MAIL PROCESSING FACILITIES

Truck Restraint Program – USPS P&DC

USPS Contract No: 104267-21-B-0028

Specification Book Date August 5, 2022

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MAIL PROCESSING FACILITIES SPECIFICATION

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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 United States Postal Service (USPS), including all incidental work described in the Contract Documents.

B. SCOPE OF WORK–Categories of work per deficiencies are listed in the attached General Findings and Condition Report (eCOMET Enhanced Deficiency Sheet Report):

1. Loading dock equipment:

   a. Vehicle restraint systems assembly/remove existing
   b. Vehicle restraint systems assembly/with or without cantilever bracket/add new
   c. Install Kelley dock communication system/add new
   d. Dock bumpers/replace as needed

2. Electrical upgrades:

   a. Panelboards/alteration/upgrade existing

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.

1.2 MISCELLANEOUS CONTRACT EXPENSES–NOT USED

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 of each of the following fees or charges payable to state, local, or special community development agencies:

Water service connection and meter fee _____
Electrical company required fees _____
Telephone company required fees _____
Off-site inspection fees _____
Sanitary sewer connection fee _____
Environmental permits/registrations _____
Other permits or fees _____

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 and taxes, as required, in the price proposal.

1.3 USPS DIRECT VENDOR EQUIPMENT OR SUPPLIES

A. In accordance with the terms and conditions of the contract provisions and clauses, including those concerning *Direct Vendor/Preselected Sources*, the Contractor is solely responsible for contracting with the Direct Vendor and ordering, payment, receiving, accepting, storage, and installation of USPS Direct Vendor equipment or supplies. Ordering instructions are included in each specification section.

B. The Contractor will off-load and inspect the delivered equipment or supplies to make sure they are in good condition, acknowledge receipt, and accept the delivered goods.

C. Direct Vendor items in this contract are limited to specific items, as shown in the drawings and listed below:

1. Section 111300–Loading Dock Equipment

1.4 USPS PREAPPROVED VENDOR EQUIPMENT OR SUPPLIES

A. The Contractor is solely responsible for contracting with the Preapproved Vendor and ordering, payment, receiving, accepting, storage, and installation of USPS Preapproved Vendor equipment or supplies. Ordering instructions are included in each specification section.

B. The Contractor will off-load and inspect the delivered equipment or supplies to make sure they are in good condition, acknowledge receipt, and accept the delivered goods.

C. Preapproved Vendor items in this contract are limited to specific items, as shown in the drawings and listed below:

1. Section 111300–Loading Dock Equipment
   https://kelleydocksolutions.com/exterior-equipment/trailer-restraints/trailer-restraint-systems/star4-vehicle-restraint/

1.5 MISCELLANEOUS EQUIPMENT CROSS-REFERENCE LIST

A. The following table is a cross-reference for equipment that may be shown in the drawings. The Contractor is solely responsible for ordering, payment, receiving, accepting, storage, and installation of the equipment or supplies, as specified in each specification section. USPS Standards for Facility Accessibility Handbook RE-4 supersedes standards in question of conflict.

PART 2 – PRODUCTS

2.1 Truck Restraint

A. Manufacturer/model as basis for design: Kelley Star 4 Vehicle Restraint
https://kelleydocksolutions.com/exterior-equipment/trailer-restraints/trailer-restraint-systems/star4-vehicle-restraint/

PART 3 – EXECUTION

SEE TECHNICAL SPECIFICATION FOR EACH ITEM IN THE SCOPE

END OF SECTION

SECTION 011104–CONTRACT DOCUMENTS

PART 1 – GENERAL

1.1 SUMMARY

A. The Contract Documents consist of the items included, or attached and incorporated by reference, in Section B, The Contract, B. 1500, Attachments.

1.2 DRAWING LIST

A. The contract drawings consist of the items included, or attached and incorporated by reference, in Section B, The Contract, B. 1500, Attachments.

B. The Contract Documents are listed in the Construction Rider.

Drawing number Title

G2-3-8 C2: Platform Equipment–Plan Details Column (Open Platform)
G2-3-8 C3: Platform Equipment–Control, Panel Pendant Detail (Open Platform)
G2-3-8 C4: Platform Equipment–Control Panel Guard
G2-3-8 e1: Platform Equipment–Elevation Dock Leveler (Open Platform)
G2-3-8 e4: Platform Equipment–Elevation Dock Leveler (Enclosed Platform)
G2-3-8 e6: Platform Equipment–Elevation Dock Leveler (Open Platform)

C. CONSTRUCTION SPECIFICATIONS (USPS Standard Specs)

D. eCOMET Enhanced Deficiency Sheet Report, categories of work per deficiencies listed in the General Findings and Condition Report part of this RFP.

PART 2 – PRODUCTS

NOT USED

PART 3 – EXECUTION

NOT USED

END OF SECTION

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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 Contracting Officer's Representative (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 6PM and 6AM in the entire area without written permission from the COR.

D. To minimize impact to operation schedule, Contractor shall coordinate delivery schedule with TANS Manager and/or Maintenance Manager and provide weekly updates to Parsons' Project Manager.

E. SAFETY:

1. Work will be performed on operating loading docks. Docks adjacent to truck restraint installation activities must be closed to moving vehicles, which means that three docks will be taken out of service at a time.

2. Schedule showing sequence of dock shutdown must be provided.

3. Offeror shall provide a Safety Plan to describe how best to optimize schedule and work sequence to minimize any impact to dock and vehicular operations and keep Contractors and USPS personnel safe.

1.2 CONSTRUCTION PROGRESS CHART

A. In accordance with the terms and conditions of the contract provisions and clauses, including those concerning the *Construction Progress Chart*, contractor shall 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 his/her designated representative

1.3 CONTRACTOR-PREPARED NETWORK ANALYSIS SYSTEM

Include Contractor-Prepared Network Analysis System only if listed in Block 9 of Page 1–*Offer and Award*. Modify as required for specific project scope.

A. Prepare a Network Analysis System in accordance with the terms and conditions of the contract provisions and clauses concerning *Network Analysis System and Update*, to include, at a minimum, the elements described below. In preparation of this system, the scheduling of construction is the responsibility of the Contractor. The requirement for the system is included to ensure adequate planning and execution of the work and to assist the COR in appraising the reasonableness of the proposed schedule and evaluating work progress. The system must consist of diagrams and accompanying mathematical analyses.

B. Diagrams must show the order and interdependence of activities and the sequence in which the work is to be done, as planned by the Contractor. The basic concept of a network analysis diagram must be followed to show how the start of a given activity is dependent on the completion of preceding activities and its completion restricts the start of the following activities. In all cases, the project completion date must be shown on the diagrams as the latest completion date of all activities.

C. The detailed network activities must include, in addition to construction activities, the submittal and approval of samples of materials and shop drawings, the procurement of critical materials and equipment, and the fabrication of special materials and equipment and their installation and testing. All USPS activities that affect progress and dates required by the contract for completion of all or parts of the work must be shown. The activities that affect the following separate buildings and features must be separately identifiable by coding or use of subnetworks, or both.

Building or Feature	Minimum Number of Activities
Mail Processing Building	250
Customer Service Building	100
Site work	70
Mechanization	50
Vehicle Maintenance Building	40

D. The selection and number of activities are subject to the COR's approval. Detailed networks must be drafted to show a continuous flow from left to right, with no arrows from right to left. The following information must be shown on the diagram for each activity, preceding the following event numbers: description of the activity, cost, activity duration, and workforce requirements in workdays.

E. A summary bar chart must be provided on a 30 x 42-inch sheet, consisting of a minimum of 30 activities and based on and supported by detailed diagrams. The summary bar chart must be time scaled, using units of approximately 0.5 inch to equal 1 week, or other suitable scale approved by the COR. Weekends and holidays must be indicated.

F. Mathematical Analysis

1. The mathematical analysis of the network diagram must include a tabulation of each activity. The following information, at a minimum, must be furnished for each activity:

    a. Numbers of preceding and following events
    b. Activity description
    c. Estimated duration of activities in days
    d. Earliest finish date
    e. Actual start date
    f. Actual finish date
    g. Latest start date
    h. Latest finish date
    i. Slack or float
    j. Monetary value of activity, with a labor and material cost breakdown
    k. Percentage of activity completed
    l. Contractor's earnings based on the portion of activity completed
    m. Workforce requirements in workdays

2. The program or means used in making the mathematical computation must be capable of compiling the total value of completed and partially completed activities and subtotals from separate buildings or features.

3. The analysis must list the activities in sorts or groups, as follows:

   a. By the preceding event number, from lowest to highest, then in the order of the following event number
   b. By the amount of slack, then in order of preceding event number
   c. By responsibility in order of earliest allowance start date
   d. In order of latest allowable start dates, then in order of preceding event numbers, then in order of succeeding even numbers

G. Submission and approval of the system must be as follows:

1. A preliminary network defining the Contractor's planned operations during the first 90 days after receipt of a Notice to Proceed must be submitted at the preconstruction conference after receipt of a Notice to Proceed.

2. The complete network analysis, consisting of the detailed network mathematical analysis, schedule of anticipated earnings as of the last day of each month, and network diagrams, must be submitted within 30 days after receipt of Notice to Proceed.

H. Submission and approval of the system must be as follows:

1. A preliminary network defining the Contractor's planned operations must be submitted at the preconstruction conference after receipt of a Notice to Proceed.

2. The complete network analysis must be submitted within 30 days after receipt of Notice to Proceed.

I. The Contractor must participate in a review and evaluation of the proposed network diagrams and analysis by the COR. Any revisions necessary as a result of this review must be resubmitted for approval of the COR within ten (10) calendar days after the conference. The approved schedule must then be the schedule used by the Contractor for planning, organizing, and directing the work, reporting progress, and requesting payment for work accomplished. Thereafter, if the Contractor desires to make changes in its method of operating and scheduling, the Contractor must notify the COR in writing stating the reasons for the change. If the COR considers these changes to be major, the COR may require the Contractor to revise and submit for approval, without additional cost to the USPS, all of the affected portions of the detailed diagrams and mathematical analysis to show the effect on the entire project. A change may be considered major if the time estimated to be required or actually used for an activity, or the logic of the sequence of activities varies from the original plan to a degree that there is a reasonable doubt as to its effect on contract completion dates. Changes that affect activities with adequate slack time must be considered minor, except that an accumulation of minor changes may be considered a major change when cumulative effect of those changes might affect the contract completion date.

J. The Contractor must submit at monthly intervals a report of actual construction progress by updating the mathematical analysis. Entering updated information into the mathematical analysis is subject to the approval of the COR.

K. The report must show the activities or portion of activities completed during the reporting period and their total value as a basis for the Contractor's periodic request for payment. Payments made underthe terms and conditions of the contract provisions and clauses, including those concerning *Payment (Construction)*, must be based on the total value of the activities or of partially completed activities after verification by the COR. The report must state the percentage of the work actually completed and scheduled on the report date and the progress along the critical path in terms of days ahead or behind the allowable dates. If the project is behind schedule, progress along other paths with negative slack must also be reported. The Contractor must also submit a narrative report with the updated analysis, which must include a description

of the problem areas, current and anticipated delaying factors and their impact, and an explanation of corrective actions taken or proposed.

L. Diagram sheet size must be 30 x 42 inches. Each updated copy must show the date of the latest revision.

M. Initial submittal and complete revisions must be submitted in three copies.

N. Periodic reports must be submitted in two copies.

O. Network analysis system revisions occurring as a result of modifications or changes in the work must be in accordance with the terms and conditions of the contract provisions and clauses, including those concerning Network Analysis Systems and Update.

P. Float or slack is defined as the amount of time between the early start date and the late start date of any activities in the network analysis system schedule. Float or slack time is not time for the exclusive use or benefit of either the USPS or the Contractor. Extensions of time for performance required under the terms and conditions of the contract provisions and clauses may be granted only to the extent that equitable time adjustments for the activity(ies) affected exceed the total float or slack along the channels involved at the time that Notice to Proceed was issued for the change. The contract provisions and clauses include those concerning Changes; Differing Site Conditions; Termination for Convenience or Default; Excusable Delays; or Suspensions and Delays.

