institute Type VI, VII, or VIII Mixes for Hot-Mix Sand Asphalt Bases: Construct to thickness indicated on Drawings. Apply in lifts or layers not exceeding 3 inches, measured loose.

G. Soil Cement Stabilized Base: Construct to thickness and strength as indicated on Drawings and in accordance with applicable state highway specifications. If not indicated on the Drawings, the minimum compressive strength shall be 500 pounds per square inch, tested at 28 days.

3.3 APPLICATIONS

A. Prime Coat:
   1. Apply bituminous prime coat to all base material surfaces where bituminous concrete paving will be constructed.
   2. Apply bituminous prime coat in accordance with applicable state highway specifications.
   3. Apply at minimum rate of 0.25 gallon per square yard over compacted base material. Apply to penetrate and seal, but not flood surface.
   4. Make necessary precautions to protect adjacent areas from overspray.
   5. Cure and dry as long as necessary to attain penetration of compacted base and evaporation of volatile substances.

B. Tack Coat:
   1. Apply to contact surfaces of previously constructed bituminous concrete base courses or portland cement concrete and surfaces abutting or projecting into bituminous concrete or into bituminous concrete pavement.
   2. Apply tack coat to bituminous concrete base course or sand asphalt base course. Apply emulsified asphalt tack coat between each lift or layer of full depth bituminous concrete and sand asphalt bases and on surface of all such bases where bituminous concrete paving will be constructed.
   3. Apply emulsified asphalt tack coat in accordance with applicable state highway specifications.
   4. Apply at minimum rate of 0.05 gallon per square yard of surface.
   5. Allow to dry until at proper condition to receive paving.

3.4 BITUMINOUS CONCRETE PLACEMENT

A. Place bituminous concrete mixture on completed compacted subgrade surface, spread, and strike off. Spread mixture at following minimum temperatures:
   1. When ambient temperature is between 40 degrees F and 50 degrees F, mixture temperature equal to 285 degrees F.
   2. When ambient temperature is between 50 degrees F and 60 degrees F, mixture temperature equal to 280 degrees F.
   3. When ambient temperature is higher than 60 degrees F, mixture temperature equal to 275 degrees F.

B. Whenever possible, all pavement shall be spread by a finishing machine; however, inaccessible or irregular areas may be placed by hand methods. The hot mixture shall be spread uniformly to the required depth with hot shovels and rakes. After spreading, the hot mixture shall be carefully smoothed to remove all segregated course aggregate and rake marks. Rakes and lutes used for hand spreading shall be of the type designed for use on asphalt mixtures. Loads shall not be dumped faster that they can be properly spread. Workers shall not stand on the loose mixture while spreading.

C. Paving Machine Placement: Apply successive lifts of bituminous concrete in transverse directions with the surface course placed in the direction of surface-water flow. Place in typical strips not less than 10 feet wide.

D. Joints: Make joints between old and new pavements, or between successive days and work in a manner that will provide a continuous bond between adjoining work. Construction joints shall have same texture, density, and smoothness as other sections of bituminous concrete course. Clean contact surfaces of all joints and apply tack coat.

3.5 ROLLING AND COMPACTION

A. The mixture, after being spread, shall be thoroughly compacted by rolling as soon as it will bear the weight of the rollers without undue displacement. The number, weight, and types of rollers and sequences of rolling operations shall be such that the required density and surface are consistently attained while the mixture is in a workable condition.

B. Compact mixture with hot hand tampers or vibrating plate compactors in areas inaccessible to rollers.

C. Breakdown Rolling: Accomplish breakdown or initial rolling immediately following rolling of joints and outside edge. Check surface after breakdown rolling, and repair displaced areas by loosening and filling with hot material.

D. Second Rolling: Follow breakdown rolling as soon as possible, while mixture is hot. Continue second rolling until mixture has been thoroughly compacted.

E. Finish Rolling: Perform finish rolling while mixture is still warm enough for removal of roller marks. Continue rolling until roller marks are eliminated and course has attained maximum density.

