

# **USPS SEATTLE MIDTOWN STATION SECURITY UPGRADES**

**301 UNION STREET  
SEATTLE, WA 98101**

**USPS PROJECT NO. Q55835  
BRW PROJECT NO. 219084.00**

## **30% DESIGN PROJECT MANUAL**

**NOVEMBER 1, 2019**



**U. S. POSTAL SERVICE**  
FACILITIES R&A WEST  
165 CALIFORNIA ROAD  
QUAKERTOWN, PA 18951  
(215) 421-9591

**OWNER**

**BROWN REYNOLDS WATFORD ARCHITECTS, INC.**  
1620 MONTGOMERY ST, SUITE 320  
SAN FRANCISCO, CA 94111  
(415) 749-2670

**ARCHITECT**

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END OF SECTION 00 00 10

## **SECTION 01 10 00 - SUMMARY OF WORK**

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### **PART 1 - GENERAL**

#### **1.01 SCOPE**

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

#### **1.02 POSTAL SERVICE FURNISHED – CONTRACTOR INSTALLED EQUIPMENT**

- A. The Postal Service will furnish to the Contractor the equipment to be incorporated or installed in the work as identified in the Scope, Specifications, and/or drawings.
- B. The Contractor will complete the Postal Service Furnished – Contractor Installed Equipment form found in Attachment A., identifying quantities and desired delivery dates.
- C. Scheduling and installation must be in accordance with the terms and conditions of the contract provisions and clauses, including those concerning *Postal Service Property*.

#### **1.03 MISCELLANEOUS CONTRACT EXPENSES**

- A. In accordance with the terms and conditions of the contract provisions and clauses, including those concerning *Permits and Responsibilities* and, *Building Codes, Fees and Charges*, the Contractor must include in its price proposal a separate line item for the cost each of the of the following fees or charges payable to State, local, or special community development agencies:

|  |       |
|--|-------|
| Water service connection and meter fee | _____ |
| 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, as required, in the price proposal.

#### **1.04 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 / Pre-selected Sources*, the Contractor is solely responsible for contracting with the Direct Vendor and ordering, payment, receiving, accepting, storage and installation of United States Postal Service Direct Vendor equipment or supplies. Ordering instructions are included in each specification section.
- B. The Contractor will off-load, 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 282305 - Integrated Security and Investigative Platform (ISIP) CCTV System

#### **1.05 USPS PRE-APPROVED VENDOR EQUIPMENT OR SUPPLIES**

- A. The Contractor is solely responsible for contracting with the Pre-Approved Vendor and ordering, payment, receiving, accepting, storage and installation of United States Postal Service Pre-Approved Vendor equipment or supplies. Ordering instructions are included in each specification section.
- B. The Contractor will off-load, inspect the delivered equipment or supplies to make sure they are in good condition, acknowledge receipt, and accept the delivered goods.
- C. Pre-Approved Vendor items in this contract are limited to specific items, as shown in the drawings and listed below:
  - 1. Not Applicable

#### **1.06 MISCELLANEOUS EQUIPMENT CROSS-REFERENCE LIST (NOT USED)**

#### **PART 2 - PRODUCTS (NOT USED)**

#### **PART 3 - EXECUTION (NOT USED)**

END OF SECTION 01 10 00

## **SECTION 01 11 04 - CONTRACT DOCUMENTS**

---

### **PART 1 - GENERAL**

#### **1.01 SUMMARY**

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

#### **1.02 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.

| C. | Drawing number | Date             | Title   |
|----|----------------|------------------|---|
| 1. | T1.1           | November 1, 2019 | Title Sheet                                       |
| 2. | A1.1           | November 1, 2019 | First Floor Plan & Partial Reflected Ceiling Plan |
| 3. | A2.1           | November 1, 2019 | Section, Elevations & Details                     |

### **PART 2 - PRODUCTS (NOT USED)**

### **PART 3 - EXECUTION (NOT USED)**

END OF SECTION 01 11 04

## **SECTION 01 32 00 - CONSTRUCTION PROGRESS DOCUMENTATION**

---

### **PART 1 - GENERAL**

#### **1.01 SCHEDULING WORK**

- A. Before any of the work is started, the Contractor must confer with the COR and agree on a sequence of procedures: means of access to premises and building; delivery of materials and use of approaches; use of corridors, stairways, elevators, and similar means of communication; and the location of partitions, eating spaces for Contractor's employees, and the like.
- B. No work can be done during the holiday mailing season between November 15<sup>th</sup> and January 5<sup>th</sup> without written permission from the COR.
- C. No work can be scheduled between the hours of 4:00 AM and 6:00 PM, in the area without written permission from the COR. Work between 10:00 AM and 2:00 PM and Sundays is possible with local USPS approval.

#### **1.02 CONSTRUCTION PROGRESS CHART**

- A. In accordance with the terms and conditions of the contract provisions and clauses, including those concerning *Construction Progress Chart*, prepare and submit a progress chart within five (5) days after receipt of the Notice to Proceed to show the principal categories of work corresponding with those used in the Schedule of Values:
  - 1. The order in which the Contractor proposes to carry on the work.
  - 2. The date on which it will start each category of work.
  - 3. The contemplated dates for completion.
- B. The chart must be in suitable scale to indicate graphically the total percentage of work scheduled to be in place at any time. At intervals as directed by the COR the Contractor must:
  - 1. Adjust the chart to reflect any changes in the contract work.
  - 2. Enter on the chart the total percentage of work actually in place.
  - 3. Submit six (6) copies of the chart to the Contracting Officer or their designated representative.

#### **1.03 CONTRACTOR-PREPARED NETWORK ANALYSIS SYSTEM – NOT USED**

### **PART 2 - PRODUCTS (NOT USED)**

### **PART 3 - EXECUTION**

END OF SECTION 01 32 00



## SECTION 01 33 00 - SUBMITTAL PROCEDURES

### PART 1 - GENERAL

#### 1.01 SCHEDULE OF SUBMITTALS

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

Project \_\_\_\_\_

Contract  
No. \_\_\_\_\_

Project  
Description \_\_\_\_\_

| Spec.<br>Section | Spec.<br>Description | Paragraph<br>Number | *Submittal<br>Type | Date      |          | Action<br>Taken | Assigned<br>Number |
|------------------|----------------------|---------------------|--------------------|-----------|----------|-----------------|--------------------|
|                  |                      |                     |                    | Submittal | Returned |                 |                    |
|                  |                      |                     |                    |           |          |                 |                    |

\*Submittal Type:

C – Certificate

S – Sample

SD – Shop Drawing

CD – Catalog Data

PL – Spare Parts List

MM – Maintenance Manual

#### 1.02 SHOP DRAWINGS AND RELATED DATA

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

required under the terms and conditions of the contract provisions and clauses, including those concerning Changes must be given to the COR. [Four] [ ] prints of all approved shop drawings must be given to the COR. The approval of the drawings by the COR must not be construed as a complete check but indicates only that the general method of construction and detailing is satisfactory. Approval of the shop drawings does not relieve the Contractor of responsibility for any error that may exist because the Contractor is responsible for the dimensions and design of adequate connections and details and for satisfactory construction of all work. The submission by the Contractor must be accompanied by a transmittal letter of a type approved by the COR.

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

### **1.03 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, to scale, and must 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 also in elevation or section in their installation positions. Ductwork and piping must be shown.

### **1.04 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.

## **1.05 CERTIFICATES OF COMPLIANCE**

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

## **1.06 A-E'S REVIEW OF SUBMITTALS**

- A. When submittals are reviewed by the A-E on behalf of the COR, each submittal must be returned to the Contractor stamped or marked by the A-E in one of the following ways:
  - 1. A Action: The Contractor is advised that "A Action" means that fabrication, manufacture, or construction may proceed, provided the work complies with the contract documents.
  - 2. B Action: The Contractor is advised that "B Action" means that fabrication, manufacture, or construction may proceed, provided the work complies with the A-E's notations and the contract documents.
  - 3. C Action: The Contractor is advised that "C Action" means that no work may be fabricated, manufactured, or constructed and that the Contractor must make a new submittal to the A-E. Any submission marked "C Action" is not permitted on the site.
- B. The A-E must return reproducibles stamped "A Action" or "B Action" to the Contractor, who is responsible for obtaining prints of them and for distributing them to the field and to subcontractors.
- C. In the case of shop drawings in the form of manufacturers' descriptive literature, catalog cuts, and brochures stamped "A Action" or "B Action," the A-E must return the stamped copies to the Contractor, who is responsible for distributing them to the field and to the subcontractors. If the shop drawings are stamped "C Action," the A-E will return stamped copies to the Contractor, who must submit new shop drawings to the A-E.
- D. In the case of samples stamped "A Action" or "B Action," the A-E must return one of the samples to the Contractor. In the case of samples stamped "C Action," the A-E must return all of the submitted samples.

## **1.07 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*.

## **1.08 SCHEDULE OF VALUES**

- A. In accordance with the terms and conditions of the contract provisions and clauses concerning, *Construction Cost Breakdown*, the Contractor must submit a construction cost breakdown using the attached Schedule of Values. When applicable, a separate cost breakdown form must be submitted for each separate 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 are 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. A Sample Schedule of Values and Definitions is attached to this Section, as Attachment A.
  - C. Do not delete items from the Schedule of Values form. 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.

**1.09 FIXED MECHANIZATION CONSTRUCTION COST ESTIMATE BREAKDOWN SUMMARY – NOT USED**

**PART 2 - PRODUCTS**

NOT USED.

**PART 3 - EXECUTION**

NOT USED.

END OF SECTION 01 33 00 – SUBMITTAL PROCEDURES

## **SECTION 01 35 43 - ENVIRONMENTAL PROCEDURES**

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### **PART 1 - GENERAL**

#### **1.01 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.

#### **1.02 NOTIFICATION**

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

#### **1.03 ENVIRONMENTAL REGULATORY COMPLIANCE**

- A. Within 30 days after receiving the notice to proceed or not less than 15 days prior to commencing on-site work, the Contractor must submit any environmental documents that are required by federal, state or local environmental regulations. Plans must be approved by the COR prior to commencing on-site work and must describe and include, but is not limited to, the following
  - 1. Erosion Control and Stormwater Management Plan that describes erosion control methods, surface drainage, storm water permitting requirements, and if applicable, protection of site wetlands and/or compliance with wetland permits. This must ensure any federal, state or local permitting requirements for site preparation, erosion control or surface drainage are met.
  - 2. Landscape Management and Protection Plan that ensures any site-specific beneficial landscaping requirements are met. The plan shall describe the prevention and restoration of landscape damage, temporary roads and embankments, and post construction cleanup as prescribed in the terms and conditions of the contract provisions and clauses, including those concerning *Protection of the Environment, Existing Vegetation, Structures, Utilities and Improvements*.
  - 3. Waste Minimization and Management Plan must describe how natural resources potentially impacted by construction will be protected or managed; construction wastes will be stored and disposed of or recycled; and pollutants associated with building materials will be controlled. The waste minimization and management section of the plan must also list materials and construction debris to be recycled, and address the disposal of solid and hazardous wastes and materials, including asbestos and lead-based paint. It must also include tables applicable to the reclamation of chlorofluorocarbons (CFCs) and hydrochlorofluorocarbons (HCFCs) in accordance with 1.4 (B) below.

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

#### **1.04 ENVIRONMENTAL SITE CONTROLS**

- A. Location of Hazardous Materials: The location of the Contractor's temporary storage of any hazardous materials and/or wastes must be appropriately marked and included in the health and Safety Plan (see Section 1.5 below).
- B. Refrigerant Recovery, Recycling, and Disposal: Any work involving the replacement or repair of equipment containing refrigerant shall meet the following requirements:
  1. Recover and recycle or dispose of refrigerant from equipment according to 40 CFR 82 and local regulations.
  2. The work shall be completed by a certified refrigerant recovery technician, per 40 CFR 82 and local regulations.
  3. Provide a statement signed by the certified refrigerant recovery technician that the work was completed per 40 CFR 82 and local regulations. Include the name and address of technician and date refrigerant was recovered.
- C. Post-construction Cleanup or Obliteration: The Contractor must remove and properly dispose of all signs of temporary construction facilities such as haul roads, work area, structures, foundations of temporary structures, excess or waste materials, or any other vestiges of construction as directed by the COR. No separate or direct payment may be made for post-construction cleanup and all associated costs must be considered included in the contract price.
- D. Historical and Archeological: Monuments, markers, and works of art must be protected. Items discovered that have potential historical or archeological interest must be preserved. The Contractor must leave the archeological find undisturbed and must immediately report the find to the COR so that the proper authority may be notified.
- E. Dust Control: The Contractor must keep the site free from dust in accordance with applicable federal, state and/or local regulations.
- F. Noise Minimization: The Contractor must perform demolition and construction operations to minimize noise including conducting work during less sensitive hours of the day in accordance with applicable noise control regulations.

#### **1.05 HEALTH AND SAFETY**

- A. Prior to commencing on-site work, the Contractor must submit an Occupational Safety and Health Administration (OSHA) Emergency Action Plan (EAP) to the Contracting Officer to demonstrate compliance by the Contractor and subcontractors with applicable OSHA regulations. If the Contractor is not required by OSHA to develop a written EAP, i.e. if 10 or fewer are employed for the construction project or any other specific regulations identified by OSHA, then the Contractor shall submit to the Contracting Officer a signed letter stating the Contractor shall meet OSHA's EAP requirements in a verbal communication to all employees.
- B. The Postal Service has provided a *Safety and Health Guide for Contractors*, as Attachment A to this section. Prior to commencing on-site work, Contractor must read the *Safety and Health Guide for Contractors* and must sign the attached Certificate of Understanding acknowledging and accepting the requirements stated therein.
- C. Prior to commencing on-site work, the Contractor must submit a project-specific Project Safety Plan to the Contracting Officer. The plan must include, but is not limited to, hazard communication, labeling, emergency response and preparedness and training.

- D. Copies of Material Safety Data Sheets (MSDSs) for any hazardous material(s), as defined by OSHA's Hazard Communications Standard, must be included whenever such materials arrive on-site. MSDSs must be kept together and maintained centrally on-site through to project completion. Provide a copy of each MSDS in the Operating and Maintenance Manual. The use of asbestos containing materials, in excess of one percent as defined by US Environmental Protection Agency regulations, is prohibited in the construction of this project. Provide an executed copy of the "Certificate of Asbestos and Lead-Based Paint (New Work)" in the Operating and Maintenance Manual and include a copy with the final payment request.
- E. The use of lead-based paint is prohibited in the construction of this project.
- F. The use of lead-containing solder for plumbing and plumbing fixtures is prohibited in the construction of this project.
- G. In accordance with the terms and conditions of the contract provisions and clauses, including those concerning *Asbestos Free and Lead-Based Paint Free Certification*, the Contractor must sign and submit to the Contracting Officer the attached "Certification of Asbestos and Lead-Based Paint" for this project. The signed certificate is required to be included in the final payment request.
- H. Do not use any of the USPS targeted chemicals (see regulated and prohibited materials identified under Safety and Health and related environmental requirements).

## **PART 2 - PRODUCTS**

NOT USED.

## **PART 3 - EXECUTION**

NOT USED.

END OF SECTION 01 35 43 – ENVIRONMENTAL PROCEDURES

# Safety and Health Guide for Contractors

## Certificate of Understanding

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

### Distribution

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

### Contractor's Verification Statement

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

### Contractor's Representative

Printed Name: \_\_\_\_\_ Contact Number: \_\_\_\_\_  
Signature: \_\_\_\_\_ Date: \_\_\_\_\_

### Designated Postal Service Representative

Printed Name: \_\_\_\_\_ Contact Number: \_\_\_\_\_  
Signature: \_\_\_\_\_ Date: \_\_\_\_\_

### Safety Representative (If Required by COR)

Printed Name: \_\_\_\_\_ Contact Number: \_\_\_\_\_  
Signature: \_\_\_\_\_ Date: \_\_\_\_\_

### Postal Service CO, COR, or Project Manager

Printed Name: \_\_\_\_\_ Contact Number: \_\_\_\_\_  
Signature: \_\_\_\_\_ Date: \_\_\_\_\_

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



## Safety and Health and Related Environmental Requirements

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

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

## Emergency Procedures

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| <b>Preparations for Emergency</b>           | <p>Be prepared for emergency situations.</p> <p>Ensure that emergency telephone numbers are site specific, readily available, easily read, and communicated to all employees.</p> <p>Train and authorize employees to implement emergency procedures.</p>   |
| <b>Medical Emergencies</b>                  | <p>Have procedures and medical supplies to provide emergency medical services for your own personnel.</p> <p>Determine how to contact emergency medical services before work begins, and have on-site capabilities to contact such services immediately.</p>  |
| <b>Fires</b>                                | <p>See Fire Protection above.</p> <p>In the event of a fire, you must:</p> <ul style="list-style-type: none"> <li>- Immediately remove personnel from the area or building following Postal Service evacuation procedures.</li> <li>- 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.</li> </ul> <p>Personnel trained in the use and limitations of fire extinguishers may attempt to extinguish the fire if it is safe to do so.</p>   |
| <b>Chemical Releases</b>                    | <p>See Hazardous Materials above.</p> <p>If the event of a hazardous material release, you must:</p> <ul style="list-style-type: none"> <li>- Immediately remove personnel from the area or building following Postal Service evacuation procedures.</li> <li>- Immediately contact the designated Postal Service representative and inform him or her of the release. You may also activate an emergency alarm in the area. If no postal employees are on-site, immediately contact the local fire department.</li> </ul> <p>Contractor personnel should not respond to the release unless specifically trained and protected to perform hazardous material response.</p>  |
| <b>Power Outages</b>                        | <p>In the event of a power outage, you must:</p> <ul style="list-style-type: none"> <li>- Immediately stop work and assemble for a head count and possible facility egress.</li> <li>- Inform all contract employees that equipment may automatically restart when power resumes.</li> <li>- Immediately contact the designated Postal Service representative and inform him or her of the status of contract work and personnel head count. Relay at this time all hazards created due to the power outage.</li> </ul> <p>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.</p> |
| <b>Accident Investigation and Reporting</b> | <p>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.</p> <p>Report all accidents, whether or not they result in injury. Give the written report to the Postal Service COR within 24 hours of the accident or incident.</p>   |

# Certificate of Asbestos and Lead-Based Paint

(New Work)

To: Contracting Officer, United States Postal Service

Subject: Certification for new construction

Postal facility name: \_\_\_\_\_

Postal facility address: \_\_\_\_\_

**Certification for new construction:**

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

Contractor/Owner name: \_\_\_\_\_

Signature: \_\_\_\_\_

Address: \_\_\_\_\_

\_\_\_\_\_

Telephone: \_\_\_\_\_ Date executed: \_\_\_\_\_

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

## **SECTION 01 40 00 - QUALITY REQUIREMENTS**

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### **PART 1 - GENERAL**

#### **1.01 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.

#### **1.02 SUBMITTALS**

- A. Prior to the start of on-site work, the Contractor must submit to the Contracting Officer a Contractor Quality Control Plan that includes the following information:
  - 1. Quality Control Organization: In chart form, showing relationship of Quality Control organization to other elements of Contractor's organization.
  - 2. Names and qualifications of personnel in Quality Control organization, including Contractor Quality Control Representative, inspectors, Independent Testing and Inspection Laboratory, and Independent HVAC Test and Balance Agency.
  - 3. Procedures for reviewing coordination drawings, shop drawings, certificates, certifications, or other submittals.
  - 4. Testing and inspection schedule, keyed to Construction Schedule, indicating tests and inspections to be performed, names of persons responsible for inspection and testing for each segment of work including preparatory, initial, and follow-up.
  - 5. Proposed forms to be used including Contractor's Daily Report, Contractor Test and Inspection Report and Non-Compliance Check-Off List.
- B. INDEPENDENT TESTING AND INSPECTION LABORATORY: Submit the following.
  - 1. Name.
  - 2. Address.
  - 3. Telephone number.
  - 4. Names of full time registered engineer.
  - 5. Responsible officer.
  - 6. Copy of report of laboratory facilities inspection made by Materials Reference Laboratory of National Bureau of Standards during most recent inspection, with memorandum of remedies of any deficiencies reported by inspection.

#### **1.03 QUALITY CONTROL PROCEDURES**

- A. Monitor quality control over Contractor staff, subcontractors, suppliers, manufacturers, products, services, site conditions, and workmanship.
- B. Comply fully with manufacturer's published instructions, including each step in sequence of installation.
- C. Should manufacturer's published instructions conflict with Contract Documents, request clarification from COR before proceeding.

- D. Comply with specified standards as a minimum quality for work, except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
- E. Perform work by persons who are thoroughly qualified and trained in their respective trade, to produce workmanship of specified quality.
- F. Perform tests required by governing authorities having jurisdiction and utilities having jurisdiction.

#### **1.04 TESTING AND INSPECTION LABORATORY SERVICES**

- A. Selection and Payment:
  - 1. The Contractor shall pay for services of an Independent Testing and Inspection Laboratory to perform specified testing and inspection.
  - 2. Employment of Independent Testing and Inspection Laboratory in no way relieves Contractor of obligation to perform work in accordance with requirements of Contract Documents.
- B. Quality Assurance:
  - 1. Comply with requirements of all applicable ASTM standards.
  - 2. Laboratory: Authorized to operate in State in which Project is located.
  - 3. Laboratory Staff: Maintain a full time registered engineer on staff to review services.
  - 4. Testing Equipment: Calibrated at reasonable intervals with devices of and accuracy traceable to either National Bureau of Standards or accepted values of natural physical constraints.
- C. Laboratory Responsibilities. Contractor shall ensure the Laboratory has the following responsibilities and limits on authority:
  - 1. Test samples of mixes submitted by Contractor.
  - 2. Provide qualified personnel at Project site. Cooperate with COR and Contractor in performance of services.
  - 3. Perform specified sampling, testing, and inspection of Products in accordance with specified standards.
  - 4. Determine compliance of materials and mixes with requirements of Contract Documents.
  - 5. Promptly notify Contractor Quality Control Representative and COR of observed irregularities or non-conformance of work or Products.
  - 6. Submit one copy of all test results directly to the COR.
  - 7. Perform additional tests as required by COR.
  - 8. Attend appropriate preconstruction meetings and progress meetings.
- D. Limits on Authority. Contractor shall ensure the Laboratory has the following limits on authority:
  - 1. Laboratory may not release, revoke, alter, or expand on requirements of Contract Documents.
  - 2. Laboratory may not approve or accept any portion of work.
  - 3. Laboratory may not assume any duties of Contractors.
  - 4. Laboratory has no authority to stop work.

#### **1.05 CONTRACTOR FIELD INSPECTION AND TESTING**

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

- B. Preparatory Inspection: Performed prior to beginning work and prior to beginning each segment of work and includes:
  - 1. Review of Contract requirements.
  - 2. Review of shop drawings and other submittal data after return and approval.
  - 3. Examination to assure materials and equipment conform to Contract requirements.
  - 4. Examination to assure required preliminary or preparatory work is complete.
- C. Initial Inspection: Performed when representative portion of each segment of work is completed and includes:
  - 1. Performance of required tests.
  - 2. Quality of workmanship.
  - 3. Review for omissions or dimensional errors.
  - 4. Examination of products used, connections and supports.
  - 5. Approval or rejection of inspected segment of work.
- D. Follow-Up Inspections: Performed daily, and more frequently as necessary, to assure non-complying work has been corrected.
- E. Testing and Inspection: Perform testing and inspection in accordance with requirements in individual Specification Sections.

#### **1.06 CONTRACTOR'S DAILY REPORT**

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

#### **1.07 CONTRACTOR'S TEST AND INSPECTION REPORTS**

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

#### **1.08 NON-COMPLIANCE CHECK-OFF LIST**

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

#### **1.09 COMPLETION AND INSPECTION OF WORK**

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

### **PART 2 - PRODUCTS**

NOT USED.

### **PART 3 - EXECUTION**

NOT USED.

END OF SECTION 01 40 00 – QUALITY REQUIREMENTS



## **SECTION 01 50 00 - TEMPORARY FACILITIES AND CONTROLS**

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### **PART 1 - GENERAL**

#### **1.01 SUMMARY**

- A. The Contractor must provide all temporary facilities and services required to complete the work and to comply with OSHA and other applicable regulations.
- B. The Contractor must maintain temporary facilities in a proper, safe, operating and sanitary condition for the duration of this Contract. Upon completion of this Contract, all such temporary work and facilities shall be removed in their entirety and the premises will be restored to its prior condition.

#### **1.02 PROJECT SIGN – NOT REQUIRED**

#### **1.03 BULLETIN BOARD**

- A. A weatherproof bulletin board, not less than 36 inches wide and 30 inches high, with hinged glass door must be provided adjacent to, or mounted on, the Contractor's project office. If adjacent to the office, the bulletin board must be securely mounted on not less than two posts. The bulletin board and posts must be painted or have approved factory finish. The bulletin board must be easily accessible at all times and must contain wage rates, equal opportunity notice, and other items required to be posted.
- B. The Contractor must maintain the bulletin board in good condition throughout the life of the project. The bulletin board will remain the property of the Contractor and upon completion of the project must be removed from the site and the premises will be restored to its prior condition.

#### **1.04 CONSTRUCTION-USE UTILITIES**

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

#### **1.05 TEMPORARY ELECTRICITY**

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

- C. Safety: The Contractor must provide and maintain lights and signs to prevent damage or injury and must illuminate all hazardous areas. Safety lights must be kept burning from dusk to dawn.
- D. Requirements of Regulatory Agencies: The Contractor must obtain permits as required by local government authorities; obtain easements as required across private property other than that of the owner for temporary power service; and comply with the National Electrical Code, applicable local codes, and utility regulations.
- E. Use of Permanent System: The Contractor must regulate any part of the permanent electrical system that is used for construction purposes in order to prevent interference with safety and with the orderly progress of the work. The Contractor must leave permanent electrical services in a condition as good as new.
- F. Materials: The materials may be new or used but must be adequate in capacity for the purposes intended and must not create unsafe conditions or violate the requirements of applicable codes. At the Contractor's option, patented specialty materials may be used if UL-approved.
- G. Conductors: The Contractor must use wire, cable, or busses of appropriate type, sized in accordance with the National Electrical Code for the applied loads. Use only UL-approved wire.
- H. Equipment: In compliance with NEMA standards, the Contractor must provide an appropriate enclosure for the environment in which the equipment is used.
- I. Installation: The Contractor must provide all required facilities, including transformers, conductors, poles, conduits, raceways, fuses, switches, fixtures, and lamps, located so as to avoid interference with cranes and materials-handling equipment, storage areas, traffic areas, and work under other contracts. The Contractor must install all work to have a neat and orderly appearance and to make it structurally sound throughout. The Contractor must maintain it to give continuous service and to provide safe working conditions. The Contractor must modify the service as required by the progress of the job.
- J. Removal: The Contractor must remove all temporary equipment and materials upon completion of construction, repair all damage caused by the installation, and the premises will be restored to its prior condition.

#### **1.06 TEMPORARY HEATING AND VENTILATION – NOT USED**

#### **1.07 TEMPORARY WATER – NOT USED**

#### **1.08 SANITARY PROVISIONS**

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

#### **1.09 APPROACHES AND EXITS**

- A. The Contractor must provide all necessary approaches and exits required to properly execute the work.
- B. In connection with these, the Contractor must provide for temporary drainage to keep the site free from standing water at all times.

#### **1.10 POSTAL SERVICE FIELD OFFICE – NOT USED**

### **PART 2 - PRODUCTS**

NOT USED.

**PART 3 - EXECUTION**

NOT USED.

END OF SECTION 01 50 00 – TEMPORARY FACILITIES AND CONTROLS

## **SECTION 01 60 00 - PRODUCT REQUIREMENTS**

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### **PART 1 - GENERAL**

#### **1.01 PRODUCT OPTIONS AND SUBSTITUTIONS**

- A. Refer to the terms and conditions of the contract provisions and clauses, including those concerning Optional Materials or Methods (Construction), Materials and Workmanship, Information On "Equal" Products and Brand Name or Equal.
- B. Provide Products that comply with Contract Documents, which are undamaged and new at time of installation.
- C. Provide Products complete with accessories, trim, finish, safety guards, and other devices and details needed for complete installation and intended use and effect.
- D. Substitutions may be considered when the Contractor:
  - 1. Becomes aware of a product or procedure that is more environmentally sensitive or is otherwise advantageous to the Postal Service;
  - 2. Represents that he has personally investigated the proposed substitute product and determined that it is equal or superior in all respects to that specified;
  - 3. Will provide the same guarantee for the substitution that he would for that specified; and
  - 4. Will coordinate the installation of the accepted substitute, making such changes as may be required for the Work to be complete in all respects, at no additional cost to the Postal Service and at no extension of the Contract completion date.

#### **1.02 PRODUCT DELIVERY REQUIREMENTS**

- A. Transport and handle Products in accordance with manufacturer's instructions, using means and methods that will prevent damage, deterioration and loss, including theft.
- B. Schedule Product delivery to minimize long-term storage at Project site and prevent overcrowding of construction spaces.
- C. Coordinate Product delivery with installation schedule to assure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
- D. Deliver Products to Project site in undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
- E. Promptly inspect shipments to ensure that Products comply with project requirements, quantities are correct, Products are undamaged, and properly protected.
- F. Provide equipment and personnel to handle Products by methods to prevent soiling, disfigurement, or damage.

#### **1.03 PRODUCT STORAGE AND HANDLING REQUIREMENTS**

- A. Store and protect Products in accordance with manufacturers' published instructions, with seals and labels intact and legible.
- B. Store Products subject to damage by elements above ground, under cover in weathertight enclosure, with ventilation adequate to prevent condensation. Maintain temperature and humidity within range required by manufacturer's published instructions.
- C. For exterior storage of fabricated Products, place on sloped supports, above ground.
- D. Provide off-site storage and protection when Project site does not permit on-site storage or protection.

- E. Cover Products subject to deterioration with impervious sheet covering. Provide ventilation to avoid condensation or potential degradation of Products.
- F. Store loose granular materials on solid flat surfaces in a well-drained area. Prevent mixing with foreign matter.
- G. Provide equipment and personnel to store Products by methods to prevent soiling, disfigurement, or damage.
- H. Arrange storage of Products to permit access for inspection. Periodically inspect to verify Products are undamaged and are maintained in acceptable condition.

## **PART 2 - PRODUCTS**

NOT USED.

## **PART 3 - EXECUTION**

NOT USED.

END OF SECTION 01 60 00 – PRODUCT REQUIREMENTS

## **SECTION 01 73 00 - EXECUTION**

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### **PART 1 - GENERAL**

#### **1.01 LAYOUT OF WORK**

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

#### **1.02 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.

#### **1.03 FOR CONTRACT WORK PERFORMED IN AN EXISTING OCCUPIED POSTAL FACILITY**

- A. The Postal Service will continue to operate the facility during performance of the work. Accordingly, the Contractor must arrange and schedule contract work to facilitate such continued use of the site and building, with minimal disruption to Postal operations. Contract work that cannot be performed during normal Postal operating hours and must be performed after hours or during periods when the facility is normally closed, must be coordinated with the COR.
- B. If contract work is being performed on the roof, or above or near electronic equipment or mail processing equipment, Contractor must provide temporary interior protection above and/or around such equipment as appropriate or as indicated in construction documents. Interior protection shall be anti-static 6-mil poly. Remove temporary protection upon completion of the work. Coordinate interior protection with local management.

#### **1.04 CLEANING**

- A. Refer to the terms and conditions of the contract provisions and clauses, including those clauses *Debris and Clean Up*.
- B. Cleaning During Construction:
  - 1. Maintain areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition.
  - 2. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces, prior to enclosing the space.
  - 3. Broom and vacuum clean interior areas prior to start of surface finishing, and continue cleaning to eliminate dust.
  - 4. Collect and remove waste materials, debris, and rubbish from site as specified in the Environmental Compliance and Management Plan as required in Section 013543 - Environmental Procedures.
- C. Final Cleaning:
  - 1. Use cleaning materials and agents recommended by manufacturer or fabricator of surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property, or that might damage finished surfaces.

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

6. Comply with governing regulations and safety standards for cleaning operations. Remove waste materials from Project Site and dispose of in accordance with requirements of local authorities having jurisdiction.
7. Where extra materials of value remain after completion of construction, they become Postal Service property and these materials should be stored as directed by COR.

## **PART 2 - PRODUCTS**

NOT USED.

## **PART 3 - EXECUTION**

NOT USED.

END OF SECTION 01 73 00 – EXECUTION



## **SECTION 01 74 19 - CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL**

### **PART 1 - GENERAL**

#### **1.01 SUMMARY**

- A. Section includes: Procedures for achieving the most environmentally conscious Work feasible within the limits of the Construction Schedule, Contract Sum, and available materials, equipment, and products.
  - 1. Participate in promoting efforts of Postal Service to create an energy-efficient and environmentally-sensitive structure.
  - 2. Use recycled-content, toxic-free, and environmentally-sensitive materials and equipment.
  - 3. Use environmentally-sensitive procedures.
    - a. Protect the environment, both on-site and off-site, during demolition and construction operations.
    - b. Prevent environmental pollution and damage.
    - c. Effect optimum control of solid wastes.
- B. Related Documents: The Contract Documents, as defined in Section 011000 - Summary of Work, apply to the Work of this Section. Additional requirements and information necessary to complete the Work of this Section may be found in other documents.
- C. Related Sections:
  - 1. Section 013200 - Construction Progress Documentation.
  - 2. Section 014000 - Quality Requirements: Contractor's Daily Report.
  - 3. Section 015000 - Temporary Facilities And Controls: Temporary ventilation, progress cleaning and waste removal.
  - 4. Section 016000 - Product Requirements: Substitutions.
  - 5. Section 017704 - Closeout Procedures and Training: Record submittals.
  - 6. Section 024113 - Selective Site Demolition.

#### **1.02 DEFINITIONS**

- A. Adequate ventilation: Ventilation, including air circulation and air changes, required to cure materials, dissipate humidity, and prevent accumulation of dust fumes, vapors, or gases.
- B. Construction and demolition waste: Includes solid wastes, such as building materials, packaging, rubbish, debris, and rubble resulting from construction, remodeling, repair, and demolition operations.
  - 1. Rubbish: Includes both combustible and noncombustible wastes but excludes recyclable materials such as paper, boxes, glass, metal, lumber scrap and metal cans.
  - 2. Debris: Includes both combustible and noncombustible wastes, such as leaves and tree trimmings, stumps and rubble that result from construction or maintenance and repair work.
- C. Chemical waste: Includes petroleum products, bituminous materials, salts, acids, alkalis, herbicides, pesticides, organic chemicals, and inorganic wastes.
- D. Diversion: Redirection of waste ordinarily deposited in a municipal landfill to a recycling facility or to another destination for reuse.
- E. Environmental pollution and damage: The presence of chemical, physical, or biological elements or agents, which adversely affect human health or welfare; unfavorably alter ecological balances; or degrade the utility of the environment for aesthetic, cultural, or historical purposes.
- F. Hazardous materials: Includes pesticides, biocides, and carcinogens as listed by recognized authorities, such as the Environmental Protection Agency (EPA) and the International Agency for Research on Cancer (IARC).

- G. Interior final finishes: Materials and products that will be exposed at interior, occupied spaces; including flooring, wallcovering, finish carpentry, and ceilings.
- H. Municipal Solid Waste Landfill: A permitted facility that accepts solid, non-hazardous waste such as household, commercial, and industrial waste, including construction and demolition waste.
- I. Packaged dry products: Materials and products that are installed in dry form and are delivered to the site in manufacturer's packaging; including carpets, resilient flooring, ceiling tiles, and insulation.
- J. Sediment: Soil and other debris that has been eroded and transported by storm or well production runoff water.
- K. Sanitary wastes:
  - 1. Garbage: Refuse and scraps resulting from preparation, cooking, distribution, or consumption of food.
  - 2. Sewage: Domestic sanitary sewage.
- L. Wet products: Materials and products installed in wet form, including paints, sealants, adhesives, and special coatings.

### 1.03 SUBMITTALS

- A. Solid Waste Management and Environmental Protection Plan: Prepare and ***submit at the Preconstruction Meeting*** a Solid Waste Management and Environmental Protection Plan including, but not limited to, the following:
  - 1. Procedures for Recycling/Re-Use Program.
  - 2. Schedule for application of interior finishes.
  - 3. Revise and resubmit Solid Waste Management and Environmental Protection Plan as required by Postal Service.
    - a. Approval of the Contractor's Solid Waste Management and Environmental Protection Plan, will not relieve the Contractor of responsibility for adequate and continuing control of pollutants and other environmental protection measures.
  - 4. Any permits required by local, state or federal agencies.
- B. With each Contractor's Report as specified in Section 014000 – Quality Requirements, submit an updated Summary Of Solid Waste Disposal And Diversion. Submit on form in Appendix A of this Section. Include manifests, weight tickets, receipts, and invoices specifically identifying the Project and waste material for:
  - 1. Municipal Solid Waste Landfills.
  - 2. Recycling/Reuse Facilities.
- C. With Record Submittals as specified in Section 017704 - Closeout Procedures and Training, submit the following:
  - 1. Final Summary Of Solid Waste Disposal And Diversion. Submit on form in Appendix A of this Section.
  - 2. Resource Conservation and Recovery Act Project Summary. Submit on form in Appendix B of this Section.

## PART 2 - PRODUCTS

NOT USED.

## **PART 3 - EXECUTION**

### **3.01 RECYCLING AND REUSE**

- A. Collection: Implement a recycling/reuse program that includes separate collection of waste materials of the following types as appropriate to authorized local and regional recycling/reuse facilities:
  - 1. Asphalt.
  - 2. Concrete.
  - 3. Metal.
    - a. Ferrous.
    - b. Non-ferrous.
  - 4. Wood.
  - 5. Debris.
  - 6. Glass.
  - 7. Clay brick.
  - 8. Paper/Cardboard.
  - 9. Plastic.
  - 10. Gypsum.
  - 11. Paint.
  - 12. Carpet.
  - 13. Others as appropriate.
- B. Recycling/reuse centers: Contact state and/or local governmental solid waste offices, Environmental Protection Agency (EPA) regional offices, and authorized applicable non-profit organizations.
  - 1. Asphalt
  - 2. Concrete.
  - 3. Metal.
  - 4. Wood.
  - 5. Debris.
  - 6. Glass.
  - 7. Clay brick.
  - 8. Paper/Cardboard.
  - 9. Plastic.
  - 10. Gypsum.
  - 11. Paint.
  - 12. Carpet.
  - 13. Others as appropriate.
- C. Handling:
  - 1. Clean materials which are contaminated prior to placing in collection containers. Deliver materials free of dirt, adhesives, solvents, petroleum contamination, and other substances deleterious to recycling process.
  - 2. Arrange for collection by or delivery to the appropriate recycling or reuse facility.
- D. Participate in re-use programs: identify local and regional re-use programs, including but not limited to non-profit organizations such as schools, local housing agencies, and public arts programs, that accept used materials. The following are examples for Contractor's information only.
  - 1. National materials exchange network, such as CAL-MAX, a free service provided by various state and regional offices, designed to help businesses find markets for materials that traditionally would be discarded. The premise of the program is that material discarded by one business may be a resource for another business.
    - a. Items and regions covered by materials exchange programs may vary. Contact the applicable regional materials exchange program. In California, contact CAL-MAX at (916) 255-2369.