PART 2 – PRODUCTS

NOT USED

PART 3 – EXECUTION

NOT USED

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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 USPS. The schedule must indicate the type of items (such as sample, shop drawings, and catalog cut) and include the scheduled dates of submittal. In preparing the schedule, adequate time (10 business days or more, exclusive of time in the mail) 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 list of all subcontractors, including subcontractor name, address, telephone number, fax number, and email address. The Contractor must 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 CD–Catalog Data

S–Sample PL–Spare Parts List

SD–Shop Drawing 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 must be given to the COR, as required under the terms and conditions of the contract provisions and clauses, including those concerning Changes. Four prints of all approved shop drawings must be given to the COR. 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 x 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
    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 are to be in .dwg and .pdf formats; .dwg files are to be generated from AutoCAD revision 12 or other revision level agreed to by USPS.

4. Documents other than drawings shall be provided in Microsoft Word format.

5. Interim project documentation may be provided to USPS electronically.

6. All final project documentation shall be provided to the USPS on a single CD or DVD.

1.3 EQUIPMENT ROOM LAYOUT DRAWINGS

A. The Contractor must prepare and submit equipment room layout drawings as required by the technical provisions, as well as for areas where equipment proposed for use could present interface or space difficulties. Room layout drawings must be submitted within 40 days after receiving a Notice to Proceed and must conform to the specified requirements for shop drawings. Submittals describing the various mechanical and electrical equipment items that are to be installed in the areas represented by the layout drawings must be assembled and submitted concurrently and must be accompanied by the room layout drawings. Room layout drawings must be consolidated for all trades, drawn to scale, and show all pertinent structural and fenestration features and other items, such as cabinets, that are required for installation and that affect the available space. All mechanical and electrical equipment and accessories must be shown to scale in the plan and must show the elevation or section of their installation positions. Ductwork and piping must be shown.

1.4 MATERIAL, EQUIPMENT, AND FIXTURE LISTS

A. When required by the technical provisions, lists of materials, equipment, and fixtures must be submitted by the Contractor in accordance with the requirements specified for shop drawings. The lists must be supported by sufficient descriptive material, such as catalogs, cuts, diagrams, and other data published by the manufacturer, as well as by evidence of compliance with safety and performance standards, to demonstrate conformance to the specification requirements. Catalog numbers alone are not acceptable. The data must include the name and address of the nearest service and maintenance organization that regularly stocks repair parts. No consideration will be given to partial lists submitted from time to time. Approval of materials and equipment is tentative, subject to submission of complete shop drawings indicating compliance with the Contract Documents.

1.5 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 4 copies submitted 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.

1.6 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 reproducible submittals stamped "A Action" or "B Action" to the Contractor, who is responsible for obtaining prints of them and 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.

1.7 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*.

1.8 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 below Schedule of Values. When applicable, a separate cost breakdown form must be submitted for each building. However, the total cost of site work for the facility must be included in the cost estimate breakdown for the Main Postal building. The number of items provided on the Systems Construction Cost Estimate Breakdown form is the minimum required. Additional subdivision of these items may be used by the Contractor.

B. Submit the construction cost breakdown after contract award to the COR.

C. Do not delete items from the Schedule of Values form. However, expand the schedule “Description of Work” as necessary to allow evaluation of work or to make partial payments.

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.

1.9 FIXED MECHANIZATION CONSTRUCTION COST ESTIMATE BREAKDOWN SUMMARY

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 estimate using the Fixed Mechanization Construction Cost Estimate Breakdown Summary indicated below. When applicable, a separate Cost Estimate Breakdown form must be submitted for each building. The number of items provided on the form is the minimum required. Additional subdivision of these items may be used by the Contractor.

B. Submit the Fixed Mechanization Construction Cost Estimate Breakdown Summary after contract award to the COR.

PART 2 – PRODUCTS

NOT USED

PART 3 – EXECUTION

NOT USED

END OF SECTION

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									
Division 03	**Concrete**									
3.0	Site Concrete									
3.1	Building Concrete									
Division 04	**Masonry**									
4.0	Masonry									
Division 05	**Metals**									
5.0	Structural Steel									
5.1	Steel Joists									
5.2	Steel Deck									

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				
5.3	Metal Studs									
5.4	Handrails & Railings									
Division 06	**Wood, Plastics and Composites**									
6.0	Rough Carpentry									
6.1	Finish Carpentry									
Division 07	**Thermal & Moisture Protection**									
7.0	Roofing System									
7.1	Wall Insulation & V.B.									
Division 08	**Openings**									
8.0	Doors & Frames									
8.1	Specialty & Grilles									
8.2	Impact Traffic Doors									
8.3	Storefronts									
8.4	Hardware									
8.5	Other Glazing									
8.6	Sectional Knockout Doors									
Division 09	**Finishes**									
9.0	Gypsum Board									
9.1	Tile									
9.2	Acoustical Ceiling									
9.3	Resilient & Carpet									
9.4	Painting									

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 10	**Specialties**									
10.0	Toilet Accessories									
10.1	Flagpoles									
10.2	Exterior Signage									
10.3	Interior Signage									
10.4	Lockers									
10.5	Wall and Door Protection									
10.6	Toilet Compartment									
Division 11	**Equipment**									
11.0	Dock Equipment									
11.1	Food Service Equipment									
Division 12	**Furnishings**									
12.0	Casework									
Division 13	**Special Construction**									
13.0	Metal Building Systems									
13.2	Vaults									
Division 14	**Conveying Equipment**									
Division 21	**Fire Suppression**									
21.0	Fire Sprinkler System									

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 22	**Plumbing**									
22.0	Plumbing									
Division 23	**Heating Ventilating and Air Conditioning (HVAC)**									
23.0	Duct Cleaning									
23.1	Air Handling Units									
23.2	Heating & Ventilation Units									
23.3	HVAC Pumps									
23.4	VAV Terminal Units									
23.5	Rooftop Units									
23.6	VRV Systems									
23.7	Unit Heaters									
23.8	Chillers									
23.9	Cooling Towers									
23.10	Water Treatment									
23.11	Controls Systems									
23.12	Ductwork and Duct Insulation									
23.13	HVAC Piping & Insulation									
23.14	Testing & Balancing, & Commissioning Assistance									
Division 25	**Integrated Automation**									
25.0	Building Automation System									
25.1	EEMS Integration									
Division 26	**Electrical**									

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				
26.0	Electrical Power									
26.1	Electrical Lighting									
Division 27	**Communications**									
27.0	Communications Systems									
Division 28	**Electronic Safety and Security**									
28.0	IDS System									
28.1	Robbery Countermeasure CCTV									
28.2	Investigative CCTV									
28.3	Physical Access Control System (PACS)									
28.4	Fire Alarm System									
28.5	Security CCTV									
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									
Division 33	**Utilities**									

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				
33.0	Utilities & Fees (off-site)									
33.1	Utilities (on-site)									
33.2	Electrical (site)									
	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		$ -	$ -	$ -	$ -	$ -		$ -	$ -

Schedule of Values Definitions

Facility:	Facility name and state.
Contractor:	General contracting company name.
Paving (off-site) #32.0:	Off-site improvements, such as streets.
Utilities (off-site) #33.0:	Off-site utility improvements, relocation of utilities and site fees.
Earthwork (develop.) #31.1:	Rough grading, removal of unsuitable material and importation of fill.
Earthwork (finish) #31.2:	Storm water systems, septic systems, and finish grading.
Electrical (site) #33.3:	Site lighting and related electrical work.
Paving #32.1:	Asphalt and concrete paving and striping.
Exterior Signage #10.2:	Exterior and building mounted signage.
Landscaping #32.3:	Soil treatment, landscaping, and irrigation systems.
Site Concrete #3.0:	Curbs and gutters, sidewalks, site pilings and retaining walls.
Building Concrete #3.1:	Foundations, building pilings, slab-on-grade, cast-in-place, and precast concrete.
Site Development:	Site construction costs that make the site usable and increase the value for the USPS and subsequent users. The prorated portion of General Conditions is included. This includes: Paving (off-site) #32.0, Utilities (off-site) #2.1, Site Clearing #31.0, Demolition #2.0 and Earthwork (development) #31.1
Site Improvement:	Site construction costs that are necessary for the construction of the project, but do not necessarily increase the value of the site for subsequent users. The prorated portion of General Conditions is included. This includes: Earthwork (finish) #31.2, Utilities (on-site) #33.1, Electrical (site) #33.2, Paving #32.1, Exterior Signage #10.2, Fences & Gates #32.2, Landscaping #32.3 and Site Concrete #3.0
Building Cost:	Construction costs that do not include Sitework costs. The prorated portion of General Conditions is included.

Schedule of Values

Facility:
FMS Project Number:
Contractor:
Date:

Item	Description of Work	Material	Labor	Total
Division 01	**General Conditions**			
1.1	Overhead			$ -
1.2	Profit			$ -
1.3	Bldg. Permits			$ -
1.4	Testing			$ -
1.5	Other			$ -
Division 02	**Existing Conditions**			
2.1	Demolition			$ -
Division 03	**Concrete**			
3.1	Site Concrete			$ -
3.2	Building Concrete			$ -
3.3	Other			$ -
Division 04	**Masonry**			
4.1	Masonry			$ -
Division 05	**Metals**			
5.1	Structural Steel			$ -
5.1	Other			$ -
Division 06	**Wood, Plastics and Composites**			
6.1	Carpentry			$ -
6.2	Other			$ -
Division 07	**Thermal & Moisture Protection**			
7.1	Roofing System			$ -
7.2	Wall Insulation & V.B.			$ -
7.3	Other			$ -
Division 08	**Openings**			
8.1	Doors & Frames			$ -
8.2	Specialty Doors			$ -
8.3	Windows			$ -
8.4	Other			$ -
Division 09	**Finishes**			
9.1	Floors			$ -
9.2	Walls			$ -
9.3	Ceilings			$ -

Item	Description of Work	Material	Labor	Total
9.4	Painting			$ -
Division 10	**Specialties**			
10.1	Signage			$ -
10.2	Other			$ -
Division 11	**Equipment**			
11.1	Dock Equipment			$ -
11.2	Other			$ -
Division 12	**Furnishings**			
12.1	Casework			$ -
12.2	Other			$ -
Division 13	**Special Construction**			
13.0	Metal Building Systems			$ -
13.2	Vaults			$ -
13.3	Other			$ -
Division 21	**Fire Suppression**			
21.0	Fire Sprinkler System			$ -
Division 22	**Plumbing**			
22.0	Plumbing			$ -
Division 23	**Heating Ventilating and Air Conditioning**			
23.0	Duct Cleaning			$ -
23.1	Air Handling Units			$ -
23.2	Heating & Ventilation Units			$ -
23.3	HVAC Pumps			$ -
23.4	VAV Terminal Units			$ -
23.5	Rooftop Units			$ -
23.6	VRV Systems			$ -
23.7	Unit Heaters			$ -
23.8	Chillers			$ -
23.9	Cooling Towers			$ -
23.10	Water Treatment			$ -
23.11	Controls Systems			$ -
23.12	Ductwork and Duct Insulation			$ -
23.13	HVAC Piping & Insulation			$ -
23.14	Testing & Balancing, & Commissioning Assistance			$ -
Division 25	**Integrated Automation**			
25.0	Building Automation System			$ -
25.1	EEMS Integration			$ -

Item	Description of Work	Material	Labor	Total
Division 26	**Electrical**			
16.0	Electrical Power			$ -
16.1	Electrical Lighting			$ -
16.2	Structured Wiring			$ -
16.3	Other			$ -
Division 27	**Communications**			
27.0	Communications Systems			$ -
Division 28	**Electronic Safety and Security**			
28.0	IDS System			$ -
28.1	Robbery Countermeasure CCTV			$ -
28.2	Investigative CCTV			$ -
28.3	EAS System			$ -
28.4	Fire Alarm System			$ -
Division 31	**Earthwork**			
31.0	Earthwork			$ -
Division 32	**Exterior Improvements**			
32.0	Paving			$ -
32.1	Landscaping			$ -
	Total	$ -	$ -	$ -