F. Patching: Remove and replace paving areas mixed with foreign materials and defective areas. Cut out such areas and fill with fresh, hot bituminous concrete. Compact by rolling to maximum surface density and smoothness.

G. Protection: After final rolling, do not permit vehicular traffic on pavement until it has cooled and hardened. Erect barricades to protect paving from traffic until mixture has cooled enough not to become marked.

3.6 CONSTRUCTION

A. Site Tolerances:
1. Paving Surface Smoothness: Maximum allowable 10 foot straightedge tolerance for smoothness.
   a. Base Course Surface: 1/4 inch.
   b. Wearing Surface Course: 3/16 inch.

3.7 FIELD QUALITY CONTROL

A. Section 014000 - Quality Requirements: Field inspection and testing procedures

B. Site Tests:
1. Paving Base Course: Perform testing of in-place base courses for compliance with requirements for thickness, compaction, density, and tolerance.
   a. Moisture/Density Test: ASTM D 698 or ASTM D 1557.
   b. Mechanical Analysis Test: AASHTO T-88.
   c. Plasticity Index Test: ASTM D 4318.
   d. Base Material Thickness Test: Minimum one test for every 20,000 square feet.
   e. Base Material Compaction Test: Minimum one test for every 20,000 square feet.
   f. Field Density Tests: Perform testing of in-place base courses for compliance with requirements for density using one of the following methods:
      1) Sand-cone Method: ASTM D 1556.
      2) Balloon Method: ASTM D 2167.
      3) Nuclear Method: ASTM D 2922, Method B (Direct Transmission).
   g. Test each source of base material for compliance with applicable state highway specifications.
2. Asphalt Concrete Paving: Perform testing of in-place asphalt concrete paving courses for compliance with requirements for thickness, compaction, and surface smoothness.
   a. Thickness: ASTM D 3549; Thickness shall not be less than thickness specified on Drawings.
   b. Surface Smoothness: Testing shall be performed on the finished surface of each asphalt paving course using 10 foot straightedge applied parallel with, and at right angles to centerline of paved areas. Smoothness shall not be less than tolerances specified herein.
3. Compaction: Field density test for in place materials shall be performed by examination of field cores in accordance with one of the following standards:
   a. Bulk Specific Gravity of Paraffin-Coated Specimens: ASTM D 1188, minimum one core per 20,000 square feet.
      1) Standard Duty Areas: Minimum 3 cores.
      2) Heavy Duty Areas: Minimum 3 cores.
   b. Bulk Specific Gravity Using Saturated Surface-Dry Specimens: ASTM D 2726, minimum one core per 20,000 square feet.
      1) Standard Duty Areas: Minimum 3 cores.
      2) Heavy Duty Areas: Minimum 3 cores.

END OF SECTION

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SECTION 321723

PAVEMENT MARKINGS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Painted pavement markings.
   2. Painted curbs.

B. Related Documents: The Contract Documents, as defined in Section 011000 - Summary of Work, apply to the Work of this Section. Additional requirements and information necessary to complete the Work of this Section may be found in other Documents.

C. Related Sections:
   1. Section 321216 - Asphalt Paving: Asphalt paving substrate for marking application.
   2. Section 321313 - Concrete Paving: Concrete paving substrate for marking application.
   3. Section 099100 – Painting: Painting exterior bollards.

1.2 SUBMITTALS

A. Section 013300 - Submittal Procedures: Procedures for submittals.
   1. Product Data: Technical data sheets indicating manufacturer's catalog number, paint type description, and VOC content for each paint type specified.
   2. Assurance/Control Submittals:
      a. Certificates: Manufacturer certificate that Products meet or exceed specified requirements.
      b. Test Reports: Manufacturer Material Safety Data Sheets (MSDS) for each paint type specified.

1.3 QUALITY ASSURANCE

A. Regulatory Requirements: Provide paint materials that conform to Federal, State, and local restrictions for Volatile Organic Compounds (VOC) and lead-free content.

1.4 DELIVERY, STORAGE AND HANDLING

A. Section 016000 - Product Requirements: Transport, handle, store, and protect products.

B. Deliver paint materials in sealed original labeled containers, bearing manufacturer's name, type of paint, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and/or reducing.