2. Habitat For Humanity, a non-profit housing organization that rehabilitates and builds housing for low income families.
  - a. Sites requiring donated materials vary. Contact the national hotline (800) HABITAT.
- E. Rebates, tax credits, and other savings obtained for recycled or re-used materials accrue to Contractor.

### **3.02 ENVIRONMENTAL CONTROLS**

- A. Protection of natural resources: Preserve the natural resources within the Project boundaries and outside the limits of permanent Work performed under this Contract in their existing condition or restore to an equivalent or improved condition as approved by Postal Service, upon completion of the Work.
  1. Confine demolition and construction activities to work area limits indicated on the Drawings and as directed by COR.
    - a. Temporary construction: As specified in Section 015000 - Temporary Facilities And Controls.
    - b. Demolition and salvage operations: As specified in Section 024119 - Selective Structure Demolition.
    - c. Disposal operations for demolished and waste materials that are not identified to be salvaged, recycled or reused:
      - 1) Remove debris, rubbish, and other waste materials resulting from demolition and construction operations, from site.
      - 2) No burning permitted.
      - 3) Transport materials with appropriate vehicles and dispose off-site to areas which are approved for disposal by governing authorities having jurisdiction.
      - 4) Avoid spillage by covering and securing loads when hauling on or adjacent to public streets or highways. Remove spillage and sweep, wash, or otherwise clean project site, streets, or highways.
      - 5) Comply with applicable federal, state and/or local regulations.
  2. Water resources as follows:
    - a. Comply with requirements of the National Pollutant Discharge Elimination System (NPDES) and the State Pollutant Discharge Elimination System (SPDES).
    - b. Oily substances: Prevent oily or other hazardous substances from entering the ground, drainage areas, or local bodies of water.
      - 1) Store and service construction equipment at areas designated for collection of oil wastes.
    - c. Mosquito abatement: Prevent ponding of stagnant water conducive to mosquito breeding habitat.
    - d. Prevent run-off from site during demolition and construction operations.
  3. Land resources: Prior to construction, identify land resources to be preserved within the Work area. Do not remove, cut, deface, injure, or destroy land resources including trees, shrubs, vines, grasses, top soil, and land forms without permission from Postal Service.
  4. Air Resources: Prevent creation of dust, air pollution, and odors.
    - a. Use water sprinkling, temporary enclosures, and other appropriate methods to limit dust and dirt rising and scattering in air to lowest practical level.
      - 1) Do not use water when it may create hazardous or other adverse conditions such as flooding and pollution.
    - b. Do not use any hazardous chemicals on USPS property when it is a shared work space with USPS employees. If chemicals are authorized for use, store volatile liquids, including fuels and solvents, in closed containers.
    - c. Properly maintain equipment to reduce gaseous pollutant emissions.
    - d. Interior final finishes: Schedule construction operations involving wet products prior to packaged dry products to the greatest extent possible in accordance with Postal Service approved Solid Waste Management and Environmental Protection Plan.

- e. Temporary Ventilation: As specified in Section 015000 - Temporary Facilities And Controls, and 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 degrees F minimum to 90 degree F maximum continuously during the ventilation period. Do not ventilate within limits of Work unless otherwise approved by the COR.
- f. Pre-occupancy ventilation: After final completion and prior to initial occupancy, provide adequate ventilation for minimum 5 days. Pre-occupancy ventilation procedures:
  - 1) Use supply air fans and ducts only.
  - 2) Temporarily seal exhaust ducts.
  - 3) Temporarily disable exhaust fans.
  - 4) Provide exhaust through operable windows or temporary openings.
  - 5) Provide temporary exhaust fans as required to pull exhaust air from deep interior locations. Stair towers may be used for exhausting air from the building during the temporary ventilation.
  - 6) After pre-occupancy ventilation and prior to final testing and balancing of HVAC system, replace air filters and make HVAC system fully operational.
- 5. Fish and Wildlife Resources: Manage and control construction activities to minimize interference with, disturbance of, and damage to fish and wildlife.
- 6. Noise Control: Perform demolition and construction operations to minimize noise. Perform noise producing work in less sensitive hours of the day or week as directed by Postal Service.
  - a. Repetitive, high level impact noise will be permitted only between the hours of 8:00 a.m. and 6:00 p.m. Do not exceed the following dB limitations:

| <u>Sound Level in dB</u> | <u>Time Duration of Impact Noise</u> |
|--------------------------|--------------------------------------|
| 70                       | More than 12 minutes in any hour     |
| 80                       | More than 3 minutes in any hour      |

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

END OF SECTION 01 74 19 – CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

Appendix A

SUMMARY OF SOLID WASTE DISPOSAL AND DIVERSION

Project Name: \_\_\_\_\_

FMS Project Number: \_\_\_\_\_

Contractor Name: \_\_\_\_\_

License Number: \_\_\_\_\_

Contractor Address: \_\_\_\_\_

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

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

RESOURCE CONSERVATION AND RECOVERY ACT - PROJECT SUMMARY.

Project Name: \_\_\_\_\_

FMS Project Number: \_\_\_\_\_

Contractor Name: \_\_\_\_\_

License Number: \_\_\_\_\_

Contractor Address: \_\_\_\_\_

## 1.0 EPA GUIDELINE ITEMS

## A. Fly Ash:

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

## B. Building Insulation Products:

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

## C. Carpet:

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

## D. Floor Tiles (resilient):

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

E. Floor Tiles (ceramic):

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

F. Hydraulic Mulch:

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

G. Compost:

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

2.0 SPECIFICATIONS

NOT USED

3.0 SOLID WASTE PREVENTION

- A. Total dollar amount of solid waste disposed (landfill) for this project. \$\_\_\_\_\_.
- B. Total weight of solid waste disposed (landfill) for this project. \$\_\_\_\_\_.



4.0 RECYCLING

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

5.0 COMMENTS

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

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

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Signature: \_\_\_\_\_ Date: \_\_\_\_\_

## **SECTION 01 77 04 - CLOSEOUT PROCEDURES AND TRAINING**

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### **PART 1 - GENERAL**

#### **1.01 MANUALS**

- A. Purpose: Operation and maintenance manuals are for the training of, and use by, Postal Service employees in the operation and maintenance of the systems and related equipment as specified below. The manuals must consist of instruction on systems and equipment. A separate manual or chapter must be prepared for each of the following classes of equipment or system:
1. Doors.
  2. Security system.
  3. Fire protection.
  4. Electrical systems.
  5. Miscellaneous building equipment and systems.
- B. Content: Unless otherwise indicated, each chapter must contain the following, as applicable:
- Introduction.
- Table of contents.
- Description of system (including design intent and considerations).
- C. Preparation: The outline below is intended as a general guide for preparing the manuals. The manuals must be prepared to provide for the optimum operation and maintenance of the various systems. The description of systems and general operating instructions for plumbing and electrical manuals may cover only complicated or unusual parts of these systems, such as sewage ejectors, transformers, high tension switchgear, and signal and alarm systems. Manufacturer's literature and data must be those of the actual equipment installed under contract for the particular facility. Further guidance is available in the ASHRAE Handbook, 1984, Systems Volume, Chapter 39, Mechanical Maintenance.
- D. Suggested Outline for Operation and Maintenance (O&M) Manuals: This is a suggested outline, with general requirements of O&M manuals. The outline is presented to indicate the extent of material to be covered and the individual items required in manuals for Mail Processing Facilities. The outline may be modified to suit specific installations; however, the purpose of the manual must be fulfilled. The manual is not intended to duplicate manufacturers' data, but proper references must be made in the text of the O&M manual to indicate that that information is applicable and where it is located.
1. Part I. Description and Design Intent
    - a. Introduction
      - 1) Provide a brief description of project and purpose of the maintenance manual. The following statements must be included: "Operation and maintenance of this equipment must be performed in accordance with this manual and posted instructions, subject to compliance with applicable technical guides and standards issued by USPS. It is recognized that minor changes in control points and settings will be required, based on actual operating experience, to correct varying conditions and improve operation. When such changes appear necessary, they must be submitted to the maintenance manager for consideration. Upon approval of any changes, the applicable portions of all copies of the manual and proposed instructions must be revised and reissued, and any change in operating procedure brought to the attention of all operating personnel."
      - 2) "This manual is specifically developed to assist the Postal official in charge at the facility to operate and maintain the building systems and equipment.

Manufacturers' recommendations set forth for certain components must be followed during the complete warranty period for that equipment."

- 3) Contents of Manual. This portion of the introduction must explain that the manual is to contain complete operating, maintenance, and safety instructions for all equipment listed. It must also contain any other appropriate references as required to outline an explanation of the manuals and major categories of reference material required with the manuals.
- b. Table of Contents
- 1) The table of contents must list numbers and titles of chapters, sections, and main paragraphs, with their page numbers. Each volume in a set of manuals must contain its own table of contents. Publications containing 10 or more illustrations or tables must include a list of illustrations or tables, as applicable. These lists must show number, title, and page number of each illustration and table. Following is a typical table of contents:
    - a) Landscaping
      - 1.) Irrigation system
      - 2.) Lawns and grasses
      - 3.) Exterior plants
      - 4.) Plant maintenance
    - b) Roof System
      - 1.) Roof and flashing type
      - 2.) Local inspection (frequency and what is included)
      - 3.) Maintenance (when manufacturer performs, if USPS performs what methods compatible materials, etc.)
    - c) Doors
      - 1.) Overhead coiling doors
      - 2.) Folding closures
      - 3.) Sectional overhead doors
      - 4.) Impact traffic doors
      - 5.) Automatic entrance doors
      - 6.) Specialized hardware
    - d) Security Systems
      - 1.) CCTV system
      - 2.) Intrusion detection
      - 3.) Electronic article surveillance
      - 4.) Access control
    - e) Fire Protection System
      - 1.) Water supply and distribution
      - 2.) Exterior fire hydrants
      - 3.) Sprinklers
      - 4.) Fire Department connections
      - 5.) Fire extinguishers
      - 6.) Exit signs

- f) Plumbing Systems
    - 1.) Potable water
    - 2.) Domestic hot water
    - 3.) Roof and sanitary drains
  - g) Mechanical Systems
    - 1.) Space conditioning
    - 2.) Heating
    - 3.) Central chilled water and distribution
    - 4.) HVAC instrumentation and controls
  - h) Electrical Systems
    - 1.) Incoming Service
    - 2.) Electrical power distribution
    - 3.) Lighting and lighting controls
    - 4.) Fire alarm
    - 5.) Emergency lighting unit
  - i) Miscellaneous Building Equipment
    - 1.) Postal Parcel Lockers
    - 2.) Floor mats
    - 3.) Dock equipment
    - 4.) Window Treatments
    - 5.) Elevators
    - 6.) Scales
    - 7.) Dust collectors
    - 8.) Vehicle maintenance equipment
2. Part II. Operating Sequence and Procedures
- a. Contents: Each chapter must describe the procedures necessary for Postal Service personnel to operate the system and equipment covered in that chapter.
  - b. Operating Procedures: The operating procedures must be divided into four subsections: Startup, Operation, Emergency Operation, and Shutdown.
    - 1) Startup: Give complete instructions for energizing the equipment and making initial settings and adjustments whenever applicable. If equipment is fully automatic, a statement to that effect is all that is required. If a specific sequence of steps must be performed, give step-by-step instructions in the proper sequence. If timing- (such as warm-up between power-on and adjustment) is important, clearly state the specific minimum time required at the proper point in the procedure. Refer to controls and indicators by panel; make references consistent with the nomenclature used in illustrations and tables of controls and indicators. If preliminary settings differ for different modes of operations, give procedures for each mode.
    - 2) Operation: Give detailed instructions in proper sequence for each mode of operation. When, for a given action on the part of the operator, alternate equipment responses are possible, give the appropriate operation reaction to each.
    - 3) Emergency Operation: If some functions of the equipment can be operated while other functions are disabled, give instructions for operations under these conditions. Include here only those alternate methods of operation (from normal) that the operator can follow when there is a partial failure or malfunctioning of components, or other unusual condition.
    - 4) Shutdown: Include instructions for stopping and securing the equipment after operation. If a particular sequence is required, give step-by-step instructions in that order.

3. Part III. Maintenance Instructions and Requirements

- a. Contents: Each chapter must describe the procedures necessary for Postal Service personnel to perform the maintenance on the systems and equipment covered in that chapter. Emphasis must be placed on the method of mechanical control of systems and equipment from a maintenance standpoint. References must be made, as appropriate, to drawings, schematics, and sequences of operation included as part of the construction Contract drawings and specifications that show piping and equipment arrangements and items of control. Prints of these drawings must be reduced to 11 inches x 17 inches for insertion in the manuals. Drawings must represent the "as-built" condition.
- b. Maintenance Procedures: The maintenance procedures must be divided into two categories: Preventive Maintenance and Corrective Maintenance.
  - 1) Preventive Maintenance
    - a) Provide a schedule for preventive maintenance. State, preferably in tabular form, the recommended frequency of performance for each preventive maintenance task (cleaning, inspection, and scheduled overhauls).
    - b) Provide instruction and schedules for all routine maintenance cleaning and inspection, with recommended lubricants.
    - c) If periodic inspection of equipment is required for operation, cleaning, or other reasons, indicate the items to be inspected and give the inspection criteria for, but not limited to, the following:
      - 1.) Motors
      - 2.) Controls
      - 3.) Filters
      - 4.) Heat exchangers
  - 2) Provide instruction for minor repairs or adjustments required for preventive maintenance routines. Minor repair and adjustment must be limited to repairs and adjustments that may be performed without special tools or test equipment and that require no special training or skills. Identify test points and give values for each.
- c. Corrective Maintenance
  - 1) Corrective Maintenance: Corrective maintenance instructions must be predicated upon a logical effect-to-cause troubleshooting philosophy and a rapid replacement procedure to minimize equipment downtime. Instructions and data must appear in the normal sequence of corrective maintenance, for example, troubleshooting first, repair and replacement of parts second, and then the parts list.
  - 2) Troubleshooting: This information must describe the general procedure for locating malfunctions and must give, in detail, any specific remedial procedures or techniques. The data shown are intended to isolate only the most common equipment deficiencies. Troubleshooting tables, charts, or diagrams may be used to present specific procedures. A guide to this type must be a three-column chart. The columns must be entitled Malfunction, Probable Cause, and Recommended Action. The information must be alphabetically arranged by component, and each component must, in turn, list deficiencies that may be expected. Each deficiency must contain one or more problems with a recommended correction.

- 3) Repair and Replacement: Indicate the repair and replacement procedures most likely to be required in the maintenance of the equipment. Information included here must consist of step-by-step instructions for repair and replacement of defective items. Include all information required to accomplish repair or replacement, including information such as torque values. Identify all tools, special equipment, and materials that may be required. Identify uses for maintenance equipment. The paragraphs must contain headings to identify the topics covered.
  - 4) Safety Precautions: This subsection must comprise a listing of safety precautions and instructions to be followed before, during, and after repairs or adjustments are made or routine maintenance is performed.
  - d. Manufacturers' Brochures: Include manufacturers' descriptive literature covering devices used in the system, together with illustrations, exploded views, and renewal parts lists. This section must also include special devices manufactured by the Contractor.
  - e. Special Maintenance: Provide information of a maintenance nature covering warranty items that have not been discussed elsewhere.
  - f. Shop Drawings: Provide a copy of all approved shop drawings covering approval of equipment for the project with the manufacturers' brochures.
  - g. Spare Parts Lists: Include a recommended spare parts list for all equipment furnished for the project. The parts list must include a tabulation of descriptive data for all the electrical-electronic spare parts and all the mechanical spare parts proposed for each type of equipment or system. Each part must be properly identified by part number and manufacturer.
  - h. Warranty: Include a copy of the "special" or extended warranty in the operation and maintenance manual.
- E. Submittal, In both "hard" and electronic DVD or CD-ROM format:
1. Preliminary Submittal: Two draft copies of the completed manuscript for items in this outline must be submitted to the COR for review within [60] [30] [ \_\_ ] days after approval of equipment to be provided. One copy will be returned to the Contractor within [30] [15] [ \_\_ ] days after submittal and, if required, must be revised and resubmitted within [30] [15] [ \_\_ ] days.
  2. Final Submittal: four complete sets of manuals must be furnished to the COR not later than [90] [30] [ \_\_ ] days before completion of the project.
  3. Final Submittal must be accepted by the COR before training can begin.

## **1.02 POSTED OPERATING INSTRUCTIONS**

- A. General. Operating instructions and diagrams must be prepared for posting near the equipment. Posted operating instructions must be photographic or equal non-fading reproductions framed under glass or encased in non-discoloring plastic and must be mounted in locations as directed. Copies of the posted operating instructions must also be used with the O&M manuals as a basis for training Postal Service personnel in the operation and maintenance of systems and related equipment installed under contract at the facility.
- B. Posted operating instructions must consist of simplified, consolidated equipment, control, and power diagrams graphically representing the entire system and actual equipment installed, including concise written instructions on how to start and stop systems, what settings and conditions are to be observed, and what control adjustments are to be made or maintained by the operation. Posted operating instructions must include, but are not limited to the following:
  1. Boiler and burner controls.
  2. Refrigeration controls.

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

### 1.03 TRAINING

- A. The Contractor must train Postal Service personnel in the operation and maintenance of mechanical and electrical equipment. Coordination must be maintained with systems designers for developing the hours of instruction and scope of material to be covered. Training of Postal Service personnel must not begin until the COR has approved the final submittal copy of each O&M manual.
- B. Schedule Submittal: The proposed scope of training and materials and instruction schedule must be submitted for review and approval approximately 30 days before the scheduled completion of the buildings. Mutually agreeable dates for training must be arranged with the COR, but the training must be completed before final acceptance of the facility.
- C. Scope of Training: Training must include classroom and on-the-job instructions by qualified installation and maintenance personnel having the necessary knowledge, experience, and teaching skills. The use of recording on digital media (DVD or CD discs) 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.

### 1.04 TRAINING PERIOD

| Item                  | Time (Hours) |
|-----------------------|--------------|
| 1. Special Doors      | 8            |
| 2. Security Equipment | 8            |
| 3. Electrical System  |              |

### 1.05 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.

### 1.06 OTHER CLOSEOUT SUBMITTALS

- A. Additional requirements for Systems Manuals, Operating Instructions, Training and other deliverables are contained in individual Specification Sections. All closeout requirements must be provided to and accepted by the COR prior to requesting final payment. Examples of additional closeout requirements include, but are not limited to, the following
  1. Final Punch-List with all items certified as complete.
  2. In accordance with the terms and conditions of the contract provisions and clauses, including those concerning *Record "As Built" Drawings*, the Contractor shall submit

certified As-Built Record Drawings and Specifications in the quantities and media specified.

3. In accordance with the terms and conditions of the contract provisions and clauses, including those concerning *Warranty*, the Contractor shall submit all transferable guarantees and warranties for equipment, materials and installations furnished by any manufacturer, supplier, or installer.
4. Signed Asbestos and Lead-Based Paint Certificate.
5. RE-4 Certification of Accessibility (CoA) and Facility Accessibility Survey Report.
6. Material Safety Data Sheets.
7. Signed and sealed Contractor Release of Claims.

## **PART 2 - PRODUCTS**

NOT USED.



### **PART 3 - EXECUTION**

NOT USED.

END OF SECTION 01 77 04 – CLOSEOUT PROCEDURES AND TRAINING

## **SECTION 01 91 13 - GENERAL COMMISSIONING REQUIREMENTS**

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### **PART 1 - GENERAL**

#### **1.01 WORK INCLUDED**

- A. Commissioning requirements common to all Sections.
- B. Systems and equipment start-up and functional performance testing.
- C. Validation of proper and thorough installation of systems and equipment.
- D. Equipment performance verification.
- E. Documentation of tests, procedures, and installations.
- F. Training.

#### **1.02 SCOPE**

- A. The Commissioning (“Cx”) Plan outlines the commissioning process outside of the Construction Contract. The specification sections dictate all requirements of the commissioning process relative to the Construction Contract. The Cx Plan is available for reference at the request of the Contractor; however it is not part of the Construction Contract.
- B. This Section and other Sections of the specification detail the Contractor’s responsibilities relative to the Cx process and it expands on the Cx Plan, which covers the roles and responsibilities of Parties outside of the Construction Contract. The degree of commissioning that will be required for this project shall include the specific requirements listed in the Division 22, 23 and/or 26 specifications.

#### **1.03 GENERAL DESCRIPTION**

- A. Commissioning (“Cx”) is the process of ensuring that all building systems are installed and perform interactively according to the design intent; that systems are efficient and cost effective and meet the Postal Service’s operational needs; that the installation is adequately documented; and that the Operators are adequately trained. It serves as a tool to minimize post-occupancy operational problems. It establishes testing and communication protocols in an effort to advance the building systems from installation to full dynamic operation and optimization.
- B. The Postal Service shall either retain a qualified independent Commissioning Authority (CxA), directly, to provide Commissioning Services, or will require the project A/E to do so.
- C. CxA shall work with the Contractor, the AE, and the Postal Service Project Manager to direct and oversee the Cx process and perform functional performance testing.
- D. The Cx process shall begin at the 95% review of the design documentation for Design/Build (DB), R&A and Design/Bid/Build (DBB) projects. However, the work shall commence at the 30% design stage for special projects, such as Geothermal, Compressed Natural Gas or Electrical Generation Projects.

#### **1.04 RELATED WORK AND DOCUMENTS**

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.
- B. Commissioning Plan: The Cx Plan shall be available for reference as it outlines responsibilities outside of the Construction Contract. It gives the Contractor a perspective as to the overall process. It encompasses the entire Cx process including design phase and post construction tasks.

- C. Section 013300 - Submittal Procedures: Stipulates additional copies of submittals to be submitted and refers to other sections for additional submittal requirements related to Cx.
- D. Section 017704 - Closeout Procedures and Training: Defines the milestones in completion incorporating the Cx process.
- E. Individual Specification Sections: Individual sections stipulate installation, start-up, warranty, O&M documentation, and training requirements for the system or device specified in the Section.

## **1.05 REFERENCE STANDARDS**

- A. ASHRAE Guideline, "Guideline for Commissioning HVAC 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 Electric Code (NEC)
- F. American Society for Testing and Materials (ASTM)
- G. Electronics Industry Association/Telecommunications Industry Association (EIA/TIA)
- H. Illuminating Engineering Society (IES)
- I. Institute of Electrical and Electronics Engineers (IEEE)
- J. International Electrical Testing Association (NETA)
- K. National Electrical Manufacturers Associates (NEMA)
- L. National Fire Protection Association (NFPA)
- M. Underwriters Laboratory, Inc. (UL)

## **1.06 DOCUMENTATION**

- A. Contractor shall provide to the CxA the following per the procedures specified herein and in other Sections of the specification:
  - 1. Drawings and Data. One hard copy and one electronic copy of Drawings and product data related to systems or equipment to be commissioned. CxA shall review and incorporate comments for Contractor's consideration.
  - 2. Draft Start-Up Procedures. Contractor shall develop Start-up Procedures for all applicable equipment and systems along with the manufacturer's application, installation and start-up procedures. CxA will initially provide to the Contractor generic Start-up Checklists, the content of which must be reviewed by the Contractor and supplemented with manufacturer-specific requirements and the Contractor's own internal quality assurance procedures and checks. CxA will review draft and recommend approval or provide comments.
  - 3. Schedule Updates. Issue periodic updates to the construction schedule.
  - 4. Action Item Response. Respond to Action Items by Cx team members.
  - 5. Field Testing Agency Reports (other than TAB). Provide all documentation of work of independent testing agencies required by the specification. These shall be provided prior to Acceptance Phase. Field Testing Agency Reports should be provided in PDF electronic format.
  - 6. Completed Start-Up Procedures. Completed Start-Up Procedure documentation for all applicable equipment and systems.
  - 7. Equipment Warrantees. Provide prior to the start of the Acceptance Phase.

- B. Record Drawings: Contractor shall maintain at the site an updated set of record or 'As-Built' documents reflecting actual installed conditions and all approved changes and modifications to the contract documents. Contractor shall provide access to the CxA to review the As-Built and Record Drawings. Provide Record Drawings in accordance with Division 1.
- C. Reports. The Cx agent shall provide a final report with executive summary of overall results, description of items commissioned, test data, conclusions, recommendations, etc. to the COR within 14 days after the completion of the commissioning process. If, due to circumstances beyond the control of the Cx agent, the Cx process cannot be completed in accordance with the schedule, then, at the discretion of the COR, a preliminary report shall be submitted detailing the results of the Cx activities completed thus far, with a final report to be submitted at a later agreed upon date.

## **1.07 COMMISSIONING SCHEDULING**

- A. The Cx will be categorized into Phases as indicated below. Note that per schedule, different systems and/or areas may be in different phases at any given time given that the Cx and testing process will be integrated into the construction process:
  - 1. Construction Phase: This is the period of time where the systems are installed, much of the Cx documentation is developed, the systems are started, and the majority of the Contractor required training is performed. On any given system or area, the Construction Phase will end when the CxA approves proceeding with the Functional Performance testing.
  - 2. Acceptance Phase: This is the period of time where the systems will be functionally tested and the systems will operate through an endurance period.
  - 3. Warranty Phase: This is the period of time that coincides with the start and end of the Contractor's base warranty.

## **1.08 CONTRACTOR RESPONSIBILITIES**

- A. Construction Phase: The Postal Service shall provide independent Cx Services directly, or through the project A/E. The A/E shall be responsible for coordinating with the CxA as necessary to assist them in completing the Cx Report. In particular, the Contractor shall be responsible for providing assistance from their test and balance contractor, BAS controls contractor, mechanical contractor, electrical contractor, etc. 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.
- B. Acceptance Phase: The following delineates the Cx-related responsibilities of the Contractor (and their subcontractors) during the Acceptance Phase.
  - 1. Assist CxA in functional performance testing. Assistance will generally include the following:
    - a. Manipulate systems and equipment to facilitate testing.
    - b. Provide any specialized instrumentation necessary for functional performance testing.
    - c. Manipulate systems to facilitate functional performance testing.
  - 2. Correct any work not in accordance with Contract Documents.
  - 3. Maintain record documentation, and update and resubmit it after completion.
- C. Warranty Phase: The following delineates the Cx-related responsibilities of the Contractor (and their subcontractors) during the Warranty Phase.
  - 1. Provide warranty service;
  - 2. Participate as required in opposite season testing;
  - 3. Correct any deficiencies identified throughout the Warranty Phase;
  - 4. Update record documentation to reflect any changes made throughout the Warranty Phase.

## **1.09 CX KICK OFF/COORDINATION MEETING**

- A. CxA shall schedule and conduct a Cx coordination meeting at the appropriate time after the award of the Construction Contract.

## **1.10 START-UP PROCEDURES AND DOCUMENTATION**

- A. Purpose: The Cx process requires that the normal quality control processes involved with preparing systems and equipment for operation are performed to a high standard of care and are thoroughly documented. The Start-up procedures shall be performed to all systems and equipment specified in the Contract documents. The Cx process requires all Parties to collaborate to establish the optimal standard of care for starting systems and equipment. The Contractor performs the Start-up procedures, documents the results, and provides them to the CxA.
- B. Sampling and Final Submission: All systems shall be started and documented per the approved procedures and NO sampling strategy is used. Completed Start-up and pre-functional checklists for all pieces of equipment shall be submitted to CxA prior to any associated functional performance testing.
- C. Postal Service Access: Contractor shall allow access by Postal Service representatives to inspect the equipment and ensure its proper operation.

## **1.11 FUNCTIONAL PERFORMANCE TESTING**

- A. The objective of Functional Performance Testing is to demonstrate that each system is operating according to the documented design intent of the Contract Documents. Functional Performance Testing facilitates bringing the systems from a state of functional completion to full dynamic operation. Additionally, during the testing process, areas of deficient performance are identified and corrected, improving the operation and functioning of the systems.
- B. The logistics and procedures involved in Functional Performance Testing are outlined below.

## **1.12 TRAINING**

- A. Adequate and thorough training of the Operators and the facilities staff is vital to effective transition and early occupancy of the building. A key goal of the Cx Team is to ensure that this is accomplished. Contractors, Subcontractors, and Manufacturers/Vendors as specified shall prepare and conduct training sessions on the installed systems and equipment for which they are responsible. The Contractor shall be responsible for insuring all other training is performed in accordance with the Contract Documents.

# **PART 2 - PRODUCTS**

## **2.01 INSTRUMENTATION**

- A. All testing equipment used in the Cx process shall be of sufficient quality and accuracy to test and/or measure system performance with the tolerances specified. All equipment shall be calibrated according to the manufacturer's recommended intervals. Calibration tags shall be affixed or certificates readily available.
- B. Testing Instrumentation: Contractor shall provide all instrumentation necessary for tests for which they are responsible. CxA will provide standard instrumentation for measuring medium and low voltage electrical voltage, current, power factor, power, and THD. CxA will provide receptacle testers for normal and GFI receptacle tests. Contractor shall provide all other instrumentation required to accomplish the specified testing.

- C. Test kits for meters and gages shall be provided to the Postal Service new. Previously used test kits will be unacceptable. Kits shall be submitted prior to the Acceptance Phase.

## **PART 3 - EXECUTION**

### **3.01 START-UP STANDARD OF CARE**

- A. Procedures that establish a minimum Standard-of-Care for the start-up, check out and testing of applicable equipment are specified in the individual technical specifications. Contractor shall apply this Standard-of-Care and document per the Cx requirements.

### **3.02 START-UP/FUNCTIONAL TEST PROCEDURES - GENERAL**

- A. This Section outlines 'generic' or minimally acceptable Start-Up and Functional Test Procedures for systems and equipment. These items shall provide a minimum guideline for the Contractor to determine the level of care required for start-up of the systems.

### **3.03 PROCEDURES COMMON TO ALL SYSTEMS**

The following start-up verifications/procedures are common to all systems.

- A. Checkout shall proceed from devices to the components to the systems.
- B. Verify labeling is affixed per spec and visible.
- C. Verify prerequisite procedures are done.
- D. Inspect for damage.
- E. Verify system is applied per the manufacturer's recommendations.
- F. Verify system has been started up per the manufacturer's recommendations.
- G. Verify that access is provided for inspection, operation and repair.
- H. Verify that access is provided for replacement of the equipment.
- I. Verify the record drawings, submittal data and O&M documentation accurately reflect the installed systems.
- J. Verify all gages and test ports are provided as required by Contract Documents and manufacturer's recommendations.
- K. Verify all recorded nameplate data is accurate.
- L. Verify that the installation is done in a manner that ensures safe operation and maintenance.
- M. Verify specified replacement material/spare parts have been provided as required by the Construction Documents.
- N. Verify all rotating parts are properly lubricated.
- O. Verify all monitoring and ensure all alarms are active and set per Postal Service's requirements.

END OF SECTION 01 91 13 – GENERAL COMMISSIONING REQUIREMENTS

## **SECTION 02 41 19 – SELECTIVE STRUCTURE DEMOLITION**

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### **PART 1 - GENERAL**

#### **1.01 SUMMARY**

- A. Section Includes:
  - 1. Procedures for demolition and removal of existing building elements.
  - 2. Removal of designated building equipment and fixtures.
  - 3. Salvaged items.
  - 4. Salvaged material.
  - 5. Salvaged items for re-use.
- B. Related Documents: The Contract Documents, as defined in Section 01 10 00 - 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 include the following:
  - 1. Section 01 35 43- Environmental Procedures: Recycling and reuse of waste materials.

#### **1.02 SYSTEM DESCRIPTION**

- A. The extent of Selective Demolition Work is that Work necessary and required to facilitate the new construction indicated.
- B. Demolition shall be such that all construction, new and existing, can be performed, and completed in accordance with the construction documents.
- C. The contractor shall visit the project site and familiarize himself with the existing conditions and project requirements.
- D. Verify the scope of the Work under this Section including salvage material. The United States Postal Service will be responsible for removing all materials and equipment which the United States Postal Service wishes to salvage prior to the beginning of this Work.
- E. The existing fire protection sprinkler system shall remain in place.

#### **1.03 QUALITY ASSURANCE**

- A. Engage only personnel who can demonstrate not less than five years successful experience in Work of similar character.
- B. Performance Criteria:
  - 1. Requirements of Structural Work: Do not cut structural work in a manner resulting in a reduction of load-carrying capacity of load/deflection ratio.
  - 2. Operational and Safety Limitations: Do not cut operational elements and safety-related components in a manner resulting in a reduction of capacities to perform in a manner intended or resulting in a decreased operational life, increased maintenance or decreased safety.
  - 3. Visual Requirements: Do not cut work which is exposed on the exterior or exposed in occupied spaces of the building in a manner resulting in a reduction of visual qualities or resulting in substantial evidence of the demolition work judged by the Architect to be cut and patched in a visually unsatisfactory manner.
  - 4. Loading: Do not superimpose loads at any point upon existing structure beyond design capacity including loads attributable to materials, construction equipment, demolition operations and shoring and bracing.

5. Vibration: Do not use means, methods, techniques or procedures which would induce vibration into any element of the structure.
6. Fire: Do not use means, methods, techniques or procedures which would produce any fire hazard unless otherwise approved by Contracting Officer.
7. Water: Do not use means, methods, techniques or procedures which would produce excessive water run-off, and water pollution.
8. Air Pollution: Do not use means, methods, techniques or procedures which would produce uncontrolled dust, fumes or other damaging air pollution.

#### **1.04 PROJECT SITE**

- A. Indicated "Existing Construction" was obtained from existing drawings or other information which may not reflect actual conditions. The Contractor shall verify all existing conditions and notify the Contracting Officer of discrepancies before proceeding with the Work.
- B. Perform the removal, cutting, drilling, etc., of existing work with extreme care, and using small tools in order not to jeopardize the structural integrity of the building.
- C. Occupancy: Contractor [shall] [shall not] have full use of the facility during construction.
- D. Condition of Structure: The United States Postal Service assumes no responsibility for the actual condition of portions of the structure to be demolished.
- E. Partial removal: Items of salvageable value to the Contractor may be removed from the structure as the work progresses if not claimed by the United States Postal Service. Salvaged items must be transported from the site as they are removed.
- F. Protection: Make sure that the safe passage of persons around the area of demolition is maintained during the demolition operation. Conduct operations to prevent injury to adjacent buildings, structures, other facilities, and persons.

#### **1.05 PROTECTION OF EXISTING CONSTRUCTION**

- A. Provide temporary protection of existing construction (floors, roof, and walls) when adjoining new work and in traffic areas.
- B. Provide temporary construction, constructed of framing and plywood, to protect existing construction and surrounding surfaces from damage by movement of materials and personnel.
- C. The contractor is responsible for all damage to existing structure and shall replace or repair all areas of damage.
- D. Repair, replace, or rebuild existing construction as required or as directed which has been removed, altered or disrupted to allow for new construction. Existing construction shall be corrected to match adjacent construction, new or existing.
- E. Perform cutting of existing concrete and masonry construction with saws and core drills. Do not use jack-hammers or explosives.

#### **1.06 SHORING AND BRACING**

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

### **PART 2 - PRODUCTS**

#### **2.01 SALVAGED ITEMS**

- A. The Contract Documents indicate the existing materials that are to be reinstalled in the new construction. The Contractor shall remove, protect and reinstall these items as indicated.



1. Items for "Reinstallation" will be indicated as such within the Contract Documents.
- B. Materials scheduled for reinstallation which are damaged by the Contractor to the extent that they cannot be reinstalled shall be replaced by the Contractor with equal quality material at no additional cost to the United States Postal Service.
- C. Coordinate with the Contracting Officer on disposition of salvage items not scheduled for reinstallation, demolished materials, and equipment. Salvaged materials, not reinstalled, shall be delivered, as directed, to the United States Postal Service.

## **2.02 SALVAGED MATERIALS**

- A. Removed and salvaged materials of value not designated for reinstallation, unless claimed as salvage by the United States Postal Service, shall become the property of the Contractor and shall be removed from the premises by the Contractor and recycled, reused or disposed of as specified in Section 013543- Environmental Procedures.
- B. The United States Postal Service will remove or, under separate contract, have all materials and equipment which the United States Postal Service requires removed prior to Work under this Section begins.

## **2.03 SALVAGED ITEMS FOR RE-USE**

- A. Materials and items scheduled for re-use which are damaged by the contractor to the extent which they cannot be re-used shall be replaced by the Contractor at no additional cost to the United States Postal Service.
- B. Contractor shall remove and salvage the existing roof hatch and access ladder for re-use. Store on site in protected area for reinstallation as indicated.

# **PART 3 - EXECUTION**

## **3.01 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.

## **3.02 PREPARATION**

- A. Temporary Support: Provide adequate temporary support for work to be cut to prevent failure. Do not endanger other work.
- B. Provide adequate protection of other work during selective demolition to prevent damage and provide protection of the work from adverse weather exposure.

## **3.03 PROCEDURE**

- A. Employ only skilled tradesmen to perform selective demolition.
- B. Cut work by methods least likely to damage work to the retained and work adjoining.

- C. In general, where physical cutting action is required, cut work with sawing and grinding tools, not with hammering and chopping tools. Core drill openings through concrete and masonry work.
- D. Patch with seams which are durable and as invisible as possible. Comply with specified tolerances for the work.
- E. Where selective demolition terminates at a surface or finish to remain, completely remove all traces of material selectively demolished, including mortar beds. Provide smooth, even, substrate transition.

### **3.04 POLLUTION CONTROLS**

- A. Use temporary enclosures and other suitable methods to limit the amount of dust and dirt rising and scattering in the air to the lowest practical level.
- B. Comply with governing authorities pertaining to environmental protection.
  - 1. Protect natural resources as specified in Section 013543 - Environmental Procedures.
- C. Clean adjacent portion of the structure and improvement of dust, dirt and debris caused by demolition operations, as directed by Contracting Officer and governing authorities. Return adjacent areas to conditions existing prior to the start of the work.

### **3.05 DISPOSAL OF DEMOLISHED MATERIALS**

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

### **3.06 SCHEDULE OF SELECTIVE DEMOLITION**

- A. Slab on Grade:
  - 1. Where indicated, saw cut perimeter of existing slab minimum of 50 percent of slab thickness to provide a breaking point to remove existing concrete.
  - 2. Break concrete slab to be removed into portions easily removed, maximum 3 foot dimensions in any side.
  - 3. Remove all concrete pieces within removed area down to the existing subgrade.
- B. Exterior Masonry:
  - 1. Locate portion of existing masonry wall to be removed.
  - 2. Using small power tools, remove only that portion of the exterior wall which is required for the indicated new construction.
- C. Interior Floor Finishes:
  - 1. Remove all interior floor tile finish material.
- D. Interior Walls and Partitions:
  - 1. All interior wall and partitions shall be removed unless otherwise indicated on drawings.
  - 2. Remove all top and bottom framing tracks and overhead braces.
- E. Mechanical System:
  - 1. Remove all mechanical equipment and related ductwork.
  - 2. Provide temporary weathertight protection of all openings in roof and exterior walls.
  - 3. Remove all accessories to the mechanical system including hanger straps.
- F. Plumbing:
  - 1. Remove all plumbing fixtures and accessories including all exposed supply, waste, and vent piping.

2. Concealed piping within and below slab construction shall be identified and capped a minimum of 3 inches (8 cm) below finish floor.
- G. Electrical Service:
1. All electrical circuits within the existing structure shall be abandoned from the existing service entrance section, beyond.
  2. Remove all abandoned electrical conduit, boxes, and wiring back to the existing electrical service which is to remain.
- H. Provide additional selective demolition as indicated and required by the Contract Documents and as required for indicated new construction.