Schedule of Values

Facility:
FMS Project Number:
Contractor:
Date:

Item	Description of Work	Material	Labor	Total
Division 01	**General Requirements**			
1.1	Mobilization and Demobilization			$ -
1.2	Interior Protection			$ -
1.3	Taxes, Permits, Misc. Fees			$ -
1.4	Bonds			$ -
1.5	Allowance			$ -
1.6	Contractor 2-Year Guarantee			$ -
1.7	[other]			$ -
Division 02	**Existing Conditions**			
2.1	Existing Roof Removal and Disposal			$ -
2.2	Substrate Preparation Work			$ -
2.3	Steel and Wood Deck Re-securement			$ -
2.4	Removal and Disposal of Non-Friable ACM			$ -
2.5	[other]			$ -
Division 03	**Concrete**			
3.1	[other]			$ -
Division 04	**Masonry**			
4.1	Masonry Repair			$ -
4.2	[other]			$ -
Division 05	**Metals**			
5.1	[other]			$ -
Division 06	**Wood, Plastics, and Composites**			
6.1	Wood Blocking, Nailers, and Plywood			$ -
6.2	[other]			$ -
Division 07	**Thermal and Moisture Protection**			
7.1	Roofing Repairs			$ -
7.2	Underlayment			$ -
7.3	Roof Insulation and Cover Board			$ -
7.4	Roofing Membrane, Flashing & Accessories			$ -
7.5	Sheet Metal Flashing			$ -
7.6	Sealant			$ -
7.7	[other]			$ -
Division 09	**Finishes**			

Item	Description of Work	Material	Labor	Total
9.1	Painting			$ -
9.2	Interior Ceiling Tile Replacement			$ -
9.3	[other]			$ -
Division 22	**Plumbing**			
22.1	Miscellaneous Plumbing Work			$ -
22.2	[other]			$ -
Division 23	**Heating, Ventilating, and Air Conditioning**			
23.1	Misc. HVAC Equipment and Ductwork Work			$ -
23.2	[other]			$ -
Division 26	**Electrical**			
26.1	Miscellaneous Electrical Work			$ -
26.2	LP Displacement, Re-installation & Re-certification			$ -
26.3	[other]			$ -
Division 28	**Electronic Safety and Security**			
28.1	Security System/Fire Alarm System Work			$ -
28.2	[other]			$ -
	Total	$ -	$ -	$ -

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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 the 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 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 and hydrochlorofluorocarbons in accordance with 1.4 (B) below.

4. Environmental Compliance Plan must document National Environmental Policy Act (NEPA) compliance by describing mitigation measures to address environmental concerns/sensitive receptors identified in the 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).

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 the technician and the 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 individuals 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 that the Contractor shall meet OSHA's EAP requirements in a verbal communication to all employees.

B. The USPS 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 hazard communication, labeling, and emergency response 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 1 percent as defined by U.S. Environmental Protection Agency (EPA) 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

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Certificate of Understanding

This *Safety and Health Guide for Contractors* was developed by the United States Postal Service (USPS) to provide guidance for contractors hired to perform repair, alteration, renovation, demolition, equipment installation, and other work requiring access to USPS-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 USPS. 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 USPS 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 USPS Representative

Printed Name: Contact Number:

Signature: Date:

Safety Representative (If required by COR)

Printed Name: Contact Number:

Signature: Date:

USPS CO, COR, or Project Manager

Printed Name: Contact Number:

Signature: Date:

Maintain a copy of this signed form in the USPS 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 USPS requirements 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 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 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 USPS 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 Barricades 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 USPS EAP 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 USPS fire extinguishers from being immediately accessible and usable. If a system must be impaired by a scheduled shutdown, notify the appropriate USPS Representative and do not proceed without USPS authorization.
Hazard Communication	Inform the USPS 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 USPS will make available to you MSDSs for hazardous materials the USPS uses in the Contractor work area.
Hazardous Materials	Follow all OSHA requirements regarding hazardous materials. Hazardous materials include 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 more than 5 gallons in capacity. Immediately report all hazardous material releases ("spills"), regardless of how small or where they occur, to the designated USPS Representative. Releases include solids, liquids, and gases.
Hot Work	Do not begin any hot work until a USPS Qualified Person has completed and signed a USPS 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 USPS 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 where 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 USPS 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 Lead-Based Paint (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 mailboxes 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 USPS lockout/tagout program. If you encounter a USPS lockout/tagout device that prevents the continuation of work, do not make any attempts to remove, tamper with, or bypass the device. Contact a USPS Maintenance Official and make arrangements to have the lockout device removed in accordance with USPS 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 moving parts and power transmission apparatus, pinch points, electrical contact, and hot surfaces. Do not use machine surfaces as work platforms. Contact the designated USPS 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 USPS 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 USPS Hazard Communication Program and chemical prohibition policies. Do not use on postal property any of the chemicals prohibited by EPA unless a USPS 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 USPS Representative before performing such actions, provide appropriate alternative means of egress, and communicate 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 USPS 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 USPS evacuation procedures. ▪ Immediately contact the designated USPS 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 USPS 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 USPS 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 U.S. 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.

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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 the 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. INDEPENDENT TESTING AND INSPECTION LABORATORY: Submit the following.

1. Name

2. Address

3. Telephone number

4. Name of fulltime 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. Should manufacturer's published instructions conflict with Contract Documents, request clarification from COR before proceeding.

C. 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.

D. Have persons who are thoroughly qualified and trained in their respective trades perform work by, to produce workmanship of specified quality.

E. 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 the 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 the Contractor of the obligation to perform work in accordance with the requirements of Contract Documents.

B. Quality Assurance:

1. Comply with the requirements of all applicable American Society for Testing and Materials (ASTM) standards.

2. Laboratory: Must be authorized to operate in state in which project is located.

3. Laboratory Staff: Must maintain a full-time registered Engineer on staff to review services.

4. Testing Equipment: Must be 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 Contractor.

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 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 ensure materials and equipment conform to Contract requirements

4. Examination to ensure 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: Perform daily, and more frequently as necessary, to ensure 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. This shall 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 among 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 the COR a written report of each test or inspection signed by the Contractor Quality Control Representative performing the inspection within 2 days of inspection.

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 referencing specification section

6. Description of inspection, 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. There is no requirement to report deficiencies corrected the same day they were 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 the Contractor to the 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

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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 and that are undamaged and new at the 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 USPS prior to award of the contract.

2. During the course of the work a product becomes unavailable and the Contractor does all of the following:

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 the product specified.
b. Will provide the same guarantee for the substitution that it would for the product specified.
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 USPS 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 ensure 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 using 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 the elements above ground, under cover in weathertight enclosure, with ventilation adequate to prevent condensation. Maintain temperature and humidity within the range required by manufacturers' 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 using 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.

PART 2 – PRODUCTS

NOT USED

PART 3 – EXECUTION

NOT USED

END OF SECTION

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SECTION 017300–EXECUTION

PART 1 – GENERAL

1.1 LAYOUT OF WORK

A. The Contractor must lay out its work from USPS-established baselines 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 USPS. 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 USPS 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 USPS operations. Contract work that cannot be performed during normal USPS 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, the 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 on 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 in *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 the manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property, or that might damage finished surfaces.

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 petrochemical 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 the 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 cannot 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 USPS property and these materials should be stored as directed by COR.

PART 2 – PRODUCTS

NOT USED

PART 3 – EXECUTION

NOT USED

END OF SECTION

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SECTION 017419–CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

PART 1 – GENERAL

1.1 SUMMARY

A. This 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 the USPS 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 016000–Product Requirements: Substitutions

4. Section 017704–Closeout Procedures and Training: Record Submittals

5. 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 EPA and the International Agency for Research on Cancer.

G. Interior Final Finishes: Materials and products that will be exposed at interior, occupied spaces (includes 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 the manufacturer's packaging (includes carpets, resilient flooring, ceiling tiles, and insulation).

J. Sediment: Soil and other debris that have 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 the following:

1. Procedures for recycling/reuse program

2. Schedule for application of interior finishes

   Revision and resubmittal of the Solid-Waste Management and Environmental Protection Plan as required by the USPS (approval of the Contractor's plan will not relieve the Contractor of responsibility for adequate and continuing control of pollutants and other environmental protection measures)

3. 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 the following:

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

NOT USED

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
        (1) Wood
        (2) Debris
        (3) Glass
        (4) Clay brick
        (5) Paper/cardboard
        (6) Plastic
        (7) Gypsum
        (8) Paint
        (9) Carpet
        (10) Others as appropriate

B. Recycling/Reuse Centers: Contact state and/or local governmental solid-waste offices, 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 that 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 Reuse Programs: Identify local and regional reuse programs, including nonprofit 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 networks, 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. 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. Sites requiring donated materials vary. Contact the national hotline at 800.HABITAT.

E. Rebates, tax credits, and other savings obtained for recycled or reused materials accrue to the 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 the USPS, on 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: temporary facilities and controls
b. Demolition and salvage operations: as specified in Section 024113–Selective Structure Demolition
c. Disposal operations for demolished and waste materials that are not identified to be salvaged, recycled, or reused as follows:

(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 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:

a. Comply with requirements of the National Pollutant Discharge Elimination System and the State Pollutant Discharge Elimination System.
b. Oily Substances: Prevent oily or other hazardous substances from entering the ground, drainage areas, or local bodies of water. 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, topsoil, and landforms without permission from the USPS.

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. 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 workspace with USPS employees. If chemicals are authorized for use, store volatile liquids, including fuels and solvents, in closed containers. Properly maintain equipment to reduce gaseous pollutant emissions.
c. Interior final finishes: schedule construction operations involving wet products prior to packaged dry products to the greatest extent possible in accordance with the USPS-approved Solid Waste Management and Environmental Protection Plan.
d. Temporary ventilation (temporary facilities and controls) as follows:

(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°F minimum to 90°F maximum continuously during the ventilation period. Do not ventilate within limits of work unless otherwise approved by the COR.

5. Pre-occupancy Ventilation: After final completion and prior to initial occupancy, provide adequate ventilation for a minimum of 5 days. Preoccupancy ventilation procedures are as follows:

a. Use supply air fans and ducts only.
b. Temporarily seal exhaust ducts.
c. Temporarily disable exhaust fans.
d. Provide exhaust through operable windows or temporary openings.
e. 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.
f. After pre-occupancy ventilation and prior to final testing and balancing of HVAC system, replace air filters and make HVAC system fully operational.

6. Fish and Wildlife Resources: Manage and control construction activities to minimize interference with,

disturbance of, and damage to fish and wildlife.

7. Noise Control: Perform demolition and construction operations to minimize noise. Perform noise-producing work during less sensitive hours of the day or week as directed by the USPS.

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

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

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

END OF SECTION

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SECTION 017704–CLOSEOUT PROCEDURES AND TRAINING

PART 1 – GENERAL

1.1 MANUALS

A. Purpose: Operations and Maintenance (O&M) manuals are for the training of, and use by, USPS employees in the O&M 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. Landscaping
2. Roof system
3. Doors
4. Security system
5. Fire protection
6. Plumbing systems
7. Mechanical systems
8. Electrical systems
9. Miscellaneous building equipment and systems
10. Mechanization (for requirements for mechanization maintenance manuals, see Mechanization Specification M-5000)

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 O&M 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 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, but 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

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.”

b. “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.”

(1) 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.

c. 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) Landscaping

(i) Irrigation system

(ii) Lawns and grasses

(iii) Exterior plants

(iv) Plant maintenance

(b) Roof System

(i) Roof and flashing type

(ii) Local inspection (frequency and what is included)

(iii) Maintenance (when manufacturer performs if USPS performs what methods compatible materials, etc.)