C. Store paint materials at minimum ambient temperature of 45 degrees F and a maximum of 90 degrees F, in ventilated area, and as required by manufacturer's published instructions.

1.5 PROJECT CONDITIONS OR SITE CONDITIONS

A. Maintain access for vehicular and pedestrian traffic as required for other construction activities. Utilize flagmen, barricades, warning signs and warning lights as required.

1.6 MAINTENANCE

A. Section 017704 – Closeout Procedures and Training: Requirements for Closeout Submittals.
   1. Extra Materials:
      a. Provide 1 gallon of each color to Contracting Officer.
      b. Label each container with color and type, in addition to manufacturer's label.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Subject to compliance with project requirements, manufacturers offering specified Products which may be incorporated into the Work include the following:
   1. Sherwin-Williams Company, Cleveland, OH (800) 321-8194.
   2. Benjamin Moore and Company, Montvale, NJ (201) 573-9600.
   3. Pittsburgh Paints (PPG), Pittsburgh, PA (800) 441-9695.

B. Section 016000 - Product Requirements: Product options and substitutions. Substitutions: Permitted.

2.2 MATERIALS

A. Ready-mixed; pigments fully ground maintaining a soft paste consistency, capable of readily and uniformly dispersing to a complete homogeneous mixture providing good flowing and brushing properties capable of drying or curing free of streaks or sags. Dry to traffic and touch in 2 hours.

B. Traffic Paint: Flat, Water Base, Acrylic, complying with Federal Specifications TT-P 1952D
   1. 1st Coat:
      a. Sherwin-Williams: Pro-Park Waterborne Traffic Marking Paint, B97 Series MDF 9 mils.
      b. Benjamin Moore: SuperSpec HP Safety & Zone Marking Paint P58, MDF 9 mils
      c. PPG Zoneline Traffic & Marking Paint, 11-50 Series, MDF 9 mils.

   2. 2nd Coat:
      a. Sherwin-Williams: Pro-Park Waterborne Traffic Marking Paint, B97 Series MDF 9 mils.
      b. Benjamin Moore: SuperSpec HP Safety & Zone Marking Paint P58, MDF 9 mils
      c. PPG Zoneline Traffic & Marking Paint, 11-50 Series, MDF 9 mils.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Section 017300 - Execution: Verification of existing conditions before starting work.

B. Verification of Conditions: Verify that field measurements, surfaces, substrates and conditions are as required, and ready to receive Work.

C. Report in writing to Contracting Officer prevailing conditions that will adversely affect satisfactory execution of the Work of this Section. Do not proceed with Work until unsatisfactory conditions have been corrected.

D. By beginning Work, Contractor accepts conditions and assumes responsibility for correcting unsuitable conditions encountered at no additional cost to the United States Postal Service.

3.2 PREPARATION

A. Sweep pavement and surfaces to receive paint markings clean of dust and dirt. Allow pavement to cure a minimum of 60 days prior to application of paint markings.

B. Clean surfaces free of glaze and grease, road film, and other foreign materials.

C. Apply paint products in accordance with manufacturer's published instructions using application procedures approved for the particular application and substrate to the specified Minimum Dry Film Thickness (MDF). Apply each coat to uniform finish.

D. Do not apply paint markings on surfaces that are not dry and if rain is expected within 24 hours.

E. Do not apply paint markings when surface or air temperature is below 50 degrees F.

F. Apply 2 coats at manufacturer recommended rate without addition of thinner. Apply with mechanical equipment to produce uniform straight edges. At sidewalk curbs and crosswalks, use straightedge to provide uniform, clean, and straight stripe.

3.3 PAINT MARKING SCHEDULE

A. Paint the following items with colors indicated below:
   1. Pedestrian Crosswalks: To match existing.
   2. Fire Lanes: Red or per local code.
   3. Lane Striping Where Separating Traffic in Opposite Directions: Yellow.
   4. Lane Striping Where Separating Traffic in Same Direction: White.
   5. Handicap Symbols: Per local code.
   6. Parking Stall Striping: White

END OF SECTION

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