END OF SECTION 02 41 19 - SELECTIVE STRUCTURE DEMOLITION

## **SECTION 05 12 00 - STRUCTURAL STEEL**

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### **PART 1 - GENERAL**

#### **1.01 SUMMARY**

- A. Section Includes:
  - 1. Structural steel framing members, support members, with required bracing, welds, and fasteners.
  - 2. Base plates.
  - 3. Grouting under base plates.
- B. Related Sections include the following:
  - 1. Section 033000 – Cast-In-Place Concrete: Anchorages cast in concrete. Grouting base plates and bearing plates.
  - 2. Section 052100 - Steel Joist Framing: Steel bracing for joists and joist girders.
  - 3. Section 053100 - Steel Decking: Support framing for small openings in deck.
  - 4. Section 055000 - Metal Fabrications: Steel fabrications affecting structural steel work.

#### **1.02 REFERENCES**

- A. American Institute of Steel Construction (AISC):
  - 1. Specification for the Design, Fabrication and Erection of Structural Steel for Buildings.
  - 2. AISC - Code of Standard Practice - Manual of Steel Construction - Allowable Stress Design (ASD).
  - 3. AISC - Section 10 - Architecturally Exposed Structural Steel.
- B. American Society for Testing and Materials (ASTM):
  - 1. ASTM A36/A36M - Specification for Structural Steel.
  - 2. ASTM A53 - Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.
  - 3. ASTM A108 - Specification for Steel Bars, Carbon, Cold-Finished, Standard Quality.
  - 4. ASTM A123 - Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
  - 5. ASTM A153 - Specification for Zinc Coating (Hot Dip) on Iron and Steel Hardware.
  - 6. ASTM A242/A242M - Specification for High-Strength Low-Alloy Structural Steel.
  - 7. ASTM A 307 - Specification for Carbon Steel Bolts and Studs, 60,000 psi Tensile Strength.
  - 8. ASTM A 325 - Specification for Structural Bolts, Heat Treated, 120/105 ksi Minimum Tensile Strength.
  - 9. ASTM A449 - Specification for Quenched and Tempered Steel Bolts and Studs.
  - 10. ASTM A490 - Specification for Heat-Treated Steel Structural 150 ksi Minimum Tensile Strength.
  - 11. ASTM A 500 - Specification for Cold Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes.
  - 12. ASTM A 501 - Specification for Hot Formed Welded and Seamless Carbon Steel Structural Tubing.
  - 13. ASTM A514/A514M - Specification for High-Yield Strength, Quenched and Tempered Alloy Steel Plate, Suitable for Welding.
  - 14. ASTM A529/A529M - Specification for High-Strength Carbon-Manganese Steel of Structural Quality.
  - 15. ASTM A563 - Specification for Carbon and Alloy Steel Nuts.

16. ASTM A568/A568M - Specification for Steel, Sheet, Carbon and High-Strength, Low-Alloy, Hot-Rolled and Cold-Rolled, General Requirements for.
  17. ASTM A572/A572M - Specification for High-Strength Low-Alloy Columbium-Vanadium Structural Steel.
- C. American Welding Society (AWS):
1. AWS D1.1 - Structural Welding Code.
  2. AWS A2.4 - Symbols for Welding, Brazing, and Nondestructive Examination.
- D. Factory Mutual (FM):
1. FM - Roof Assembly Classifications.
- E. Underwriters Laboratories, Inc. (UL):
1. UL - Fire Resistance Directory.
- F. Steel Structures Painting Council (SSPC):
1. SSPC - Painting Manual.
  2. SSPC-Paint 20 Type II - Zinc Rich Primers - Organic.
  3. SSPC-Paint 22 - Epoxy Polyamide Paints.
  4. SSPC-Paint 25 - Red Iron Oxide, Zinc Oxide, Raw Linseed Oil, and Alkyd Primer.
  5. SSPC-SP 2 - Hand Tool Cleaning.
  6. SSPC-SP 6 - Commercial Blast Cleaning.

### **1.03 SUBMITTALS**

- A. Section 013300 - Submittal Procedures: Procedures for submittals.
1. Shop Drawings:
    - a. Indicate profiles, sizes, spacing, locations of structural members, openings, attachments, and fasteners.
    - b. Connections.
    - c. Cambers and loads.
    - d. Indicate welded connections with AWS A2.0 welding symbols. Indicate net weld lengths.
  2. Assurance/Control Submittals:
    - a. Erection Procedure: Submit descriptive data to illustrate structural erection procedure including sequence of erection and temporary staying and bracing.
    - b. Field Welding Equipment: Submit descriptive data for field welding equipment including type, voltage, and amperage.
    - c. Test Reports: Submit the following reports directly to Contracting Officer from Testing Laboratory, with copy to Contractor. Prepare reports in conformance with Section 014000 - Quality Requirements:
      - 1) Welding inspection.
      - 2) Bolted connection inspection.
    - d. Certificates: Certify welders employed on Work, verifying AWS qualification within previous 12 months.
    - e. Qualification Documentation: Submit documentation of fabricator and erector experience indicating compliance with specified qualification requirements.

### **1.04 QUALITY ASSURANCE**

- A. Qualifications:
1. Fabricator: Company specializing in performing the work of this section with minimum 5 years documented experience.
  2. Erector:
    - a. A company specialized in performing the work of this section with a minimum of 5 years documented experience.

- b. A qualified company that participates in the AISC Quality Certification Program and is designated an AISC-Certified Erector, Category CASE or CSE.
- 3. Qualifications for Welding Work: Qualify welding operators in accordance with AWS Standard Qualification Procedures. Provide certification that welders employed in work have satisfactorily passed AWS qualification tests within previous 12 months. If rectification of welders is required, provide without additional cost to Owner.
- B. Fabricate structural steel members in accordance with AISC Code of Standard Practice.
- C. Perform Work in accordance with AISC Section 10.
- D. Design connections not detailed on the Drawings under direct supervision of a Professional Structural Engineer experienced in design of this work and licensed in State where Project is located.
- E. Survey: Employ Professional Engineer registered in State in which Project is located, experienced in survey work, to establish permanent benchmarks as shown and as necessary for accurate erection of structural steel. Check elevations of concrete and masonry bearing surfaces, and locations of anchor bolts and similar devices, before erection work proceeds, and report discrepancies to Owner. Do not proceed with erection until corrections have been made, or until compensating adjustments to structural steel work have been agreed upon with Owner.

## **1.05 DELIVERY, STORAGE, AND HANDLING**

- A. Section 016000 - Product Requirements: Transport, handle, store, and protect Products.
- B. Store steel above ground on platforms, skids, or other supports.
- C. Protect steel from corrosion.
- D. Store packaged materials in their original, unbroken packages or containers.

## **PART 2 - PRODUCTS**

### **2.01 MATERIALS**

- A. Structural Steel Shapes, Plates and Bars: ASTM A 36.
- B. Structural Tubing: ASTM A 500, Grade B.
- C. Bolts, Nuts, and Washers: AISC Specification Section 1.4.4.
  - 1. Unfinished Bolts: ASTM A 307.
  - 2. High Strength Bolts: ASTM A 325 or A 490.
  - 3. Anchor Bolts and Nuts: ASTM A 307 Grade A.
  - 4. High Strength Anchor Bolts: ASTM A 490.
- D. Welding Materials: AWS D1.1; type required for materials being welded or as indicated on Drawings.
- E. Rivets: AISC Specification Section 1.4.3.
  - 1. Steel Structural Rivets: ASTM A 502.
- F. Grout: Specified in Section 033000.
- G. Shop and Touch-Up Primer: AISC Specification Section 1-24.

### **2.02 FABRICATION**

- A. Fabricate structural steel members in accordance with AISC Code Section 6 and AISC Specification.
- B. Connections not detailed on Drawings: Engineer by fabricator, which is subject to review.

- C. Fabricator's Responsibility:
  - 1. Errors of detailing, fabrications, and for correct fitting of structural steel members.
  - 2. Do not splice structural steel members. Members having splice not indicated on Drawings will be rejected.
- D. Continuously seal joined members by continuous welds. Grind exposed welds smooth.
- E. Fabricate connections for bolt, nut, and washer connectors.
- F. Develop required camber for members.

## **2.03 FINISH**

- A. Clean, prepare, and shop prime structural steel members in accordance with SSPC - Painting Manual. Do not paint surfaces in contact with concrete, or surfaces specified to be galvanized.
- B. Shop prime structural steel members. Do not prime surfaces that will be field welded, in contact with concrete, and high strength bolted.

## **2.04 SOURCE QUALITY CONTROL AND TESTS**

- A. Provide shop testing of structural steel sections.

# **PART 3 - EXECUTION**

## **3.01 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.

## **3.02 PREPARATION**

- A. A. Supply items required to be cast into concrete or embedded in masonry with setting diagrams to appropriate Sections.

## **3.03 ERECTION**

- A. Erect structural steel in accordance with AISC Code, Section 7, and AISC Specification Section 1.25 except as specified herein.
- B. Make provision for erection loads, and for sufficient temporary bracing to maintain structure safe, plumb, and in true alignment until completion of erection and installation of permanent bracing.
- C. Do not field cut or alter structural members without approval of Contracting Officer.
- D. Field weld components indicated on Drawings.
- E. Field connect members with threaded fasteners; torque to required resistance.
- F. After erection, prime welds, abrasions, and surfaces not shop painted that are to receive finish painting, except surfaces to be in contact with concrete. Use a primer consistent with shop coat.

- G. Anchor Bolts: Install anchor bolts and other connectors required for securing structural steel to foundations and other in place work. Furnish templates and other devices as necessary for presetting bolts and other anchors to accurate locations.
- H. Setting Bases and Bearing Plates: Clean concrete and masonry bearing surfaces of bond reducing materials and roughen to improve bond to surfaces. Clean bottom surfaces of base and bearing plates.
  - 1. Set loose and attached base plates and bearing plates for structural members on steel wedges or other adjusting devices.
  - 2. Tighten anchor bolts after the supported members have been positioned and plumbed. Do not remove wedges or shims, but if protruding, cut off flush with edge of base or bearing plate prior to grouting.
  - 3. Grout solidly between bearing surfaces and bases of plates immediately after erecting member and before additional load is placed on member. Finish exposed surfaces, protect installed materials, and allow to cure. For proprietary grout materials, comply with manufacturer's installation instructions.
  - 4. Slide bearings: Permanently affixed to member and support, respectively, by welding or bolting as indicated. Align and level member faces to maintain full contact between surfaces before completing installation.
- I. High strength Bolting: Comply with specifications for Structural Joints using ASTM A 325 or A 490 Bolts.
- J. Erection Bolts:
  - 1. Comply with ASTM A 307.
  - 2. On exposed welded construction, remove erection bolts, fill holes with plug welds, and grind smooth at exposed surfaces.
- K. Touch up Painting: Immediately after erection, clean exposed field welds, bolted connections, and abraded areas of shop paint. Apply paint to exposed areas with same material as used for shop painting. Apply by brush or spray to provide a minimum dry film thickness of 2.0 mils

### **3.04 CONSTRUCTION**

- A. Site Tolerances:
  - 1. Maximum Variation From Plumb: 1/4 inch.
  - 2. Maximum Offset From True Alignment: 1/4 inch.

### **3.05 FIELD QUALITY CONTROL**

- A. Section 014000 - Quality Requirements: Field testing and inspection.
- B. Quality Assurance Program:
  - 1. AISC Code Section 8 and AISC Specification Section 1.26.
  - 2. AISC Quality Criteria and Inspection Standards, except as specified herein.
- C. Welding:
  - 1. AWS D1.1 Section 6.
  - 2. Inspectors: AWS Certified in accordance with AWS QCI, Standard for Qualifications and Certification of Welding Inspectors.

END OF SECTION 05 12 00 – STRUCTURAL STEEL



## **SECTION 05 50 00 – METAL FABRICATIONS**

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### **PART 1 - GENERAL**

#### **1.01 SUMMARY**

- A. Section Includes:
  - 1. Steel lintels for masonry openings.
  - 2. Counter and equipment supports.
  - 3. Miscellaneous framing and supports.
  - 4. Security grilles for ductwork over 8 inches square penetrating the roof or wall structure.
  - 5. Pipe Bollards.
  - 6. Pipe bollard plastic covers.
  - 7. Access Ladders.
  - 8. Angular steel floor guides for the Bulk Mail Containers or General Post Mail Containers, (where applicable).
  - 9. Alternating tread stair
- B. Related Documents: The Contract Documents, as defined in Section 01 10 00 - 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.

#### **1.02 REFERENCES**

- A. American Institute of Steel Construction (AISC):
  - 1. Specifications for the Design, Fabrication and Erection of Structural Steel for Building
- B. American National Standards Institute (ANSI):
  - 1. ANSI A14.3, "Ladders, Fixed, Safety Requirements."
- C. American Society for Testing and Materials (ASTM):
  - 1. ASTM A36, "Structural Steel."
  - 2. ASTM A53, "Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless."
  - 3. ASTM A123, "Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products."
  - 4. ASTM A153, "Zinc Coating (Hot-Dip) on Iron and Steel Hardware."
  - 5. ASTM A307, "Carbon Steel Bolts and Studs, 60,000 psi Tensile Strength."
  - 6. ASTM A500, "Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes."
  - 7. ASTM A568, "Specification for General Requirements for Steel Sheet, Carbon, and High-Strength, Low Alloy Hot-Rolled and Cold Rolled."
  - 8. ASTM A627, "Specification for Homogeneous Tool-Resisting Steel Bars for Security Applications."
  - 9. ASTM A780, "Practice for Repair of Damaged and Uncoated Areas of Hot-Dipped Galvanized Coatings."
  - 10. ASTM B221, "Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tube."
- D. American Welding Society (AWS):
  - 1. AWS D1.1 - Structural Welding Code.
- E. Steel Structures Painting Council Specification (SSPC):
  - 1. Steel Structures Painting Manual.

### **1.03 SUBMITTALS**

- A. Section 013300 - Submittal Procedures: Procedures for submittals.
  - 1. Product Data:
    - a. Submit complete descriptive data for all stock items.
  - 2. Shop Drawings:
    - a. Prepare Shop Drawings under seal of professional structural engineer registered in state where Project is located for products requiring structural engineering.
    - b. Include profiles, sizes, connection attachments, reinforcing, anchorage, size and type of fasteners and accessories, erection drawings, elevations, welded connections using standard AWS welding symbol with net weld lengths.
    - c. Take field measurements prior to preparation of shop drawings and fabrication when possible. Allow for trimming and fitting whenever taking of field measurements before fabrication might delay construction.

### **1.04 DELIVERY, STORAGE, AND HANDLING**

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

## **PART 2 - PRODUCTS**

### **2.01 MATERIALS**

- A. Steel plates, angles, and other structural shapes shall conform to ASTM A36.
- B. Steel pipe shall conform to ASTM A53, Grade B, Schedule 40.
- C. Galvanized steel pipe and tube shall conform to ASTM A53.
- D. Steel Tubing shall conform to ASTM A500.
- E. Sheet Steel, Galvanized: ASTM A446.
- F. Sheet and Strip Steel, Hot Rolled: ASTM A568.
- G. Extruded Aluminum: ASTM B221.
- H. Anchors and Fasteners for Aluminum: Stainless steel.
- I. Welding Materials: AWS D1.1; type required for materials being welded.
- J. Anchors
  - 1. Threaded Type Concrete Inserts: Galvanized malleable iron or cast steel capable of receiving 3/4 inch diameter machine bolts.
  - 2. Slotted Type Concrete Inserts: Welded box type fabricated with minimum 1/8 inch thick galvanized pressed steel plate with slot to receive 3/4 inch diameter square head bolt and knockout cover.
  - 3. Expansion Shield for Masonry Anchorage: FS FF-2-325.
  - 4. Toggle Bolts: FS FF-B-588.
- K. Fasteners
  - 1. Bolts, Nuts and Washers for Exterior Locations: ASTM A307, galvanized in accordance with ASTM A153.
  - 2. Bolts, Nuts and Washers for Interior Locations: ASTM A307, Grade A, regular hexagon head.
  - 3. Bolts, Round Head: ANSI B-18.5
  - 4. Wood Screws, Flat Head Carbon Steel: ANSI B-18.6.1.
  - 5. Plain Washers, Helical Spring Type Carbon Steel: FS FF-W-84.

L. Security Grilles:

1. All grilles are to be factory fabricated of 1/2 inch (1.25 cm) diameter tool-resistant, round steel bars spaced a maximum eight inches (20 cm) on center each direction. The bars are to be framed with a minimum 1/8 inch (0.625 cm) by 1 inch (2.5 cm) flat steel.
2. Grilles must be securely fastened to the structural framing around the opening with welded or non-removable fasteners at a maximum 6 inches (15.25 cm) on center.

M. Primers:

1. Primer for Painting: One of following:
  - a. Tnemec, Kansas City, MO, (816) 474-3400: No. 99 red primer.
  - b. Chessman-Elliot Company: Ceco No. 15 Primox.
  - c. Rowe Products, Inc.: No. 7-C-19.
  - d. Section 016000 – Product Substitutions. Substitutions: Permitted.
2. Touch-Up Primer for Galvanized Surfaces: FS TT-P-641.

## **2.02 FABRICATION**

- A. Fabricate steel items according to approved shop drawings and to applicable portions of AISC Specifications. Conceal welds where possible; grind exposed welds smooth and flush with adjacent finished surface. Ease exposed edges to small uniform radius.
- B. Pre-assemble products in shop to greatest extent possible. Disassemble units to extent necessary for shipping and handling. Clearly mark units for re-assemble and installation.
- C. For exposed to view fabrications, use materials which are smooth and free of surface blemishes including pitting, seams marks, roller marks, roller trade names and roughness. Remove blemishes by grinding or by welding and grinding, prior to cleaning, treating and application of surface finishes including zinc coating.
- D. Fabricate items with joints tightly fitted and secured.
- E. Fit and shop assemble in largest practical sections for delivery to Project site.
- F. Exposed Mechanical Fastenings: Flush countersunk screws or bolts; unobtrusively located; consistent with design of structure, except where specifically noted otherwise.
- G. Make exposed joints butt tight, flush and hairline.
- H. Fabricate anchorage and related components of same material and finish as metal fabrication, unless indicated otherwise.

## **2.03 ROUGH HARDWARE**

- A. Furnish bent or otherwise custom fabricated bolts, plates, anchors, hangers, dowels, and other miscellaneous steel and iron shapes as required for framing and supporting woodwork, and for anchoring or securing woodwork to concrete or other structures. Straight bolts and other stock rough hardware items are specified in Division 6 sections.
- B. Fabricate items to sizes, shapes, and dimensions required. Furnish malleable-iron washers for heads and nuts which bear on wood structural connections; elsewhere, furnish steel washers.

## **2.04 LOOSE STEEL LINTELS**

- A. Fabricate loose structural steel lintels from steel angles and shapes of size indicated for openings and recesses in masonry walls and partitions at locations indicated.
- B. Weld adjoining members together to form a single unit where indicated.

- C. Size loose lintels for equal bearing of one inch per foot of clear span but not less than 8 inches bearing at each side of openings, unless otherwise indicated.
- D. Galvanize all surfaces of loose steel lintels located in exterior walls.

## **2.05 MISCELLANEOUS STEEL TRIM**

- A. Provide shapes and sizes indicated for profiles shown. Unless otherwise indicated, fabricate units from structural steel shapes, plates, and steel bars, with continuously welded joints and smooth exposed edges. Use concealed field splices wherever possible. Provide cutouts, fittings, and anchorages as required for coordination of assembly and installation with other work.
- B. Galvanize miscellaneous framing and supports in the following locations:
  - 1. Exterior locations.

## **2.06 SHELF AND RELIEVING ANGLES**

- A. Fabricate shelf and relieving angles from steel angles of sizes indicated and for attachment to concrete framing. Provide slotted holes to receive 3/4 inch bolts, spaced not more than 6 inches from ends and not more than 24 inches on center, unless otherwise indicated.
- B. Galvanize shelf angles to be installed on exterior concrete framing.

## **2.07 PIPE BOLLARDS**

- A. Fabricate pipe bollards from Schedule 80 steel pipe. Exterior bollards to be galvanized. Fill bollards with concrete rounded off at top. Paint bollards per Section 099100.
- B. Fabricate pipe bollards from Schedule 80 steel pipe. Exterior bollards are to be galvanized. Fill bollards with concrete flush at top. Do not paint bollards. Install pipe bollard plastic cover.
- C. Fabricate sleeves for bollard anchorage from steel pipe with 1/4 inch thick steel plate welded to bottom of sleeve. Exterior sleeves are to be galvanized.

## **2.08 PIPE BOLLARD PLASTIC COVERS**

- A. Exterior shell cover of low density polyethylene and interior steel sleeve. Covers are to be 1/4 inch nominal wall thickness with ultraviolet and anti-static additives and a dome top. Install over steel pipe posts as indicated on Drawings. Subject to compliance with project requirements, manufacturers offering Products which may be incorporated in the Work include the following:
  - 1. Ideal Shield, L.L.C., Detroit, MI (313) 842-7290, (800) 731-1722.
  - 2. Liberty Equipment Sales, Houston, TX (281) 987-8708, (888) 987-8708.

## **2.09 ACCESS LADDERS**

- A. General: Fabricate ladders for the locations shown, with dimensions, spacings, details and anchorages as indicated. Comply with requirements of ANSI A14.3.
- B. Siderails: Continuous steel flat bars, with eased edges.
- C. Bar Rungs: Square steel bars.
- D. Fit rungs in centerline of side rails, plug weld and grind smooth on outer rail faces.
- E. Support each ladder at top and bottom and at intermediate points spaced not more than 5 feet on center. by means of welded or bolted steel brackets.
  - 1. Size brackets to support design dead and live loads indicated and to hold centerline of ladder rungs clear of the wall surface by not less than 7 inches.

- F. Provide non-slip surface on top of each rung, either by coating the rung with aluminum oxide granules set in epoxy resin adhesive, or by using a type of manufactured rung which is filled with aluminum oxide grout.

## **2.10 ALTERNATING STAIRS**

- A. Manufacturers: Subject to compliance with requirements, manufacturers offering Products which may be incorporated in the Work include the following:
  - 1. Basis of Design: Lapeyre Stair, Inc., (800) 535-7631
  - 2. Section 016000 – Product Substitutions. Substitutions: Permitted.
- B. Performance Requirements:
  - 1. Stair Treads: Treads shall be capable of withstanding a concentrated load of 1000 lbs. without deformation.
  - 2. Handrail: Handrails shall be capable of withstanding a load of 200 lbs. applied in any direction at any point on the rail.
- C. Material: Carbon Steel
- D. Finish: Safety Yellow powder coat finish
- E. Angle of Incline: 56 deg or 68 deg from horizontal, to be determined by Architect.

## **2.11 FINISHES, GENERAL**

- A. Comply with NAAMM “Metal Finishes Manual” for recommendations relative to application and designations of finishes.
- B. Finish metal fabrications after assembly.

## **2.12 STEEL AND IRON FINISHES**

- A. Galvanizing: For those items indicated for galvanizing, apply zinc-coating by the hot-dip process compliance with the following requirements:
  - 1. ASTM A153 for galvanizing iron and steel hardware.
  - 2. ASTM A123 for galvanizing both fabricated and unfabricated iron and steel products made of uncoated rolled, pressed, and forged shapes, plates, bars, and strip 0.0299 inch thick and heavier.
- B. Preparation for Shop Priming: Prepare uncoated ferrous metal surfaces to comply with minimum requirements indicated below for SSPC surface preparation specifications and environmental exposure conditions of installed metal fabrications:
  - 1. Interiors (SSPC Zone 1A): SSPC-SP3 “Power Tool Cleaning”:
- C. Apply shop primer to uncoated surfaces of metal fabrications, except those with galvanized finish or to be embedded in concrete, sprayed-on fireproofing, or masonry, unless otherwise indicated. Comply with requirements of SSPC-PA1 “Paint Application Specification No. 1” for shop painting.

## **2.13 SHOP PAINTING AND PROTECTIVE COATING**

- A. Conform to Steel Structures Painting Council Specification 15-68T, Type 1, including preparation for painting.
- B. Hot-Dip galvanizing and zinc coatings applied on products fabricated from rolled, pressed, and forged steel shapes, plates, bars and strips shall comply with ASTM Specification A123. Galvanized surfaces for which a shop coat of paint is specified shall be chemically treated to provide a bond for the paint. Except for bolts and nuts, all galvanizing shall be done after fabrication.

- C. Clean surfaces of rust, scale, grease and foreign matter in accordance with SSPC SP-1 solvent cleaning, prior to finishing. Prepare surfaces for painting in accordance with SSPC-SP2 Hand Tool Cleaning, SSPC-SP3 Power Tool Cleaning or SSPC SP-7 Brush Off Blast Cleaning.
- D. Do not prime surfaces in direct contact bond with concrete or where field welding is required.
- E. Prime paint items scheduled with one coat.
- F. Protect aluminum surfaces in contact with steel with zinc chromate primer.

## **PART 3 - EXECUTION**

### **3.01 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.

### **3.02 PREPARATION**

- A. Coordinate and furnish anchorages, setting drawings, diagrams, templates, instructions, and directions for installation of anchorages, including concrete inserts, sleeves, anchor bolts, and miscellaneous items having integral anchors that are to be embedded in concrete or masonry construction. Coordinate delivery of such items to project site.

### **3.03 INSTALLATION**

- A. Fastening to In-Place Construction: Provide anchorage devices and fasteners where necessary for securing miscellaneous metal fabrications to in-place construction; include threaded fasteners for concrete and masonry inserts, toggle bolts, through-bolts, lag bolts, wood screws, and other connectors as required.
- B. Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required for installation of miscellaneous metal fabrications. Set metal fabrication accurately in location, alignment, and elevation; with edges and surfaces level, plumb, true, and free of rack; and measured from established lines and levels.
- C. Provide temporary bracing or anchors in formwork for items that are to be built into concrete masonry or similar construction.
- D. Fit exposed connections accurately together to form hairline joints. Weld connections that are not to be left as exposed joints, but cannot be shop welded because of shipping size limitations. Do not weld, cut or abrade the surfaces of exterior units which have been hot-dip galvanized after fabrication, and are intended for bolted or screwed field connections.
- E. Field Welding: Comply with AWS Code for procedures of manual shielded metal-arc welding, appearance and quality of welds made, methods used in correcting welding work, and the following:
  - 1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
  - 2. Obtain fusion without undercut or overlap.

3. Remove welding flux immediately.
4. At exposed connections, finish exposed welds and surfaces smooth and blended so that no roughness shows after finishing and contour of welded surface matches those adjacent.

### **3.04 INSTALLATION – SECURITY GRILLES**

- A. Securely fasten to structural framing around opening with tamper-proof fasteners.

### **3.05 INSTALLATION – BOLLARDS**

- A. Anchor bollards in concrete by means of pipe sleeves preset and anchored into concrete. After bollards have been inserted into sleeves, fill annular space between bollard and sleeve solid with nonshrink, nonmetallic grout, mixed and placed to comply with grout manufacturer's directions.
- B. Install pipe bollard plastic covers per manufacturer's recommendation.

### **3.06 ADJUSTING AND CLEANING**

- A. Touch-Up Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with same material as used for shop painting to comply with SSPC-PA 1 requirements for touch-up of field painted surfaces.
  1. Apply by brush or spray to provide a minimum dry film thickness of 2.0 mils.
- B. For galvanized surfaces clean welds, bolted connections and abraded areas and apply galvanizing repair paint to comply with ASTM A780.

END OF SECTION 05 50 00 - METAL FABRICATIONS

## **SECTION 07 92 00 – JOINT SEALANTS**

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### **PART 1 - GENERAL**

#### **1.01 SUMMARY**

- A. Section Includes:
  - 1. Preparing sealant substrate surfaces.
  - 2. Sealant and backing.
- 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 321313 - Concrete Paving: Sealants used in conjunction with paving.
  - 2. Section 033000 - Cast-In-Place Concrete: Sealants used in conjunction with concrete.
  - 3. Section 042100 – Clay Unit Masonry: Sealants used in conjunction with clay masonry.
  - 4. Section 042200 – Concrete Unit Masonry: Sealants used in conjunction with concrete masonry.
  - 5. Section 078400 - Firestopping: Firestopping sealant at fire-rated assemblies.
  - 6. Section 076200 - Sheet Metal Flashing and Trim: Sealants used in conjunction with metal flashings.
  - 7. Section 088000 - Glazing: Sealants used in conjunction with glazing methods.

#### **1.02 REFERENCES**

- A. American Society for Testing and Materials (ASTM):
  - 1. ASTM C717 - Standard Terminology of Building Seals and Sealants.
  - 2. ASTM C834 - Specification for Latex Sealants.
  - 3. ASTM C920 - Specification for Elastomeric Joint Sealants.
  - 4. ASTM D1056 - Flexible Cellular Material- Sponge or Expanded Rubber.
- B. Federal Specifications (FS):
  - 1. FS SS-S-200 - Sealing Compounds, Two Component, Elastomeric, Polymer Type, Jet-Fuel Resistant, Cold Applied.
  - 2. FS TT-S-1657 - Sealing Compound, Single Component Butyl Rubber Based Solvent Release Type (for Buildings and other Types of Construction).

#### **1.03 SUBMITTALS**

- A. Section 013300 – Submittal Procedures: Procedures for submittals.
  - 1. Product Data: Product chemical characteristics, performance criteria, substrate preparation, limitations, and color availability.
- B. Section 017704 - Closeout Procedures and Training: Procedures for closeout submittals.
  - 1. Warranty: Submit manufacturer warranty with forms completed in United States Postal Service name and registered with manufacturer.

#### **1.04 QUALITY ASSURANCE**

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



## **1.05 DELIVERY, STORAGE, AND HANDLING**

- A. Section 016000 - Product Requirements: Transport, handle, store, and protect products.
- B. Deliver Products in manufacturer's original unopened containers or packages with labels intact, identifying product and manufacturer, date of manufacture, lot number, shelf life, curing time, and mixing instructions, where applicable.
- C. Store and handle materials to prevent deterioration or damage due to moisture, temperature changes, contaminants, or other causes.

## **1.06 PROJECT CONDITIONS OR SITE CONDITIONS**

- A. Environmental Requirements: Install sealant during manufacturer's recommended temperature ranges and weather conditions for application and cure. Consult manufacturer when sealant cannot be applied during recommended conditions.

## **1.07 WARRANTY**

- A. Section 017704 - Closeout Procedures and Training: Procedures for closeout submittals.
- B. Warranty:
  - 1. Submit written warranty signed by sealant manufacturer agreeing to replace sealants and accessories which fail because of loss of cohesion or adhesion or which do not cure.
  - 2. Warranty Period: 5 years or longer per the manufacturers' standard warranties.

# **PART 2 - PRODUCTS**

## **2.01 MANUFACTURERS**

- A. Subject to compliance with project requirements, manufacturers offering specified items which may be incorporated into the work include the following:
  - 1. Bostik, Inc, Huntingdon Valley, PA, (800) 523-2678, (125) 674-5600.
  - 2. Dow Corning, Midland, MI (517) 496-4000.
  - 3. GE Silicones, Waterford, NY (518) 233-3330.
  - 4. Mameco International, Cleveland, OH, (800) 321-6412, (216) 752-4400.
  - 5. W.R. Meadows, Inc, Elgin, IL (800) 342-5976, (847) 683-4500.
  - 6. Nomaco, Inc., Zebulon, NC, (919) 269-6500.
  - 7. Pecora Corporation, Harleysville, PA, (800) 523-6688, (215) 723-6051.
  - 8. Sika Corporation, Lyndhurst, NJ, (800) 933-7452, (201) 933-8800.
  - 9. Sonneborn Building Products Div. ChemRex, Inc., Shakopee, MN (800) 243-6739, (612) 496-6000.
  - 10. Tremco, Beachwood, OH, (800) 852-3821, (216) 292-5000.
  - 11. USG Corp., Chicago, IL (800) 874-4968, (312) 606-4000.
  - 12. Sherwin-Williams Co. (The), Cleveland, OH (800) 321-8194

## **2.02 BUILDING SEALANTS(SEE SEALANT SCHEDULE AT THE END OF THIS SECTION FOR SPECIFIC USE OF SEALANTS.)**

- A. Urethanes:
  - 1. Type 1: Two-Part Urethane: Self-Leveling, ASTM C920, Type M, Grade P, Class 25.
    - a. Chem-Calk CC-550, by Bostik.
    - b. Vulkem 245, by Mameco.
    - c. Vulkem 255, Wide-Joint, by Mameco.
    - d. NR-200 Urexpan, by Pecora Corporation.
    - e. Loxon 2K SL Multi-Component Polyurethane Sealant, by Sherwin-Williams.

2. Type 2: Two-Part Urethane: Non-Sag, ASTM C920, Type M, Grade NS, Class 25.
    - a. Chem-Calk 500, by Bostik.
    - b. Vulkem 227, by Mameco.
    - c. Sonolastic NP 2, by Sonneborn Building Products, ChemRex Inc.
    - d. Loxon 2K NS Multi-Component Polyurethane Sealant, by Sherwin-Williams.
  3. Type 3: One-Part Urethane: Self-Leveling, ASTM C920, Type S, Grade P, Class 25.
    - a. Vulkem 45, by Mameco.
    - b. Urexpam NR-201, by Pecora Corporation.
    - c. Sonolastic SL1, by Sonneborn Building Products, ChemRex Inc.
    - d. Sikaflex 1C-SL by Sika.
    - e. Loxon 1K SL Polyurethane Sealant, by Sherwin-Williams.
  4. Type 4: One-Part Urethane: Non-Sag, ASTM C920, Type S, Grade NS, Class 25.
    - a. Chem-Calk 900, by Bostik.
    - b. Vulkem 116, by Mameco.
    - c. Sonolastic NP I, by Sonneborn Building Products, ChemRex Inc.
    - d. Loxon 1K Smooth Polyurethane Sealant, by Sherwin-Williams.
- B. Silicones:
1. Type 1: One-Part Silicones: ASTM C920, Type S, Grade NS, Class 50.
    - a. 795 Silicone Building Sealant, by Dow Corning.
    - b. 864 Architectural Silicone Sealant, by Pecora Corporation.
    - c. White Lightning Silicone Ultra Sealant, by Sherwin-Williams.
  2. Type 2: One-Part Silicones: ASTM C920, Type S, Grade NS, Class 25.
    - a. 999-A Silicone Building & Glazing Sealant, Dow Corning.
    - b. Construction 1200 Sealant, General Electric Company.
  3. Type 3: One-Part Silicones: ASTM C920, Type S, Grade NS, Class 25. Vertical Surfaces Only.
    - a. Construction 1200 Sealant, General Electric Company.
    - b. 999-A, Dow Corning.
    - c. 860 Glaziers and Contractors Silicone Sealant, by Pecora Corporation. (colors only)
  4. Type 4: One-Part Silicones: ASTM C920, Type S, Grade NS, Class 25 or 50.
    - a. 786 Mildew Resistant Silicone Sealant, Dow Corning.
    - b. SCS 1700 Sanitary Sealant, General Electric.
    - c. 898 Silicone Sanitary Sealant, Pecora Corporation.
- C. Acrylics, Latex:
1. Type 1: One-Part Acrylic Latex, Non-Sag, ASTM-C-834-76.
  2. Chem-Calk 600, by Bostik.
  3. LC-130, by MACCO Adhesives, The Glidden Company.
  4. Easa-ply ALS, by W. R. Meadows, Inc.
  5. AC-20+Silicone Acrylic Latex, by Pecora Corporation.
  6. Sonolac, Sonneborn Building Products, ChemRex Inc
  7. 950A Siliconized Acrylic Latex Caulk, by Sherwin-Williams.
- D. Acoustical Sealants:
1. Type 1: AC-20 FTR Acoustical and Insulation Sealant, by Pecora Corporation.
  2. Type 2: 60+ Unicrylic, by Pecora Corporation.
  3. Type 3: Sheetrock Acoustical Sealant, by United States Gypsum.
    - a. Power House Siliconized Latex Caulk, by Sherwin-Williams
- E. Butyls:
1. Type 1: One-Part Butyl, Non-Sag, FS TT-S-1657.
    - a. Chem-Calk 300, by Bostik.
    - b. BC-158 Butyl Rubber, by Pecora Corporation. (ASTM C1085)
    - c. White Lightning Butyl Rubber Caulk, by Sherwin-Williams. (ASTM C1311)

- F. Preformed Compressible & Non-Compressible Fillers:
  - 1. Type 1: Backer Rod - Closed cell polyethylene foam:
    - a. HBR Backer Rod, by Nomaco.
    - b. #92 Greenrod, by Nomaco.
    - c. Sonofoam Closed-Cell Backer Rod, Sonneborn Building Products, ChemRex Inc.
  - 2. Type 2: Backer Rod - Open cell polyurethane foam:
    - a. Denver Foam, by Backer Rod Mfg Inc.
    - b. Foam Pack II, by Nomaco.
  - 3. Type 3: Neoprene compression seals:
    - a. WE, WF, and WG Series, by Watson Bowman & Acme Corp.
    - b. Will-Seal 150 Precompressed Expanding Foam Sealants, by Will-Seal, a Division of Illbruck.
  - 4. Type 4: Butyl Rod: Kirkhill Rubber Co. (714)529-4901.
- G. Bond Breaker Tape: Polyethylene tape of plastic as recommended by sealant manufacturer, to be applied to sealant contact surfaces where bond to substrate of joint filler must be avoided for proper performance of sealant

## **2.03 PAVING SEALANTS**

- A. Type 1: Two-Part Urethane: Self-Leveling, ASTM C920, Type M, Grade P, Class 25.
  - 1. Vulkem 202, by Mameco. (Jet Fuel Resistant) (FS SS-S-200D, Type H only)
  - 2. NR-300 Urexpam, by Pecora Corporation. (FS SS-S-200E)
  - 3. Loxon 2K SL Polyurethane Sealant, by Sherwin-Williams.
- B. Type 2: One-Part Urethane: Self-Leveling, ASTM C920, Type S, Grade P, Class 25.
  - 1. Sonomeric 1 Sealant, by Sonneborn Building Products, ChemRex Inc. (FS SS-S-200E)
  - 2. Vulkem 45, by Mameco.
  - 3. Loxon 1K SL Polyurethane Sealant, by Sherwin-Williams

## **2.04 COLORS**

- A. Generally, use sealant colors matching color of material joint is located in.
- B. Where a joint occurs between two materials of differing colors and Contractor cannot determine which material to match, contact Contracting Officer for selection.

## **2.05 ACCESSORIES**

- A. Joint Cleaner: Provide type of joint cleaning compound recommended by sealant manufacturer for joint surfaces to be cleaned.
- B. Primer: As recommended by sealant manufacturer.
- C. Masking tape and similar accessories to protect surfaces from damage.

# **PART 3 - EXECUTION**

## **3.01 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.
  - 1. Verify that joint widths are in conformance with sealant manufacturer allowable limits.
  - 2. Verify that contaminants capable of interfering with adhesion have been cleaned from joint and joint properly prepared.

- 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.

### **3.02 PREPARATION**

- A. Prepare and size joints in accordance with manufacturer's instructions. Clean substrates of dirt, laitance, dust, or mortar using solvent, abrasion, or sandblasting as recommended by manufacturer. Remove loose materials and foreign matter which might impair adhesion of sealant.
- B. Verify that joint backing and release tapes are compatible with sealant. Verify sealant is suitable for substrate. Verify that sealant is paintable if painted finish is indicated.
- C. Protect materials surrounding work of this Section from damage or disfiguration.