(c) Doors

(i) Overhead coiling doors

(ii) Folding closures

(iii) Sectional overhead doors

(iv) Impact traffic doors

(v) Automatic entrance doors

(vi) Specialized hardware

(d) Security Systems

(i) CCTV system

(ii) Intrusion detection

(iii) Electronic article surveillance

(iv) Access control

(e) Fire Protection System

(i) Water supply and distribution

(ii) Exterior fire hydrants

(iii) Sprinklers

(iv) Fire department connections

(v) Fire extinguishers

(vi) Exit signs

(f) Plumbing Systems

(i) Potable water

(ii) Domestic hot water

(iii) Roof and sanitary drains

(g) Mechanical Systems

(i) Space conditioning

(ii) Heating

(iii) Central chilled water and distribution

(iv) HVAC instrumentation and controls

(h) Electrical Systems

(i) Incoming service

(ii) Electrical power distribution

(iii) Lighting and lighting controls

(iv) Fire alarm

(v) Emergency lighting unit

(i) Miscellaneous Building Equipment

(i) Postal parcel lockers

(ii) Floor mats

(iii) Dock equipment

(iv) Window treatments

(v) Elevators

(vi) Scales

(vii) Dust collectors

(viii) Vehicle maintenance equipment

2. Part II. Operating Sequence and Procedures

a. Contents: each chapter must describe the procedures necessary for USPS 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 warmup 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.

(2) If preliminary settings differ for different modes of operations, give procedures for each mode.

(3) 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.

(4) 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.

(5) 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 USPS 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.

c. Preventive Maintenance

(1) 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).

(2) Provide instruction and schedules for all routine maintenance cleaning and inspection, with recommended lubricants.

(3) 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:

(a) Motors

(b) Controls

(c) Filters

(d) Heat exchangers

(e) Truck restraints

(4) 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.

d. Corrective Maintenance

(1) Corrective Maintenance: Corrective maintenance instructions must be predicated on 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 the parts list last.

(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 labeled 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 consist of a listing of safety precautions and instructions to be followed before, during, and after repairs or adjustments are made or routine maintenance is performed.

e. 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.
f. Special Maintenance: Provide information of a maintenance nature covering warranty items that have not been discussed elsewhere.
g. Shop Drawings: Provide a copy of all approved shop drawings covering approval of equipment for the project with the manufacturers' brochures.
h. 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.
i. Warranty: Include a copy of the special or extended warranty in the O&M manual.

E. Submittal, in both hard and electronic DVD or CD-ROM format, should be as follows:

1. Preliminary Submittal: Two draft copies of the completed manuscript for items in this outline must be submitted to the COR for review within 30 days after approval of equipment to be provided. One copy will be returned to the Contractor within 15 days after submittal and, if required, must be revised and resubmitted within 15 days.

2. Final Submittal: Four complete sets of manuals must be furnished to the COR no later than 30 days 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 USPS personnel in the O&M 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 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- 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 USPS personnel in the O&M 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 USPS 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) 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)
A.	Roofing	8
B.	Special doors	8
C.	Dock equipment	8
D.	Security equipment	8
E.	Heating plant (covers heat-generating equipment, such as heat exchangers, boilers, and burners; electric resistance heating; and related equipment, where applicable (including combustion testing), together with associated operation and safety controls)	12
F.	Cooling plant (covers the refrigeration plant, cooling tower (including water treatment), and related equipment, together with associated operating and safety controls)	14
G.	Ventilation (covers air-handling units with heating and cooling coils, fans, and all other air-handling equipment, together with associated operating and limit controls)	8
H.	Overall control system (covers central control center, coordinating respective controls of heating, cooling, and ventilation systems and shows how these controls work together to provide an integrated overall control of the complete air-conditioning system, both heating and cooling, as well as all other utility control systems)	16
I.	Electrical system (covers all building services, lighting, lighting controls, and intercommunications, and security system)	32

J. Elevators (covers operation of the different types installed, demonstrations in the machine room on the various operating and control equipment installed, and explanation of the use of the electric circuit diagrams [of sufficient size] to ensure proper operation and assistance in troubleshooting)

12

K. Piping and plumbing (includes domestic water supply, storm and sanitary drainage systems, cold-water supply systems, sprinkler systems, and the like) 20

L. Miscellaneous (includes vehicle maintenance equipment, fire protection and alarm equipment, dust collection systems, compressed air systems, automatic door operators, dock levelers, truck scales, data collection center, and all other equipment not specifically covered above) 20

M. Mechanization

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 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*, Contractor-submitted 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*, Contractor-submitted transferable guarantees and warranties for all 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 and Facility Accessibility Survey Report

6. Material Safety Data Sheets

7. Signed and sealed Contractor Release of Claims

PART 2 – PRODUCTS

NOT USED

PART 3 – EXECUTION

NOT USED

END OF SECTION

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SECTION 024113–SELECTIVE SITE DEMOLITION

PART 1 – GENERAL

1.1 SUMMARY

A. Section includes the following:

1. Demolition of designated site structures, retaining walls, fences, and foundations
2. Demolition and removal of pavement, curbs and gutters, drainage structures, drainage pipes, utilities, site signs, and landscaping
3. Disconnecting and capping or removal of identified utilities
4. Removal of underground tanks and pipes
5. Filling voids in subgrade created as a result of removal or demolition
6. Disposal of demolished materials

B. Related documents include the Contract Documents as defined in Section 011000–Summary of Work (and they 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 include the following:

1. Section 013543–Environmental Procedures; Recycling and Reuse of Waste Material
2. Section 017419–Construction Waste Management and Disposal

1.2 QUALITY ASSURANCE

A. Regulatory Requirements

1. Conform to applicable local code for demolition of structures, safety of adjacent buildings and structures, dust control, and runoff control.
2. Obtain required permits and licenses from authorities having jurisdiction. Pay associated fees including disposal charges.
3. Notify affected utility companies before starting work and comply with utility company requirements.
4. Do not close or obstruct roadways, sidewalks, or fire hydrants without permits.
5. Barricade and mark hazards as necessary.
6. Conform to applicable regulatory procedures when discovering hazardous or contaminated materials. Notify the Contracting Officer immediately on discovery of hazardous or contaminated materials. Do not commence removals, remediation, or abatement without authorization from the Contracting Officer.

1.3 PROJECT CONDITIONS

A. Existing Conditions

1. Structures indicated for demolition will no longer be used and be vacated prior to start of work.

2. USPS assumes no responsibility for condition of structures to be demolished.

3. Unless otherwise indicated in the Contract Documents or specified by the Contracting Officer, remove items of salvageable value to contractor from project site and structure. Storage or sale of removed items on project site is not permitted.

4. Burning or fires of any nature is not permitted.

5. Do not bring explosives on-site without written approval of authorities having jurisdiction. Such written approval will not relieve the Contractor of total responsibility for injury to persons or for damage to property.

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:

B. 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.

C. LEED Submittals:

1. Product data and statements for credits being considered.

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

C. material. Provide lumber dressed on at least 2 edges and one side for tight fit.

D. 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. Water-stops (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 affected 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 water-stops 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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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: None

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 Non-absorptive 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 a 50-blow Marshall complying with ASTM D 1559 of 1000 pounds with a flow between 8 and 16. The Design Mix shall be within sieve analysis and bitumen ranges below:

G. 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.

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 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 pavements 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.
      1. Thickness: ASTM D 3549; Thickness shall not be less than thickness specified on Drawings.
      2. Surface Smoothness: Testing shall be performed on the finished surface of each asphalt paving course using 1- 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:
    1. Bulk Specific Gravity of Paraffin-Coated Specimens: ASTM D 1188, minimum one core per 20,000 square feet.
        a. Standard Duty Areas: Minimum 3 cores.
        b. Heavy Duty Areas: Minimum 3 cores.
    2. Bulk Specific Gravity Using Saturated Surface-Dry Specimens: ASTM D 2726, minimum one core per 20,000 square feet.
        a. Standard Duty Areas: Minimum 3 cores.
        b. Heavy Duty Areas: Minimum 3 cores.

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 PracticeMSP-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.

B. LEED submittals:

1. Product data and statements for credits being considered.

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 fulltime 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.

1.6 ENVIRONMENTAL REQUIREMENTS

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, below 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

A. 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.

B. 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.

C. 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. Tilt-up: 4,000 psi.
5. All concrete exposed to weather shall be air entrained (ASTM C260).
6. All concrete shall be normal weight except as noted above.

D. Durability: Conform to ACI 301.

1. All concrete exposed to potentially destructive weathering, such as freezing and thawing, or to de-ice chemicals is to be air-entrained, percent.,
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.

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

F. 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 nosing's, 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 reinforcing bars. No concrete that has partially hardened or been contaminated by foreign materials shall be deposited in the work
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
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.
8. 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
4. slabs, walls, decks, conduits, and channels as shown on the plans or approved by the Engineer.
5. 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.
6. 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.
7. 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.
8. 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.
9. 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.
10. 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. Slabs shall be placed using vibrating screed.
3. 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.
4. Concrete shall not be placed until the previous layer has been vibrated.
5. 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. Hardener:

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.

3. 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.

d. The Testing Laboratory shall assess and report floor flatness and levelness in accordance with the requirements of this specification.

e. 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

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SECTION 111300–LOADING DOCK EQUIPMENT

PART 1 – GENERAL

1.1 SUMMARY

A. This section includes the following:

1. Dock bumpers
2. Dock seals
3. Air-powered pit-type dock levelers
4. Hydraulic edge-of-dock levelers (flip ramp)
5. Truck restraints with integrated control panel and automatic light communication package
6. Manual wheel chocks
7. Dual function, scissors-type dock lift/dock leveler

B. Related documents the Contract Documents, as defined in Section 011000–Summary of Work and which 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 include Section 017704–Closeout Procedures and Training.

1.2 REFERENCES

A. American National Standards Institute (ANSI)

1. ANSI MH29.1–Safety Requirements for Industrial Scissors Lifts
2. ANSI MH30.1–Loading Dock Levelers and Dock Boards
3. ANSI MH30.3–Vehicle Restraining Device

1.3 SUBMITTALS

A. Section 013300–Submittal Procedures (procedures for submittals)

1. Product Data: Indicate unit dimensions, and details of construction materials and finish, installation details, method of anchorage, roughing-in measurements, and accessories.
2. Shop Drawings: Indicate required opening dimensions, tolerances of opening dimensions, placement dimensions, and perimeter conditions of construction.
3. Assurance/Control Submittals:
   a. Test Reports: Report from approved Independent Testing Agency indicating compliance of Dock Leveler with requirements of ANSI MH30.1, Scissors Lift with ANSI MH29.1, and Vehicle Restraining Device with ANSI MH30.3.
   b. Certificates: Manufacturer's certificate that Products meet or exceed specified requirements.
   c. Qualification Documentation: Submittal of documentation of experience indicating compliance with specified qualification requirements.

B. Section 017704–Closeout Procedures and Training (procedures for closeout submittals)

1. O&M Data: O&M instructions and parts lists

2. Training Manuals: Complete set of all equipment training manuals

3. Submittal of written special warranty with forms completed in USPS name and registered with manufacturer as specified in this section

1.4 QUALITY ASSURANCE

A. Dock levelers must conform to requirements of ANSI MH30.1.

B. Scissor lifts must conform to requirements of ANSI MH 29.1.

C. Vehicle-restraining devices must conform to requirements or ANSI MH30.3.

D. Qualifications

1. Manufacturer: company specializing in manufacturing products specified with minimum of 20 years of documented experience.