### **3.03 INSTALLATION**

- A. Install sealant in accordance with manufacturer's published instructions.
- B. Prime or seal joint surfaces where recommended by sealant manufacturer. Do not allow primer or sealer to spill or migrate onto adjoining surfaces.
- C. Install backer rod and bond breaker tape where required by manufacturer.
- D. Install preformed compressible and non-compressible fillers in accordance with manufacturer's published instructions.
- E. Install sealants to depths recommended by sealant manufacturer in uniform, continuous ribbons free of air pockets, foreign embedded matter, ridges, and sags, "wetting" joint bond surfaces equally on both sides.
- F. Tool joints concave unless shown otherwise. Where horizontal joints are between a horizontal surface and a vertical surface, fill joint to form slight cove so that joint will not trap moisture and foreign matter. Dry tool joints. Do not use soap, water, or solvent to tool joints.
- G. Epoxy Floor Joint Sealant: Install sealant at floor construction and control joints in accordance with manufacturer's published instructions and initially under manufacturer's supervision.

### **3.04 CURING**

- A. Cure sealants in compliance with manufacturer's published instructions.

### **3.05 CLEANING**

- A. Remove excess and spillage of sealants promptly as the work progresses, using materials and methods as recommended by sealant and substrate manufacturers. Clean adjoining surfaces to eliminate evidence of spillage without damage to adjoining surfaces or finishes.

### **3.06 SEALANT SCHEDULE**

- A. Exterior Joints:
  - 1. Perimeters of exterior openings where frames and other penetrations meet exterior facade of building: precast concrete, brick, CMU, polymer reinforced concrete.
    - a. Sealant Urethane Type 2
    - b. Sealant Silicone Type 1 (for prefinished materials only)

2. Expansion and control joints in exterior surfaces of cast-in-place concrete walls, precast architectural wall panels.
    - a. Sealant Urethane Type 2
    - b. Sealant Urethane Type 4
    - c. Preformed Compressible & Non-Compressible Filler Type 1
  3. Expansion and control joints in exterior surfaces of unit masonry walls and polymer reinforced concrete, including at metal panels.
    - a. Sealant Urethane Type 2
  4. Coping joints, coping-to-facade joints, cornice and wash, or horizontal surface joints not subject to foot or vehicular traffic.
    - a. Sealant Urethane Type 2
    - b. Sealant Urethane Type 4
    - c. Sealant Silicone Type 1 (for prefinished materials only)
  5. Exterior joints in horizontal wearing and non-wearing surfaces.
    - a. Sealant No. Urethane Type 1
    - b. Sealant No. Urethane Type 3
    - c. Preformed Compressible & Non-Compressible Filler Type 1
  6. Paving joints and curbs.
    - a. Sealant Urethane Type 4
    - b. Paving Sealant Type 2
  7. Setting bed for threshold and saddles.
    - a. Sealant Acoustical Type 1
  8. Painted metal lap or flashing joints.
    - a. Sealant Silicone Type 1
- B. Interior Joints:
1. Seal interior perimeters of exterior openings.
  2. Expansion and control joints on interior of exterior cast-in-place concrete walls.
  3. Expansion and control joints on interior of exterior precast, architectural wall panels.
  4. Expansion and control joints on interior of exterior masonry walls.
  5. Perimeters of interior hollow metal and aluminum frames.
  6. Interior masonry vertical control joints and intersecting masonry walls; CMU-to-CMU, CMU-to-concrete.
  7. Joints at intersection of exterior masonry walls and interior gypsum board partitions.
  8. For all of the above interior joints:
    - a. Sealant Urethane Type 2
    - b. Sealant Urethane Type 4
    - c. Sealant Silicone Type 1 (for prefinished materials only)
  9. Exposed interior control joints in drywall and concealed joints.
    - a. Sealant Acrylic, Latex, Type 1
    - b. Sealant Acoustical Type 1
    - c. Sealant Acoustical Type 3
    - d. Sealant Butyl Type 1
  10. Joints of underside of precast beams or planks.
    - a. Sealant Urethane Type 2
    - b. Sealant Urethane Type 4
  11. Joints at tops of non-load bearing masonry walls at underside of cast-in-place concrete.
    - a. Sealant Urethane Type 2
    - b. Sealant Urethane Type 4
  12. Perimeter of bath fixtures: sinks, tubs, urinals, waterclosets, basins, vanities, etc.
    - a. Sealant Silicone Type 4

13. Interior expansion and control joints in floor surfaces exposed to foot traffic.
    - a. Sealant Urethane Type 2
    - b. Sealant Urethane Type 4
    - c. Preformed Compressible & Non-Compressible Filler Type 1
  14. Interior saw-cut contraction joints in exposed concrete floors exposed to forklift traffic.
    - a. Paving Sealant Type 1
  15. Interior non-moving joints, including control, contraction, or construction joints, in interior floor slabs exposed to heavy duty traffic.
    - a. Paving Sealant Type 1
  16. Painted metal lap joints.
    - a. Sealant Silicone Type 1
- C. Glazing:
1. Structural Glazing.
    - a. Sealant Silicone Type 2
    - b. Sealant Silicone Type 3
  2. General Purpose Glazing.
    - a. Sealant Silicone Type 3
  3. End Damming.
    - a. Sealant Butyl Type 1

END OF SECTION 07 92 00 – JOINT SEALANTS

## **SECTION 08 33 23 - OVERHEAD COILING DOORS**

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### **PART 1 - GENERAL**

#### **1.01 SUMMARY**

- A. Section Includes:
  - 1. Overhead coiling security door. (manually and electrically operated)
  - 2. Hardware.
- B. Related Documents: The Contract Documents, as defined in Section 011000 - Summary of Work, apply to the Work of this Section. Additional requirements and information necessary to complete the Work of this Section may be found in other Documents.
- C. Related Sections:
  - 1. Section 055000 - Metal Fabrications
  - 2. Section 087100 - Door Hardware
  - 3. Section 099100 - Painting
  - 4. Division 26 - Electrical

#### **1.02 REFERENCES**

- A. Underwriter's Laboratories (UL):
  - 1. UL #325 - Standard for Door, Drapery, Gate, Louver and Window Operators and Systems.
- B. Door and Access Systems Manufacturing Association (DASMA):
  - 1. DASMA #202-1999 Metal Coiling Slat Door Terminology.
  - 2. DASMA #203-2001 Standards for Non-Fire Rated Rolling Doors.

#### **1.03 DEFINITIONS**

- A. Operation cycle: One complete cycle of a door begins with the door in the closed position. The door is then moved to the open position and back to the closed position.

#### **1.04 PERFORMANCE REQUIREMENTS**

- A. Structural performance to include providing overhead coiling door capable of withstanding the effects of gravity.
- B. Operating cycle requirements: Design overhead coiling door components and operator to operate for not less than 20,000 cycles.

#### **1.05 SUBMITTALS**

- A. Reference section 013300 - Submittal Procedures: Procedures for submittals.
  - 1. Submit all manufacturer's product data.
  - 2. Shop drawings: Include special conditions not detailed in manufacturer's product data and interface with adjacent conditions. Include elevations, sections, and details indicating dimensions, materials, finishes, conditions for anchorage and support of each coiling service door.
  - 3. Assurance/Control Submittals:
    - a. Test Reports: Submit the following reports directly to Contracting Officer from Testing Laboratory, with copy to Contractor. Prepare reports in conformance with Section 014000 - Quality Requirements.
    - b. Certificates: Manufacturer's certificate that Products meet or exceed specified requirements.

- c. Qualification Documentation: Submit documentation of experience indicating compliance with specified qualification requirements.
  - d. Manufacturer's Installation Instructions.
- B. Section 017704 - Closeout Procedures and Training: Procedures for closeout submittals.
  - 1. Project Record Documents including Operating and Maintenance Manual.
  - 2. Certificate stating properly installed materials that comply with this specification

## **1.06 QUALITY ASSURANCE**

- A. Qualifications:
  - 1. Manufacturer: Company specializing in manufacturing Products specified with minimum 5 years documented experience.
  - 2. Installer: Company specializing in performing the Work of this Section with minimum 5 years documented experience and approved by manufacturer.

## **1.07 DELIVERY, STORAGE, AND HANDLING**

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

## **1.08 WARRANTY**

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

# **PART 2 - PRODUCTS**

## **2.01 MANUFACTURERS**

- A. Subject to compliance with project requirements, manufacturers offering Products which may be incorporated in the Work include the following:
  - 1. McKeon, Bellport, NY (800) 266-9392.
  - 2. AlumaTek, Inc., Greenville, RI (800) 949-9950.
  - 3. Cornell Ironworks, Mountaintop, PA (800) 233-8366.
  - 4. Cookson Corporation, Phoenix, AZ (800) 294-4358.
  - 5. Dynaflair Corporation, Tampa, FL (813) 248-8100 (800) 624-3667.
  - 6. Dynamic Closures Corporation, Massena, NY (800) 663-4599.
  - 7. Metro Door, Hauppauge, NY, (800) 669-3667.
  - 8. Overhead Door Corporation, Farmer's Branch, TX (800) 972-1730.
- B. Section 016000 - Product Requirements: Product options and substitutions. Substitutions: Permitted.

## **2.02 COILING DOORS**

- A. Model:
  - 1. Basis of design: McKeon Model SD3000E-M / PF3000E-M
  - 2. AlumaTek: Solid Slat Clear Anodized Aluminum Model SA, Motor Operated.
  - 3. Cornell: Rolling Service Door (Motor Operated) Model PFI-5F.
  - 4. Cookson: Service Door (Motor Operated) Model JRA Manual.
  - 5. Dynaflair: Overhead Coiling Shutter, Motor Operated.
  - 6. Dynamic: Vortex, Motor Operated.
  - 7. Metro: Rolling Door CFMA, Motor Operated, Model CFPA, Manual.
  - 8. Overhead: Service Door Series 610, Motor Operated.
- B. Curtain: Constructed of G90 galvanized steel interlocking slats, cold rolled. Slats shall have endlocks locking each end of alternate slats to act as a wearing surface and maintain slat alignment. Curtain shall be 20 gauge minimum.
  - 1. Slats: Shall be of a cross section not less than 3" wide by 7/8" deep.
  - 2. Perforated slats shall consist of 1/8" diameter holes set at 3/16" staggered centers.



- C. Guides: Each guide assembly shall be fabricated of a minimum 3" x 3" steel support angle, a 2" x 3" inner guide angle and a 3" x 3" outer guide angle.
- D. Bottom Bar: Shall consist of two (2) angles, each not less than 2" x 2" x 1/8" steel formed to fit slats.
- E. Hood: Shall be provided to entirely enclose curtain and counterbalance barrel assembly. Hood shall be fabricated 22 gauge G90 galvanized steel and designed to match brackets. Top and bottom shall be bent and reinforced for stiffness.
- F. Counterbalance Assembly: Coiling service door shall be counterbalanced by means of adjustable steel helical torsion springs attached to shaft enclosed in pipe with required mounting blocks or rings for attachment of curtain. Grease sealed bearing or self-lubricating graphite bearings shall be attached to the spring barrel which shall be fabricated of hot formed structural quality carbon steel seamless pipe.
- G. Brackets: Fabricate reinforced steel end plates not less than 3/16 inch thick to support curtain and counterbalance assembly and form end closure plates.
- H. Structural Supports: Provide all required structural steel tube support columns, angles, anchorage, etc. Anchor to floor and roof structure as required. Coordinate with Contractor.
- I. Electric Motor Operator: Coiling service door shall be provided with a compact power unit designed and built by the coiling service door manufacturer. Operator shall be equipped with an adjustable screw-type limit switch to break the circuit at termination of travel. High efficiency gearing running in an oil bath, shall be furnished together with a magnetic operated break, completely housed to protect against damage, dust and moisture. An efficient overload protection device, which will break the power circuit and protect against damage to the motor windings shall be integral with the unit. Operator is to be housed in a NEMA type 1 enclosure.
  - 1. Motor: Shall be intermediate duty, thermally protected, ball bearing type with class A or better insulation. Horsepower of motor is to be 3hp or of manufacturer's recommended size, whichever is greater.
  - 2. Starter: Shall be size "0" magnetic reversing starter, across the line type with mechanical and electrical interlocks, with 10 amp continuous rating and 24 volt control circuit.
  - 3. Reducer: Spiral gear type, 70% efficiency minimum.
  - 4. Brake: Magnetically activated, integral within the operator's housing.
  - 5. Control Station: Provide surface mount push button control station marked open, close and stop.
  - 6. Remote Transmitter Kit: Provide manufacturer recommended remote control (RC) transmitters and receiver for remote door operation from vehicle. Coordinate transmitter quantity with USPIS.
- J. Obstruction Sensing Device: The coiling service door shall be designed with an obstruction sensing safety edge. In the event that the safety edge meets an obstruction during the normal closing operation, the coiling service door shall stop, reverse and return to the open position.
- K. Finish: After completion of fabrication, clean all metal surfaces to remove dirt and chemically treat to provide for paint adhesion. Curtain assembly is to receive a prime coat finish of .2 mils of epoxy primer and .8 mils of polyester paint in a McKeon Sterling Gray finish.

## **PART 3 - EXECUTION**

### **3.01 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.
  - 1. Verify that opening sizes, tolerances, and conditions are as indicated on 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 the United States Postal Service.

### **3.02 INSTALLATION**

- A. Perform installation using only factory approved and certified representatives of the coiling service door manufacturer.
- B. Install coiling service door assemblies at locations shown in perfect alignment and elevation, plumb, level, straight and true.
- C. Use anchorage devices to securely fasten assembly to wall construction and building framing without distortion or stress.
- D. Adjust coiling service door installation to provide uniform clearances and smooth non-binding operation.
- E. Install wiring in accordance with applicable local codes and the National Electrical Code Standard. Materials shall be US listed.

### **3.03 CONSTRUCTION**

- A. Site Tolerances:
  - 1. Maintain dimensional tolerances and alignment with adjacent work.
  - 2. Maximum Variation From Plumb: 1/16 inch.
  - 3. Maximum Variation From Level: 1/16 inch.

### **3.04 ADJUSTING**

- A. Following completion of installation, including related work by others; lubricate, test, and adjust doors for ease of operation, free of warp, distortion or twist.

### **3.05 PROTECTION AND CLEANING**

- A. Protect installed work using adequate and suitable means during and after installation until accepted by owner.
- B. Remove, repair or replace materials which have been damaged in any way.
- C. Clean surfaces of grime and dirt using acceptable and recommended means and methods.
- D. Remove labels and visible markings.

### **3.06 DEMONSTRATION**

- A. Demonstrate proper operation to Owner's Representative.
- B. Instruct Owner's Representative in proper maintenance procedures.

END OF SECTION 08 33 23 – OVERHEAD COILING DOORS

## **SECTION 08 71 00 – DOOR HARDWARE**

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### **PART 1 - GENERAL**

#### **1.01 SUMMARY**

A. Section Includes:

1. Finish Hardware items which are required for swing, sliding and folding doors, except special types of unique and non-matching hardware specified in the same section as the door and door frame.
2. Hinges.
3. Locks and latches.
4. Operating trim.
5. Accessories for pairs of doors and exit devices.
6. Closing devices.
7. Door controls.
8. Stops and holders.
9. Miscellaneous hardware.

B. Related Sections:

1. Section 083323 - Overhead Coiling Doors.
2. Section 016000 - Product Requirements.

#### **1.02 REFERENCES**

A. American National Standards Institute (ANSI);

1. ANSI A156.3 - National Standard for Exit devices.
2. ANSI A156.4 - National Standard for Door Controls - Closers.
3. ANSI A156.6 - National Standard for Architectural Door Trim.
4. ANSI A156.13 - National Standard for Mortise Locks & Latches.

B. National Fire Protection Association (NFPA):

1. NFPA 80 - Fire Doors and Windows.
2. NFPA 101 - Code for Safety to Life from Fire in Buildings and Structures.
3. NFPA 252 - Fire Tests of Door Assemblies.

C. Underwriters Laboratories (UL):

1. UL 10B - Fire Tests of Door Assemblies.
2. UL 305 - Panic Hardware.

#### **1.03 SUBMITTALS**

A. Section 013300 - Submittal Procedures: Procedures for submittals.

B. Product Data: Submit manufacturers' technical product data for each item of hardware. Include whatever information may be necessary to show compliance with requirements and include instructions for installation and for maintenance of operating parts and finishes.

C. Hardware Schedule: Submit final hardware schedule in manner indicated below. Coordinate hardware with doors, frames and related work to ensure proper size, thickness, hand, function and finish of hardware.

1. Final Hardware Schedule Content: Based on finish hardware indicated, organize hardware schedule into "hardware sets" indicating complete designations of every item required for each door or opening. Include the following information:
  - a. Type, style, function, size and finish of each hardware item.
  - b. Name and manufacturer of each item.
  - c. Fastenings and other pertinent information.

- d. Location of hardware set cross referenced to indications on Drawings both on floor plans and in door and frame schedule.
  - e. Explanation of all abbreviations, symbols, codes, etc. contained in schedule.
  - f. Mounting locations for hardware.
  - g. Door and frame sizes and materials.
  - h. Keying information.
- 2. Submittal Sequence: Submit schedule at earliest possible date particularly where acceptance of hardware schedule must precede fabrication of other work (e.g., hollow metal frames) which is critical in the project construction schedule. Include with schedule the product data, samples, shop drawings of other work affected by finish hardware, and other information essential to the coordinated review of hardware schedule.
- D. Samples: Prior to submittal of the final hardware schedule and prior to final ordering of finish hardware, submit one sample of each type of exposed hardware unit, as selected by the Contracting Officer, finished as required, and tagged with full description for coordination with schedule.
  - 1. Samples will be returned to the supplier. Units which are acceptable and remain undamaged through submittal, review and field comparison procedures may, after final check of operation, be used in the work, within limitations of keying coordination requirements.
- E. Templates: Furnish hardware templates to each fabricator of doors, frames and other work to be factory prepared for the installation of hardware. Upon request, check shop drawings of such other work, to confirm that adequate provisions are made for proper location and installation of hardware.
- F. Written Report: Before final inspection, a detailed written report shall be made to the Contracting Officer covering application and condition of the Finish Hardware.

#### **1.04 QUALITY ASSURANCE**

- A. Perform work in accordance with the following requirements:
  - 1. ANSI A117.1
  - 2. NFPA 101.
  - 3. NFPA 80.
  - 4. NFPA 252.
  - 5. UL 10B.
  - 6. UL 305.
- B. Regulatory Requirements:
  - 1. Conform to applicable code for requirements applicable to fire rated doors and frames.
  - 2. Products Requiring Electrical Connection: Listed and classified by Underwriters' Laboratories, Inc., and acceptable to the public authority as suitable for the purpose specified and indicated.
  - 3. Conform to United States Postal Service "Standards for Facility Accessibility by the Physically Handicapped" Handbook RE-4 for mounting heights and locations of accessories.
- C. Manufacturer: Obtain each type of hardware (latch and lock sets, hinges, closers, etc.) from a single manufacturer, although several may be indicated as offering products complying with requirements.
- D. Supplier: A recognized architectural finish hardware supplier, with warehousing facilities, who has been furnishing hardware to similar projects for a period of not less than 2 years, and who employs an experienced architectural hardware consultant (AHC) who is available, at reasonable times during the course of the work, for consultation about project's hardware requirements.

- E. Fire Rated Openings: Provide hardware for fire rated openings in compliance with NFPA Standard No. 80 and local building code requirements.

## **PART 2 - PRODUCTS**

### **2.01 MANUFACTURERS**

- A. Within each Article in Part 2 hardware products from a few manufacturers are specified to establish a standard of quality and minimum functional requirements.
- B. All items of a particular hardware category i.e. locksets, closers, hinges shall be of the same manufacturer.
- C. Hardware Manufacturers:
- |  |                |
|--|----------------|
| 1. Adams Rite / ASSA ABLOY, Phoenix, AZ                | (800) 872-3267 |
| 2. Alarm Lock Systems, Amityville, NY                  | (800) 252-5625 |
| 3. Bommer, Landrum, SC                                 | (800) 334-1654 |
| 4. Best Access Systems, Indianapolis, IN               | (800) 311-1705 |
| 5. Corbin Russwin, Berlin, CT                          | (800) 543-3658 |
| 6. Detex Corporation, New Brannfels, TX                | (800) 729-3839 |
| 7. Door Controls International, Dexter, MI             | (800) 742-3634 |
| 8. Folger Adam Company, Lemont, IL                     | (800) 260-9001 |
| 9. Glynn Johnson, Indianapolis, IN                     | (877) 613-8766 |
| 10. Hager Companies, St. Louis, MO                     | (800) 255-3590 |
| 11. Hiawatha, Inc., Bloomington, MN                    | (800) 777-1686 |
| 12. H. B. Ives, Wallingford, CT                        | (888) 371-7331 |
| 13. Knap & Vogt Manufacturing Co., Grand Rapids, MI    | (800) 253-1561 |
| 14. LCN Closers, Princeton, IL                         | (800) 526-2400 |
| 15. McKinney Hinge, Scranton, PA                       | (800) 346-7707 |
| 16. National Guard Products, Incorporated, Memphis, TN | (800) 647-7874 |
| 17. Norton, Charlotte, NC                              | (800) 393-1097 |
| 18. Pemko, Ventura, CA                                 | (800) 824-3018 |
| 19. Precision Hardware, Romulus, MI                    | (317) 849-2250 |
| 20. Reese Enterprises, Incorporated, Rosemount, MN     | (800) 328-0953 |
| 21. Rixson-Firemark, Franklin Park, IL                 | (866) 474-9766 |
| 22. Rockwood Manufacturing, Rockwood, PA               | (800) 458-2424 |
| 23. Sargent, New Haven, CT                             | (800) 727-5477 |
| 24. Sargent & Greenleaf, Nicholasville, KY             | (800) 826-7652 |
| 25. Schlage, Colorado Springs, CO                      | (800) 847-1864 |
| 26. Securitech Group Incorporated, Maspeth, NY         | (800) 622-5625 |
| 27. Simplex Access Controls                            | (800) 746-7539 |
| 28. Soss, Pioneer, OH                                  | (800) 922-6957 |
| 29. Stanley, New Britain, CT                           | (877) 334-6791 |
| 30. Trimco, Los Angeles, CA                            | (323) 262-4191 |
| 31. Von Duprin, Indianapolis, IN                       | (317) 613-8302 |
| 32. Wooster Products Incorporated, Wooster, OH         | (800) 321-4936 |
| 33. Yale, Charlotte, NC                                | (800) 438-1951 |
| 34. Zero International (Allegion), Indianapolis, IN    | (877) 671-7011 |
- D. Section 016000 - Product Requirements: Unless noted otherwise, substitution of specified products with equivalent products from the above approved manufacturers is permitted in accordance with Product Options and Substitutions in Section 016000.

## 2.02 HINGES

- A. Subject to compliance with requirements, provide hinges of one of the following manufacturers and as specified below:
1. Hager.
  2. McKinney.
  3. Stanley.
  4. Soss.
- B. Material:
1. For interior doors, provide full mortise type steel hinges with steel pins; non rising for non security exposure, flat button with matching plugs.
  2. For exterior doors, provide full mortise type stainless steel hinges with stainless steel pins; non-removable, flat button with matching plugs.
  3. Ball bearing Type: Swaged, inner leaf beveled, square corners.
- C. Hinges/pivots by types:
1. Type H-1: Medium weight door, average frequency, steel.

|          |        |               |     |          |
|----------|--------|---------------|-----|----------|
| a. Hinge | FBF179 | 4-1/2 x 4-1/2 | 652 | Stanley  |
| b. Hinge | BB1279 | 4-1/2 x 4-1/2 | 652 | Hager    |
| c. Hinge | TA2714 | 4-1/2 x 4-1/2 | 652 | McKinney |
  2. Type H-2: Medium weight door, average frequency, steel, non-removable pins. Hinges on interior doors shall be satin chrome plated finish 652. Hinges on exterior doors shall be completely stainless-steel finish 630.

|          |        |                   |     |          |
|----------|--------|-------------------|-----|----------|
| a. Hinge | FBF179 | 4-1/2 x 4-1/2 NRP | 652 | Stanley  |
| b. Hinge | BB1279 | 4-1/2 x 4-1/2 NRP | 652 | Hager    |
| c. Hinge | TA2714 | 4-1/2 x 4-1/2 NRP | 652 | McKinney |
  3. Type H-3: Concealed, medium weight door, average frequency, steel.

|          |      |  |     |          |
|----------|------|--|-----|----------|
| a. Hinge | 216  |  | 626 | Soss     |
| b. Hinge | MK80 |  | 626 | McKinney |
  4. Type H-4: Medium weight door, average frequency, steel. (Continuous Piano hinge)

|          |            |  |     |         |
|----------|------------|--|-----|---------|
| a. Hinge | STS314 1/4 |  | 626 | Stanley |
|----------|------------|--|-----|---------|
  5. Type H-5: Medium weight door, average frequency, steel, 5-inch high, non-removable pins. Hinges on interior doors shall be satin chrome plated finish 652. Hinges on exterior doors shall be completely stainless-steel finish 630.

|          |        |               |     |          |
|----------|--------|---------------|-----|----------|
| a. Hinge | FBF179 | 4-1/2 x 5 NRP | 652 | Stanley  |
| b. Hinge | BB1279 | 4-1/2 x 5 NRP | 652 | Hager    |
| c. Hinge | TA2714 | 4-1/2 x 5 NRP | 652 | McKinney |

## 2.03 LOCKS, LATCHES, AND BOLTS

- A. Subject to compliance with requirements, provide locks, latches and bolts of one of the following manufacturers and as specified below:
1. Best.
  2. Corbin Russwin.
  3. Sargent.
  4. Schlage.
  5. Yale.
- B. Materials:
1. Mortise Locks: ANSI A156.13, Grade 1, equipped with 6 pin tumbler. Provide 2 3/4-inch backset. Provide three keys per cylinder.
  2. Latch Sets: Provide release by turning lever, closing door, or turning emergency release key through hole in outside knob.

3. Strikes: ANSI Strikes, 1-1/4 x 4-7/8 inches, with curved lip. Wrought box strikes, with extended lip for latch bolts, except open strike plates may be used in wood frames. Provide dustproof strikes for foot bolts.
4. Tactile Warning: Provide lever handles with manufacturer's standard tactile warning per handicapped codes when required by local authority.

C. Keying

1. General:
  - a. Incorporate a security system to ensure that keys used during construction do not open doors after United States Postal Service occupancy.
  - b. Key side of locks shall be on the public side.
  - c. Master and submaster key system shall conform to United States Postal Service criteria. Doors at exterior of facility, from public area to workroom, and Stamped Envelope Storage areas shall not be on the master/submaster keying schedule. Other areas, based on need or local preference, may be excluded from master/submaster keying schedule.
2. Construction Keying:
  - a. Furnish exterior door lock sets with keyed alike removable construction core cylinders for use during construction.
  - b. Restrict distribution of construction keys. Maintain record of persons who have received keys and deliver copies of record to Contracting Officer upon request.
  - c. Provide permanent cores to Postmaster prior to substantial completion. Postmaster shall store them securely until needed. At substantial completion and at Contracting Officer direction, remove construction cores and replace with permanent cores in presence of Postmaster. Provide keys to Postmaster and return construction cores to manufacturer.
3. Permanent Keying:
  - a. Master locks and cylinders are to match the United States Postal Service existing keying system if a system exists.
  - b. Master to open all doors, except entrance doors to facility, doors from public area to workroom, and Stamped Envelope Storage shall not be on any master key system.
4. Permanent Keying:
  - a. Master locks and cylinders are to match the United States Postal Service existing I/C core system.
  - b. Master to open all doors, except Stamped Envelope Storage shall not be on any master key system.

D. Cylinders and Thumbturns by types:

1. Type B-1: Rim Cylinder.
 

|             |          |     |                |
|-------------|----------|-----|----------------|
| a. Cylinder | 1109     | 626 | Yale           |
| b. Cylinder | 20-022   | 626 | Schlage        |
| c. Cylinder | 3000-200 | 626 | Corbin Russwin |
2. Type B-2: Mortise Cylinder.
 

|             |                         |     |                |
|-------------|-------------------------|-----|----------------|
| a. Cylinder | 2153 w/ 1161 series cam | 626 | Yale           |
| b. Cylinder | 20-013                  | 626 | Schlage        |
| c. Cylinder | 1000-A03                | 626 | Corbin Russwin |
3. Type B-3: Cylinder Guard
 

|                   |        |     |            |
|-------------------|--------|-----|------------|
| a. Cylinder Guard | MS4043 | 630 | Adams Rite |
|-------------------|--------|-----|------------|

E. Locks and Latches by types:

1. Type L-1 Hotel Lock (similar to ANSI F15)
 

|                                 |     |                |
|---------------------------------|-----|----------------|
| a. AUR 8832FL w/security collar | 626 | Yale           |
| b. ML2029 NSA w/security collar | 626 | Corbin Russwin |
| c. L9485P-06 w/security collar  | 626 | Schlage        |

|    |                               |                              |     |                |
|----|-------------------------------|------------------------------|-----|----------------|
| 2. | Type L-2                      | Classroom Lock (ANSI F84)    |     |                |
| a. | AU 5408LN                     |                              | 626 | Yale           |
| b. | CL 3555                       |                              | 626 | Corbin Russwin |
| c. | ND70PD                        |                              | 626 | Schlage        |
| 3. | Type L-3                      | Entrance Lock (ANSI F20)     |     |                |
| a. | AUR 8847FL w/security collar  |                              | 626 | Yale           |
| b. | ML2067 w/ security collar     |                              | 626 | Corbin Russwin |
| c. | L9453P-06A w/ security collar |                              | 626 | Schlage        |
| 4. | Type L-4                      | Storeroom Lock (ANSI F86)    |     |                |
| a. | AU 5405LN                     |                              | 626 | Yale           |
| b. | CL3557                        |                              | 626 | Corbin Russwin |
| c. | ND80PD                        |                              | 626 | Schlage        |
| 5. | Type L-5                      | Privacy Lock (ANSI F76)      |     |                |
| a. | AU 5402LN                     |                              | 626 | Yale           |
| b. | CL3520                        |                              | 626 | Corbin Russwin |
| c. | ND40S                         |                              | 626 | Schlage        |
| 6. | Type L-6                      | Closet Deadbolt (ANSI E2151) |     |                |
| a. | 3611B                         |                              | 626 | Yale           |
| b. | 470                           |                              | 626 | Sargent        |
| 7. | Type L-7                      | Passage                      |     |                |
| a. | AU 5401LN (F75)               |                              | 626 | Yale           |
| b. | CL3510                        |                              | 626 | Corbin Russwin |
| c. | ND10S                         |                              | 626 | Schlage        |

## 2.04 PUSH/PULL UNITS

A. Pulls and Pushes Manufacturers: Subject to compliance with requirements, provide from one of the following manufacturers as specified below.

1. H. B. Ives.
2. Trimco.
3. Rockwood.
4. Baldwin.
5. Adams Rite

B. Materials: ANSI A156.6 for 0.050-inch thickness.

C. Push and Pulls by types:

- |    |                                       |     |            |
|----|---------------------------------------|-----|------------|
| 1. | Type P-1: Push 4-inch x 16 inch.      |     |            |
| a. | 1001-3                                | 630 | Trimco     |
| b. | 70C                                   | 630 | Rockwood   |
| 2. | Type P-2 Pull: 4-inch x 16 inch.      |     |            |
| a. | 1010-3                                | 630 | Trimco     |
| b. | 132 x 70C                             | 630 | Rockwood   |
| 3. | Type P-3 Pull: 2.75-inch x 11.5 inch. |     |            |
| a. | 3001 fixed pull                       | 629 | Adams Rite |

## 2.05 EXIT DEVICES

A. Exit Devices: Subject to compliance with requirements, provide exit devices of one of the following manufacturers and as specified below.

1. Corbin Russwin.
2. Yale.
3. Von Duprin.
4. Adams Rite.
5. Sargent.



6. Securitech Group Inc.
- B. Exit Only Door Alarms:
  1. SDA103 SECURITECH
- C. Materials:
  1. Provide exposed metal to match hardware.
  2. Size and mount units indicated or, if not indicated, to comply with manufacturer's recommendations for exposure condition. Reinforce substrate as recommended.
- D. Exit Devices by types:
  1. Type E-1: Exit Device (F01) (for wood and metal doors)
    - a. 8700 w/ security interlock nose guard/strike 628 Adams Rite
  2. Type E-2: Exit Device (F04) (for narrow stile rim for aluminum doors)
    - a. 8800 x cyl. dog w/ security interlock nose guard/strike 630 Adams Rite
  3. Type E-3: Exit Device (F03) (for wood and metal doors)
    - a. 8700 x cyl. dog w/ security interlock nose guard/strike 628 Adams Rite
  4. Type E-3: Not Used
  5. Type E-4M: Mechanical Access Control Device (For use at CSFs of 6,500 SF or less, including Carrier Annexes, and as determined for Administrative Offices.)
    - a. Centurion PEDS 8155-PB Series Securitech
    - b. Simplex 5000 Series 628 Simplex
  6. Type E-4EM: Electromechanical Access Control Device (For use at CSFs 6,501 to 60,000 SF, including Carrier Annexes.)
    - a. Centurion 8155-DX2 Series Securitech
    - b. Trilogy DL 3500 SERIES 628 Alarm Lock
    - c. Yale Nextouch NTB 630 Series 626 Yale
  7. Type E-5: Time Lock Exit Device system (For entrance doors)
    - a. USPSTL-FA-200 or approved equal (outswing) 628 Securitech  
(includes exit device, power supply, timer, power transfer)
    - b. USPSTL-FA-300 or approved equal (inswing) 628 Securitech  
(includes exit device, power supply, timer, power transformer)

## 2.06 CLOSERS

- A. Closers: Subject to compliance with requirements, provide closers of one of the following manufacturers and as specified below.
  1. LCN.
  2. Norton.
  3. Yale.
- B. Materials & Features:
  1. ANSI A156.4, Grade 1.
  2. ADA/ANSI A117.1
  3. U.L. listed. Provide closers for fire rated openings in compliance with NFPA 80, NFPA 101, and local building codes.
  4. Non-Sized; adjustable 1 to 5 pounds.
  5. 180-degree door opening.
  6. Heavy Duty parallel arm.
  7. Standard Cover.
  8. Provide exposed metal to match hardware.
  9. Mounting: Mount closers as follows unless indicated otherwise:
    - a. Interior side of exterior doors.
    - b. Opposite side of public side.
    - c. Workroom side of doors leading to or from the Workroom.
    - d. Room side of corridor doors.

10. Size and mount units indicated or, if not indicated, to comply with manufacturer's recommendations for exposure condition. Reinforce substrate as recommended.
11. Closers to be installed to allow door swing as shown on drawings.

C. Closers by types:

1. Type C-1:
  - a. 4011 689 LCN
  - b. P7500 689 Norton
  - c. 4400 689 Yale
2. Type C-2: Parallel arm.
  - a. 4111 689 LCN
  - b. P7500 689 Norton
  - c. 4400 689 Yale

## 2.07 STOPS, HOLDERS, AND BUMPERS

A. Stop and Holder, Floor and Wall Stop, and Bumper Manufacturers: Subject to compliance with requirements, provide from one of the following manufacturers as specified below.

1. H. B. Ives.
2. Quality Hardware Manufacturing Co., Inc.
3. Trimco.
4. Dor-O-Matic.
5. Glenn-Johnson.

B. Materials:

1. Door stop mounting: Methods to suit substrates encountered (plastic anchor, drywall anchor, expansion shield).
2. Provide grey rubber exposed resilient parts.
3. Do not furnish aluminum floor stops.
4. Where a door stop is specified in the Hardware Schedule, provide a wall stop type (S-1). However, if circumstances prevent a wall stop installation (door too far from perpendicular wall, door swing into adjacent glass, etc.) then substitute a type (S-2) or (S-3) floor stop as indicated for use intended.
5. Adjust height of floor stops to suit undercut of adjacent door.

C. Stops, Holders and Bumpers by types:

1. Type S-1: Wall Stop - Install with appropriate anchors for substrate encountered.
  - a. 1270W 630 Trimco
  - b. 407 1/2C 630 Ives
  - c. 409 630 Rockwood
2. Type S-2: Floor Stop - Install with appropriate anchors for substrate encountered.
  - a. 1201 626 Trimco
  - b. FS444 626 Ives
  - c. 471 626 Rockwood
3. Type S-3: Floor Stop - Install with appropriate anchors for substrate encountered.
  - a. W1211 630 Trimco
  - b. FS436 630 Ives
  - c. 440/442 626 Rockwood

## 2.08 THRESHOLDS

A. Threshold Manufacturers: Subject to compliance with requirements, provide from one of the following manufacturers as specified below.

1. Pemko.
2. National Guard.
3. Reese.

4. Zero.
- B. Section 016000 - Product Requirements: Product options and substitutions. Substitutions: Permitted.
- C. Thresholds by types:
  1. Type T-2: Saddle threshold for floor finish at doors (either VCT to VCT or VCT to tile or sealed concrete.)
    - a. VCT to VCT
      - 1) 271 628 Pemko
      - 2) HD5A 628 Reese
      - 3) 425E 628 National
    - b. VCT to Tile/Concrete
      - 1) 158 628 Pemko
      - 2) S514A 628 Reese
      - 3) 653 628 National
  2. Type T-3 (with weather seal):
    - a. S483AV 628 Reese
    - b. 2005AT 628 Pemko
    - c. 896V 628 National

## 2.09 WEATHERSTRIPPING

- A. Weatherstripping Manufacturers: Subject to compliance with requirements, provide from one of the following manufacturers as specified below.
  1. Pemko.
  2. Reese.
  3. Zero.
  4. National Guard.
- B. Weatherstripping by types:
  1. Type W-1: Door Gaskets.
    - a. 807A Reese
    - b. 303AS Pemko
    - c. 160VS NGP

## 2.10 MISCELLANEOUS HARDWARE

- A. Miscellaneous Hardware Manufacturers: Subject to compliance with requirements, provide from the manufacturers specified below.
- B. Provide door silencers for all doors unless indicated otherwise.
- C. Miscellaneous Hardware by types:
  1. Type M-1: Acoustical Perimeter Door Seal
    - a. 379 APK 628 Pemko
  2. Type M-2: Dead Lock, (ANSI E0191) - w/ No exposed trim on lobby side.
    - a. 3300 Series 630 Yale
  3. Type M-3: Security Viewer. Mounted/installed, centered at 5'-0" AFF.
    - a. 1756 630 Hager
    - b. 627 626 Rockwood
  4. Type M-4: Astragal
    - a. 184A 628 Reese
    - b. 359A 628 Pemko
  5. Type M-5: Silencers
    - a. 1229A Gray Trimco
    - b. SR64 Ives

|   |      |          |
|---|------|----------|
| c. 608  | Gray | Rockwood |
| 6. Type M-6: Flushbolts   |      |          |
| a. 3917   | 626  | Trimco   |
| b. 555  | 626  | Rockwood |
| 7. Type M-7: Astragal   |      |          |
| a. 276C   | 628  | Reese    |
| b. 355CS  | 628  | Pemko    |
| 8. Type M-8: Kick Plates  |      |          |
| a. K0050 8 x 34   | 630  | Trimco   |
| b. KP1050 8 x 34  | 630  | Rockwood |
| 9. Type M-9: Armor Plate; 40" H x 46" W (both sides of door)  | 630  |          |
| a. Same spec  |      |          |
| 10. Type M-10: Emergency Exit Alarm w/ Contacts:  |      |          |
| a. SDA103   |      | SGI      |
| 1) Provide concealed door contacts and a separate alarm unit. Alarm will have local 120 db (min) audible alarm and a visual alarm (strobe light) operated on 24VDC fed from a local card reader interface module (where ePACS is provided) or 24VDC from independent power supply and must have a backup battery which will power the alarm for one hour in the event of a loss of power, and to continually charge the battery. Battery operated door or panic bar mounted alarms are not allowed. |      |          |
| 2) Alarm to be located directly above the door 10 ft. above the finished floor. Provide door sign indicating alarm will sound when opened and labeled, "EMERGENCY EXIT ONLY - RE-ENTRY PROHIBITED".   |      |          |
| 11. Type M-11: Reinforcing Pivot Hinges   |      |          |
| a. 253  | 652  | Hager    |
| b. B1923  | 652  | McKinney |
| 12. Type M-12: Bumper (Install on push side of door at same height as lockset, in line with lever handle of lockset and approximately 2 inches away from the handle.)   |      |          |
| a. 170-19   | 630  | Bommer   |
| 13. Type M-13: Door Bottom Shoe   |      |          |
| a. DES-3C, 1 1/4" x 1 3/4" width  | 630  | Hiawatha |

## 2.11 FABRICATION

- A. Finish and Base Material Designations: Number indicate BHMA Code or nearest traditional U.S. commercial finish.
- B. Where base material and quality of finish are not otherwise indicated, provide at least commercially recognized quality specified in applicable Federal Specifications.

## PART 3 - EXECUTION

### 3.01 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.
  1. Verify that doors and frames are ready to receive Work and dimensions are as instructed by the manufacturer.
  2. Verify that electric power is available to power operated devices and of the correct characteristics.

- 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.

### **3.02 INSTALLATION**

- A. Where not specified under other sections to be performed by manufacturer or suppliers, machine, fit and drill wood and metal doors.
- B. Prepare doors of various types to receive hardware, using templates and instructions provided with the hardware items for jobsite work.
- C. Mount hardware units at heights indicated in "Recommended Locations for Builders Hardware for Standard Steel Doors and Frames" by the Door and Hardware Institute, except as specifically indicated or required to comply with governing regulations, and except as may be otherwise directed by Contracting Officer.
  - 1. Conform to requirements United States Postal Service "Standards for Facility Accessibility by the Physically Handicapped" Handbook RE-4.
- D. Install each hardware item in compliance with the manufacturer's instructions and recommendations. Wherever cutting and fitting is required to install hardware onto or into surfaces which are later to be painted or finished in another way, coordinate removal, storage and reinstallation or application of surface protections with finishing work specified in the Division 9 sections. Do not install surface mounted items until finishes have been completed on the substrate.
- E. Installer of security hardware is to be trained and familiar with product.
- F. Set units level, plumb and true to line and location. Adjust and reinforce the attachment substrate as necessary for proper installation and operation.
- G. Drill and countersink units which are not factory prepared for anchorage fasteners. Space fasteners and anchors in accordance with industry standards.
- H. Set thresholds for exterior doors in full bed of butyl rubber or polyisobutylene mastic sealant.

### **3.03 ADJUSTING**

- A. Adjust and check each operating item of hardware and each door, to ensure proper operation or function of every unit. Replace units which cannot be adjusted to operate freely and smoothly as intended for the application made.
- B. Clean adjacent surfaces soiled by hardware installation.
- C. Final Adjustment: Wherever hardware installation is made more than one month prior to acceptance or occupancy of a space or area, return to the work during the week prior to acceptance or occupancy, and make final check and adjustment of all hardware items in such space or area. Clean operating items as necessary to restore proper function and finish of hardware and doors. Adjust door control devices to compensate for final operation of heating and ventilating equipment.
- D. Instruct United States Postal Service Personnel in proper adjustment and maintenance of hardware and hardware finishes, during the final adjustment of hardware.
- E. Continued Maintenance Service: Approximately six months after the acceptance of hardware in each area, the Installer, accompanied by the representative of the latch and lock manufacturer, shall return to the project and re adjust every item of hardware to restore proper function of doors and hardware. Consult with and instruct United States Postal

Service personnel in recommended additions to the maintenance procedures. Replace hardware items which have deteriorated or failed due to faulty design, materials or installation of hardware units. Prepare a written report of current and predictable problems (of substantial nature) in the performance of the hardware

### **3.04 HARDWARE SCHEDULE**

- A. General requirements, see respective paragraphs above for details:
1. Ensure that keys used during construction cannot open doors after United States Postal Service occupancy.
  2. Provide door silencers for all doors unless indicated otherwise.

#### **EGRESS DOOR**

Each set to have:

- 3 ea. (H-2) Hinges
- 1 ea. (E-4EM) Access Control Device (includes 1 electric hinge)
- 1 ea. Door Stop
- 1 ea. Closer

END OF SECTION 08 71 00 - DOOR HARDWARE

## **SECTION 09 91 00 - PAINTING**

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### **PART 1 - GENERAL**

#### **1.01 SUMMARY**

- A. Section Includes:
  - 1. Surface preparation and field application of paints and finishes for interior and exterior surfaces.
  - 2. Schedule of Items to be painted.
  - 3. Exterior painting and finishing schedule.
  - 4. Interior painting and finishing schedule.
- B. Related Documents: The Contract Documents, as defined in Section 011000 - Summary of Work, apply to the Work of this Section. Additional requirements and information necessary to complete the Work of this Section may be found in other Documents.
- C. Related Sections:
  - 1. Section 055000 - Metal fabrications:
  - 2. Section 081100 - Metal Doors and Frames: Shop priming.
  - 3. Section 083323 - Overhead Coiling Doors: Shop priming.

#### **1.02 REFERENCES**

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

#### **1.03 SUBMITTALS**

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

#### **1.04 QUALITY ASSURANCE**

- A. Applicator Qualifications: Company specializing in performing Work of this Section with minimum five years documented experience.
- B. Regulatory Requirements:
  - 1. Surface Burning Characteristics in Accordance with ASTM E-84 for Class I or A finish:
    - a. Flame Spread (Non-Combustible Surfaces): Less than 25.
    - b. Smoke Density (Non-Combustible Surfaces): Less than 450.
  - 2. Provide paint and coating materials that conform to Federal, State, and Local restrictions for Volatile Organic Compounds (VOC) content.

## **1.05 DELIVERY, STORAGE AND HANDLING**

- A. Section 016000 - Product Requirements: Transport, handle, store, and protect products.
- B. Deliver paint materials in sealed original labeled containers, bearing manufacturer's name, type of paint, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and/or reducing.
- C. Store paint materials at minimum ambient temperature of 45 degrees F and a maximum of 90 degrees F, in ventilated area, and as required by manufacturer's published instructions.
- D. Prevent fire hazards and spontaneous combustion.

## **1.06 PROJECT CONDITIONS OR SITE CONDITIONS**

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

## **1.07 MAINTENANCE**

- A. Section 017704 - Closeout Procedures and Training: Procedures for closeout submittals.
- B. Extra Materials:
  - 1. Provide one gallon of each color, type and sheen to USPS Project Manager.
  - 2. Label each container with color, type, texture, room locations, in addition to the manufacturer's label.

## **PART 2 - PRODUCTS**

### **2.01 MATERIALS**

- A. Subject to compliance with project requirements, manufacturers offering specified items which may be incorporated in the work include the following:
  - 1. Benjamin Moore and Company, Montvale, NJ (201) 573-9600.
  - 2. Devco (ICI), Cleveland, OH (888) 681-6353.
  - 3. Glidden (ICI), Cleveland, OH (888) 681-6353.
  - 4. Pittsburgh Paints, Pittsburgh, PA (800) 441-9695.
  - 5. Sherwin-Williams Company, Cleveland, OH (800) 321-8194.
- B. Section 016000 - Product Requirements: Product options and substitutions. Substitutions: Permitted.

### **2.02 MATERIALS**

- A. Paints:
  - 1. Manufacturer's "Best Grade" for each type specified.
  - 2. Ready-mixed; pigments fully ground maintaining a soft paste consistency, capable of readily and uniformly dispersing to a complete homogeneous mixture.
  - 3. Providing good flowing and brushing properties and be capable of drying or curing free of streaks or sags.



4. VOC limits (g/L) for exterior and interior paint applications:
  - a. Exterior- Steel-Shop Primed
    - 1) Top Coat – Non-Flat: 150
    - 2) Top Coat - Gloss: 250
  - b. Exterior- Steel - Galvanized
    - 1) Primer Coat: 200
    - 2) Top Coat - Non-Flat: 150
    - 3) Top Coat - Gloss: 250
  - c. Interior Wood – Transparent
    - 1) Stain: 250
    - 2) Varnish: 350
  - d. Interior Concrete, Concrete Block
    - 1) Block filler: 300
    - 2) Top Coat – Flat: 100
    - 3) Top Coat – Non-Flat: 150
    - 4) Top Coat – Gloss: 250
  - e. Interior Steel – Unprimed
    - 1) Rust Prime Coat: 400
    - 2) Top Coat – Non-Flat: 150
    - 3) Top Coat – Gloss: 250
  - f. Interior Steel – Primed
    - 1) Top Coat – Flat: 100
    - 2) Top Coat – Non-Flat: 150
    - 3) Top Coat – Gloss: 250
  - g. Interior Steel – Galvanized
    - 1) Top Coat – Non-Flat: 150
    - 2) Top Coat – Gloss: 250
  - h. Interior Plaster, Gypsum Board
    - 1) Undercoater: 200
    - 2) Top Coat - Flat: 100
    - 3) Top Coat – Non-Flat: 150
    - 4) Top Coat – Gloss: 250
  - i. Interior Exposed Structural Steel and Metal Deck
    - 1) Industrial Maintenance - Primer: 340
    - 2) Industrial Maintenance – Top Coat: 340
- B. Primers and Undercoaters: Manufactured by same manufacturer as finish coat materials.
- C. Paint Accessory Materials: Linseed oil, shellac, turpentine and other materials not specifically indicated herein but required to achieve the finishes specified of high quality and approved manufacturer.

## **2.03 EXTERIOR PAINT SYSTEMS**

- A. Benjamin Moore:
  1. Ferrous Metal: Semi-Gloss, Water Base, Alkyd Primer/Acrylic Latex.
    - a. Primer: M04 Acrylic Metal Primer; MDF 2.0 mils.
    - b. Each Finish Coat: M29 DTM Acrylic Semi-Gloss; MDF 2.0 mils.
  2. Galvanized Metal: Semi-Gloss, Water Base, Alkyd Primer/Acrylic Latex.
    - a. Primer: M04 Acrylic Metal Primer; MDF 2.0 mils.
    - b. Each Finish Coat: M29 DTM Acrylic Semi-Gloss; MDF 2.0 mils.
- B. Devoe (ICI):
  1. Ferrous Metal: Semi-Gloss, Water Base, Alkyd Primer/Acrylic Latex.
    - a. Primer: Mirrolac W/B DTM Primer DP85XX.

- b. Each Finish Coat: Mirrolac W/B Semi-Gloss Enamel DP83XX.
- C. Galvanized Metal: Semi-Gloss, Water Base, Alkyd Primer/Acrylic Latex.
  - 1. Primer: Mirrolac W/B DTM Primer, DP85XX.
  - 2. Each Finish Coat: Mirrolac W/B Semi-Gloss Enamel DP83XX.
- D. Pittsburgh:
  - 1. Ferrous Metal: Semi-Gloss, Water Base, Alkyd Primer/Acrylic Latex.
    - a. Primer: 90-709 DTM Interior/Exterior Primer; MDF 3.0 mils.
    - b. Each Finish Coat: 90-474 Acrylic Enamel Satin; MDF 3.0 mils.
  - 2. Galvanized Metal: Semi-Gloss, Water Base, Alkyd Primer/Acrylic Latex.
    - a. Primer: 90-709 DTM Interior/Exterior Primer; MDF 3.0 mils.
    - b. Each Finish Coat: 90-474 Acrylic Enamel Satin; MDF 3.0 mils.
- E. Sherwin-Williams:
  - 1. Ferrous Metal: Semi-Gloss, Low VOC, Alkyd Primer/Acrylic Latex.
    - a. Primer: Pro-Cryl Universal Water-Based Primer, B66-310, MDF 3.0 mils.
    - b. Each Finish Coat: DTM Acrylic B66 Series; MDF 3.0 mils.
  - 2. Galvanized Metal: Semi-Gloss, Water Base, Alkyd Primer/Acrylic Latex.
    - a. Primer: Pro-Cryl Universal Water Based Primer, B66-310, MDF 3.0 mils.
    - b. Each Finish Coat: DTM Acrylic B66 Series; MDF 3.0 mils.

## 2.04 INTERIOR PAINT SYSTEMS

- A. Benjamin Moore:
  - 1. Gypsum Board: Eggshell, Water Base, Acrylic Latex.
    - a. Primer: 284 Moorecraft Superhide Interior Latex Primer/Undercoater; MDF 1.5 mils.
    - b. Each Finish Coat: Moorecraft Super-Hide Eggshell 286.
  - 2. Masonry: Eggshell, Water Base, Acrylic Latex.
    - a. Primer: Moorecraft Super Hide Interior/Exterior Latex Blockfiller 285; MDF 11.0 mils.
    - b. Each Finish Coat: Moorecraft Super-Hide Eggshell 286.
  - 3. Metal: Satin, Water Base, Acrylic Latex.
    - a. Each Finish Coat: Moorecraft Super-Hide Eggshell 286.
  - 4. Wood and Wood Doors: Satin, Water Base, Acrylic Latex.
    - a. Primer: 253 Moorecraft Latex Enamel Undercoater and Primer Sealer; 2.0 mils.
    - b. Each Finish Coat: Moorecraft Super-Hide Eggshell 286.
  - 5. Concrete: Semi-Gloss, Water Base, Acrylic Latex.
    - a. Primer: Moorecraft Super Hide Interior/Exterior Latex Blockfiller 285; MDF 11.0 mils.
    - b. Each Finish Coat: 276 Moorecraft Acrylic Latex; MDF 1.5 mils.
  - 6. Ferrous Metal: Semi-Gloss, Water Base, Acrylic Latex.
    - a. Primer: M04 Acrylic Metal Primer; MDF 2.0 mils.
    - b. Each Finish Coat: 276 Moorecraft Acrylic Latex; MDF 1.5 mils.
  - 7. Wood Cabinets and Wood Shelves: Semi-Gloss, Water Base, Acrylic Latex.
    - a. Enamel Undercoater: Moorecraft Acrylic Latex Underbody 269.
    - b. Each Finish Coat: 276 Moorecraft Acrylic Latex; MDF 1.5 mils.
  - 8. Wood Bumpers:
    - a. Stain: 234 Benwood Penetrating Stain.
    - b. Benwood Stays Clear Acrylic Polyurethane: 423 Benwood Low Lustre Polyurethane.
    - c. Benwood Stays Clear Acrylic Polyurethane: 422 Benwood High-Gloss Polyurethane.

B. Devoe (ICI):

1. Gypsum Board: Eggshell, Water Base, Acrylic Latex.
  - a. Primer: Wonder-Tones Primer DR50801; MDF 1.5 mil.
  - b. Each Finish Coat: Wonder-Tone Eggshell Enamel DR34XX; MDF 1.5 mil.
2. Masonry: Eggshell, Water Base, Acrylic Latex.
  - a. Primer: Bloxfil 4000 Interior/Exterior Heavy-Duty Acrylic Block Filler 4000-1000; 7.0-14.5 MDF
  - b. Each Finish Coat: Wonder-Tone Eggshell Latex Enamel DR34XX; MDF 1.5 mil.
3. Metal: Satin, Water Base, Acrylic Latex.
  - a. Each Finish Coat: Mirrolac W/B Semi-Gloss Enamel DP83XX; MDF 1.5 mil.
4. Wood and Wood Doors: Satin, Water Base, Acrylic Latex.
  - a. Primer: Wonder-Prime DR51701; MDF 1.5 mil.
  - b. Each Finish Coat: Devflex 4216HP High Performance Waterborne Acrylic Semi-Gloss Enamel; MDF 1.5 mil.
5. Concrete: Semi-Gloss, Water Base, Acrylic Latex.
  - a. Primer: Bloxfil 4000 Interior/Exterior Heavy-Duty Acrylic Block Filler 4000-1000; 7.0-14.5 MDF
  - b. Each Finish Coat: Mirrolac W/B Semi-Gloss Latex Enamel DP83XX; MDF 1.5 mil.
6. Ferrous Metal: Semi-Gloss, Water Base, Acrylic Latex.
  - a. Primer: Mirrolac W/B DTM Primer DP85XX; MDF 1.5 mil.
  - b. Each Finish Coat: Mirrolac W/B Semi-Gloss DP83XX.
7. Wood Cabinets and Wood Shelves: Semi-Gloss, Water Base, Acrylic Latex.
  - a. Primer/Sealer: Wonder-Prime DR51701; MDF 1.5 mil.
  - b. Each Finish Coat: Devflex 4216HP High Performance Waterborne Acrylic Semi-Gloss Enamel; MDF 1.5 mil.
8. Wood Bumpers:
  - a. Stain: Penchrome Interior Solventborne Semi-Transparent Oil Stain, DF 2XX; MDF 1.5 mil.
  - b. Clear Polyurethane: Penchrome Interior 100% Acrylic Finishes, DF 400 Satin; MDF 1.5 mil.

C. Glidden (ICI):

1. Gypsum Board: Eggshell, Water Base, Acrylic Latex.
  - a. Primer: ProMaster Interior Latex Primer-Sealer MP-5111; MDF 1.5 mil.
  - b. Each Finish Coat: ProMaster Interior Latex Eggshell MP-6800; MDF 1.5 mil.
2. Masonry: Eggshell, Water Base, Acrylic Latex.
  - a. Primer: Bloxfil 4000 Interior/Exterior Heavy Duty Acrylic Block Filler 4000-1000; MDF 11 mil
  - b. Each Finish Coat: ProMaster Interior Latex Eggshell MP-6800; MDF 1.5 mil.
3. Metal: Satin, Water Base, Acrylic Latex.
  - a. Each Finish Coat: Devflex 4214HP High Performance Waterborne Acrylic Semi-Gloss Enamel; MDF 1.5 mil.
4. Wood and Wood Doors: Satin, Water Base, Acrylic Latex.
  - a. Primer: Prime Interior 100% Acrylic Multi-Purpose Latex Stain Killer, PC 1000; MDF 1.5 mil.
  - b. Each Finish Coat: Devflex 4216 HP High Performance Waterborne Acrylic Semi-Gloss Enamel; MDF 1.5 mil.
5. Concrete: Semi-Gloss, Water Base, Acrylic Latex.
  - a. Primer: Bloxfil 4000 Interior/Exterior Heavy Duty Acrylic Block Filler 4000-1000; MDF 11 mil
  - b. Each Finish Coat: Devflex 4216 HP High Performance Waterborne Acrylic Semi-Gloss Enamel; MDF 1.5 mil.

6. Ferrous Metal: Semi-Gloss, Water Base, Acrylic Latex.
    - a. Primer: Devflex 4020 PF Direct to Metal Primer & Flat Finish; MDF 1.5 mil.
    - b. Each Finish Coat: Devflex 4216 HP High Performance Waterborne Acrylic Semi-Gloss Enamel; MDF 1.5 mil.
  7. Wood Cabinets and Wood Shelves: Semi-Gloss, Water Base, Acrylic Latex.
    - a. Primer/Sealer: Prime Interior 100% Acrylic Multi-Purpose Latex Stain Killer, PC 1000; MDF 1.5 mil.
    - b. Each Finish Coat: Devflex 4216 HP High Performance Waterborne Acrylic Semi-Gloss Enamel; MDF 1.5 mil.
  8. Wood Bumpers:
    - a. Stain: DF200 semi-transparent; MDF 1.5 mil.
    - b. Clear Polyurethane: Penchrome Interior 100% Acrylic Finishes, DF 400 Satin; MDF 1.5 mil.
- D. Pittsburgh:
1. Gypsum Board: Eggshell, Water Base, Acrylic Latex.
    - a. Primer: 6-2 Speedhide Latex Sealer; MDF 1.0 mils.
    - b. Each Finish Coat: 6-411 Speedhide Eggshell Latex; MDF 1.5 mils.
  2. Masonry: Eggshell, Water Base, Acrylic Latex.
    - a. Primer: 6-2 Speedhide Latex Sealer; MDF 1.0 mils.
    - b. Each Finish Coat: 6-411 Speedhide Eggshell Latex; MDF 1.5 mils.
  3. Metal: Satin, Water Base, Acrylic Latex.
    - a. Each Finish Coat: 90-474 DTM Acrylic Satin; MDF 1.5 mils.
  4. Wood and Wood Doors: Satin, Water Base, Acrylic Latex.
    - a. Primer: 6-855 Interior Water Base Undercoater; MDF 1.5 mils.
    - b. Each Finish Coat: 90-474 DTM Acrylic Satin; MDF 1.5 mils.
  5. Concrete: Semi-Gloss, Water Base, Acrylic Latex.
    - a. Primer: 6-7 Speedhide Block Filler; MDF 6.0 - 12.0 mils.
    - b. Each Finish Coat: 6-500 Speedhide Semi-Gloss Latex; MDF 1.2 mils.
  6. Ferrous Metal: Semi-Gloss, Water Base, Acrylic Latex.
    - a. Each Finish Coat: 90-474 DTM Acrylic Satin; MDF 1.5 mils.
  7. Wood Cabinets and Wood Shelves: Semi-Gloss, Water Base, Acrylic Latex.
    - a. Primer/Sealer: 6-855 Interior Water Base Undercoater; MDF 1.5 mils.
    - b. Each Finish Coat: 90-474 DTM Acrylic Satin; MDF 1.5 mils.
  8. Wood Bumpers:
    - a. Stain: 77-560 Interior Oil Stain
    - b. Clear Polyurethane: 77-89 Interior Oil Satin Polyurethane
- E. Sherwin Williams:
1. Gypsum Board: Low VOC, Eg-shell, Water Base, Acrylic Latex.
    - a. Primer: Harmony Latex Primer, MDF 1.6 mils.
    - b. Each Finish Coat: Harmony Latex Eg-Shel, MDF 1.6 mils.
  2. Masonry: Semi-Gloss, Water Base, Acrylic Latex.
    - a. Primer: PrepRite Interior/Exterior Block Filler, B25W25; MDF 10.0 mils
    - b. Each Finish Coat: ProMar 200 Zero VOC Interior Latex Egg Shell: MDF 1.5 mils.
  3. Metal: Semi-Gloss, Water Base, Acrylic Latex.
    - a. Each Finish Coat: Pro Industrial DTM Acrylic S-G, B66-1151 Series MDF 3.0 mils.
  4. Wood and Wood Doors: Semi-Gloss, Water Base, Acrylic Latex.
    - a. Primer: Wall & Wood Primer, B28W08111, MDF 1.6 mils.
    - b. Each Finish Coat: Pro Industrial Waterborne Alkyd Urethane S-G B53-1150 Series, MDF 1.4 mils.
  5. Concrete: Semi-Gloss, Water Base, Acrylic Latex.
    - a. Primer: Loxon Concrete & Masonry Primer; MDF 10.0 mils.

- b. Each Finish Coat: Pro Industrial Waterborne Alkyd Urethane S-G B53-1150 Series, MDF 1.4 mils.
- 6. Ferrous Metal: Semi-Gloss, Water Base, Acrylic Latex.
  - a. Primer: Pro-Cryl Universal Water Based Primer, B66-1310, MDF 3.0 mils.
  - b. Each Finish Coat: Pro Industrial DTM Acrylic S-G, B66-01151 Series; MDF 3.0 mils.
- 7. Wood Cabinets and Wood Shelves: Semi-Gloss, Water Base, Acrylic Latex.
  - a. Primer/Sealer: Wall & Wood Primer, B28W08111, MDF 1.6 mils.
  - b. Each Finish Coat: Pro Industrial Waterborne Alkyd Urethane S-G B53-1150 Series, MDF 1.4 mils.
- 8. Wood Bumpers:
  - a. One Coat: Stain: Oil Stain, A48 Series.
  - b. Each Coat: Clear Polyurethane: Wood Classic Waterborne Polyurethane Varnish; A68 series MDF 1.0 mil.

## **PART 3 - EXECUTION**

### **3.01 EXAMINATION**

- A. Section 017300 - Execution: Verification of existing conditions before starting work.
- B. Verification of Conditions: Verify that field measurements, surfaces, substrates and conditions are as required, and ready to receive Work.
- C. Report in writing to USPS Project Manager prevailing conditions that will adversely affect satisfactory execution of the Work of this Section. Do not proceed with Work until unsatisfactory conditions have been corrected.
- D. By beginning Work, Contractor accepts conditions and assumes responsibility for correcting unsuitable conditions encountered at no additional cost to the United States Postal Service.

### **3.02 PREPARATION**

- A. Do not paint over dirt, rust, scale, grease, moisture, scuffed surfaces, and conditions otherwise detrimental to formation of a durable paint film.
- B. Perform preparation and cleaning procedures in accordance with paint manufacturer's published instructions for each particular substrate condition.
  - 1. Provide barrier coats over incompatible primers or remove and reprime as required.
  - 2. Remove hardware, hardware accessories, machined surfaces, plates, lighting fixtures, and similar items in place and not to be painted or provide surface applied protection prior to surface preparation and painting operations. Reinstall all removed items after completion of paint work.
  - 3. Clean surfaces to be painted before applying paint of surface treatment. Remove oil and grease prior to mechanical cleaning.
- C. Ferrous Metals: Clean ferrous surfaces that are not galvanized or shop-coated, of oil, grease, dirt, loose mill scale and other foreign substances by solvent or mechanical cleaning.
  - 1. Touch-up shop-applied prime coats, where damaged or bare. Clean and touch-up with same type shop primer.
- D. Galvanized Surfaces: Clean free of oil and surface contaminants with non-petroleum-based solvent. Apply coat of etching primer if required by paint manufacturer.

- E. Cementitious Materials: Prepare cementitious surfaces to be painted by removing efflorescence, chalk, dust, dirt, grease, oils, and by roughening as required to remove glaze.
  - 1. Determine alkalinity and moisture content of surfaces to be painted by performing appropriate tests.
    - a. If surfaces are found to be sufficiently alkaline to cause blistering and burning of finish paint, correct condition before application of paint.
  - 2. Do not paint over surfaces where moisture content exceeds that permitted in manufacturer's printed instructions.
  - 3. Clean floor surfaces scheduled to be painted with a commercial solution of muriatic acid, or other etching cleaner. Flush floor with clean water to neutralize acid and allow to dry before painting.
- F. Wood: Clean wood surfaces to be painted of dirt, oil, and other foreign substances with scrapers, mineral spirits, and sandpaper, as required. Sandpaper smooth those finished surfaces exposed to view and dust off. Scrape and clean small, dry, seasoned knots and apply a thin coat of white shellac or other recommended knot sealer, before application of priming coat. After priming, fill holes, and imperfections in finish surfaces with putty or plastic wood-filler. Sandpaper smooth when dried.
  - 1. Prime, stain, or seal wood required to be job-painted immediately upon delivery to job. Prime edges, ends faces, undersides, and backsides of such wood, including cabinets and counters.
  - 2. Seal tops, bottoms, and cut-outs with a heavy coat of varnish or equivalent sealer immediately upon delivery to job.
- G. Gypsum Board: Fill minor defects with filler compound. Spot prime defects after repair.

### **3.03 APPLICATION**

- A. Apply paint products in accordance with manufacturer's published instructions using application procedures approved for the particular application and substrate to the specified Minimum Dry Film Thickness (MDF). Apply each coat to uniform finish.
- B. Apply each coat slightly darker than preceding coat unless otherwise approved by USPS Project Manager. Sand lightly between coats to achieve specified finish.
- C. Do not apply finishes on surfaces that are not dry.
- D. Number of coats and film thickness required is same regardless of application method. Do not apply succeeding coats until the previous coat has cured as recommended by the manufacturer.
- E. Apply additional coats when undercoats, stains, or other conditions show through final coat until paint film is of uniform finish, color, and appearance. Surfaces, including edges, corners, crevices, welds, and exposed fasteners to receive minimum dry film thickness equivalent to that of flat surfaces.
- F. Minimum Coating Thickness: Apply materials at not less than manufacturer's recommended spreading rate. Provide minimum dry film thickness (MDF) of the entire coating system as indicated in Painting and Finishing Schedule at end of this Section.
- G. Block Fillers: Apply block fillers to concrete masonry units at rate to provide complete coverage with pores filled.
- H. Prime Coats: Before application of finish coats, apply a prime coat of material as recommended by manufacturer to material scheduled to be painted or finished that has not been shop primed. Recoat primed and sealed surfaces where evidence of suction spots or unsealed areas in first coat appears, to assure a finish coat with no burn through or other defects due to insufficient sealing.

- I. Pigmented (Opaque) Finishes: Completely cover to provide an opaque, smooth surface of uniform finish, color, appearance, and coverage. Cloudiness, spotting, laps, brush marks, runs, sags, or other surface imperfections will not be acceptable.
- J. Hollow Metal Doors: Paint each door edge.
- K. Completed Work: Match Contracting Officer approved field samples for color and sheen.

### **3.04 MECHANICAL AND ELECTRICAL EQUIPMENT**

- A. Clean or replace identification markings on mechanical or electrical equipment when painted over or spattered.
- B. Paint both sides and edges of plywood backboards for electrical equipment before installing backboards and mounting equipment on them.
- C. Prepaint Gas piping prior to installation. (Touch-up paint after installation.)
  - 1. Color:
    - a. Roof (Yellow): OSHA Standard "Safety Yellow."
    - b. Other Areas: Match adjacent surfaces.
- D. At Workroom locations, paint red background on wall behind fire extinguisher extending 6 inches on both sides of the extinguisher and from floor to ceiling, or to 12 feet above floor, whichever is lower. Color is to be OSHA Standard "Safety Red" and in accordance with ANSI Z53.1.

### **3.05 FIELD QUALITY CONTROL**

- A. Section 014000 - Quality Requirements: Field testing and inspection.
- B. Inspect painting and coating application for scheduled material, color, sheen, specified thickness (MDF), and coverage.

### **3.06 CLEANING**

- A. As work proceeds and upon completion, promptly remove paint where spilled, splashed, or spattered.
- B. During progress of work keep premises free from any unnecessary accumulation of tools, equipment, surplus materials, and debris.
- C. Collect waste, cloths, and material which may constitute a fire hazard, place in closed metal containers and remove daily from site.
- D. Upon completion of work leave premises neat and clean.

### **3.07 PROTECTION**

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

### **3.08 COLOR SCHEDULE**

- A. Any proposal to substitute a color is to include manufacturer's certification that the color matches the specified Munsell notation. Similarly, paint colors proposed for P-4 and P-5 must include the manufacturer's certification that the color matches the specified PMS number.
- B. P-1 White (Munsell notation: #5Y 9.25/0.5NN)
  - 1. Benjamin Moore: #968.
  - 2. Glidden (ICI): #50YY 83/057.

3. Pittsburgh: #512-1, Winter Mood.
  4. Sherwin-Williams (S-W): #SW 7636, Origami White.
- C. P-2 Light Gray (Munsell notation: #N8.0)
1. Benjamin Moore: #1612, Pelican Gray.
  2. Devoe (ICI): #1H51G, Catkin.
  3. Glidden (ICI): #50BG 62/007.
  4. Sherwin-Williams: #SW7662, Evening Shadow
- D. P-3 (Not Used)
- E. P-4 Red (Match PMS 485C "Postal Red") Custom Match
- F. P-5 Blue (Match PMS 301C "Postal Blue") Custom Match
- G. P-6 Medium Gray (Munsell notation: #10B7/1)
1. Sherwin Williams: SW#1232, Dublin Gray (custom mix)
- H. P-7 Semi-gloss Black

### **3.09 SCHEDULE OF ITEMS TO BE PAINTED**

- A. Painted finishes shall be provided for, but not limited to, the following items. Refer to Drawings and Paint Color Schedule at end of this Section for designated finishes and colors of areas.
1. Exterior: All exterior surfaces including, but not limited to:
    - a. Hollow metal doors and frames.
    - b. Metal opening frames and trim.
    - c. Metal flashing (if exposed from ground level) and downspout.
    - d. Metal gravelstops (vertical face).
    - e. Pipe Bollards, if not to receive plastic covers specified in Section 055000.
    - f. Metal railings.
    - g. Roof hatch.
    - h. Canopy supporting steel structure.
    - i. Wall louvers.
  2. Interior: All interior surfaces as scheduled on Drawings including, but not limited to:
    - a. Hollow metal doors and frames.
    - b. Hollow metal window frames.
    - c. Metal opening frames and trim.
    - d. Gypsum wallboard.
    - e. Exposed concrete unit masonry.
    - f. Pipe Bollards.
    - g. Metal railings.
    - h. Exposed structure columns.
    - i. Metal stair stringers and handrails.
    - j. Exposed wood trim.
- B. Do not paint the following items:
1. Pre-finished items:
    - a. Aluminum, brass, bronze, stainless steel, and chrome plated steel.
    - b. Pre-finished items, such as toilet compartments, acoustical ceiling materials, mechanical, and electrical equipment.
    - c. UL, FM, and other code-required labels.
    - d. Equipment identification, performance rating, and name plates.
    - e. Finish hardware.
    - f. Factory finished metal wall panels, metal wall panel trim, and metal gravel stops.



2. Exposed items:
  - a. Exposed mechanical ductwork, hangers, and supports.
  - b. Exposed piping and conduit, hangers and supports.
  - c. Exposed fire protection piping, hangers and supports.
  - d. Exposed roof structure.
  - e. Exposed roof deck.

### **3.10 PAINTING AND FINISHING SCHEDULE**

#### **A. Interior Paint Systems:**

1. Interior Gypsum Wallboard:
  - a. 1 coat Latex Wall Primer.
  - b. 1 coat Latex Eggshell Enamel
2. Interior Masonry:
  - a. 1 coat Latex Block Filler
  - b. 1 coat Latex Eggshell Enamel
3. Interior Metal:
  - a. 2 coats Latex Satin
4. Interior Wood (painted):
  - a. 1 coat Enamel Undercoat
  - b. 2 coats Alkyd Semi-Satin Enamel
5. Cast-In-Place Concrete:
  - a. One coat of Latex Masonry Block Filler.
  - b. Two tinted coats of Acrylic Latex Semi-Gloss Enamel.
6. Wood Doors - Painted.
  - a. One coat Enamel Undercoat.
  - b. Two tinted coats of Latex Semi-Gloss Enamel.
7. Ferrous Metals
  - a. Touch up Prime Coat.
  - b. Two tinted coats of Alkyd Enamel Semi-Gloss.
8. Wood Cabinets, Shelves, etc. - exposed surfaces.
  - a. One coat Primer-Sealer.
  - b. One coat Enamel Undercoat.
  - c. One coat Alkyd Enamel Semi-Gloss Enamel.
9. Wood Bumpers.
  - a. Penetrating Oil Stain.
  - b. Two Coats of Clear Polyurethane Semi-Gloss Finish.
10. Exterior Paint Systems:
  - a. Galvanized Metal:
    - 1) Touch up Prime Coat.
    - 2) Two tinted coats Exterior Alkyd Enamel Semi-Gloss Enamel.
11. Ferrous Metals:
  - a. Touch up Prime Coat.
  - b. Two tinted coats Exterior Alkyd Enamel Semi-Gloss Enamel.

END OF SECTION 09 91 00 – PAINTING

## **SECTION 11 12 00 - PARKING CONTROL EQUIPMENT**

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### **PART 1 - GENERAL**

#### **1.01 SUMMARY**

- A. Section Includes:
  - 1. Parking gate arm and activator units.
  - 2. Devices for card controlled access.
  - 3. Vehicle and motorcycle detection activators.
  - 4. Entry operated by coded card.
  - 5. Exit operation by detection of vehicle or motorcycle.
- 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.

#### **1.02 SUBMITTALS**

- A. Section 013300 - Submittal Procedures: Procedures for submittals.
  - 1. Product Data: Data on components, accessories, configurations, and operation.
  - 2. Shop Drawings: Detailed dimensions, electrical requirements, and foundation system.
  - 3. Assurance/Control Submittals:
    - a. Certificates: Manufacturer's certificate that Products meet or exceed specified requirements.

#### **1.03 QUALITY ASSURANCE:**

- A. UL and NEMA compliance.
- B. Installer: Approved by equipment manufacturer to install specified items.
- C. Conform to applicable code for emergency vehicle access.

#### **1.04 DELIVERY, STORAGE AND HANDLING**

- A. Section 016000 - Product Requirements: Transport, handle, store, and protect products.
- B. Protect components and accessories on site from damage or moisture.

### **PART 2 - PRODUCTS**

#### **2.01 MANUFACTURERS**

- A. Subject to compliance with project requirements, manufacturers offering specified items which may be incorporated in the Work include the following:
  - 1. Magnetic Automation Corporation, Rockledge, FL (321) 6350-8585
  - 2. Aleph America Corporation, Reno, NV (775) 827-8000
- B. Section 016000 - Product Requirements: Product options and substitutions. Substitutions: Permitted.

#### **2.02 AUTOMATIC GATE**

- A. Basis of Design: Magnetic Automation Corp., Magstop Auto Control

#### **2.03 PHOTOELECTRIC DUAL BEAM DETECTORS**

- A. Basis of Design: Aleph America, HA-70D

## **PART 3 - EXECUTION**

### **3.01 INSTALLATION**

- A. Install parking control system and components in accordance with manufacturer's instructions and placement drawings.

### **3.02 SURGE PROTECTION**

- A. Provide individual surge protection at both ends of all power and low voltage controls conductors serving the parking gate. Refer to section 281304.

### **3.03 TESTING**

- A. Test operating functions in accordance with manufacturer's printed checklist.
- B. Correct defects revealed by tests.
- C. Retest corrected areas until functions are operating correctly.

### **3.04 ACCEPTANCE**

- A. At completion of project and as condition of acceptance, parking control equipment and systems shall be operated for a period of 15 consecutive calendar days without breakdown.