2. Installer: Company specializing in performing the Work of this section with minimum of 5 years of documented experience.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Section 016000–Product Requirements: Transport, Handle, Store, and Protect Products

PART 2 – PRODUCTS

2.1 DOCK BUMPERS

A. Dock Bumpers at Dock Leveler Locations

1. Laminated rubber, ozone resistant, with two 3/4-inch tie rods and 3/8-inch steel angle at both ends

2. Thickness from wall, vertical height, width, and profile of bumpers indicated on Drawings

3. Pre-drilled, countersunk mounting holes

B. Dock Bumpers at Non-Leveler Locations

1. Molded rubber, ozone resistant, nylon or polyester reinforced, minimum Shore A Durometer of 80, tensile strength of 950 psi to 1,050 psi

2. Thickness from wall, vertical height, width, and profile of bumpers indicated on Drawings

3. Pre-drilled, countersunk mounting holes

C. Attachment hardware: 3/4-inch diameter galvanized bolts and L-shape anchor rods cast into concrete

2.2 DOCK SEALS

A. Manufacturers/Models

1. Blue Giant: BG-200 Head Curtain Dock Seal

2. Chalfant: 101 Curtain Dock Seal

3. Kelley: DSH-102-WP4-WF with head curtain

4. McGuire: TS103 with head curtain

5. Nordock: FP Series with head curtain

6. NOVA: FP Series with head curtain

7. Pioneer: PF Series with head curtain

8. Rite-Hite: Model 1D3C self-locking head curtain

9. Serco: S-600 Series with head curtain

B. Components

1. Fixed side pads: 12-inch width, length equal to clear opening height, maximum 12-inch projection, square profile

2. Fixed head pad with curtains: 24-inch height, length 2 feet longer than clear opening width, maximum 12-inch projection (head pads accommodate trucks from 12 feet to 13 feet, 6 inches)

3. Shelters: Soft-sided dock shelter with flexible side supports and curtains able to withstand trailer impact for dock doors wider than 8 feet

4. Wear pleats: 12-inch-wide to comply with tear strength and abrasion resistance of Federal Standard 191 (pleats installed at 4-inch spacing)

5. Effective seal for trailers ranging in height from 12 feet to 13 feet, 6 inches off pavement, based on door size, dock height, and driveway approach

6. Pad, shelter, and wear pleat fabric to be minimum of 40-ounce vinyl

7. Fabric color: Black

C. Warranty: 2-year parts and labor

2.3 AIR-POWERED PIT-TYPE DOCK LEVELERS

A. Manufacturers/Models

1. Blue Giant: AB Series

2. Kelley: AFX Series, with two maintenance struts

3. Nordock: AD–USPS, with two maintenance struts

4. Poweramp: AP Series, with two maintenance struts

5. Rite-Hite: RHA 4002

6. Serco: AB Model, with two maintenance struts

B. Description

1. Operation: power-activated push button through full working range

2. Deck Width: 6 feet

3. Deck Length: VIF with additional VIF lip

4. Operating Range: Minimum 12 inches above to minimum 10 inches below dock level

5. Capacity: ANSI MH14.1, 1987, minimum 29,000 pounds

6. Dock to Truck/Trailer Cycle Time: Maximum 30 seconds

7. Leveler Electrical Requirements: Coordination of wiring requirements and current characteristics with building electrical and emergency power systems

C. Operation

1. When pressure is applied to push button, leveler platform rises pneumatically through a high-volume, low-pressure industrial fan motor and PVC lifting bag system.

2. Leveler falls slowly to truck bed when button is released.

3. Leveler lip automatically extends onto truck and is yieldable.

4. A single push-button controls both platform and lip operations.

D. Safety Features

1. Automatic safety device to prevent a drop beyond dock level when leveler is above dock and below dock stops when leveler is below dock level

2. Maintenance struts to withstand 10,000 pounds of fork truck roll-on, capable of accepting OSHA lockout/tagout pad locks with the lockout/tagout instructions prominently displayed in durable fashion, and one of following:

   a. Two outbound maintenance struts secured to the leveler, to support leveler platform with an additional integral maintenance strut for separate lip support
   b. One central maintenance strut supporting both the leveler and the lip for maintenance purposes

3. Dock safety gate:

   a. Blue Giant: Loading Dock Gate
   b. Kelley: Dock-Guard Safety Gate
   c. Nordock: Fall-Stop Safety Barrier Gate
   d. Rite-Hite: Dok-Guardian
   e. Serco: Dock Impact Barrier

E. Warranty

1. Rated in capacity to match project application, or a minimum of ANSI MH14.1, 1987, and provide a minimum of 10-year parts and labor warranty from the manufacturer on all major structural components such as front hinge assembly, front hinge pins, platform assembly, rear hinges, rear hinge pins, subframe assembly, and working range toe guards

2. Minimum 5-year parts and labor warranty from the manufacturer on all major power-activated lifting mechanisms such as air hoses, fittings, motors, lifting bag assembly, etc.

2.4 HYDRAULIC EDGE-OF-DOCK DOCK LEVELERS (FLIP RAMP)

A. Manufacturers/Models

1. Blue Giant: MD-CH Series
2. Chalfant: HED 66
3. Kelley: KH Series
4. McGuire: HED 6620.
5. Nordock: EFH–Full Hydraulic
6. Rite-Hite: RHE 3 Hydraulic
7. Serco: SH Series.

B. Description

1. Operation: hydraulic
2. Deck width: 30 inches
3. Deck length: 66 inches
4. Operating range: 5 inches above or below dock level
5. Capacity: 20,000-pound minimum
6. Toe guards: full range
7. Lip: 17 inches

2.5 TRUCK RESTRAINTS WITH INTEGRATED CONTROL PANEL AND AUTOMATIC LIGHT COMMUNICATION PACKAGE

A. Truck Restraint

1. Manufacturer/model as basis for design: Kelley Star 4 Vehicle Restraint https://kelleydocksolutions.com/exterior-equipment/trailer-restraints/trailer-restraint-systems/star4-vehicle-restraint/

2. Distributors

   a. Alta Material Handling (Long Island); 37th Street, New York, NY 11101; Steve LoPiccolo, 347.531.0007, steven.lopiccolo@altg.com
   b. Mt. Zion Material Handling Equipment; 165 South Memorial Highway, Trucksville, PA 18708; Jeff Vanesko, 570.388.4001, jeffv@mtzionmh.com
   c. MHP Corp-E Syracuse; 6601 Joy Road East, Syracuse, NY 13057; Scott Minich, 800.634.9364, sales@mhpcorp.com
   https://kelleydocksolutions.com/distributor-directory-new

3. Description: electrically operated, non-impact, restraint device designed to engage trailer's rear-impact guard and hold truck at loading dock

4. Operation: restraint activated and released at inside-mounted integrated control panel (sensor bar signals contact of hook with the rear impact guard of trailer)

5. Restraining Capacity: 32,000-pound minimum

6. Mounting: Manufacturer's standard concrete anchor bolts and reinforcing plate for field mounting to concrete dock face

B. Integrated Control Panel and Automatic Light Communication Package

1. Manufacturer/model as basis for design: Kelley Master Control Panel and red/green light LED communication system

2. Description: single control panel at each dock position with individual push button operation to control the truck restraint, leveler, and LED dock light and overhead door (panel communicates with automatic interior and exterior LED signal lights)

   a. Panel: NEMA 12, automatic motor starter, thermal overload, 2-amp control breaker with reset capability (all components individually circuit protected)
   b. Panel Graphics: Clear text and illustrative instructions adjacent to push buttons, and mushroom-style stop button that ceases all dock devices when depressed and does not require continuous pressure
   c. Selector Switch: Red rotating on/caution switch to maintain caution mode during non-engagement periods
   d. Keyed Override: Panel includes removable key override for trucks with damaged or missing ICC bars (in override mode, audible alarm is silenced, outside lights remain red, and inside lights show caution)
   e. Caution Sign: Single surface-mounted exterior sign with forward-facing and reversed letters
   f. Signal Lights: set of illuminated exterior and interior LED signal lights to indicate device's status to both controller and truck driver
   g. Alarm: Audible alarm indicating that truck restraint did not engage trailer's rear-impact guard

3. Operation:

Equipment	State 1	State 2	Condition Required for State 2
Outside signal light	RED	GREEN	State 2; truck can enter or leave dock position: Truck Restraint in disengaged position. Leveler in neutral position. Overhead door fully closed.
Inside signal light	RED	GREEN	State 2; truck may be loaded or unloaded: Truck Restraint has engaged trailer's rear-impact guard. Leveler lip extended onto truck bed. Overhead Door fully open.
Horn	OFF	ON	State 2; horn sounds: Truck Restraint did not engage trailer's rear-impact guard. Keyed override required.
Leveler	NOT OPERABLE	OPERABLE	State 2; leveler operates: Truck Restraint has engaged trailer's rear-impact guard. Overhead Door fully open.
Truck restraint	ENGAGED	DISENGAGED	State 2; Truck Restraint has disengaged from trailer's rear-impact guard. Leveler in neutral position. Overhead Door fully closed

2.6 MANUAL WHEEL CHOCKS

A. Fabric-reinforced laminated rubber with handle; two per truck position

B. Accessories

1. Wall-mounted storage bracket; two per truck position
2. 15-foot galvanized chain; two per truck position
3. Wall-mounted sign (“CAUTION–CHOCK WHEELS”)

2.7 DUAL-FUNCTION SCISSORS-TYPE DOCK LIFT/DOCK LEVELER

A. Manufacturers/models: Rite Hite (Dual-Dock Series)

B. Description

1. Stationary single-scissor-type hydraulic dock lift/hydraulic dock lever designed for permanent, recessed installation in preformed concrete pit
2. Self-contained electric hydraulic power unit for raising and lowering of the lift, controlled from a remotely located push-button station
3. Rated lifting capacity for scissors lift operation: ANSI MH14.1, 16,000-pound minimum
4. Roll-Over Capacity: 10,000 pounds
5. Vertical Travel for Scissors Lift Operation: Outside pavement to dock level
6. Operating Range for Leveler Operation: 12 inches above to 20 inches below dock level
7. Travel Speed: 8 feet per minute up or down
8. Lowered Height: Maximum 8 inches
9. Travel Alarm with Bell Volume Control
10. Safety Barrier: At pit perimeter with two permanent sections of rail approximately 4 feet high spanning the length of the pit, and a removable vertical rise gate, approximately 4 feet high, at the front entry to the pit
11. Communication Package: Inside and outside communication lights and signs
12. Front Pit Enclosure: Extends from side to side and automatically extends or contracts with the height of the lift platform
13. Platform Size: As indicated on drawings

C. Electrical Requirements: Coordination of wiring requirements and current characteristics with building electrical and emergency power systems

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. (Work should not be proceeded with until unsatisfactory conditions have been corrected.)

D. By beginning work, acceptance by Contractor of conditions and assumption of responsibility for correcting unsuitable conditions encountered at no additional cost to the USPS

3.2 INSTALLATION

A. Dock Bumpers: Install in accordance with manufacturer's instructions. Set square and level.

B. Dock seals: Install in accordance with manufacturer's instructions. Set square and level.

C. Signage: Install in accordance with manufacturer's instructions. Set square and level.

D. Air-powered Pit-Type Dock Levelers: Install unit in prepared opening in accordance with manufacturer's instructions. Set square and level and anchor unit securely.

E. Hydraulic Edge-of-Dock Levelers (Flip Ramp): Install unit in prepared opening in accordance with manufacturer's instructions. Set square and level and anchor unit securely.

F. Truck Restraints With Integrated Control Panel and Automatic Light Communication Package: Install in accordance with manufacturer's instructions. Set restraint device square and level and anchor securely. Connect control panel wiring with truck restraint, leveler, LED dock light, and overhead door sensor.

G. Manual Wheel Chocks: Wall mount storage brackets at each truck position, attach chains to brackets and chocks. Mount signs as directed.

H. Touch up all field welds with primer.

3.3 ADJUSTING

A. Adjust all products for smooth and balanced operation.

3.4 OPERATING INSTRUCTION

A. Section 017704–Closeout Procedures and Training: procedures for training

B. Provide on-site instruction to review the operation of all products and detail any common troubleshooting or maintenance that is required to ensure normal operation.

C. Provide one complete set of equipment operating, installation, and programming manuals, and warranties that will remain at the installed location.

END OF SECTION

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SECTION 260500–COMMON WORK RESULTS FOR ELECTRICAL

PART 1 – GENERAL

1.1 SUMMARY

A. This section includes the following:

1. Basic electrical methods
2. Grounding and bonding
3. Hangers and supports
4. Electrical identification
5. Motor starters, controls, and connections to mechanical equipment
6. Electrical system testing and inspection

B. Related documents include the Contract Documents, as defined in Section 011000–Summary of Work, and which 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 include the following:

1. Section 260519–Low-Voltage Electrical Power Conductors and Cables
2. Section 260533–Raceway and Boxes for Electrical Systems
3. Section 262416–Panelboards
4. Section 260800–Commissioning of Electrical Systems
5. Section 262200 – Secondary Dry Type Transformers

1.2 REFERENCES

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

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

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

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

1.3 Submittals

A. Section 013300–Submittal Procedures: Procedures for submittals

1. Product Data: Grounding connections
2. Assurance/Control Submittals

Electrical system test reports: Submit report including the below directly to USPS Project Manager from Testing Laboratory, with copy to Contractor. Prepare reports in conformance with Section 014000–Quality Requirements.

a. Summary of project
b. Description of equipment tested
c. Description of test
d. Test results
e. Conclusions and recommendations
f. Appendix, including appropriate test forms
g. List of test equipment used and calibration date
h. Signature of responsible Testing Laboratory Officer

B. Certificates: Manufacturer's certificate that each Product specified meets or exceeds specified requirements

C. Qualification Documentation: Submission of documentation of experience indicating compliance with specified qualification requirements

D. Section 017704–Closeout Procedures and Training: Procedures for closeout submittals

Project Record Documents: Accurately record the locations of components.