END OF SECTION 11 12 00 – PARKING CONTROL EQUIPMENT

## **SECTION 26 05 00 - COMMON WORK RESULTS FOR ELECTRICAL**

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### **PART 1 - GENERAL**

#### **1.01 SUMMARY**

- A. Section Includes:
  - 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: 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 019113 - General Commissioning Requirements
  - 2. Section 078400 - Firestopping
  - 3. Section 220500 - Common Work Results for Plumbing
  - 4. Section 230500 - Common Work Results for HVAC
  - 5. Section 251104 - Metering Devices
  - 6. Section 251304 - Facility System Integration into EEMS
  - 7. Section 260519 - Low-Voltage Electrical Power Conductors and Cables
  - 8. Section 260533 - Raceway and Boxes for Electrical Systems
  - 9. Section 260623 - Lighting Control Devices
  - 10. Section 260800 - Commissioning of Electrical Systems
  - 11. Section 262200 - Low Voltage Transformers
  - 12. Section 262413 - Switchboards
  - 13. Section 262416 - Panelboards
  - 14. Section 262726 - Wiring Devices
  - 15. Section 262816 - Enclosed Switches and Circuit Breakers
  - 16. Section 262923 - Variable Speed Drives
  - 17. Section 264100 - Facility Lightning Protection
  - 18. Section 264128 - Surge Protective Devices (SPD's)
  - 19. Section 265100 - Interior Lighting (LED-Solid State)
  - 20. Section 265600 - Exterior Lighting
  - 21. Section 270500 - Common Work Results for Communications
  - 22. Section 271100 - Communications Equipment Room Fittings
  - 23. Section 271300 - Communications Backbone Cabling
  - 24. Section 271500 - Communications Horizontal Cabling
  - 25. Section 272133 - Data Communications – Wireless Access Points
  - 26. Section 275116 - IP Integrated, Public Address Zone Paging System
  - 27. Section 275123 - Call Bell Systems
  - 28. Section 281600 - Intrusion Detection System
  - 29. [Section 282304 - Analog CCTV System]
  - 30. [Section 282305 - Integrated Security and Investigative Platform (ISIP) CCTV System]
  - 31. Section 283100 - Fire Detection and Alarm System (Horn/Strobes)
  - 32. Section 337173 - Electrical Utility Services

## **1.02 REFERENCES**

- A. National Electrical Contractors Association (NECA):
  - 1. NECA SI - Standard of Installation.
- B. National Electrical Manufacturers Association (NEMA):
  - 1. NEMA KS 1 - Enclosed Switches.
- C. National Electrical Testing Association (NETA):
  - 1. NETA ATS - Acceptance Testing Specifications for Electrical Power Distribution Equipment and Systems.
- D. National Fire Protection Association (NFPA):
  - 1. NFPA 70 - National Electrical Code.

## **1.03 SUBMITTALS**

- A. Section 013300 - Submittal Procedures: Procedures for submittals.
  - 1. Product Data:
    - a. Grounding electrodes and connections.
    - b. Starter electrical characteristics and connection requirements.
  - 2. Assurance/Control Submittals:
    - a. Electrical System Test Reports: Submit report including the following directly to USPS Project Manager from Testing Laboratory, with copy to Contractor. Prepare reports in conformance with Section 014000 - Quality Requirements.
      - 1) Summary of project.
      - 2) Description of equipment tested.
      - 3) Description of test.
      - 4) Test results.
      - 5) Conclusions and recommendations.
      - 6) Appendix, including appropriate test forms.
      - 7) List of test equipment used and calibration date.
      - 8) Signature of responsible Testing Laboratory Officer.
    - b. Certificates: Manufacturer's certificate that each Product specified meet or exceed specified requirements.
    - c. Qualification Documentation: Submit documentation of experience indication compliance with specified qualification requirements.
- B. Section 017704 - Closeout Procedures and Training: Procedures for closeout submittals.
  - 1. Project Record Documents: Accurately record the following.
    - a. Locations of components and grounding electrodes.

## **1.04 QUALITY ASSURANCE**

- A. Installer Qualifications: Company specializing in performing Work of this Section with minimum 5 years documented experience.
- B. Regulatory Requirements:
  - 1. Products: Listed and classified by Underwriters Laboratories, Incorporated as suitable for the purpose specified and indicated.
  - 2. Work herein shall conform to all applicable laws, ordinances and regulations in accordance with the latest applicable requirements of:
    - a. National Electrical Manufacturer's Associates.
    - b. Standards of National Fire Protection Association (NFPA 72, 90A and 101).
    - c. Underwriter's Laboratories.
    - d. Occupational Safety and Health Agency Standards.
    - e. Illuminating Engineering Society Handbook.
    - f. The International Existing Building Code.

- g. The International Electrical Code.
- h. ASHRAE Standard 90.1.
- i. The International Energy Conservation Code.

## **1.05 BASIC ELECTRICAL METHODS**

- A. Drawings are schematic and diagrammatic. Use judgment and care to install electrical Work to function properly and fit within building construction and finishes. Electrical conductors, conduit, components, not shown or specified, which are required for any device or system to produce a complete and operative system are required to be furnished and installed.
- B. Exact location of outlets are determined from dimension on Drawings, manufacturer's shop drawings, or as may be determined at Project Site. Do not scale Drawings for exact location of any item. Verify item mounting heights as required by project conditions prior to rough-in.
- C. Route conduits and wiring associated with new equipment and systems above ceilings, in existing chases, and concealed within building structure.
- D. Surface mounted raceways or conduit permitted only at locations indicated on Drawings.
- E. Circuit grouping, conduit or cable runs and home runs are indicated with number of conductors shown in each raceway to clarify operation and function of various systems. Provide proper number of conductors and conduits or cables to provide operative system as indicated on Contract Documents. Do not regroup any feeder circuits, branch circuits, home runs, and zone alarms at any point, from that shown on Contract Documents. Each conduit run shall contain no more than (6) current carrying conductors.
- F. Branch and home run circuits are indicated as 2, 3, or 4 wire circuits unless otherwise noted. Do not connect two ungrounded conductors to same circuit breaker/fused switch in any panel. Circuit runs consist of a maximum of five conductors; 3 phase conductors, 1 neutral conductor, and 1 equipment ground conductor, unless otherwise noted. Do not splice branch circuit conductors in any panels, safety switches, or circuit breakers in separate enclosures.
- G. The sharing of neutral conductors for multiwire branch circuits is prohibited. All branch circuits shall contain individual neutrals.
- H. Proposed equipment, switches or devices, shown mounted on and/or adjacent to equipment, which if installed, would impair proper operation of existing or new equipment, shall be removed and relocated by Contractor as required so equipment will function properly. Notify 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.
  - 1. Seal penetrations in non-fire rated ceilings, walls or floors material specified in Section 079200 – Joint Sealants.
  - 2. Seal penetrations in fire rated walls with material specified in Section 078400 - Firestopping.
- J. Tighten electrical connectors and terminals, including screws and bolts, in accordance with equipment manufacturer's published torque tightening values for equipment connectors. Where manufacturer's torqueing requirements are not indicated, tighten connectors and terminals to comply with tightening torques specified in UL 486A, and NFPA 70.
- K. Install equipment and materials to provide required maintenance and code working clearance for servicing and maintenance. Coordinate final location of concealed equipment and devices requiring access with final location of required access panels and doors. Allow required space for removal of parts that require replacement or servicing.

- L. Remove existing equipment, lighting fixtures, switches, and receptacles as required to facilitate proposed installation and as specified in Section 024119 - Selective Structure Demolition. Remove existing wiring and conduit serving items to be removed. Conduit in inaccessible areas shall be cut off below finished surfaces and existing surface patched to match existing. Provide blank plates on existing flush mounted outlet boxes that will be abandoned. Remove all abandoned conductors from raceways.
- M. Refer to section 015000 – Temporary Facilities & Controls for special requirements relating to facilities leased by USPS.

## **PART 2 - PRODUCTS**

### **2.01 GROUNDING AND BONDING**

- A. Grounding System Resistance: Five ohm.
- B. Rod Electrodes:
  - 1. Material: Copper.
  - 2. Diameter: 3/4 inch.
  - 3. Length: 10 feet.
- C. [Active Electrodes]:
  - 1. [Description: Metallic-salt-filled copper-tube electrode].
  - 2. [Shape: As required to pass test].
  - 3. [Length: As required to pass test].
  - 4. [Connector: U-bolt pressure plate].
- D. Mechanical Connectors: Bronze.
- E. Electrode Conductor:
  - 1. Material: Bare stranded copper.
  - 2. [Foundation Electrodes: [2/0] [2] [ \_\_\_\_\_ ] AWG].
  - 3. [Grounding Electrode Conductor: Size to meet NFPA 70 requirements].
- F. [Grounding Well Components]:
  - 1. [Well Pipe: 8 inch NPS by 24 inch long clay tile concrete pipe with belled end].
  - 2. [Well Cover: Cast iron with legend "GROUND" embossed on cover.]

### **2.02 HANGERS AND SUPPORTS**

- A. Product Requirements: Furnish and install approved materials, sizes, and types of anchors, fasteners, and supports to carry loads of equipment and conduit, including weight of wire in conduit plus 300 pounds.
- B. Materials and Finishes: Corrosion resistive.
- C. Anchors and Fasteners:
  - 1. Steel Structural Elements: Beam clamps and welded fasteners.
  - 2. Concrete Surfaces: Self-drilling anchors and expansion anchors.
  - 3. Hollow Masonry, Plaster, and Gypsum Board Partitions: Toggle bolts and hollow wall fasteners.
  - 4. Solid Masonry Walls: Expansion anchors.
  - 5. Sheet Metal: Sheet metal screws.
  - 6. Wood: Wood screws.

### **2.03 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. Communication cabinets.
    - c. Terminal Cabinets.
    - d. Individual motor starter.
    - e. Separately enclosed circuit breakers.
    - f. Panelboards
    - g. Transformers.
    - h. Pull boxes.
    - i. Lighting contactor/control panel enclosure.
    - j. Relays.
    - k. Switches and disconnects.
  3. Letter Size:
    - a. Use 1/8 inch letters for identifying individual equipment and loads.
    - b. Use 1/4 inch letters for identifying grouped equipment and loads.
- B. Wire and Cable Markers:
1. Description: Cloth tape or tubing type wire markers.
  2. Locations: Each conductor at panelboard gutters, pull boxes, outlet and junction boxes, and each load connection.
  3. Identification:
    - a. Power and Lighting Circuits: Branch circuit or feeder number indicated on Drawings.
    - b. Control Circuits: Control wire number indicated on schematic and interconnection diagrams on Drawings.
    - c. Communications Cable: Per section 270500.
- C. Conduit Markers:
1. Underground conduit routings shall be marked utilizing magnetic marker tape set atop of the entire conduit run.
    - a. Underground-Type Plastic Line Marker: Manufacturer's standard detectable permanent, bright colored, continuous-printed plastic tape, intended for direct-burial service; not less than 6" wide by 4 mils thick. Provide tape with printing which most accurately indicates type of service of buried cable. Locate tape 12 inches above top of conduit.
- D. Arc Flash warning Signs: Furnish signs in accordance with NEC Article 110.16, warning of potential arc flash hazard and requiring suitable Personal protective equipment. Locate and install signs per INSTALLATION Section of this specification.
- E. Receptacles and Switches: All coverplates for receptacles and switches shall be labeled with the branch circuit number. Label shall be machine generated and permanently affixed to the outside of the coverplate.

## **2.04 MOTOR STARTERS, CONTROLS, AND CONNECTIONS TO MECHANICAL EQUIPMENT**

- A. Manufacturers: Subject to compliance with project requirements, manufacturers offering Products which may be incorporated in the Work include the following:
1. Allen-Bradley Company, Milwaukee, WI (414) 382-2000.
  2. Cutler-Hammer Eaton Corp, Milwaukee, WI (800) 833-3927.
  3. Square D Company, Palatine, IL (847) 397-2600.
  4. General Electric Company, Plainville, CT (860) 747-7111.
  5. Siemens Energy and Automation, Alpharetta, GA (800) 964-4114.
  6. Section 016000 - Product Requirements: Product options and substitutions. Substitutions: Permitted.



B. Motor Starters:

1. Provide manual, single phase, 120/277V, toggle type, motor rated switches with thermal overload element (sized at 115 percent of full load current) for fractional horsepower motors not requiring automatic control interfaces.
2. Provide across-the-line, AC magnetic motor starters in applications where controls other than manual on and off are involved. Motor starters shall be UL labeled. Provide starters with the following features:
  - a. Rating for the voltage and current imposed.
  - b. Enclosure for the application usage: NEMA 1 for dry, indoors, NEMA 3R for outdoors, etc.
  - c. Control circuit voltage and amperage to match coil voltage and ratings of control apparatus.
  - d. Control transformers with primary and secondary fusing for control circuits, as required.
  - e. Overload elements for every conductor leg above ground. Elements are to be "thermal alloy" type, resettable and properly sized to motor nameplate rating. Elements located near boilers, heat strips, duct heaters or other heat sources or where heating by conduction or radiation can occur, shall be ambient temperature compensated types.
  - f. Adjustable phase loss/phase reversal protection (0-15 seconds), factory set at 7 seconds and a minimum of two field convertible auxiliary contacts.
  - g. Cover-mounted control switch is to be a "start-stop" or "hand-off-auto" type with "running" and "auto" pilot lights, as required by the control sequence. A suitable reset device for manually resetting overcurrent trip shall be provided.
3. Magnetic starters for motors 10 hp or less shall be connected to automatically return the motor to service after a power interruption. Starters for motors over 10 hp shall be equipped with time delay relays so that after a power resumption and after a preset delay of 0-30 seconds, the motor shall automatically be returned to service.
4. Combination magnetic motor starter/fused disconnect unit shall be utilized wherever possible.

C. Furnish and Install the Following:

1. Conduit, wiring and electrical connections to motors, safety switches, starters, relays, electrical interlock circuits, valves, unit heaters, fan coil units, air handling units, and other similar equipment, required for complete and ready for operation. Coordinate with and review other sections of the specifications describing electrical equipment in order to fully understand the wiring requirements.
2. Starters as indicated on Drawings except factory provided starters such as those physically mounted on the unit or any piece of equipment where starter is furnished as an integral part of the equipment.
3. Electrical line voltage control components and installation as specified in Division 26 Sections.
4. Furnish and install low voltage (below 50 volts) control wiring as indicated on Drawings using metallic conduit and No. 12 type THHN wire, minimum.
5. [Thermostat and special wire other than building wire].

D. Refer to Drawings for quantity and size of motor starters.

E. Individual motor starters and those starters factory provided integral with the equipment shall be furnished in accordance with paragraph 2.4 B.

## **PART 3 - EXECUTION**

### **3.01 EXAMINATION**

- A. Section 017300 - Execution: Verification of existing conditions before starting work.
- B. Verification of Conditions: Verify that field measurements, surfaces, substrates and conditions are as required, and ready to receive Work.
- C. Report in writing to USPS Project Manager prevailing conditions that will adversely affect satisfactory execution of the Work of this Section. Do not proceed with Work until unsatisfactory conditions have been corrected.
- D. By beginning Work, Contractor accepts conditions and assumes responsibility for correcting unsuitable conditions encountered at no additional cost to the United States Postal Service.

### **3.02 INSTALLATION - GROUNDING AND BONDING**

- A. Install rod electrodes at locations indicated. Install additional rod electrodes as required to achieve specified resistance to ground.
- B. Provide grounding well pipe with cover at [each rod location] [rod locations where indicated]. Install well pipe top flush with finished grade or surface.
- C. Provide grounding electrode conductor and connect to reinforcing steel in foundation footing, building steel above grade and metallic cold water pipe.
- D. Provide bonding and grounding in conformance with NFPA 70.
- E. Equipment Grounding Conductor: Provide separate, insulated conductor within all lighting and power raceways. Terminate each end on suitable lug, bus, or bushing.
- F. Testing and Inspection:
  - 1. Inspect and test in accordance with NETA ATS, where applicable.
  - 2. Perform inspections and tests listed in NETA ATS, Section 7.13.
  - 3. Test ground resistance of system with clamp-on ground resistance tester. The resistance of the grounding system shall not exceed 5 ohms. Where tests show resistance-to-ground is over 5 ohms, take appropriate action to reduce resistance to 5 ohms, or less, by driving additional ground rods; lengthening the rods or installing ground enhancing materials; then retest to demonstrate compliance. Install rods at least 8 feet apart.

### **3.03 INSTALLATION - HANGERS AND SUPPORTS**

- A. Install products in accordance with manufacturer's published instructions.
- B. Furnish and install anchors, fasteners, and supports in accordance with NECA SI.
- C. Do not fasten supports to pipes, ducts, mechanical equipment, and conduit.
- D. Do not use spring steel clips and clamps.
- E. Do not use powder-actuated anchors.
- F. Obtain permission from structural engineer before drilling or cutting structural members.
- G. Fabricate supports from structural steel angle or structural steel channel. Rigidly weld members or use hexagon head bolts to present neat appearance with adequate strength and rigidity. Use spring lock washers under all nuts.
- H. Install surface-mounted cabinets and panelboards with minimum of four anchors.
- I. In wet and damp locations use structural steel channel supports to stand cabinets and panelboards one inch off wall.

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

### **3.04 INSTALLATION - ELECTRICAL IDENTIFICATION**

- A. Install nameplate parallel to equipment lines.
- B. Secure nameplate to equipment front using stainless steel screws. Use minimum two screws at each end of nameplate.
- C. Secure nameplate to outside surface of door on panelboards and switchboards.
- D. Install Arc Flash Warning Signs on switchboards, panelboards, control panels, meter socket enclosures, and motor control centers likely to require examination, adjustment, servicing, or maintenance while energized. Locate sign so as to be clearly visible to qualified persons before examination, adjustment, servicing, or maintenance of the equipment.

### **3.05 INSTALLATION – MOTOR STARTERS, CONTROLS, AND CONNECTIONS TO MECHANICAL EQUIPMENT**

- A. Verify and check equipment manufacturer's nameplate and installation instructions to obtain exact location of outlets for equipment before installation.
- B. Wire and connect line voltage controls in accordance with approved wiring diagrams. Provide line voltage interlock and control wiring as indicated on Drawings using conduit and No. 12 type THHN wire.

### **3.06 FIELD QUALITY CONTROL - ELECTRICAL TESTING AND INSPECTION**

- A. Section 014000 - Quality Requirements: Field testing and inspection.
- B. Section 260800 - Commissioning of Electrical Systems: Requirements related to Division 26 Commissioning.
- C. Conduct testing to Determine that Electrical Equipment and Systems:
  - 1. Are in conformance with Contract Documents and applicable reference standards.
  - 2. Is properly installed without damage due either to installation or shipment.
  - 3. Operate correctly, meet design intent, and are performing at optimum level, in safe manner.
- D. Provide a complete written record of operational values to be used as a baseline for future operational testing.
- E. Instrumentation:
  - 1. Provide calibration program that assures applicable test instrumentation is maintained within rated accuracy and directly traceable to National Bureau of Standards.
  - 2. Calibrate instruments in accordance with following frequency schedule:
    - a. Field Instruments:
      - 1) Analog - 6 months maximum.
      - 2) Digital - 12 months maximum.
    - b. Leased Specialty Equipment: 12 months. (Where accuracy is guaranteed by lessor.)
  - 3. Dated Calibration Labels: Visible on test equipment.
  - 4. Keep records current; show date and result of instruments calibrated or tested.
  - 5. Maintain current instrument calibration instruction and procedure for each test instrument.
  - 6. Calibrating Standard: Higher accuracy than that of instrument being calibrated.
- F. Regulatory Requirements:
  - 1. Safety Practices: Include, but not limited to, the following requirements:
    - a. Occupational Safety and Health Act of 1970 - OSHA.

- b. Accident Prevention Manual for Industrial Operations, Seventh Edition, National Safety Council, Chapter 4.
  - c. Applicable State and Local Safety Operating Procedures.
  - d. NETA Safety/Accident Prevention Program.
  - e. United States Postal Service Safety Practices.
  - f. NFPA 70E - Electrical Safety Requirements for Employee Workplace.
  - g. American National Standards for Personnel Protection, ANSI Z244.1.
- 2. Perform tests with apparatus de-energized except where otherwise specifically required herein.
- 3. Testing Laboratory: Provide a designated safety representative present at Project Site and supervise safety operations.
- 4. Power Circuits: Conductors shorted to ground by a hot line grounded device approved for the purpose.
- 5. Do not proceed until safety representative has determined that it is safe to do so.
- 6. Testing Laboratory: Provide sufficient protective barriers and warning signs to conduct specified tests safely.
- G. Tests and inspections include, but are not limited to the following:
  - 1. Proper operation of lights and equipment.
  - 2. Continuity of raceway system.
  - 3. Insulation leakage and impedances.
  - 4. Ground system resistance.
  - 5. Elimination of reverse rotation and single-phasing of motors.
  - 6. Sub-system tests indicated in other Sections.
  - 7. Proper operation of communications systems specified in Section 270500.
  - 8. Proper operation of intrusion detection systems specified in Section 281600.
  - 9. Proper operation of video surveillance system specified in [Section 282304] [Section 282305].
  - 10. Proper operation of fire alarm system specified in Section 283100.
- H. Load balance all electrical phases, at device, panels, and switchboards.
- I. Perform electrical system testing and inspection as specified in each related Section and as specified in this Section.

END OF SECTION 26 05 00 – COMMON WORK RESULTS FOR ELECTRICAL

## **SECTION 26 05 19 - LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES**

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### **PART 1 - GENERAL**

#### **1.01 SUMMARY**

- A. Section Includes:
  - 1. Building wire and cable.
  - 2. Branch-circuit cable.
  - 3. Wiring connectors and connections.
  - 4. Drop cords.
- B. Related Documents: The Contract Documents, as defined in Section 011000 - Summary of Work, apply to the Work of this Section. Additional requirements and information necessary to complete the Work of this Section may be found in other documents.
- C. Related Sections
  - 1. As specified in Section 260500 - Common Work Results for Electrical.

#### **1.02 REFERENCES**

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

#### **1.03 SUBMITTALS**

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

#### **1.04 QUALITY ASSURANCE**

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

#### **1.05 DELIVERY, STORAGE, AND HANDLING**

- A. Section 016000 - Product Requirements: Transport, handle, store, and protect products.
- B. Deliver in accordance with NEMA WC 26.

### **PART 2 - PRODUCTS**

#### **2.01 BUILDING WIRE AND CABLE**

- A. Manufacturers: Subject to compliance with project requirements, manufacturers offering Products which may be incorporated in the Work include the following:
  - 1. Alcan Cable, Atlanta, GA (770) 392-2376.
  - 2. Anixter, Inc., Skokie, IL (800) ANIXTER.
  - 3. General Cable, Highland Heights, KY (800) 526-4391.
  - 4. General Electric, Plainville, CT (860) 747-7111.
  - 5. Okonite, Ramsey, NJ (201) 825-0300.
  - 6. Southwire Company, Carrollton, GA (800) 444-1700.
  - 7. Section 016000 - Product Requirements: Product options and substitutions. Substitutions: Permitted.
- B. Description: Single conductor insulated wire.
- C. Conductor: Copper, except conductors #1/0 AWG and larger may be compact stranded aluminum if equipped with compression lugs and installed per manufacturer's recommendations and the National Electrical Code.
- D. Insulation Voltage Rating: 600 Volts.

- E. Insulation: NFPA 70, Type THHN/THWN or Type XHHW-2
- F. Multiconductor cable: Metal clad cable, Type MC with ground wire.
  - 1. Type "MC" cable shall be permitted for use in exposed or accessible ceiling spaces only. Type "MC" cable shall not be utilized above inaccessible hard ceilings or in damp locations. Cable shall be supported and secured where such support does not exceed 3 ft. intervals and shall be properly color coded to identify phase, neutral, ground and switch legs.

## **2.02 WIRING CONNECTORS**

- A. Manufacturers: Subject to compliance with project requirements, manufacturers offering Products which may be incorporated in the Work include the following:
  - 1. Buchanan Construction Products, Hackettstown, NJ (800) 610-5201.
  - 2. Thomas and Betts, Memphis, TN (800) 695-1901.
  - 3. 3M, St. Paul, MN (800) 364-3577.
  - 4. Section 016000 - Product Requirements: Product options and substitutions. Substitutions: Permitted.
- B. Compression Connectors; Conductor sizes #12 through #6 AWG:
  - 1. Buchanan: 2006S or 2011S.
  - 2. Thomas and Betts: [\_\_\_\_\_].
  - 3. 3M; [\_\_\_\_\_].

## **2.03 DROP CORDS**

- A. Description: Continuous length of cable with 20 Amp, 120 Volt, locking blade type connector body at one end as indicated on Drawings. Secure cable at both ends with wire type stainless steel cable grips to prevent transmission of tension directly to conductors or terminal screws.
- B. Junction Box: Furnished and installed [flush with ceiling] anchored to building structure for fastening of uppercord grip.
- C. Cable: Type SO 600 volt flexible cord with three #12 stranded wires.
- D. Connector Body: Single 20 Amp, 120 volt, grounding receptacle of twistlock type at one end and straight blade type at other end that grips on cable insulation and is manufactured for use with wire cable grips. Furnish and install drop cords in length required for a receptacle height of 6 feet 8 inches above finished floor.

## **PART 3 - EXECUTION**

### **3.01 EXAMINATION**

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

### **3.02 PREPARATION**

- A. Completely and thoroughly swab raceway before installing wire.

### **3.03 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 manufacturers published instructions and NECA SI.
  - C. Use solid conductor for feeders and branch circuits 10 AWG and smaller.
  - D. Use stranded conductors for control circuits and final connections to all vibration equipment.
  - E. Use conductor not smaller than 12 AWG for power and lighting circuits.
  - F. Use conductor not smaller than 14 AWG for control circuits.
  - G. Use 10 AWG conductors for 20 ampere, 120 volt branch circuits longer than 75 feet.
  - H. Use 10 AWG conductors for 20 ampere, 277 volt branch circuits longer than 200 feet.
  - I. Pull all conductors into raceway at same time.
  - J. Use approved wire pulling lubricant for all building wire.
  - K. Protect exposed cable from damage.
  - L. Neatly train and lace wiring inside boxes, equipment, and panelboards in accordance with NECA Standards.
  - M. Clean conductor surfaces before installing lugs and connectors.
  - N. Make splices, taps, and terminations to carry full ampacity of conductors with no perceptible temperature rise.
  - O. For splices and taps, use only compression connectors for copper conductors, 6 AWG and larger or aluminum conductors 1/0 and larger. Tape uninsulated conductors and connector with electrical tape to 150 percent of insulation rating of conductor.
  - P. Use solderless pressure compression connectors with insulating covers for copper conductor splices and taps, 8 AWG and smaller.
  - Q. Use conductors rated 90 degrees C, inside a ballast compartment or within 6 inches of any ballast.
  - R. Conductor Sizes #8 and Larger: Class B stranding.
  - S. Install Drop Cords to building structure at locations indicated on Drawings as indicated on Drawings.
  - T. The sharing of neutral conductors for multiwire branch circuits is prohibited. All branch circuits shall contain individual neutral conductors.

### **3.04 CONSTRUCTION**

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

### **3.05 WIRING COLOR CODE**

- A. Comply with the following color code for each voltage system.
- B. 208Y/120 Volt System:
  1. Phase A - Black
  2. Phase A Switch Leg - Black with "S" tag.

3. Phase B - Red
  4. Phase B Switch Leg - Red with "S" tag.
  5. Phase C - Blue.
  6. Phase C - Switch Leg - Blue with "S" tag.
  7. Travelers - Yellow.
  8. Neutral - White.
  9. Equipment Ground - Green.
- C. 240/120 Volt System:
1. Phase A - Black.
  2. Phase A Switch Leg - Black with "S" tag.
  3. Phase B - Orange (High-Leg)
  4. Phase C - Blue
  5. Phase C Switch Leg - Blue with "S" tag.
  6. Travelers - Yellow.
  7. Neutral - White.
  8. Equipment Ground - Green.
- D. 480Y/277 Volt System:
1. Phase A - Brown
  2. Phase A Switch Leg - Brown with "S" Tag.
  3. Phase B - Orange.
  4. Phase B Switch Leg - Orange with "S" Tag.
  5. Phase C - Yellow
  6. Phase C Switch -Leg- Yellow with "S" Tag.
  7. Travelers - Yellow with "T" Tag.
  8. Neutral - Grey.
  9. Equipment Ground - Green with Yellow stripe.
- E. Use same color for same phase throughout. Use same colors for switch legs. Travelers shall be yellow. Phase rotation shall be same in all panels. Identify large cables with colored tape.
- F. Provide identification tags on each conductor entering panel, switch, junction box and pull box to identify conductor.

### **3.06 FIELD QUALITY CONTROL**

- A. As specified in Section 260500 – Common Work Results for Electrical.
- B. Cables, 600 Volt or less and size no. 3 or larger, shall be meggered using an industry-approved "megger with a minimum of 500 Volt internal generating voltage. All inspection, cleaning and testing procedures shall be in compliance with the recommendations and standards outlined in the "maintenance testing specifications for electrical power distribution equipment and systems", latest edition, published by International Electrical Testing Association (NETA). Insulation resistance test values shall be no less than 250 megaohms. A typewritten report of all readings shall be prepared and submitted.

END OF SECTION 26 05 19 – LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES



## **SECTION 26 05 33 – RACEWAY AND BOXES FOR ELECTRICAL SYSTEMS**

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### **PART 1 - GENERAL**

#### **1.01 SUMMARY**

- A. Section Includes:
  - 1. Metal conduit.
  - 2. Flexible metal conduit.
  - 3. Liquidtight metal conduit.
  - 4. Electrical metallic tubing.
  - 5. Fittings and conduit bodies.
  - 6. Wall and ceiling outlet boxes.
  - 7. Pull and junction boxes.
  - 8. Cable trays.
  - 9. Floor boxes with covers (other uses.)
- 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 281600 – Intrusion Detection System.
  - 2. [Section 282305 – Integrated Security and Investigative Platform (ISIP) CCTV System.]
  - 3. Section 283100 – Fire Detection and Alarm System (Horn/Strobes).
  - 4. Section 230500 – Common Work Results for HVAC.
  - 5. Section 260500 – Common Work Results for Electrical.
  - 6. Section 262726 – Wiring Devices.
  - 7. Section 270500 – Common Work Results for Communication.

#### **1.02 REFERENCES**

- A. American Society for Testing and Materials (ASTM):
  - 1. ASTM A 123 - Specification for Zinc (Hot-Galvanized) Coatings on Iron and Steel Products.
- B. American National Standards Institute (ANSI):
  - 1. ANSI C80.1 - Rigid Steel Conduit, Zinc Coated.
  - 2. ANSI C80.3 - Electrical Metallic Tubing, Zinc Coated.
  - 3. ANSI C80.5 - Rigid Aluminum Conduit.
- C. National Electrical Contractors Association (NECA):
  - 1. NECA "Standard of Installation."
- D. National Electrical Manufacturers Association (NEMA):
  - 1. NEMA FB 1 - Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit and Cable Assemblies.
  - 2. NEMA RN 1 - Polyvinyl Chloride (PVC) Externally Coated Galvanized Rigid Steel Conduit and Intermediate Metal Conduit.
  - 3. NEMA TC 2 - Electrical Plastic Tubing (EPT) and Conduit (EPC-40 and EPC-80).
  - 4. NEMA TC 3 - PVC Fittings for Use with Rigid PVC Conduit and Tubing.
  - 5. NEMA VE 1 - Metallic Cable Tray Systems.
- E. National Fire Protection Association (NFPA):
  - 1. NFPA 70 - National Electrical Code.

### **1.03 SYSTEM DESCRIPTION**

#### **A. Design Requirements**

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

### **1.04 QUALITY ASSURANCE**

#### **A. Regulatory Requirements:**

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

### **1.05 DELIVERY, STORAGE, AND HANDLING**

- A. Section 016000 - Product Requirements: Transport, handle, store, and protect products.
- B. Accept conduit on site. Contractor inspect for damage prior to acceptance.
- C. Protect conduit from corrosion and entrance of debris by storing above grade. Provide appropriate covering.
- D. Protect PVC conduit from sunlight.

## **PART 2 - PRODUCTS**

### **2.01 CONDUIT REQUIREMENTS**

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

### **2.02 METAL CONDUIT**

- A. Manufacturers: Subject to compliance with project requirements, manufacturers offering specified items which may be incorporated in the Work include the following:
  1. Allied Tube & Conduit, Harvey, IL (800) 882-5543.
  2. Wheatland Tube Co., Collinswood, NJ (800) 257-8182.
  3. Republic Wire & Cable, Rocky Mount, NC (800) 533-8198.
  4. Section 016000 - Product Requirements: Product options and substitutions. Substitutions: Permitted.
- B. Rigid Galvanized Steel Conduit (GRC): ANSI C80.1, UL6.
- C. Intermediate Metal Conduit (IMC): UL1242.
- D. Fittings and Conduit Bodies: NEMA FB1 Material to match conduit.

### **2.03 FLEXIBLE METAL CONDUIT (FMC)**

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

B. Description: Interlocked steel and aluminum construction.

C. Fittings: NEMA FB 1.

## **2.04 LIQUIDTIGHT FLEXIBLE 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. Hubbell, Millford, CT (203) 882-4800.
2. Electriflex, Roselle, IL (800) 323-6174.
3. Anixter, Inc., Skokie, IL (800) ANIXTER.
4. Section 016000 - Product Requirements: Product options and substitutions. Substitutions: Permitted.

B. Description: Interlocked steel and aluminum construction with PVC jacket.

C. Fittings: NEMA FB 1.

## **2.05 ELECTRICAL METALLIC TUBING (EMT)**

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

1. Allied Tube & Conduit, Harvey, IL (800) 882-5543.
2. Wheatland Tube Co., Collinswood, NJ (800) 257-8182.
3. Republic Wire & Cable, Rocky Mount, NC (800) 533-8198.
4. Section 016000 - Product Requirements: Product options and substitutions. Substitutions: Permitted.

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

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

## **2.06 NONMETALLIC CONDUIT**

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

1. Carlon, Cleveland, OH (800) 322-7566.
2. Section 016000 - Product Requirements: Product options and substitutions. Substitutions: Permitted.

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

C. Fittings and Conduit Bodies: NEMA TC 3.

## **2.07 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. O-Z/Gedney.
2. Section 016000 - Product Requirements: Product options and substitutions. Substitutions: Permitted.

B. Conduits 1/2 inch thru 1 inch enter junction boxes, pull boxes, panels, cabinets, and gutters, provide the following:

1. Rigid Conduit: Raco 1222, 1223, 1224.
2. Flexible Metal Conduit: Raco 3302, 3303, 3304, 3305, 3306, 3308.
3. Liquidtight Flexible Metal Conduit: Raco 3511, 3512, 3513, 3541, 3542, 3543.

- C. Conduits 1-1/4 inch and larger entering junction boxes, pull boxes, panels, cabinets, and gutters, provide Insulated throat type bushings; Raco 1225, 1226, 1228, 1230, 1232, 1234, 1236.
- D. Provide threaded joint connectors and malleable iron no thread compression box connectors on rigid conduit. Do not provide fittings requiring set screws or indentor type applications including BM connectors.
- E. Provide only steel set-screw couplings and connectors on EMT conduit.

## **2.08 CONDUIT STRAPS AND HANGERS**

- A. Strap Manufacturer: Raco, Inc., South Bend, IN (219) 234-7151
  - 1. Subject to compliance with project requirements, one of the following manufacturers may also be provided:
    - a. Steel City.
    - b. Unistrut.
  - 2. Section 016000 - Product Requirements: Product options and substitutions. Substitutions: Permitted.
- B. Hanger Manufacturer: Steel City/Thomas & Betts, Memphis, TN (800) 888-0211.
  - 1. Subject to compliance with project requirements, one of the following manufacturers may also be provided:
    - a. Unistrut.
    - b. Raco.
  - 2. Section 016000 - Product Requirements: Product options and substitutions. Substitutions: Permitted.
- C. Straps: Two hole push on stamped steel straps on surface areas such as concrete, masonry, wide flange beams, columns, and wood.
  - 1. Rigid Conduit: Raco 2232, 2233, 2234, 2235, 2336, 2238.
  - 2. Electrical Metallic Tubing: Raco 2092, 2093, 2094.
- D. Hangers: Lay-in pipe hanger.
  - 1. Conduits 1-1/4 Inch and Larger: Steel-City C-149.
- E. Trapeze Hangers for Conduits Grouped Together: Hangers consisting of all thread rods sized as required and Kingdorff channel.
  - 1. Steel City B-909, 1/2 inch x 1-7/8 inch (12 gauge) with single bolt channel pipe straps.
  - 2. Steel City C-105, C-105-AL, or C-106, (no wire permitted for anchoring conduit).

## **2.09 SEAL-OFF AND EXPANSION FITTINGS**

- A. Seal-Off Fitting Manufacturer: Crouse-Hinds, Syracuse, NY (315) 477-5531.
  - 1. Subject to compliance with project requirements, one of the following manufacturers may also be provided:
    - a. Killark.
    - b. Appleton.
    - c. O-Z/Gedney.
  - 2. Section 016000 - Product Requirements: Product options and substitutions. Substitutions: Permitted.
- B. Expansion Fitting Manufacturer: OZ/Gedney, Farmington, CT (860) 677-5541
  - 1. Subject to compliance with project requirements, one of the following manufacturers may also be provided:
    - a. Crouse-Hinds.
    - b. Killark.
    - c. Appleton.

2. Section 016000 - Product Requirements: Product options and substitutions. Substitutions: Permitted.
- C. Provide seal-off fittings where required by governing authority, code, or as indicated on Drawings.
  1. Vertical Runs: Crouse-Hinds Type EYS.
  2. Horizontal and Vertical Runs: Crouse-Hinds Type EZS.
  3. Elbows: Crouse-Hinds Type EYS.
  4. Sealing Compound: "Chico X" fiber and "Chico A".
- D. Provide expansion fittings in conduits where indicated on Drawings or where required to pass through expansion joints embedded in concrete.
  1. O-Z/Gedney Type AX.

## **2.10 OUTLET BOXES**

- A. Sheet Metal Outlet Boxes: NEMA OS 1, galvanized steel.
  1. Luminaire and Equipment Supporting Boxes: Rated for weight of equipment supported; include 1/2 inch male fixture studs where required.
  2. Receptacle and Device Boxes - 4 inch square x 2-1/8 inch deep with raised, single gang, plaster ring unless indicated otherwise.
  3. Switch Boxes: 2 inch x 4 inch x 2-1/8 inch deep, unless indicated otherwise.
  4. Communication Boxes: 4 inch square x 3 inch deep with raised gang plaster ring unless indicated otherwise.
- B. Cast Boxes: NEMA FB 1, Type FD, aluminum. Provide gasketed cover by box manufacturer. Provide threaded hubs.
- C. Wall Plates for Finished Areas: Specified in Section 262726.

## **2.11 PULL AND JUNCTION BOXES**

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

## **2.12 CABLE TRAY**

- A. Manufacturers: Subject to compliance with project requirements, manufacturers offering specified items which may be incorporated in the Work include the following:
  1. Chalfant Cable Trays, Cleveland, OH (216) 521-7922.
  2. Cable Management Solutions, Incorporated, Deer Park, NY (800) 308-6788.
  3. GS Metals Corporation, Pinckneyville, IL (800) 851-9341.
  4. Southwire Co., Carrollton, GA (800) 444-1700.
  5. Mono-Systems, Inc., Rye Brook, N.Y. (914) 934-2075.
  6. Section 016000 - Product Requirements: Product options and substitutions. Substitutions: Permitted.
- B. Provide factory shop drawing submittals for each type of cable tray.
  1. Show fabrication and installation details of cable tray, including plans, elevations and sections of components and attachments to other construction elements. Designate components and accessories, including clamps, brackets, hanger rods, splice-plate connectors, expansion-joint assemblies, straight lengths and fittings.
  2. Seismic-Restraint Details: Signed and sealed by a qualified Professional Engineer, licensed in the state where Project is located, who is responsible for their preparation.
    - a. Design Calculations: Calculate requirements for selecting seismic restraints.
    - b. Detail fabrication, including anchorages and attachments to structure and to supported cable trays.

- C. Description: NEMA VE 1, ladder tray, wire mesh tray or solid bottom tray as indicated on drawings.
- D. Material: Steel or aluminum.
- E. NEMA Load/Span Class: 20C
- F. Finish: ASTM A 525, pre-galvanized or clear aluminum.
- G. Inside Width and Depth: Indicated on Drawings. Inside Radius of Fittings: 24 inches (minimum).
- H. Provide with compartment dividers as indicated on drawings. Same materials and finish as tray.
- I. Straight Section Rung Spacing: 9 inches on center (ladder tray only).
- J. Provide approved manufacturer's standard clamps, hangers, brackets, splice plates, reducer plates, blind ends, barrier strips, connectors, and grounding straps. Obtain cable tray components from a single manufacturer.
- K. Engraved Nameplates: 1/2 inch high black letters on yellow laminated plastic nameplate, engraved with the following wording:

WARNING!DO NOT USE CABLE TRAY AS WALKWAY, LADDER, OR  
SUPPORT.USE ONLY AS MECHANICAL SUPPORT FOR CABLES AND TUBING!

## **2.13 FLOOR BOXES**

- A. Type: Modular, flush-type dual-service units suitable for wiring method used. Provide dual-service units within carpeted areas only.
- B. Compartmentation: Barrier separates power and signal compartments.
- C. Housing Material: Die-cast aluminum, satin-finished.
- D. Power Receptacle: NEMA WD 6, Configuration 5-20R, ivory finish, unless otherwise indicated.
- E. Signal Outlet: Blank cover with brushed cable opening, unless otherwise indicated.

## **PART 3 - EXECUTION**

### **3.01 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.
  - 1. 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 United States Postal Service.

### 3.02 INSTALLATION - RACEWAYS

- A. Install in accordance with the following schedule, unless indicated otherwise on Drawings: Plastic flexible PVC conduit shall not be permitted. Flexible metal conduit shall be permitted for electrical power and security wiring only and not permitted for fire alarm cables. Intermediate grade rigid conduit permitted where indicated below.
  - 1. Above suspended ceilings: Galvanized or sherardised thick wall rigid steel (GRC), or intermediate grade rigid steel (IMC), or electrical metallic tubing (EMT).
  - 2. Metal stud walls: Galvanized or sherardised thick wall rigid steel (GRC), intermediate grade rigid steel (IMC), or electrical metallic tubing (EMT).
  - 3. Exposed interior areas: Galvanized or sherardised thick wall rigid steel (GRC), intermediate grade rigid steel (IMC), electrical metallic tubing (EMT).
  - 4. Exposed exterior areas: Galvanized or sherardised thick wall rigid steel (GRC).
  - 5. Underground or below slab areas: Rigid polyvinyl chloride conduit (PVC-Sched. 40).
- B. Install conduit in accordance with NECA "Standard of Installation."
- C. Install nonmetallic conduit in accordance with manufacturer's instructions. Nonmetallic conduit shall only be used under slabs or direct buried in earth. Conduit penetrations through slab including elbows shall be galvanized rigid conduit.
- D. Conduit routing indicated on Drawings are approximate locations unless dimensioned. Route parallel and perpendicular to building construction for complete wiring system regardless whether exposed or concealed.
- E. Arrange supports to prevent misalignment during wiring installation.
- F. Support conduit using coated steel or malleable iron straps, lay-in adjustable hangers, clevis hangers, and split hangers.
- G. Group related conduits; support using conduit rack. Construct rack using approved steel channel and provide space on each rack for 25 percent additional conduits.
- H. Fasten conduit supports to building structure and surfaces under provisions of this section.
- I. Do not support conduit with wire or perforated pipe straps in any type structure. Remove wire used for temporary supports. Steel tie wire may be used to anchor conduit down to reinforcing rods in concrete encasement only.
- J. Do not attach conduit or boxes to ceiling support wires. Boxes shall be independently supported.
- K. Arrange conduit to maintain headroom and present neat appearance. Maintain required clearance between conduit and piping.
- L. Route all conduit, whether exposed or concealed, parallel and perpendicular to walls, ceilings, building structures, etc.
- M. Maintain 12 inch clearance between conduit and surfaces with temperatures exceeding 104 degrees F.
- N. Cut EMT conduit square using saw or pipe cutter; de-burr cut ends and ream. Bring conduit to shoulder of fittings; fasten securely.
- O. Join nonmetallic conduit using cement as recommended by manufacturer. Wipe nonmetallic conduit dry and clean before joining. Apply full even coat of cement to entire area inserted in fitting. Allow joint to cure for 20 minutes, minimum.
- P. Use conduit hubs or sealing locknuts to fasten conduit to sheet metal boxes in damp and wet locations and to cast boxes. Use Myers hub connectors on all conduit entering top or sides of all junction boxes, pull boxes, wiring gutters, exposed to weather.

- Q. The number of conduit bends per box shall comply with NFPA 70, Article 360. Conduit bends for "SCS" installation shall not exceed two 90 degree bends or exceed a total of 180 degrees of bend between pull boxes or conduit ends. Pull boxes shall be sized per NEC codes per conduit installed. Use conduit bodies to make sharp changes in direction, as around beams. Use hydraulic one-shot bender to fabricate or use factory elbows for bends in metal conduit larger than 2 inch size.
- R. Avoid moisture traps; provide junction box with drain fitting at low points in conduit system.
- S. Provide suitable fittings to accommodate expansion and deflection where conduit crosses control and expansion joints.
- T. Provide suitable nylon pull string or #14 AWG steel wire in each conduit excluding sleeves and nipples.
- U. Ground and bond conduit per NFPA 70.
- V. Coat all metallic conduit with "General Electric" RTV silicone sealer where conduit is installed in exterior areas or in contact with concrete or earth.
- W. Conduits shall be sized as indicated on Drawings. Where sizes are not indicated, conduit shall be sized per NFPA 70.
- X. Cap all upturned conduits during construction rough-in to prevent moisture or debris from entering. Pull through each and every conduit a dry swab of sufficient size to remove any and all moisture.
- Y. Maximum length of flexible metal conduit (Greenfield), or flexible liquidtight shall be 5 feet.
- Z. Assure ground continuity on all branch circuitry conduits with two locknuts, one inside and one outside of all boxes, cabinets and gutters for rigid conduit. One locknut inside of all boxes, cabinets, and gutters for EMT.
- AA. Provide conduit supports as follows:
  - 1. Galvanized rigid thick wall conduit (GRC), intermediate grade rigid conduit (IMC) and electrical metallic conduit (EMT) within three feet of all outlet boxes, junction boxes, cabinets, gutters, or fittings. Horizontally anchored at 10 foot maximum intervals. Other spacings indicated on Drawings.
  - 2. Flexible metal conduit (Greenfield) and liquid-tight flexible metal conduit (sealtite), within 12 inches of all outlet boxes, junction boxes, cabinets, gutters, or fittings and bends or turns. Horizontally anchored at 4-1/2 foot intervals. 1/2 inch minimum size permitted.

### **3.03 INSTALLATION - BOXES**

- A. Install boxes in accordance with NECA "Standard of Installation."
- B. Install in locations as shown on Drawings, and as required for splices, taps, wire pulling, equipment connections and compliance with NFPA 70.
- C. Set wall mounted boxes at elevations to accommodate mounting heights indicated or as required for specific project requirements. Orient boxes to accommodate wiring devices as specified in Section 262726.
- D. Electrical boxes are indicated on Drawings in approximate locations unless dimensioned. Adjust box location up to 10 feet if required to accommodate intended purpose with no additional cost to contract. Coordinate mounting heights and locations of outlets mounted above counters, benches, and backsplashes.
- E. Maintain headroom and present neat mechanical appearance.



- F. Install pull boxes and junction boxes above accessible ceilings and in unfinished areas only. Install pull boxes in freezer and dock area above bottom chord of structural joist. Pullboxes sized in excess of 12 inches shall be equipped with hinged and hasped covers.
- G. Install outlet and junction boxes within inaccessible ceiling areas, no more than 6 inches from ceiling access panel or from removable recessed luminaire.
- H. Locate outlet boxes to allow luminaires positioned as indicated on Drawings.
- I. Align adjacent wall mounted outlet boxes for switches, thermostats, and similar devices.
- J. Locate flush mounted box in masonry wall to require cutting of masonry unit corner only. Coordinate masonry cutting to achieve neat opening. Use approved raised gang covers in masonry and stud walls.
- K. Flush mounted boxes shall not be mounted back-to-back in walls; provide minimum 6 inches separation. Provide minimum 24 inches separation in acoustic rated walls.
- L. Secure flush mounted box to interior wall and partition studs. Accurately position to allow for surface finish thickness. Use approved stamped steel bridges to fasten box between studs.
- M. Install flush mounting box without damaging wall insulation or reducing its effectiveness.
- N. Use approved adjustable steel channel fasteners spanning joist for hung ceiling outlet box.
- O. Provide factory sectioned multi-gang boxes where more than one adjacent device is to be mounted. Sectional boxes shall not be permitted.

### **3.04 INSTALLATION - CABLE TRAYS**

- A. Install trays level and plumb in accordance with manufacturer's published instructions.
- B. Install metallic cable tray in accordance with NEMA VE 2.
- C. Support cable trays as follows:
  - 1. Use anchors and fasteners as specified in Section 260500.
  - 2. Provide supports at each connection point and at the end of each run.
  - 3. Design supports including attachment to structure to carry the greater of calculated load multiplied by a factor of four or the calculated load plus 200 lb.
- D. Locate cable tray with sufficient space to permit access for installing cables.
- E. Make changes in directions and elevations using standard fittings. Use expansion connectors where required.
- F. Ground and bond cable tray under provisions of Section 260500.
- G. Provide continuity between tray components.
- H. Use anti-oxidant compound to prepare aluminum contact surfaces before assembly.
- I. Provide #2 AWG bare copper equipment grounding conductor through entire length of tray; bond to each section.
- J. Connections to tray may be made using mechanical connectors.
- K. Install warning signs at 50 feet on center along cable tray, located to be visible.

### **3.05 FIELD QUALITY CONTROL**

- A. Section 014000 - Quality Requirements: Field inspection.
- B. Inspect conduit installation, types, sizes, fittings and attachment to structure.
- C. Inspect box installation, locations, connection to conduit, and attachment to structure.
- D. Inspect cable tray installation, locations, connection to conduit, and attachment to structure.

### **3.06 ADJUSTING**

- A. Adjust flush-mounting outlets to make front flush with finished wall material.
- B. Install knockout closures in unused box openings.

### **3.07 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 26 05 33 - RACEWAY AND BOXES FOR ELECTRICAL SYSTEMS

## **SECTION 26 27 26 – WIRING DEVICES**

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### **PART 1 - GENERAL**

#### **1.01 SUMMARY**

- A. Section Includes:
  - 1. Wall switches.
  - 2. Receptacles.
  - 3. Device plates and box covers.
  - 4. Multi-outlet surface raceway.
  - 5. TelePower poles.
- B. Related Documents: The Contract Documents, as defined in Section 011000 - Summary of Work, apply to the Work of this Section. Additional requirements and information necessary to complete the Work of this Section may be found in other documents.
- C. Related Sections:
  - 1. As specified in Section 260500 - Common Work Results for Electrical.

#### **1.02 REFERENCES**

- A. As specified in Section 260500 - Common Work Results for Electrical.
- B. National Electrical Manufacturers Association (NEMA):
  - 1. NEMA WD 1 - General Requirements for Wiring Devices.
  - 2. NEMA WD 6 - Wiring Device -- Dimensional Requirements.

#### **1.03 SUBMITTALS**

- A. Product data required.

#### **1.04 QUALITY ASSURANCE**

- A. Qualifications:
  - 1. Manufacturer: Company specializing in manufacturing the Products specified in this section with minimum 5 years documented experience.
- B. Regulatory Requirements:
  - 1. Conform to requirements of NFPA 70.
  - 2. Provide Products listed and classified by Underwriters Laboratories, Incorporated.

### **PART 2 - PRODUCTS**

#### **2.01 WALL SWITCHES**

- A. Manufacturers: Subject to compliance with project requirements, manufacturers offering specified items which may be incorporated in the Work include the following:
  - 1. Hubbell, Inc, Milford, CT (203) 882-4800.
  - 2. Leviton Manufacturing, Company, Inc., Little Neck, NY (800) 824-3005.
  - 3. Pass & Seymour, Syracuse, NY (800) 776-4035.
- B. Section 016000 - Product Requirements: Product options and substitutions. Substitutions: Permitted.
- C. Provide 20 Amp, 120/277V, specification grade, flush, single pole toggle switches with side and back wired screw terminals. All switches shall be equipped with grounding screws.

- D. Single Pole Switch:
  - 1. Leviton Cat. No. 1221-2.
  - 2. P&S Cat. No. PS20AC1I.
  - 3. Hubbell Cat. No. HBL1221.
- E. Double Pole Switch:
  - 1. Leviton Cat. No. 1222-2.
  - 2. P&S Cat. No. PS20AC2.
  - 3. Hubbell, Cat. No. HBL1222.
- F. Three-way Switch:
  - 1. Leviton, Cat. No. 1223-2.
  - 2. P&S Cat. No. PS20AC-3.
  - 3. Hubbell Cat. No. HBL1223.
- G. Indicator Switch:
  - 1. Leviton Cat. No. 1221-PLR (Red).
  - 2. P&S Cat. No. PS20AC1-RPL (Red).
  - 3. Hubbell Cat. No. HBL1221PL (Red).
- H. Locator Switch:
  - 1. Leviton Cat. No. 1221-LHC (Clear).
  - 2. P&S Cat. No. PS20AC1-CSL (Clear).
  - 3. Hubbell Cat. No. HBL1221IL (Clear).
- I. Locking Switch:
  - 1. Leviton Cat. No. 1221-2LW.
  - 2. P&S Cat. No. PS20AC1-L.
  - 3. Hubbell Cat. No. HBL1221L.
- J. Color: Switches located within the Retail Area to be mounted in “blue” or “red” painted walls shall be black. All other switches shall be white unless indicated otherwise.

## **2.02 RECEPTACLES**

- A. Manufacturers: Subject to compliance with project requirements, manufacturers offering specified items which may be incorporated in the Work include the following:
  - 1. Leviton Manufacturing, Company, Inc., Little Neck, NY (800) 824-3005.
  - 2. Pass & Seymour, Syracuse, NY (800) 776-4035.
  - 3. Hubbell, Inc, Milford, CT (203) 882-4800.
  - 4. Section 016000 - Product Requirements: Product options and substitutions. Substitutions: Permitted.
- B. Provide duplex, specification grade, 20 Amp, 120 Volt, 2 pole, 3 wire receptacles with grounding screw.
- C. Duplex Convenience Receptacle:
  - 1. Leviton Cat. No. 5362.
  - 2. P&S Cat. No. 5362.
  - 3. Hubbell Cat. No. HBL5352.
- D. Tamper and Weather Resistant GFCI Receptacle (Side Wired Feed-Thru):
  - 1. Hubbell Cat. No. GFR5362SG.
- E. Color: Receptacles located within the Retail Area to be mounted in “blue” or “red” painted walls shall be black. All other receptacles shall be white unless indicated otherwise.

## **2.03 WALL PLATES**

- A. Manufacturers: Subject to compliance with project requirements, manufacturers offering specified items which may be incorporated in the Work include the following:
  - 1. P&S Sierra.
  - 2. Hubbell.
  - 3. Leviton.
  - 4. Section 016000 - Product Requirements: Product options and substitutions. Substitutions: Permitted.
- B. Coverplate: Coverplates to be installed within the Retail Areas on “blue” or “red” painted walls shall be black smooth thermoplastic. All other coverplates shall be white smooth thermoplastic unless otherwise noted.
  - 1. Sierra TP8-W.
- C. Weatherproof Coverplate: Gasketed cast metal with hinged gasketed device.
  - 1. Sierra 4510 cast aluminum.

## **2.04 MULTI-OUTLET SURFACE RACEWAY**

- A. Manufacturers: Subject to compliance with project requirements, manufacturers offering specified items which may be incorporated in the Work include the following:
  - 1. Legrand/Wiremold, West Hartford, CT (800) 621-0049.
  - 2. Section 016000 - Product Requirements: Product options and substitutions. Substitutions: Permitted.
- B. Raceway Material: Anodized aluminum with manufacturer’s standard hardware and fittings. Length as indicated on drawings.
- C. Wire: Factory pre-wired with No. 12 AWG minimum. Provide equipment grounding conductor.
- D. Wiring Devices: NEMA5-20R duplex receptacles and/or telecommunication outlets. Quantity as indicated on drawings.
- E. Provide single channel raceway for applications requiring power receptacles only. Provide dual channel raceway for applications requiring power receptacles and telecommunications outlets.
- F. Single channel, single cover raceway.
  - 1. Wiremold #AL3000 Series.
- G. Dual channel, single cover raceway
  - 1. Wiremold #AL4000 Series.

## **2.05 TELE/POWER POLE**

- A. Manufacturers: Subject to compliance with project requirements, manufacturers offering specified items which may be incorporated in the Work include the following:
  - 1. Legrand/Wiremold, West Hartford, CT (800) 621-0049.
  - 2. Section 016000 - Product Requirements: Product options and substitutions. Substitutions: Permitted.
- B. Raceway Material: Anodized aluminum with manufacturer’s standard hardware and fittings. Length as indicated on drawings.
- C. Wire: Factory pre-wired with No. 12 AWG minimum. Provide equipment grounding conductor.

- D. Wiring Devices: NEMA5-20R duplex receptacles and/or telecommunication outlets. Quantity as indicated on drawings.
- E. Basis of Design: Wiremold NP620 Series.

## **PART 3 - EXECUTION**

### **3.01 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.
  - 1. Verify that outlet boxes are installed at proper height.
  - 2. Verify that wall openings are neatly cut and will be completely covered by wall plates.
  - 3. Verify that branch circuit wiring installation is completed, tested, and ready for connection to wiring devices.

### **3.02 PREPARATION**

- A. Provide extension rings to bring outlet boxes flush with finished surface.
- B. Clean debris from outlet boxes.

### **3.03 INSTALLATION**

- A. Install wiring devices as indicated, in accordance with manufacturer's written instruction, applicable requirements of NEC and NECA "Standard of Installation" , and in accordance with recognized industry practices to fulfill project requirements
- B. Install devices plumb and level.
- C. Install switches with OFF position down.
- D. Install receptacles with grounding pole on bottom.
- E. Connect wiring device grounding terminal to branch circuit equipment grounding conductor.
- F. Connect wiring devices by wrapping conductor 2/3 of screw diameter in clockwise direction around screw terminal. Tighten screw to 12 pound-inches. Do not use spring pressure devices for wire connections.
- G. Install galvanized steel plates on outlet boxes and junction boxes in unfinished areas, above accessible ceilings, and on surface mounted outlets.
- H. Provide coverplates on switch, receptacle, and blank outlets.

### **3.04 LABELING**

- A. All coverplates for receptacles and switches shall be labeled with the branch circuit number. Label shall be machine generated and permanently affixed to the outside of the coverplate.

### **3.05 CONSTRUCTION**

- A. Interface with other work:
  - 1. Coordinate locations of outlet boxes provided under Section 260533 to obtain mounting heights indicated on Drawings.

### **3.06 FIELD QUALITY CONTROL**

- A. Section 014000 – Quality Requirements: Field inspection.

- B. Prior to energizing circuitry, test wiring for electrical continuity, and for short circuits. Ensure proper polarity of connections is maintained. Subsequent to energization, test wiring devices to demonstrate compliance with requirements.
- C. Inspect each wiring device for defects.
- D. Operate each wall switch with circuit energized and verify proper operation.
- E. Verify that each receptacle device is energized.
- F. Test each receptacle device for proper polarity.
- G. Test each GFCI receptacle device for proper operation.

### **3.07 ADJUSTING**

- A. Adjust devices and wall plates to be flush, level and plumb with wall.

### **3.08 CLEANING**

- A. Section 017300 Execution: Cleaning installed work.
- B. Clean exposed surfaces to remove splatters and restore finish.

END OF SECTION 26 27 26 – WIRING DEVICES

## **SECTION 26 28 16 - ENCLOSED SWITCHES**

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### **PART 1 - GENERAL**

#### **1.01 SUMMARY**

- A. Section Includes:
  - 1. Fusible switches.
  - 2. Nonfusible switches.
  - 3. Fuses.
- B. Related Documents: The Contract Documents, as defined in Section 011000 - Summary of Work, apply to the Work of this Section. Additional requirements and information necessary to complete the Work of this Section may be found in other Documents.
- C. Related Sections:
  - 1. As specified in Section 260500 - Common Work Results for Electrical.

#### **1.02 REFERENCES**

- A. National Electrical Testing Association (NETA):
  - 1. NETA ATS - Acceptance Testing Specifications for Electrical Power Distribution Equipment and Systems.
- B. National Electrical Contractors Association (NECA):
  - 1. NECA SI - Standard of Installation.
- C. National Electrical Manufacturers Association (NEMA):
  - 1. NEMA FU 1 - Low Voltage Cartridge Fuses.
  - 2. NEMA KS 1 - Enclosed Switches.
- D. National Fire Protection Association (NFPA):
  - 1. NFPA 70 - National Electrical Code.

#### **1.03 SUBMITTALS**

- A. Section 013300 - Submittal Procedures: Procedures for submittals.
  - 1. Product Data:
    - a. Switch ratings and enclosure dimensions.
    - b. Fuse data sheets showing electrical characteristics including time-current curves.
  - 2. Assurance/Control Submittals:
    - a. Certificates: Manufacturer's certificate that Products meet or exceed specified requirements.
    - b. Manufacturer's Instructions: Indicate application conditions and limitations of use stipulated by Product testing agency. Include instructions for storage, handling, protection, examination, preparation, installation, and starting of Product.
- B. Section 017704 - Closeout Procedures and Training: Procedures for closeout submittals.
  - 1. Project Record Documents: Record actual locations of enclosed switches and actual fuse sizes.

#### **1.04 QUALITY ASSURANCE**

- A. Perform Work in accordance with NECA SI.
- B. Manufacturer Qualifications: Company specializing in manufacturing Products specified in this Section with minimum five years documented experience.



- C. Regulatory Requirements:
  - 1. Conform to requirements of NFPA 70.
  - 2. Products: Listed and classified by Underwriters Laboratories, Incorporated as suitable for purpose specified and indicated.

## **PART 2 - PRODUCTS**

### **2.01 MANUFACTURERS**

- A. Switches: Subject to compliance with project requirements, manufacturer's offering Products which may be incorporated in the Work include the following:
  - 1. Eaton/Cutler Hammer Corp., Pittsburg, PA (800) 525-2000.
  - 2. General Electric Company (800) 626-2000.
  - 3. Siemens Energy & Automation, Alpharetta, GA (800) 964-4114.
  - 4. Square D Company, Palatine, IL (800) 392-8781.
- B. Fuses: Subject to compliance with project requirements, manufacturers offering Products which may be incorporated in the Work include the following:
  - 1. Cooper Industries Incorporated, Waukesha, WI (414) 524-3300.
  - 2. General Electric Company (800) 626-2000.
  - 3. Gould Shawmut, Newburyport, MA (508) 462-6662.
- C. Section 016000 - Product Requirements: Product options and substitutions. Substitutions not permitted.

### **2.02 FUSIBLE ENCLOSED SWITCH ASSEMBLIES**

- A. NEMA KS 1, Type HD heavy duty, 100,000 AIC load interrupter enclosed knife switch with externally operable handle interlocked to prevent opening front cover with switch in ON position. Cover shall be equipped with a manual defeat to allow opening by authorized personnel while energized. Handle shall be lockable in ON or OFF position.
- B. Rating: 250 volts AC or 600 volts AC as indicated on Drawings.
- C. Fuse Clips: Designed to accommodate Class R fuses.
- D. Enclosures: NEMA KS 1.
  - 1. Interior Dry Locations: NEMA Type 1 or 12.
  - 2. Exterior Locations: NEMA Type 3R or 12.
- E. Provide factory grounding lug and neutral block if required.

### **2.03 NONFUSIBLE SWITCH ASSEMBLIES**

- A. NEMA KS 1, Type GD, general duty load interrupter enclosed knife switch with externally operable handle interlocked to prevent opening front cover with switch in ON position. Cover shall be equipped with a manual defeat to allow opening by authorized personnel while energized. Handle shall be lockable in ON or OFF position.
- B. Rating: 250 volts AC or 600 volts AC as indicated on Drawings.
- C. Enclosures: NEMA KS 1.
  - 1. Interior Dry Locations: NEMA Type 1 or 12.
  - 2. Exterior Locations: NEMA Type 3R or 12.
- D. Provide factory grounding lug and neutral block if required.

### **2.04 FUSES**

- A. NEMA FU 1, Class RK5, dual element, current limiting, time delay, 250 volt AC or 600 volt AC as indicated on Drawings.

- B. Interrupting Rating: 100,000 rms amperes.

## **PART 3 - EXECUTION**

### **3.01 EXAMINATION**

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

### **3.02 INSTALLATION**

- A. Switches:
  - 1. Install in accordance with manufacturers published instructions and NECA SI.
  - 2. Install where indicated on Drawings, where required by equipment, and where required by NFPA 70.
  - 3. Apply adhesive tag on inside door of each fused switch indicating NEMA fuse class and size installed.
- B. Fuses:
  - 1. Install fuses in fusible switches in accordance with manufacturer's published instructions, as indicated on Drawings, or as required by loading per NFPA 70.
  - 2. Install fuse with label oriented with manufacturer, type, and size easily read.

### **3.03 FIELD QUALITY CONTROL**

- A. Section 014000 - Quality Requirements: Field testing and inspection.
- B. Inspect and test in accordance with NETA ATS, except Section 4.
- C. Perform inspections and tests listed in NETA ATS, Section 7.5.

END OF SECTION 26 28 16 - ENCLOSED SWITCHES

## **SECTION 28 23 05 - INTEGRATED SECURITY AND INVESTIGATIVE PLATFORM (ISIP) CCTV SYSTEM**

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### **PART 1 - GENERAL**

#### **1.01 SUMMARY**

##### **A. Section Includes:**

1. Provide and install a complete IP Video System including, but not limited to;
  - a. IP Video Surveillance Cameras, housings, power supplies, cabling, and related equipment.
  - b. Video management software.
  - c. Video monitoring and recording equipment.
  - d. Equipment enclosures.
  - e. Network equipment including routers and switches

##### **B. Direct Vendor**

1. All equipment including the servers, monitors, network switch, etc. are to be procured directly from the Direct Vendor (Securitas Electronic Security) utilizing the pass through pricing process.
2. The cameras, servers, monitors and associated equipment shall be supplied and installed by Securitas Electronic Security, Inc the sole approved USPS CCTV Direct Vendor. The Direct Vendor is to provide a Bill of Materials, pricing, and installation costs. The General Contractor is responsible for power, conduit, cable tray, cable and cable pulling. For assistance contact the Direct Vendor at:

Securitas Electronic Security, Inc.  
Michael Tracey, USPS Account Manager  
3 Westchester Plaza  
Elmsford, NY 10523  
Cell: 571-451-7629  
email: [michael.tracey@Securitases.com](mailto:michael.tracey@Securitases.com)

3. Contract to Securitas should be addressed to:

Securitas Electronic Security, Inc.  
1790 Graybill Road, Suite 100  
Uniontown, OH 44685

4. SES Inquiry Number: 855-331-0359
  - For any SES inquiries.

##### **C. General Contractor**

1. Responsible for providing power, conduit, cable tray, cable, and cable pulling and NEMA Enclosures to be used as part of the installation.
2. Provide AutoCAD electronic copies of the final camera placement drawings and camera schedules (from the project issued for construction drawings produced and provided by the design A/E) to the Direct Vendor and any requested documentation. This will include head end location and any monitors requested.
3. Verify customer location has 56 network available for installation of system via USPS site project manager or USPS IT.

- D. 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 including:
  - 1. System Installation Manuals (provided by the Direct Vendor) shall be left on-site during the final acceptance. Manuals will not be provided prior to installation completion.
  - 2. USPS Security Standards Booklet (prepared by Securitas) – 10/1/2019.
- E. Prompt Payments. In accordance with the Contractor Certification on Postal Service Form 4211B, “Project Contract Payment Authorization”, the contractor certifies that prompt payment, (within 30 days) to the subcontractor (Direct Vendor) will be made.
- F. Related Sections:
  - 1. Section 260500 – Common Work Results for Electrical
  - 2. Section 260533 – Raceway and Boxes for Electrical Systems

## **1.02 REFERENCES**

- A. National Fire Protection Association (NFPA):
  - 1. NFPA 70 - National Electrical Code.
  - 2. ANSI / TIA / EIA 568-C Commercial Building Telecommunications Cabling Standard (2009)
  - 3. ANSI / TIA / EIA 569-B Commercial Building Standard for Telecommunications Pathways

## **1.03 SYSTEM DESCRIPTION**

- A. Design Requirements: IP video system between points of surveillance indicated on Drawings and the central monitoring station consists of video IP cameras, camera outlets, camera controls, monitors, control stations, distribution components, video servers, Network Connections and accessories.

## **1.04 DEFINITIONS**

- A. Non “Blue Sky”: The following camera locations are considered to be non blue sky applications:
  - 1. Interior cameras
  - 2. Exterior building mounted cameras
  - 3. Exterior cameras covered by an overhang or canopy or similar protection.
- B. “Blue Sky”: Exterior cameras mounted remote from the building exterior wall are to be considered “blue sky” applications.

## **1.05 SUBMITTALS**

- A. Section 013300 - Submittal Procedures:
  - 1. Product Data: Manufacturer’s specification sheets for each component shall not be required for all products provided as part of this Direct Vendor agreement.
  - 2. Due to USPS security requirements, submittals will be limited to one electronic copy of the block diagram and one copy of the shop drawings to be provided to the General Contractor.
  - 3. Final As-Built Drawings, Operation and Installations Manual, will be supplied directly to USPS and stored within the rack per USPS Project Manager.
- B. Shop Drawings:
  - 1. The Direct Vendor will provide a Standard Drawing Package that shall be utilized for the installation of the CCTV system. This package shall include:
    - a. Block Diagram: System block diagrams noting major system components and interrelationships of each component.

- b. Console and Equipment Racks: Rack elevation drawings showing console/equipment arrangement.
  - c. The shop drawings shall include camera placement (camera placements shall be provided by the project specific design entity).
- C. Field Testing Reports for Cat-6 Copper and Fiber Optic Cable
  - 1. Test reports: Typewritten with complete listing of all required test parameters.
  - 2. Submit test reports prior to installation of any cameras or the headend.
- D. Sequence and Scheduling Plan: Direct Vendor shall provide installation scheduling plan for review and approval. Coordinate scheduling of software and revisions with the USPS.
- E. Section 017704 - Closeout Procedures and Training:
  - 1. Operation and Maintenance Data: Include data for each type of product, including features and operating sequences, both automatic and manual. This information shall be supplied directly to the USPS by the Direct Vendor.
  - 2. Product Quick Reference cards for the operation of all key system components.
  - 3. Project Record Documents: Direct vendor shall provide field-accurate drawings that reflect actual locations of cameras and, indicating cable identifiers, layout, location and numbering of system devices to reflect as-built conditions. The General Contractor shall provide routing of cabling in-formation.
  - 4. Provide a final materials list of equipment installed and spare parts on hand. Materials list shall include model number, serial number, and date installed.
  - 5. Project Completion Certification: Document signed by the Direct Vendor and a Postal Service representative indicating that the project is fully complete with all punch-listed items resolved. In new construction, the General Contractor will sign the project completion certification.
  - 6. Operating Instruction
    - a. Provide on-site instruction to review the operation of the system and detail any common troubleshooting or maintenance that is required to ensure normal operation. Authorized USPS (USPIS & USPS OIG) Representatives will receive this training.
    - b. Provide one complete set of equipment operating, installation.

#### **1.06 DELIVERY, STORAGE AND HANDLING**

- A. Section 016000 - Product Requirements: Transport, handle, store, and protect products.
- B. Keep devices and equipment in manufacturer's packaging in a secured location until system is ready for installation.
- C. Comply with Direct Vendor requirements. Coordinate storage location with the Postal Service.
- D. The equipment delivered must be insured at the contractor's expense through acceptance.

#### **1.07 DIRECT VENDOR WARRANTY/SERVICE/TECHNICAL SUPPORT PLAN**

- A. Warranty:
  - 1. Direct Vendor to include manufacturer warranty for three (3) years after facility acceptance and project completion certification for materials and labor.
    - a. Service plan shall include all parts and labor, the cost of utilizing a lift truck (if required) and shall include return shipping. Failed equipment shall be repaired or replaced at no charge to the Postal Service during the Direct Vendor warranty period.
    - b. USPS shall not be required to process any paperwork in order to be entitled to service plan coverage. It is the Direct Vendor's sole responsibility to monitor and comply with warranty eligibility.

- c. Where operational performance is substantially affected, all software and firmware shall be upgraded to the latest version supported by the purchased hardware platform throughout the service plan period and be provided at no cost to USPS. Such upgrades shall be covered under the warranty/service plan and are at the discretion of the USPS Project Manager.
  - d. Any software bugs identified by the USPS and mutually agreed upon as ‘level one’ bugs (impacting operation with no work-around) shall be rectified within two (2) weeks of their being reported.
  - e. Any software bugs identified by the USPS and mutually agreed upon as ‘level two’ bugs (impacting operation but with a work-around) shall be rectified within 90 days of their being reported.
  - f. Turnaround time for all repairs (warranty and out-of-warranty) shall not exceed 72 hours.
  - g. The annual “PM” service performed by the Direct Vendor shall include testing and exercising of the PTZ cameras. Direct Vendor shall provide annual service test results to USPIS/OIG.
- B. Technical Support:
- 1. Direct Vendor shall provide toll-free 24/7 technical support at no charge throughout the warranty period.
  - 2. Direct Vendor shall provide on-site installation support for systems with more than 40 total cameras. These visits shall include pre-construction site survey and project review, punch-list generation, and final inspection and system certification.
  - 3. Data Recovery — Direct Vendor shall provide a service to assist the USPS in recovering data from digital recording system hard drives and removable storage media in the event of a failure.
    - a. Turnaround time for data recovery shall be less than seven (7) days from receipt of hard drives at Direct Vendor’s data recovery center.
- C. Maintenance Stock Submittals:
- 1. At the completion of the installation, furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents. These extra materials shall be stored within the Investigative Office.
    - a. Indoor/Outdoor fixed camera: Two cameras.
    - b. Indoor/Outdoor PTZ camera: Two cameras.
    - c. Video encoder: One encoder.
    - d. Video decoder: One decoder.
    - e. 22” monitor: One monitor.
    - f. Fiber optic transmitter/receiver: Two of each type.
    - g. Camera power supply transformer: Two power supplies
    - h. Ethernet cable extender: Two midspans.
- D. These extra materials are to be used as advanced replacement parts in cases where USPS operational issues require immediate replacement and procurement of the material is delayed due to inavailability from the manufacturer. The spare parts utilized are to be replenished upon completion of the replacement or repair. Installation of the replacement units shall only be performed by an authorized representative of the Direct Vendor.

## **PART 2 - PRODUCTS**

### **2.01 MANUFACTURER**

#### **A. Selected Direct Vendor**

Securitas Electronic Security, Inc.  
Michael Tracey, USPS Account Manager  
3 Westchester Plaza  
Elmsford, NY 10523  
Cell: 571-451-7629  
email: [michael.tracey@Securitates.com](mailto:michael.tracey@Securitates.com)

#### **B. Section 016000 - Product Requirements:**

1. Product options and substitutions are not permitted without a written and USPS approved deviation.
2. All equipment to be supplied under this specification shall be new and the current model of the Direct Vendor listed above.
3. Systems and components shall have been thoroughly tested and proven in actual use.

### **2.02 VIDEO SERVER AND STORAGE**

#### **A. Based on the Construction Documents, the General Contractor shall purchase all equipment from the Direct Vendor.**

#### **B. Server:**

1. Server/Storage Requirements: Server storage, processor, and RAM requirements will be based off a mathematical formula from the information obtained during the site survey process. Once the number, type and classification of cameras are approved by all parties, it will calculate the required server(s) fit for the site. These servers are all HP Servers that contain USPS IT ACE images. These are approved CLINS and Assets by USPS.
  - a. Storage for 30 Days of Video with 30 % Expansion Capability. Depending on size of system storage may be either internal to the server or external iSCSI attached NAS device.
  - b. Dual Network Interface Cards on board and 4 additional GB NIC ports via PCIe card per USPS requirements. The system also contains HP's integrated Lights Out management cards. This requires 1 connection on the USPS network per server. Thus each server will have (at minimum) 2 USPS 56 Network connections.
  - c. UPS Power Supplies for Server and Storage.
  - d. Input Power: 120VAC, 60Hz (a power adaptor may be used to provide this voltage).
  - e. Operating Temperature: Range shall be equal to or greater than 10 to 40 degrees Celsius.
  - f. Humidity: Withstand a minimum of 10% to 80% humidity.
  - g. Current Build of IpConfigure Network Video Recording Software.
  - h. Laptop computer.
  - i. All items rack mounted.

### **2.03 IP VIDEO SWITCH**

#### **A. CISCO NETWORK SWITCH (IP Video)**

1. Based on the Construction Documents, the CISCO Switch is to be procured by the General Contractor from the Direct Vendor.

### **2.04 VIDEO ENCODER**

#### **A. Direct Vendor shall provide video encoders**

- B. The video encoder blade shall be equipped with six (6) analog video inputs and shall be able to provide simultaneous Motion 0;JPEG and MPEG-4 video streams. Furthermore, the blade shall, for each video channel, support resolutions up to 704x576 (PAL) / 704x480 (NTSC) pixels in full frame rate (25/30fps). The Encoder Shall meet or Exceed the following requirements:
  1. Be equipped with 6 analog composite video inputs with PAL/NTSC auto sensing
  2. Provide resolutions up to 704x576 (PAL) / 704x480 (NTSC) pixels at 25/30 frames per second for each video channel
  3. Support simultaneous Motion JPEG, MPEG-4 and H264 individually configurable for each video channel
  4. Support both unicast and multicast MPEG-4, individually configurable for each video channel
  5. Provide the ability to control PTZ devices from third party manufacturer
  6. Support both IPv4 and IPv6
  7. Provide multiple user passwords, support for HTTPS and SSL/TLS and incorporate IEEE802.1X authentication
  8. Be equipped with 4 alarm inputs and 4 alarm outputs
  9. Include embedded event functionality, which may be triggered by alarm input, video loss or by video motion detection
  10. Be supported by an open and published API
  11. Be equipped with a 1000BaseT Gigabit Ethernet interface
- C. The desktop Video Encoder shall be equipped with one analog video input and one channel of audio, provide simultaneous Motion JPEG and MPEG-4 video streams and shall support resolutions up to 704x576 (PAL) / 704x480 (NTSC) pixels in full frame rate (25/30fps). The Encoder Shall meet or Exceed the following requirements:
  1. Be equipped with a 10BaseT/100BaseTX Ethernet interface
  2. Be equipped with 1 analog video input, supporting composite and Y/C signals
  3. Provide resolutions up to 704x576 (PAL) / 704x480 (NTSC) pixels at 25/30 frames per second
  4. Support simultaneous Motion JPEG, MPEG-4 and H264
  5. Support both unicast and multicast MPEG-4
  6. Provide full duplex audio and be equipped with Line In and Line Out
  7. Provide the ability to control PTZ devices from third party manufacturer
  8. Support both IPv4 and IPv6
  9. Provide multiple user passwords, support for HTTPS and SSL/TLS and incorporate IEEE802.1X authentication
  10. Be equipped with 4 alarm inputs and 4 alarm outputs
  11. Include embedded event functionality, which may be triggered by alarm input, video loss or by video motion or audio detection
  12. Be supported by an open and published API
- D. The Video Encoder Blade and Video Encoder Shall be available as Rack Mountable or Desktop versions.