1.4 QUALITY ASSURANCE

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

B. Regulatory Requirements

1. Products: Listed and classified by the UL 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 the following:

a. The National Electrical Code (NFPA 70)
b. NEMA
c. Standards of NFPA (NFPA 72, 90A and 101).
d. UL
e. Occupational Safety and Health Agency standards
f. The International Existing Building Code
g. The International Electrical Code
h. ASHRAE Standard 90.1
i. 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 but that are required for any device or system to produce a complete and operative system must be furnished and installed.

B. Exact location of equipment 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 where practical.

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 six 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 (three phase conductors, one neutral conductor, and one 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 USPS Project Manager immediately if any such condition exists.

I. Seal and make permanently watertight penetrations by electrical raceways or equipment through ceilings, walls, or floors.

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 torquing 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. 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: 5 ohm

B. Mechanical Connectors: Bronze

C. Electrode Conductor: Bare stranded copper material

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 resistant

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. Pull boxes

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.

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 of Power Circuits: Branch circuit or feeder number indicated on Drawings

PART 3 – EXECUTION

3.1 EXAMINATION

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

B. 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.

C. By beginning Work, Contractor accepts conditions and assumes responsibility for correcting unsuitable conditions encountered at no additional cost to the USPS.

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 greater than 5 ohms, take appropriate action to reduce resistance to 5 ohms or less.

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.

3.4 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. Are properly installed without damage due either to installation or shipment

3. Operate correctly, meet design intent, and are performing at optimum level, in a safe manner.

D. Regulatory Requirements

1. Safety practices include 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. USPS 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.

E. Tests and inspections include 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

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

G. 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. This section includes the following:

1. Building wire and cable
2. Branch-circuit cable
3. Wiring connectors and connections
4. Drop cords

B. Related documents include the Contract Documents, as defined in Section 011000–Summary of Work, and which 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 section is as specified in Section 260500–Common Work Results for Electrical.

1.2 REFERENCES

As specified in Section 260500–Common Work Results for Electrical

1.3 SUBMITTALS

As specified in Section 260500–Common Work Results for Electrical

1.4 QUALITY ASSURANCE

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. Delivered 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 that 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) are as follows:

1. Buchanan: 2006S or 2011S

2. Thomas and Betts

3. 3M type

PART 3 – EXECUTION

3.1 EXAMINATION

As specified in Section 260500–Common Work Results for Electrical

3.2 PREPARATION

Completely and thoroughly swab raceway before installing wire.

3.3 INSTALLATION

A. Wiring Methods

1. Concealed dry interior locations: use building wire, Type THHN/THWN or Type XHHW-2 insulation, in metallic raceway or MC multiconductor cable.

2. Exposed dry interior locations: use building wire, Type THHN/THWN or Type XHHW-2 insulation, in metallic raceway or MC multiconductor cable.

3. Above accessible ceilings: use building wire, Type THHN/THWN or Type XHHW-2 insulation, in metallic raceway or MC multiconductor cable.

4. Wet or damp interior/exterior locations: use only building wire, Type THHN/THWN or Type XHHW-2 insulation, in raceway.

B. Install products in accordance with manufacturer's 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 10-AWG conductors for 20-ampere, 120-volt branch circuits longer than 75 feet.

G. Use 10-AWG conductors for 20-ampere, 277-volt branch circuits longer than 200 feet.

H. Pull all conductors into raceway at same time.

I. Use approved wire-pulling lubricant for all building wire.

J. Protect exposed cable from damage.

K. Neatly train and lace wiring inside boxes, equipment, and panelboards in accordance with NECA standards.

L. Clean conductor surfaces before installing lugs and connectors.

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

N. 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.

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

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

Q. Conductor sizes #8 and larger should be Class B stranding.

R. 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 as follows:

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

junctions, pull and terminal boxes, panels, and cabinets.

3.5 WIRING COLOR CODE

Comply with the following color code for each voltage system, for example, as follows:

A. 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

B. 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.

C. 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 volts or less and size no. 3 or larger, shall be meggered using an industry-approved “megger” with a minimum 500-volt internal generating voltage. All inspection, cleaning, and testing procedures shall follow the recommendations and standards outlined in the “maintenance testing specifications for electrical power distribution equipment and systems,” latest edition, published by the National 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

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SECTION 260533–RACEWAY AND BOXES FOR ELECTRICAL SYSTEMS

PART 1 – GENERAL

1.1 SUMMARY

A. This section includes the following:

1. Metal conduit
2. Electrical metallic tubing
3. Fittings and conduit bodies
4. Wall and ceiling outlet boxes
5. Pull and junction boxes

B. Related documents include the Contract Documents, as defined in Section 011000–Summary of Work, which 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 include Section 260500–Common Work Results for Electrical.

1.2 REFERENCES

A. ASTM: ASTM A 123–Specification for Zinc (Hot-Galvanized) Coatings on Iron and Steel Products

B. ANSI

1. ANSI C80.1–Rigid Steel Conduit, Zinc Coated
2. ANSI C80.3–Electrical Metallic Tubing, Zinc Coated

C. NECA: NECA "Standard of Installation"

D. NEMA FB 1–Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit and Cable Assemblies

E. NFPA 70–National Electrical Code

1.3 SYSTEM DESCRIPTION

A. Design requirements regarding 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 UL.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Section 016000–Product Requirements: transport, handle, store, and protect products

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

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

PART 2 – PRODUCTS

2.1 CONDUIT REQUIREMENTS

A. Where conduit is required by standards, codes, or required elsewhere, minimum size shall be as follows: 1/2 inch for power and branch circuit wiring, unless indicated otherwise. All homerun conduits shall be ¾-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. Fittings and Conduit Bodies: NEMA FB1 material to match conduit

2.3 ELECTRIC METALLIC TUBING

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

2.4 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. For conduits 1/2 inch through 1 inch that enter junction boxes, pull boxes, panels, cabinets, and gutters, provide Electric Metallic Tubing (EMT).

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

2.5 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. EMT: Raco 2092, 2093, 2094

D. Hangers: Lay-in pipe hanger; 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)

2.6 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 were indicated on Drawings or where required to pass through expansion joints embedded in concrete: O-Z/Gedney Type AX.

2.7 PULL AND JUNCTION BOXES

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

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 USPS.

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.

1. Above Suspended Ceilings: Galvanized or sherardized thick-wall rigid steel (GRC) or EMT

2. Metal Stud Walls: Galvanized or sherardized thick-wall rigid steel (GRC) or EMT

3. Exposed Interior Areas: Galvanized or sherardized thick-wall rigid steel (GRC) or EMT

4. Exposed Exterior Areas: Galvanized or sherardized thick-wall rigid steel (GRC)

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 directly buried in earth. Conduit penetrations through slab including elbows shall be galvanized rigid conduit (GRC).

D. Conduit routing indicated on Drawings are approximate locations unless dimensioned. Route parallel and perpendicular to building construction for complete wiring system regardless of 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 of 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 °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. 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 or pull boxes exposed to weather.

P. 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.

Q. Avoid moisture traps; provide junction box with drain fitting at low points in conduit system.

R. Provide suitable fittings to accommodate expansion and deflection where conduit crosses control and expansion joints.

S. Provide suitable nylon pull string or #14-AWG steel wire in each conduit excluding sleeves and nipples.

T. Ground and bond conduit per NFPA 70.

U. Coat all metallic conduit with General Electric RTV silicone sealer where conduit is installed in exterior areas or in contact with concrete or earth.

V. Conduit shall be sized per NFPA 70.

W. 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.

X. Ensure 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.

Y. Provide conduit supports as follows: Galvanized rigid thick wall conduit (GRC) and EMT within 3 feet of all outlet boxes, junction boxes, or fittings. Anchor horizontally at 10-foot maximumintervals.

3.3 INSTALLATION–BOXES

A. Install boxes in accordance with NECA Standard of Installation.

B. Install in locations 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.

D. Install electrical boxes 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-in dock area above bottom chord of structural joist. Pull boxes sized in excess of 12 inches shall be equipped with hinged and hasped covers.

G. Install junction boxes within inaccessible ceiling areas, no more than 6 inches from ceiling access panel or from removable recessed luminaire.

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.

3.5 ADJUSTING

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

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SECTION 260800–COMMISSIONING OF ELECTRICAL SYSTEMS

PART 4 – GENERAL

4.1 SUMMARY

A. The USPS has retained an independent Commissioning Authority to provide Commissioning Services and a Commissioning Plan to confirm that the functionality of new equipment and systems meets the original design intent, operates efficiently, and demonstrates that all the required features of the new system are functioning as specified in the design documents.

B. This section and other sections in the Project Manual detail the Contractor's responsibilities relative to the Commissioning process.

4.2 RELATED REQUIREMENTS

A. Commissioning plan: available for reference

B. Section 013200–Construction Progress Documentation

C. Section 013300–Submittal Procedures

D. Section 017704–Closeout Procedures and Training

E. Section 019113–General Commissioning Requirements

4.3 REFERENCE STANDARDS

A. ASHRAE/EIS Standard 202-2018, "Commissioning Process for Buildings and Systems"

B. ASHRAE Guideline, "Preparation of Operating and Maintenance Documentation for Building Systems"

C. AABC Commissioning Group (ACG)

D. NEBB–Procedural Standards for Building Systems Commissioning

E. National Electrical Code (NEC)

F. ASTM

G. Electronics Industry Association/Telecommunications Industry Association (EIA/TIA)

H. Institute of Electrical and Electronics Engineers (IEEE)

I. NETA

J. NEMA

K. NFPA

L. UL

4.4 COMMISSIONING SCHEDULING

A. Refer to Section 019113–General Commissioning Requirements

4.5 SUBMITTALS

A. Startup procedures: provide quality assurance procedures, checklists, and manufacturer's installation and startup procedures for all electrical equipment and systems to be commissioned.

B. Field testing agency reports: prior to the Acceptance Phase, provide all documentation from independent testing agencies required by the contract.

C. Equipment warranties: provide prior to the start of the Acceptance Phase.

4.6 QUALITY ASSURANCE

A. Electrical testing equipment: Ensure that quality and accuracy to be sufficient to test and measure system performance with the tolerances specified. Calibrate all equipment according to the manufacturer's recommended intervals. Calibration tags to be affixed or certificates readily available.

PART 5 – PRODUCTS

NOT USED

PART 6 – EXECUTION

6.1 COMMISSIONING CONSTRUCTION PHASE

A. Provide assistance from the electrical contractor during the startup process to confirm that the functionality of the new equipment meets the original design intent, operates efficiently, and demonstrates that all of the required features of the new system are functioning as specified in the design documents.

6.2 COMMISSIONING ACCEPTANCE PHASE

A. Provide assistance in functional performance testing from the electrical contractor to manipulate electrical systems to facilitate functional performance testing.

B. Functional performance testing requirements for electrical systems and equipment: verify the system performs satisfactorily and as intended.

6.3 COMMISSIONING WARRANTY PHASE

A. Provide assistance in functional performance testing from the electrical contractor to participate as required in seasonal testing.

END OF SECTION

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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 Non-Sinusoidal 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 nonlinear load test program.
      g. Sound level ratings.
   3. Assurance/Control Submittals:
      1. Certificates: Manufacturer's certificate that Products meet or exceed specified requirements.
      2. 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 axials shake table test results conducted in accordance with the ICC ES AC156 test protocol 3 (Acceptance Criteria or 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 five (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. Eaton Corporation, Cutler-Hammer Products, Pittsburgh, PA (800) 525-2000.
   2. General Electric Company (800) 626-2000.
   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 cover plate.