## 2.05 VIDEO DECODERS

- A. Video Decoders will support up to (2) remote monitors with full screen camera views; (9) camera views per monitor.
- B. Camera displays approved only by OIG and CIS
  1. Video Output - HDMI
  2. Video Decoding - H.265, H.264 and MPEG-4 Unicast and Multicast
  3. Security – Password protected user access HTTPS encryption
- C. Basis of Design: Costar #CV12MV2.



## 2.06 VIDEO CAMERAS

- A. Direct Vendor shall provide cameras.
- B. IP color cameras for video surveillance and monitoring of specific areas as shown on the drawings and confirmed with Postal Inspection Service and/or OIG through the USPS Project Manager with the following minimum capacities.
- C. Fixed, indoor/outdoor, dome type camera shall be a network camera with WDR, light finder, remote focus and zoom and shall incorporate Power over Ethernet. The camera shall meet or exceed the following requirements:
  - 1. Be equipped with a 10BaseT/100BaseTX Ethernet interface
  - 2. Include a vandal resistant, indoor/outdoor casing with smoked transparent cover where required.
  - 3. Equipped with pixel counter.
  - 4. Image sensor: Progressive scan RGB CMOS 1/3 inch (effective).
  - 5. Lens: Varifocal, 3.0 – 10.5mm, F1.4: 92 degree – 34 degree horizontal/50 degree – 20 degree vertical.
  - 6. Minimum illumination:
    - a. Color: 0.15 LUX, F1.4.
    - b. B/W: 0.03 LUX, F1.4.
  - 7. Shutter time: 1/66,500 to 1 second; 60 Hz.
  - 8. Pan/Tilt/Zoom: Digital PTZ, preset positions, guard tour.
  - 9. Angle Adjustment: Pan  $\pm 180$  degrees, tilt -5 to -85 degrees, rotation  $\pm 95$  degrees.
  - 10. Resolution: 1920x1080 (2 MP).
  - 11. Support simultaneous Motion JPEG, MPEG-4 and H264.
  - 12. Support both unicast and multicast MPEG-4.
  - 13. Support Power over Ethernet according to IEEE802.3af.
  - 14. Support both IPv4 and IPv6.
  - 15. Provide multiple user passwords, support for HTTPS and SSL/TLS and incorporate IEEE802.1X authentication.
  - 16. Be equipped with 1 alarm input and 1 alarm output.
  - 17. Include embedded event functionality, which may be triggered by alarm input or by video motion or audio detection.
  - 18. Be supported by an open and published API.
  - 19. Casing: Indoor/Outdoor; IP66, NEMA 4x and IK10 impact resistant, aluminum dome with encapsulated electronics (1.8 lbs).
  - 20. Processor and Memory: 512 Mb RAM, 256 Mb Flash.
  - 21. Connectors: RJ45 10 BASE – T/100BASE-TX PoE terminal block for (1) alarm input and (1) alarm output.
  - 22. Operating Conditions: Indoor/Outdoor; -40 – 122 degrees F; 10 – 100 percent RH.
  - 23. Accessories: Mounting plate, smoked transparent cover. Provide ceiling, pendant or wall bracket mounting and connector kits.
  - 24. Basis of Design: Indoor/Outdoor, Axis #P3225-VE-MKII.
- D. Indoor/Outdoor PTZ camera shall be a network dome camera and shall incorporate 23x optical zoom, day/night functionality, and simultaneous Motion JPEG and MPEG-4 video streams. Camera shall meet or exceed the following requirements:
  - 1. Be equipped with a 10BaseT/100BaseTX Ethernet interface.
  - 2. Include a vandal resistant, indoor/outdoor casing with smoked transparent cover.
  - 3. Feature a progressive scan CMOS sensor with Wide Dynamic Range (WDR), Electronic Image Stabilizer and day/night functionality.
  - 4. Be equipped with 23x optical zoom.
  - 5. Image Sensor: Progressive scan CMOS, 1/2.8”.

6. Lens: F1.6 – F4.2, 4.3 – 98.9 mm, angle of view: Horizontal – 57.9 to 2.9 degrees, Vertical – 33.9 to 1.6 degrees.
  7. Minimum Illumination: 0.2 LUX @ 30IRE F1.6.
  8. Shutter Time: 1/45,500s to 2s.
  9. PTZ:
    - a. E-Flip, 100 preset positions
    - b. 23x optical zoom and 12x digital zoom, total 276x zoom.
    - c. Pan: 360 degrees, 0.1 – 350 degrees/s.
    - d. Tilt: 180 degrees, 0.1 – 350 degrees/s
  10. Video Compression: H264 (MPEG – 4 part 10/AVC) baseline, main and high profiles motion J-PEG.
  11. Resolution: 1280 x 720 (1 MP).
  12. Frame Rate: Up to 60 fps in all resolutions.
  13. Support multiple, Motion JPEG and H264.
  14. Support Power over Ethernet according to IEEE802.3af.
  15. Support both IPv4 and IPv6.
  16. Provide multiple user passwords, support for HTTPS and SSL/TLS and incorporate IEEE802.1X authentication.
  17. Be equipped with full memory card for alarm triggers.
  18. Include embedded event functionality, which may be triggered by alarm input, camera temperature or by video motion or audio detection.
  19. Be supported by an open and published API.
  20. Casing:
    - a. Indoor/Outdoor; IP66, IK10 and NEMA 4x impact – resistant aluminum.
  21. Processor and Memory: 512 MB RAM, 256 MB Flash.
  22. Connectors: RJ45 10 BASE – T/100BASE-TX PoE push-pull connector for (2) alarm input and (2) alarm output.
  23. Operating Conditions:
    - a. -22 – 131 degrees F; 10 – 100 percent RH.
  24. Security: Password protection, IP address filtering, HTTPS encryption, IEEE 802.1x network access control.
  25. Power: 24 to 34 VDC max 20W power over Ethernet IEEE 802.3at.
  26. Accessories: Mounting plate, smoke transparent cover. Provide ceiling, wall or pendant mounting and connector kits.
  27. Basis of Design: Indoor, Axis #P5624-EMK11.
- E. Exterior fixed camera shall be (3) mega pixel, outdoor, network type with WDR, light finder, remote focus and zoom and incorporate Power over Ethernet (PoE). The camera shall meet or exceed the following requirements:
1. Be equipped with a 10BASE-T/100BASE-TX Ethernet interface.
  2. Include a vandal proof resistant casing with smoked transparent cover.
  3. Equipped with pixel counter.
  4. Image Sensor – 1/2.8" Progressive scan RGB CMOS.
  5. Lens: F1.3 varifocal, 2.8 to 8 mm, P – iris.
  6. Day and Night: Automatic IR filter removal in low light conditions.
  7. Angle of view: 80 to 32 degrees horizontal.
  8. Minimum Illumination:
    - a. Color (HDTV): 0.22 LUX @ F1.3.
    - b. BW (HDTV): 0.02 LUX @ F1.3.
  9. Shutter Time – 1/66,000s to 2s.
  10. Video Compression, H264 (MPEG-4 part 10/AVC) baseline, main and high profiles motion J-PEG.
  11. Resolutions: 1920x1080 (2 MP).

12. Frame Rate: Up to 60 fps in all resolutions.
  13. Video Streaming: Multiple motion JPEG and H264 controllable frame rate and band width, VBR/CBR H264.
  14. Support Power over Ethernet according to IEEE802.3af.
  15. Support both IPv4 and IPv6.
  16. Provide multiple user passwords, support for HTTPS and SSL/TLS and incorporate IEEE802.1X authentication.
  17. Be equipped with 1 alarm input and 1 alarm output.
  18. Include embedded event functionality, which may be triggered by alarm input or by video motion or audio detection.
  19. Be supported by an open and published API.
  20. Casing: Outdoor; IP66 and NEMA 4X, IK10 impact-resistant aluminum with integrated humidifying membrane.
  21. Processor and Memory: 512 Mb RAM, 256 Mb Flash.
  22. Connectors: RJ45 10 BASE – T/100BASE-TX PoE terminal block for (2) alarm input and (2) alarm output.
  23. Power: Camera with built in fan and heater, 24 - 34 VDC max; 12.95 Watts, PoE (IEEE 802.3 af) class 2.
  24. Operating Conditions: -40 - 122 degrees F, Humidity 10 - 100 percent RH (non-condensating).
  25. Accessories: Outdoor, weather shield, cable shield, 16 ft. network cable with pre-mounted gasket. Provide pole attachment.
  26. Basis of Design: Axis #P1365-EMKII.
- F. Products shall utilize internal or external surge protection such that a normally occurring power surge shall not void any manufacturer's warranty.
- G. Product model numbers indicated with the cameras are for convenience only. Errors or obsolescence shall not relieve the furnishing of cameras, which meet the technical description given in specifications noted or required by function designated.

## **2.07 VIDEO MONITORS**

- A. Provide 21.5-inch LCD flat-panel color monitors with the following minimum capabilities.
1. Product Requirements:
    - a. Video Interface Connections: BNC Video – 1 in, BNC Video – 1 out, HDMI – 1 in, VGA – 1 in, Audio – 1 in, Audio – 1 out.
      - 1) Switching between inputs shall be performed using a front panel control.
      - 2) VGA resolution shall be equal to the native resolution of the installed Digital Video Recorder, if applicable.
    - b. Input Power: 120VAC, 60Hz (a power adaptor may be used to provide this voltage).
    - c. Mounting: Each monitor shall be wall or desktop mounted. VESA mounting holes shall be provided and a series of optional VESA compliant mounts shall be made available at extra cost.
    - d. Operating Temperature: Range shall be equal to or greater than 0 to 40 degrees Celsius.
    - e. Humidity: Withstand a minimum of 20% to 80% humidity.
    - f. Resolution: 1920 x 1080 SXGA.
    - g. Pixel Pitch: 0.2482 x 0.2482 mm.
    - h. Brightness: 250 cd/m<sup>2</sup>.
    - i. Contrast Ratio: 1000:1.
    - j. Backlight Type: LED BLU.
    - k. Panel Aspect Ratio: 16:9.
    - l. Warranty: 3 years – parts/labor.

- m. Adjustments: Must support on-screen display for setup and adjustment of monitor parameters.
  - n. Colors: Must support a minimum of 16.7 million colors.
  - o. Basis of Design: Orion #22RCE.
- B. The contractor shall provide a wall mounted UPS unit at each monitor station location.
- 1. The UPS shall be line-interactive, rated 1000VA/900W with (18) minute battery reserve at 450 Watts; Tripp-Lite #SMART1000RML2U and #2POSRMKITWM wall bracket.

## **2.08 CAMERA POWER SUPPLIES**

- A. Based on the Construction Documents, the Direct Vendor will identify camera power source. When required the Direct Vendor will provide power supplies for camera.
- B. Interior Fixed Cameras: Camera shall be powered by PoE from network switch. Maximum total cable length (including horizontal and vertical distances) from switch to camera is 300 ft. Provide ethernet cable extenders for total cable lengths exceeding 300 ft., but less than 800 ft. a mid-span device is required.
  - 1. Network switch shall be equipped with UPS power supply.
- C. Interior and Exterior PTZ Cameras (non “Blue Sky”): Camera shall be powered by PoE from network switch. Maximum total cable length (including horizontal and vertical distances) from switch to camera is 300 ft. Provide ethernet cable extenders for total cable lengths exceeding 300 ft., but less than 800 ft. A mid-span device is required.
  - 1. Network switch shall be equipped with UPS power supply.
- D. Exterior Building Wall Mounted Fixed Cameras (non “Blue Sky”): Camera and enclosure shall be powered by PoE from network switch. Maximum total cable length (horizontal and vertical distances) from switch to camera is 300 ft. Provide ethernet cable extenders for total cable lengths exceeding 300 ft., but less than 800 ft. a mid-span device is required. Provide fiber cabling for total cable lengths exceeding 800 ft.
  - 1. Network switch shall be equipped with UPS power supply.
  - 2. Camera enclosures shall be equipped with integral heaters and defoggers.
  - 3. All exterior building wall mounted cameras are to be considered as “non blue-sky type”.
- E. Exterior Fixed Cameras (Blue Sky): Exterior cameras mounted remote from the building exterior wall are considered “Blue-Sky” type.
  - 1. Wall mounted environmental enclosure power supplies shall be located in a suitably protected area near the camera. Provide individually fused power supplies.
  - 2. Pole mounted Pole mounted environmental enclosure power supplies shall be located within a NEMA 4 enclosure at the pole. Provide individually fused power supplies.
  - 3. Camera enclosures shall be equipped with integral heaters and defoggers.
- F. Fixed and PTZ cameras requiring cable runs in excess of 800 ft. and all exterior cameras not building wall mounted and exposed to the elements (“Blue Sky” type) shall utilize fiber optic transmission equipment and shall be powered by individually fused power supplies.
- G. Provide a means for disconnecting camera power supplies from main power at the power supply enclosure, either through a detachable power cord, master fuse or circuit breaker located in the power supply cabinet, or other UL approved switching device.
  - 1. Power supplies shall be rated to support 200% of the actual (nominal) power loading.
  - 2. Each power supply shall be fed from a dedicated 120Volt circuit.
  - 3. Adjacent cameras shall be fed from different power supplies.
  - 4. Enclosures housing camera power supplies, media converters and 120 volt receptacle shall contain interior backplanes for mounting of all components and shall be provided by the General Contractor. NEMA type 4X, stainless steel, lockable enclosures shall be provided for exterior applications.

## **2.09 VIDEO CAMERA HOUSINGS AND MOUNTS**

- A. Direct Vendor shall provide housings and mounts as required for all camera types with the following minimum capabilities:
  - 1. Interior Cameras:
    - a. All cameras shall be in a housing that is coordinated with adjacent finishes with the appropriate mounting hardware. Selection of housings and mounts, including incremental changes to paint colors, dome materials, and cosmetic finishes shall be approved by the USPS or their authorized agent.
    - b. All housings shall be sufficiently dust and moisture resistant to withstand normal environmental conditions in their chosen installation location.
    - c. Hardware shall be provided to ensure tamper-resistant mounting in public access areas after normal business hours without modification to the integrity of the housing.
    - d. Where used, pendant mounts shall be suitable for use as wall, ceiling and column mounts. Pendant mounts shall attach to the appropriate camera housing using Direct Dealer provided standard threaded schedule 40 rigid iron pipes. Pipe lengths of 10 feet or less are to be a minimum of 1-inch diameter. Pipe lengths exceeding 10 feet are to be a minimum of 1-1/2 inch in diameter. Exterior pipe shall be galvanized.
    - e. All mounts shall incorporate installer provided safety chain or cable of sufficient endurance to support 2 times the weight of the equipment.
    - f. The General Contractor shall terminate the Ethernet, camera power and fiber optic cabling to the patch panels provided by the Direct Vendor and located in the upright racks.
  - 2. Exterior Cameras:
    - a. Environmental: Thermostatically controlled heaters and blowers with defrosting capabilities.
    - b. Moisture: Rainproof seals and gaskets.
    - c. Wind Resistance: Rated for 80mph sustained winds, minimum.
    - d. Ambient Temperature Rating: -22 to 131 degrees F.
    - e. Areas with more demanding environmental conditions will be granted a deviation from this specification.

## **2.10 FIBER OPTIC MEDIA CONVERTER MODULES**

- A. Direct Vendor shall provide fiber optic media converters.
- B. Fiber optic transmission equipment shall be used when one or more of the following conditions are met:
  - 1. Camera cable lengths (including horizontal and vertical distances) exceed 800 linear feet.
  - 2. The camera is located outdoors, is not building wall mounted and is exposed to the elements ("blue sky" type).
  - 3. Building wall mounted cameras and cameras protected by canopies or other architectural elements that shield them from direct view of the overhead sky are excluded from this requirement.
  - 4. The cable path is within 20 feet of a TIME or MIMS aerial.
- C. Modules located at field devices shall be low profile "miniaturized" type, and shall be mounted in the power supply/PoE injector housing for both fixed and PTZ cameras.
  - 1. Fiber optic transmit modules shall derive power from the camera power supply, eliminating the need for an additional power supply. AC power is required for PoE injector and media converter.

- D. Modules located at head-end locations shall be standalone modular units unless four (4) or more modules are required, in which case they shall be enclosed in a fiber-optic rack mount.
  - 1. If more than one fiber optic rack is used, modules shall be distributed as evenly as possible among the racks to reduce the load on the rack power supply and minimize the impact of a failed rack.
- E. Fiber optic modules shall conform to the following minimum specifications:
  - 1. 10/100 Mbps RJ-45 Ethernet port, SC Fiber Port
  - 2. 62.5/125, OM1, tight-buffered, multi-mode fiber
  - 3. PoE (PD) device or locally powered
  - 4. Protocol independent
  - 5. -31 to 158 deg operating Temperature
  - 6. IEEE 802.3, IEEE 803.2u and IEEE 803.2af Complaint
- F. Remote Node Cabinet
  - 1. Remote Node Cabinet shall be lockable and will house an IP video system network switch, patch panel, UPS and camera power supply.
    - a. The GC shall install the remote node cabinet, terminate fiber optic and CAT-6 cables.
    - b. Direct Vendor will supply 1.0kVA/900W, line-interactive, rack mounted UPS with 18 minute battery reserve at 450 Watts; Tripp-Lite #SMART1000RML2U.
    - c. The GC shall provide a dedicated 20 Amp, 120 Volt circuit for each remote node cabinet.
  - 2. Remote node cabinets shall be mounted high enough to deter unauthorized tampering, but low enough to avoid the use of motorized lifts for future repair or warranty work.
    - a. Node cabinets mounted within ePACS secured rooms shall typically be wall mounted top at 6 feet AFF.
    - b. Node cabinets mounted within the workroom and platform areas must be wall or column mounted bottom at no less than 9 feet AFF and no more than 14 feet AFF.
  - 3. Interior cable runs from remote node cabinets to the CCTV headend rack shall be (6) count, 62.5/125, OM1, indoor rated fiber cable; utilize plenum rated where required (General Cable #CG0061PNR or #CG0061PNU).
- G. Patch Cables
  - 1. Direct Vendor will provide CAT-6 and fiber optic patch cables for connections, CAT-6, fiber optic patch pushed to devices.

## **2.11 ETHERNET CABLE EXTENDERS**

- A. Direct Vendor shall provide ethernet cable extenders as required.
- B. Cable extenders, or fiber optics, shall be used at the discretion of the design engineer or when one or more of the following conditions are met:
  - 1. Utilize mid span cable extenders where the total camera cable length (including horizontal and vertical distances) exceeds 300 ft. but is not more than 800 ft. and it is not practical to use a remote switch and bridge to the head-end switch.
- C. Modules located at the field devices shall be located in the camera enclosure or junction box close to the device field device module derives power from the head end module and does require local power.
- D. Modules located at the head-end are standalone modules mounted in the equipment rack.

## **2.12 CABLING**

- A. Cabling requirements:
  - 1. Interior cable runs from cameras to the CCTV headend that do not exceed 800 feet shall be category 6; utilize plenum rated where required.

2. Interior cable runs exceeding 800 feet from cameras to the CCTV headend shall be (2) count 62.5/125, OM1, multi-mode, indoor rated fiber cable; utilize plenum rated where required.
  3. Exterior cable runs routed to remotely located “blue sky” cameras shall be (2) count, 62.5/125, OM1, multi-mode, indoor/outdoor rated fiber cable. Where multiple fiber cables are routed within a common conduit provide innerduct separation of each cable.
  4. All exterior cable runs shall be contained in conduit.
- B. Camera Ethernet Data Cabling:
1. 4-Pair Category 6 Unshielded Twisted Pair Cable shall be provided and installed by the General Contractor.
  2. The General Contractor shall provide and install the RJ-45 biscuit jack at the camera end of each cable. The General Contractor shall terminate and test the CAT-6 cable and RJ 45 jacks.
  3. CAT-6 cable shall be permanently terminated on female RJ45 jacks on the peripheral end, and appropriate patch panels at the distribution end. At no time shall male RJ45 ends be crimped on home run cables. All testing shall be performed only after the cables are terminated.
  4. Complies with individual characteristics established in ANSI/TIA/EIA-568-B terminated to T568A and all addendums for Category 6 cable performance specification.
  5. Cabling and wire ways shall be installed in accordance to sections 260533.
- C. Power cable shall be appropriately sized to ensure that any signal loss as a function of cable length does not prohibit the delivery of sufficient voltage and current from the power supply to the powered device. A separate power cable may be required by the design engineer as shown on the drawings.
- D. Cable shall have footage markings to Identify CCTV system Cable lengths.
- E. Fiber Optic - When fiber optic modules are required, the General Contractor shall provide fiber optic cable appropriate for the application. Cable shall conform to the following specifications:
1. 62.5/125, OM1, multi-mode, indoor rated fiber.
  2. 62.5/125, OM1, multi-mode, indoor/outdoor rated fiber.
  3. “SC” type connectors shall be used on all cable terminations, including junction boxes and break-out trays.
  4. Performance characteristics (including optical attenuation) shall be such that the Fiber Optic modules specified in Section 2.9 function to deliver signals end-to-end with sufficient bandwidth and quality to meet the specified application.
  5. Physical characteristics such that the cable has sufficient strength and endurance to withstand installation and environmental conditions without adversely affecting optical performance.
  6. At no time shall fiber optic cable have loose ends terminated and left loose. All fiber optic cable shall be looped, stored, connected and permanently mounted in appropriate LIU cabinets/devices prior to testing.
  7. Fiber cabling not routed within conduit shall be encased within appropriately sized inner ducts; utilize plenum rated where required.
  8. The general contractor shall terminate and test the fiber optic cable and connectors.

| Cable Type  | Signal      | Use  |
|---|-------------|--|
| (2) Count, 62.5/125, OM1, multi-mode, indoor riser rated fiber optic (General Cable #CG0021PNU or Approved Equal)                         | Camera Data | Interior (non-plenum) camera cable runs exceeding 800 feet. See Sections 2.10 and 2.14 |
| (2) Count, 62.5/125, OM1, multi-mode, indoor plenum rated fiber cable (General Cable #CG0021PNU or Approved Equal)                        | Camera Data | Interior (plenum) camera cable runs exceeding 800 feet. See Sections 2.10 and 2.14     |
| (2) Count, 62.5/125, OM1, multimode, indoor/outdoor rated fiber optic contained in conduit (General Cable #CG002ANR.BK or Approved Equal) | Camera Data | Exterior cable runs to “blue sky” cameras. See Sections 2.10 and 2.14                  |
| CAT-6 riser rated cable with footage markings (purple) (General Cable 7133809 or Approved Equal)  | Camera Data | Interior (non-plenum) camera cable runs less than 800 feet. See Sections 2.8 and 2.13  |
| CAT-6 plenum rated cable with footage markings (purple) (General Cable 7131809 or Approved Equal)   | Camera Data | Interior (plenum) camera cable runs less than 800 feet. See Sections 2.8 and 2.13      |

## 2.13 CATEGORY 6 CABLING

- A. Manufacturers: Subject to compliance with project requirements, manufacturers offering Products which may be incorporated in the work include the following:
1. Belden
  2. Berk-Tek
  3. CommScope Uniprise
  4. General Cable - Preferred
  5. Leviton
  6. Ortronics (Legrand)
  7. Panduit
  8. Product options and substitutions. Substitutions: Permitted if approved by Direct Vendor and Manufacturer.
- B. Conductors: 4 twisted pair, minimum 23 AWG, solid copper.
1. Individually insulated plenum rated conductors under common plenum rated sheath unless entire area where cable is installed is not considered a return air plenum according to any applicable codes.
  2. Complies with individual characteristics established in TIA-568-C, and all addendums for Category 6 cable performance specification.
  3. Nominal Impedance: 100 ohms plus or minus 15 percent.
  4. Certified and capable of performing to a minimum of 250 MHz.

## 2.14 OM1 FIBER CABLING

- A. Manufacturers: Subject to compliance with project requirements, manufacturers offering Products which may be incorporated in the Work include the following:
1. Belden
  2. Berk-Tek
  3. CommScope Uniprise
  4. Corning Cable Systems
  5. General Cable - Preferred
  6. Leviton



7. Optical Cable Corp.
  8. Ortronics (Legrand)
  9. Superior Essex
  10. Product options and substitutions. Substitutions: Permitted if approved by Direct Vendor and Manufacturer.
- B. Conductors: 2 / 6 strand
1. Provide multi-strand, 62.5/125 micron, tight-buffered, multimode, OM1 fiber cabling rated as follows:
    - a. 1 Gb/s < 150m @ 850 nm.
    - b. 1 Gb/s < 1000m @ 1300 nm.
  2. The fiber cabling shall meet the following specifications:
    - a. EIA/TIA-492AAAA-A-1997, "Detail Specification for 62.5 micron Core Diameter/125 micron Cladding Diameter Class 1a Graded-Index Multimode Optical Fibers."
    - b. IEC 60793-2-10, "Product specifications – Sectional specification for category A1 multimode fibers", Type A1b 62.5/125 micron graded index fiber.
  3. Terminate fiber strands onto "SC" ports.
  4. Provide individually insulated plenum rated strands under common plenum rated sheath, unless entire area where cable is installed is not considered a return air plenum according to any applicable codes.
  5. Fiber cabling shall comply with individual characteristics established in TIA-568-C including all addendums for fiber optic cable performance specification.
  6. Interior fiber cabling shall be indoor rated and contained within innerduct.
  7. All exterior or underground fiber cable shall be indoor/outdoor rated.

## **2.15 SECONDARY BONDING BUSBAR – SBB BEHIND HEADEND (REFER TO TIA-607-D)**

- A. Subject to compliance with project requirements, manufacturers offering Products which may be incorporated in the Work include the following:
  1. Harger – P/N GBI/14212 TMGB
  2. Chatsworth – P/N CPI 13622
  3. Legrand – P/N OR-GB2X12TGB
  4. Product options and substitutions. Substitutions: Not Permitted.
- B. Provide and install one SBB behind the CCTV headend rack(s), below ceiling acoustic tile, with all bonding leads clearly labeled by machine labeler. All bonding leads shall be 2 hole compression lugs. This SBB will connect to the PBB using minimum #1/0/AWG/CU bonding conductor. Minimum size will be 2 inch H x 0.25 inch W x 12 inch L.
- C. Each headend rack shall be bonded to the SBB using a #6/AWG/CU stranded bond wire.
- D. Each (2) lug compression connector shall have antioxidant coating applied to lug and busbar prior to attachment.

## **2.16 ACCESSORIES**

- A. Lightning/Surge Protection: Products shall utilize internal or external (power and low voltage) surge protection such that a normally occurring power surge shall not void any manufacturer's warranty.
  1. Rack mounted surge protectors shall be provided within the headend and remote node cabinets to protect the CAT-6 cabling serving the exterior, building wall mounted cameras.

- B. The headend equipment rack shall utilize a standalone UPS sized for a minimum of 10 minutes of battery run-time. The UPS shall be provided by the Direct Vendor. General Contractor will provide dedicated 30 Amp, 120VAC power and NEMA L5-30R twist-lock receptacle.
  - 1. The UPS shall be line-interactive, rack mounted and rated 3kVA/2.88kW with a 10 minute battery reserve at 1440 Watts; Tripp-Lite #SMART3000RML2U.
  - 2. Provide quad-plex Telecommunications Outlet (T/O) bottom mounted at 24 inch AFF behind the headend rack.
- C. Upright Racks: The Direct Vendor shall provide and install upright equipment racks to provide sufficient mounting space for the required equipment.
  - 1. Racks shall be all metal construction conforming to EIA standards with 19 inch equipment mounting opening and 1-3/4 inch vertical spacing of equipment. Rack rails shall be punched with captive nuts, 10-32 screws and nylon washers.
- D. The General Contractor shall terminate the Ethernet, camera power and Fiber Optic cabling to the patch panels provided by the Direct Vendor and located in the Upright Racks.

## **2.17 TERMINAL CABINETS**

- A. Terminal cabinets shall be provided to house media converters, mid-spans, power supplies, SPD's and other CCTV system components. Enclosures shall be hinged and lockable with panelboard construction and plywood backboards.
- B. Terminal cabinets shall be wall or pedestal mounted at no less than 12 inches A.F.F. or A.F.G. Provide NEMA type 1 enclosures within interior locations and NEMA type 4X stainless steel type for exterior locations. Pedestal mounted cabinets shall be supported utilizing 4 inch square concrete posts buried 24 inches below finished grade and set in concrete footing with 6 inches of concrete all around.
- C. Terminal cabinets shall be amply sized to accommodate all components without overheating, and forced air exhaust fans shall be provided. Cabinets shall be equipped with copper ground busses and those requiring 120 Volt power shall be provided with a 20 Amp, 125 Volt quadruplex receptacle and a (6) outlet, 120 Volt power strip complete with surge protection (Tripp-Lite, APC or equal). Receptacle and power strip shall be securely mounted within the cabinet.
  - 1. Components shall be individually mounted and secured to the backboard. Stacking of components is not acceptable and the use of tie-wraps is prohibited.
- D. Exterior terminal cabinets mounted near or adjacent to vehicular traffic shall be protected using 6 inch dia. x 4 ft. high concrete bollards. Exterior terminal cabinets shall be located within the secured area of the facility.

## **PART 3 - EXECUTION**

### **3.01 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.
  - 1. Verify that power and video outlets are in correct locations.
  - 2. Verify that building structure for attachment of equipment mounting devices is in place.
- C. Report in writing to USPS Project Manager any prevailing conditions that will adversely affect satisfactory execution of 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 Postal Service.
- E. Provide required power outlets, low voltage power supplies, interconnecting cables, hardware and equipment for a complete and operable system.
- F. Camera locations are to be reviewed and approved by a Postal Inspector, through the USPS Project Manager prior to installation of conduit and cabling.

### **3.02 INSTALLATION**

- A. Install all equipment in accordance with Direct Vendor's published instructions. Installation must be done by the Direct Vendor to assure proper installation and accountability. This includes, but is not limited to the following:
  - 1. All hardware used to secure equipment to racking shall include nylon or other non-metallic washer or grommet between the screw head and equipment panel to prevent any damage to the equipment.
    - a. Rack mount screws shall be self-centering Philips-head configuration unless specialized tam-per-resistant hardware has been specified.
    - b. Screws shall be tightened in such a manner as to allow their removal with common hand tools.
  - 2. Any equipment placed on shelving mounted on an incline of greater than 2 degrees shall be secured to the rack or shelving in such a manner as to prevent movement of the equipment in the direction of the incline. Such fastening shall be done in a manner as to preserve the integrity of the equipment case and chassis, and shall in no way jeopardize warranty coverage of the device.
  - 3. All equipment cabling shall be dressed in such a manner as to ensure a neat and clean appearance.
  - 4. Cable break-outs shall be at 90-degree angles from the harness or chase, and all chases shall be parallel to or at 90-degree angles from the rack frame.
  - 5. Cables are to be secured to the rack frames at sufficient intervals to ensure that the weight of the cable will not contribute to fatigue or early failure of that cable or the device and connector to which it is attached.
  - 6. Sufficient excess cable shall be provided in "service loop locations" to ensure that the cable may be re-connected without requiring the addition of extension pieces.
  - 7. All permanent cabling shall be mechanically numbered in a manner consistent with Direct Vendor's written system documentation.
  - 8. All wiring to include CAT-6 and Fiber Optic cables shall utilize Velcro fasteners to eliminate the risk of over-tightening cable bundles and affecting the strength or rated performance of the cable. The use of tie wraps is not acceptable.
  - 9. Where wiring is routed through sheet metal or over frame members, the metal edges shall be covered with flexible grommeting or edge dressing (such as automobile door edge trim).
  - 10. Double-sided foam tape shall not be used to secure any equipment, terminal blocks, or accessory devices. All device mounting shall be of a permanent nature.
  - 11. All excess length AC cords are to be tie-wrapped out of the way. Where possible, they shall be routed in a separate bundle a minimum of 6 inches away from any signal or control cable.
  - 12. Exposed wires run to wall mounted cameras shall be fed through tubing or the body of the mount to present a professional appearance.
    - a. Any accessible cables that can be reached by an individual standing on the floor, a stool, or a small stepladder shall be encased in protective tubing or armored sheathing to prevent tampering or cutting with common hand tools.

13. Care shall be exercised at all times to protect Postal Service property. For example, ladders shall not be placed against wallpapered or finished surfaces, equipment or furnishings; desks or countertops shall not be used in lieu of ladders.
  14. Each camera shall be labeled by a numbering system requiring no more than three digits. The camera numbering system chosen shall be utilized by the A/E during preparation of the design drawings and by Securitas in preparation of their construction drawings to provide consistent, matching and accurate as-built documentation.
    - a. Each pendant mounted camera shall be labeled on three sides with 3 inch high numbers supplied by the Direct Vendor.
    - b. Each ceiling or wall mounted camera shall be labeled with a single set of 2 inch high numbers supplied by the Direct Vendor.
    - c. Labeling shall be stenciled or laminated vinyl in a contrasting color to the camera housing.
    - d. Labeling shall not be placed on lower dome or any area that would obstruct camera viewing.
  15. Ensure that pendant mounted cameras are hung from stable, vibration free mounting platforms, using guy-wires or other support mechanisms to ensure stability where required. Mount cameras below any suspended lighting to avoid glare or reflection on camera dome and/or lens.
  16. Perform complete programming of the system, in coordination with the USPS Project Manager and Postal Inspector, or designated representative. Programming shall include, but not be limited to, elimination of duplicate or redundant titling information, synchronization of system clocks, camera sequences, dome presets, salvos and tours. Programming of any system passwords or limiting of accessibility prior to commissioning and training is prohibited.
  17. Provide the Direct Vendor red-lined drawings with job condition changes required to provide accurate close-out documentation.
- B. Power requirements shall be determined by actual equipment used.
- C. Ensure that:
1. All applicable statutes, ordinances, regulations, license requirements and codes are fully complied with.
  2. All required permits are obtained.
  3. All required inspections are conducted.
  4. All necessary certificates are issued, obtained, and delivered to the Postal Service.
  5. All equipment installations and mounting are in strict accordance with requirements for applicable seismic classification.
- D. Arrange all components to be mounted in the console(s)/rack(s) in accordance with Direct Vendor and/or Postal Service provided System Elevation drawings. Design shall provide a neat appearance and accessibility for servicing equipment.
- E. Provide required power outlets, interconnecting cables, hardware and equipment for a complete and operable system.
1. Power, 120VAC: As required by codes and standards for the facility.
  2. Where conduit is used, a minimum of 40% excess capacity shall be provided for future use.
- F. Install cameras as shown on the drawings and in accordance with the USPS specifications.
1. Provide 84-inch minimum headroom below cameras and their mountings. Where necessary modify mounting type to maintain clearance.
- G. All CAT-6 cable connections must be made to 8 pin modular jacks or plugs at the device and to 8 pin modular patch panel at the head end to the T568A standard. Patch panel shall be terminated per direct vendors documentation/drawings by the General Contractor.

- H. When not installed in cable trays, cable (CAT-6, fiber optic, and low voltage power) shall be supported with wide base cable hangers rated for proper support of CAT-6, fiber optic, and inner-duct cables (compliant with UL and NEC requirements for structured cabling).
  - 1. Cable hangers shall be installed every 3 to 6 feet and shall be rated to support the weight of the cable multiplied by a factor of three (3).
  - 2. Cable tray for camera wiring shall not include any low voltage AC wiring.
  - 3. Interior fiber optic cabling shall be contained within innerduct.
- I. The entire CCTV system shall utilize an independent wiring system not shared with any other building system. The structured cabling system racks, the TE's, the fiber backbone, cable trays, etc. cannot be utilized for any CCTV system purpose. Cable trays installed for the CCTV cabling may be utilized to contain the ePACS wiring.

### **3.03 FIELD TESTING CAT-6 COPPER AND FIBER OPTIC CABLE**

- A. Section 014000 – Quality Requirements: Field testing and inspection.
- B. Field Testing Procedures:
  - 1. Provide all equipment and services necessary to test the cabling.
  - 2. Test and calibrate instruments before testing.
  - 3. Re-terminate and retest any cable found to be defective.
  - 4. Perform cable testing and submit report prior to installation of any cameras or node cabinets.
- C. CAT-6 Copper Cable Testing:
  - 1. Use Level III Compliant test equipment.
  - 2. Test parameters shall include:
    - a. Wire map.
    - b. Insertion loss (attenuation).
    - c. DC loop resistance.
    - d. Return loss at camera.
    - e. NEXT, NEXT at camera.
  - 3. Perform end-to-end tests of each 4-pair cable as follows:
    - a. Pair/conductor for proper pinouts and continuity.
    - b. Ground fault.
    - c. Proper termination, shorts, and crossed pairs.
    - d. Channel attenuation per TIA-568-C, including all addendums.
    - e. Channel bi-directional worst case near end cross talk (NEXT) at frequencies up to 250 MHz, per TIA-568-C, including all addendums.
    - f. Measured effective cable run length.
- D. Fiber Optic Testing:
  - 1. Use 62.5/125 micron, OM1, multimode fiber optic cable testing.
  - 2. Perform testing of fiber in accordance with the fiber type being tested, TIA-526-14-A, Method B for Multimode Fiber (One Jumper/Two Adapters).
  - 3. Multimode fiber optic cable shall be tested bi-directionally at wavelengths of 850nm and 1300nm.
  - 4. The fiber testers and test heads shall have passed calibration within one year of actual test date.
  - 5. Tests include:
    - a. Tier 1 Testing with Optical Loss Test Set (OLTS) that includes testing for length.
    - b. Tier 2 Testing with OTDR to show all splices.

### **3.04 CONSTRUCTION COORDINATION**

- A. The Direct Vendor shall interface with Other Work.

### **3.05 FIELD QUALITY CONTROL**

- A. Section 014000 - Quality Requirements: Inspection and testing procedures.
- B. Inspection:
  - 1. The Direct Vendor shall inspect equipment installation, interconnection with system devices, mounting locations, and mounting methods.
  - 2. The Direct Vendor shall verify that units and controls are properly installed, connected, and labeled and that interconnecting wires and terminals are identified.
- C. Testing:
  - 1. The Direct Vendor shall Perform tests and provide test equipment, tools, and personnel required to conduct system tests and inspections. These tests shall include video quality and PTZ operation (where applicable) for all cameras.
  - 2. The Direct Vendor shall provide an actual demonstration of each system function.
  - 3. The Direct Vendor shall conduct system acceptance test upon completion of installation using pre-approved procedures. Test shall consist of system, subsystem, and device level acceptance tests, including software.
  - 4. The Direct Vendor shall use accepted Checklist for system testing.
  - 5. The Direct Vendor shall ensure that test procedures confirm each specification statement and manufacturer requirement has been met or exceeded. An actual demonstration of each system function and a simulation of each system failure shall be provided.
  - 6. An acceptance test period of thirty days shall begin at the start of the acceptance test. Any system failure during the acceptance test period will suspend the acceptance test. The thirty-day test period will restart when the required repairs have been made and certified.
  - 7. Perform all tests in the presence of the USPS Project Manager. The Postal Service reserves the right to accept any portion or activate any phase prior to acceptance of entire system.

### **3.06 CLEANING AND ADJUSTING**

- A. Adjust manual lens irises to meet lighting conditions.
- B. Adjust field of view for each camera per USPS Project Manager direction.

END OF SECTION 28 23 05 – INTEGRATED SECURITY AND INVESTIGATIVE PLATFORM (ISIP) CCTV SYSTEM