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.

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. 30 kVA: 98.58 percent.

J. Sound Levels shall be as follows:
   1. 30 kVA:39 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 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 panelboards.

B. Related documents include the contract documents as defined in Section 011000–Summary of Work, which 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 include Section 260500–Common Work Results for Electrical.

1.2 REFERENCES

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

B. NEMA:

1. NEMA AB 1–Molded Case Circuit Breakers
2. NEMA ICS 2–Industrial Control Devices, Controllers, and Assemblies
3. NEMA PB 1–Panelboards
4. NEMA PB 1.1–Instructions for Safe Installation, Operation and Maintenance of Panelboards Rated 600 Volts or Less

C. 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, and 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, and include instructions for storage, handling, protection, examination, preparation, installation, and starting of Product.
3. Submittals 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 and indicate actual branch circuit arrangement.

2. O&M data include spare parts data listing; source and current prices of replacement parts and supplies; and recommended maintenance procedures and intervals.

3. Data should be submitted 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 is a company specializing in manufacturing the Products specified in this section with a minimum of 5 years of documented experience.

PART 2 – PRODUCTS

2.1 GENERAL CLASSIFICATION

A. Manufacturers: General Electric Company (GE) 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

4. Substitutions not 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.

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 pad lockable handle attachments.

3. 208Y/120V branch circuit panelboards: molded-case, bolt-on type designed for 208Y/120V, three-phase, four-wire service with minimum 10,000 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. Nameplates: Provide screwed-on (no adhesives) engraved bake lite nameplate identification on outside of each panel showing panel designation, voltage, and phase in minimum ¼-inch-high letters.

K. Circuit Directories: Provide a metal-framed circuit directory on inside of inner door, with plastic protector.

PART 3 – EXECUTION

3.1 EXAMINATION

As specified in Section 260500–Common Work Results for Electrical

3.2 CLEARANCES

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, 0 inches 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

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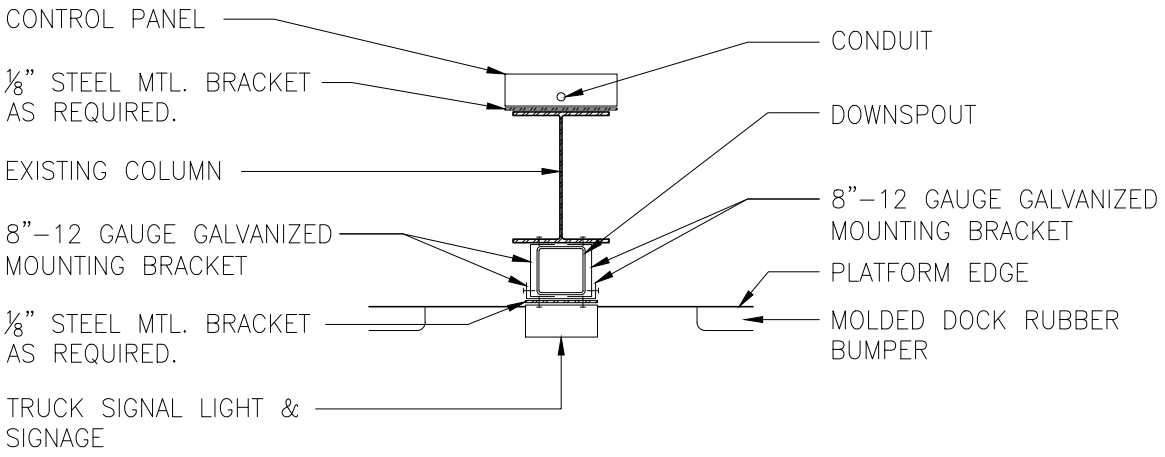
NOTES TO A/E:

1.



DETAIL @ COLUMN

	Detail: PLATFORM EQUIPMENT – PLAN DETAILS @ COLUMN (OPEN PLATFORM)		Fac. | Ch. | Sect. | Para. | Detail: G2-3-8 c2
	CAD File: \Details\G2-3-8c2.dwg	Scale: 1/2" = 1'-0" (0, 1/2", 1")	USPS SDL Issued: 10/1/2021 Last Revised: 10/1/2021

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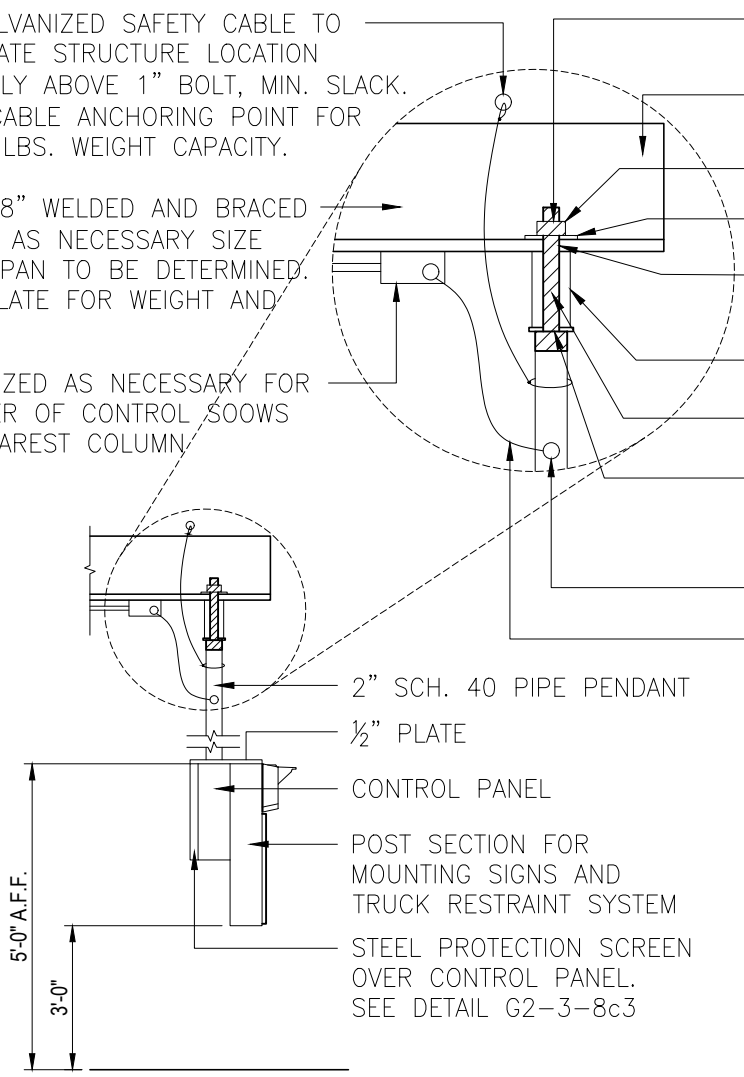
NOTES TO A/E:

1. USE THIS DETAIL TO SUSPEND CONTROL PANEL FROM STRUCTURE ABOVE TO OPEN PLATFORM



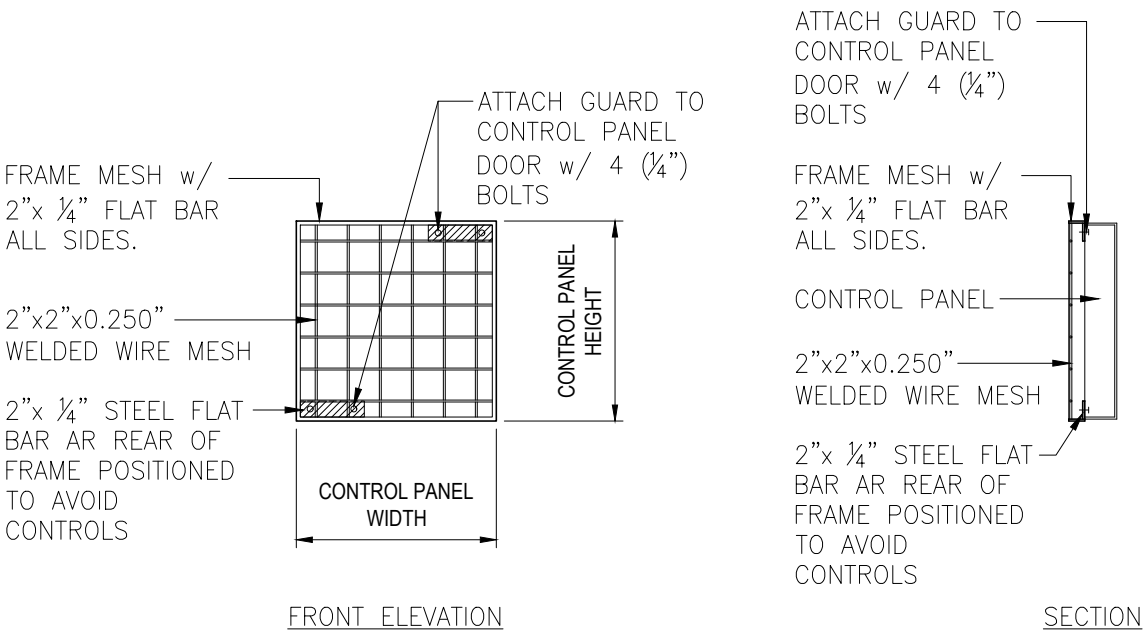
SIDE ELEVATION

NOTE: SOOW CORD IS AN ACRONYM FOR A 600W HEAVY DUTY INDUSTRIAL CHORD W/ OIL RESISTANT INTERIOR AND EXTERIOR JACKETS WHICH ARE WEATHER RESISTANT. TYPICALLY USED FOR SWAYING/MOVING EQUIPMENT TO PREVENT FRAY AND DESTRUCTION FROM THE POWER SOURCE.

Detail:	Fac.	Ch.	Sect.	Para.	Detail
PLATFORM EQUIPMENT - CONTROL PANEL PENDANT DETAIL (OPEN PLATFORM)	G2-3-8 c3				
CAD File: \Details\G2-3-8c3.dwg	Scale: N.T.S. (0, 1/2", 1")	USPS SDL Issued: 10/1/2021	Last Revised: 10/1/2021		

NOTES TO A/E:

1. OPTIONAL FACE PLATE PROTECTION AT CONTROL PANEL.

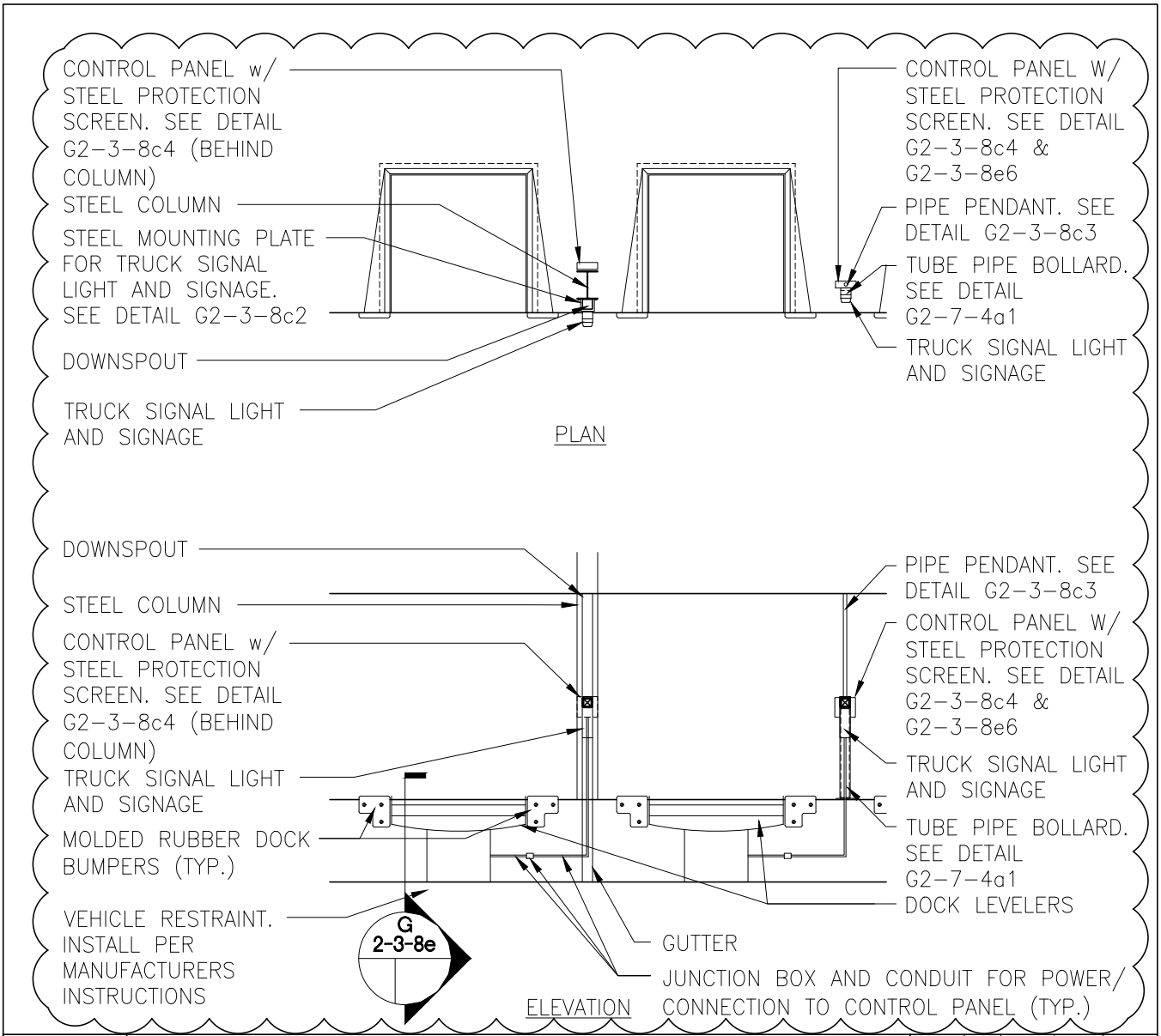


NOTE: POWDER COAT CONTROL PANEL SAFETY YELLOW AFTER FABRICATION
VERIFY DIMENSIONS OF CONTROL PANEL PRIOR TO FABRICATION

	Detail: PLATFORM EQUIPMENT - CONTROL PANEL GUARD			Fac.	Ch.	Sect.	Para.	Detail
				G2-3-8 c4				
	CAD File: \Details\G2-3-8c3.dwg	Scale: N.T.S.	0 1/2" 1"	USPS SDL Issued: 10/1/2021 Last Revised: 10/1/2021				

NOTES TO A/E:

1. USE THIS DETAIL TO MOUNT CONTROL PANEL ON A COLUMN OR BOLLARD.
2. *USE DOCK BUMPER DETAIL G2-3-8a OR G2-3-8b, OR SUBSTITUTE BOLLARDS FOR DOCK BUMPERS AS DIRECTED BY USPS.*



Detail: PLATFORM EQUIPMENT - ELEV. @ DOCK LEVELER (OPEN PLATFORM)	Fac. / Ch. / Sect. / Para. / Detail: G2-3-8e1
CAD File: \Details\G2-3-8e1.dwg — Scale: 1/8" = 1'-0" (0, 1/2", 1")	USPS SDL Issued: 10/1/2021 — Last Revised: 9/16/2021

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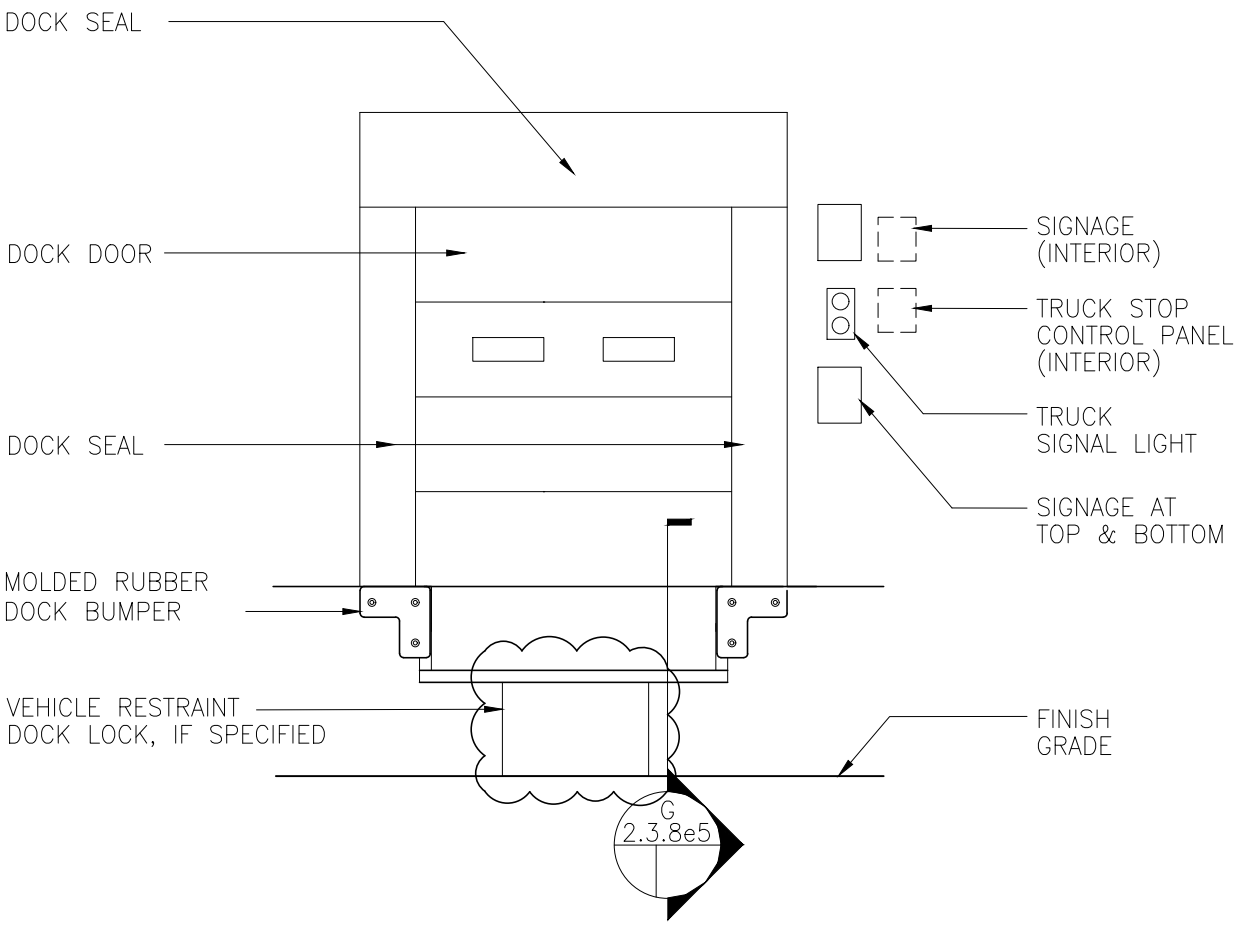
NOTES TO A/E:

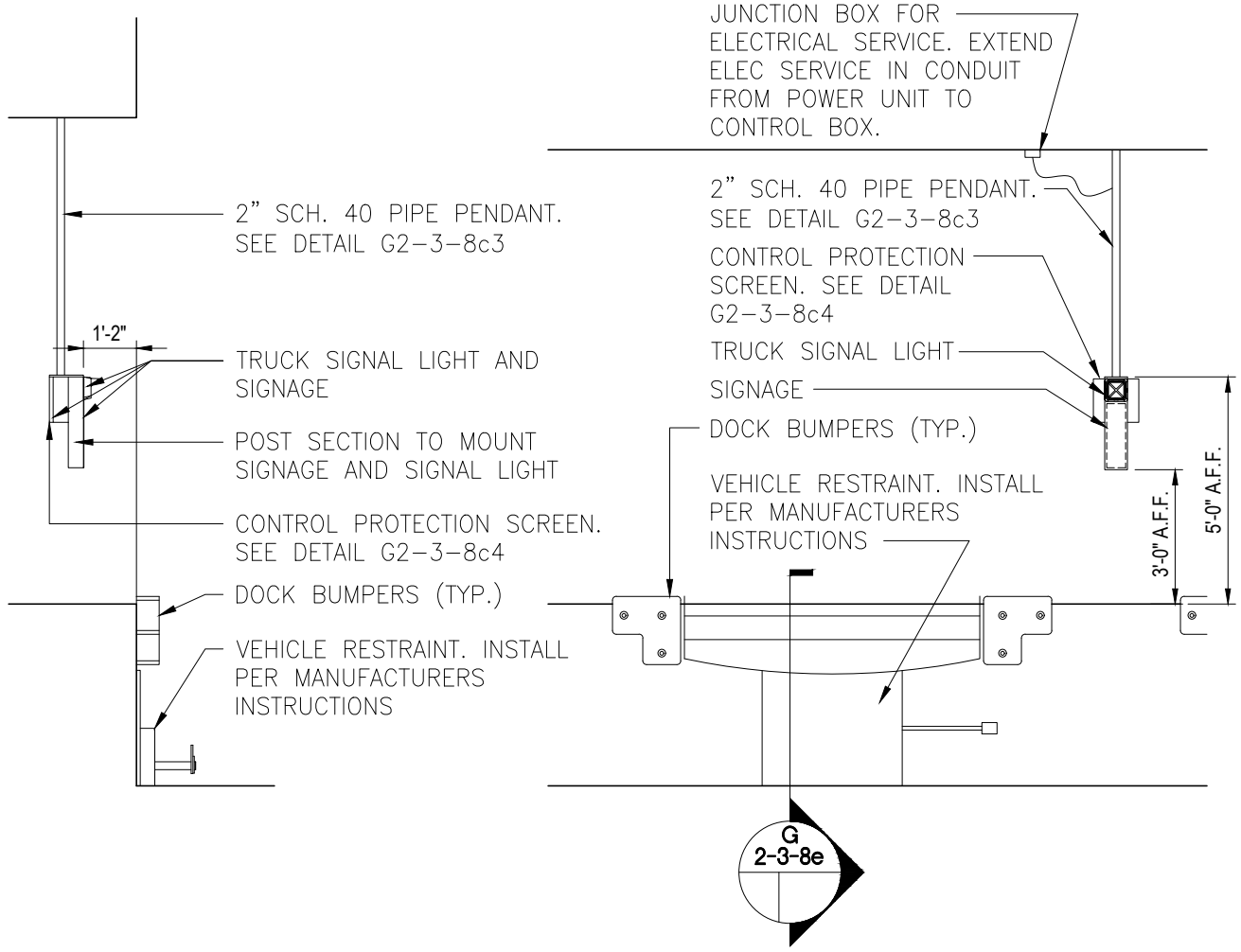
1. *USE DOCK BUMPER DETAIL G2-3-8a OR G2-3-8b, OR SUBSTITUTE BOLLARDS FOR DOCK BUMPERS AS DIRECTED BY USPS.*



	Detail: PLATFORM EQUIPMENT - ELEVATION @ DOCK LEVELER (ENCLOSED PLATFORM)	Fac. | Ch. | Sect. | Para. | Detail: G2-3-8 e4
	CAD File: ..\usps\library\details\G2-3-8e4.dwg Scale: 1/4"=1'-0" (0, 1/2", 1")	USPS SDL Issued: 10/1/2021 Last Revised: 9/16/2021

NOTES TO A/E:

1. USE THIS DETAIL TO SUSPEND CONTROL PANEL TO STRUCTURE ABOVE TO OPEN PLATFORM



Detail: PLATFORM EQUIPMENT - ELEV. @ DOCK LEVELER (OPEN PLATFORM)	Fac.	Ch.	Sect.	Para.	Detail
	G	2	- 3	- 8	e6
CAD File: \Details\G2-3-8e6.dwg	Scale: 1/4" = 1'-0" (0, 1/2", 1")	USPS SDL Issued: 10/1/2021			
	Last Revised: 10/1/2021				

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