SECTION 261116

SECONDARY UNIT SUBSTATIONs

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**NOTE TO SPECIFIER**

*Use this Specification Section for Mail Processing Facilities.*

***This is a Type 1 Specification with completely editable text; therefore, any portion of the text can be modified by the A/E preparing the Solicitation Package to suit the project.***

*For Design/Build projects, do not delete the Notes to Specifier in this Section so that they may be available to Design/Build entity when preparing the Construction Documents.*

*For the Design/Build entity, this specification is intended as a guide for the Architect/Engineer preparing the Construction Documents.*

*The MPF specifications may also be used for Design/Bid/Build projects. In either case, it is the responsibility of the design professional to edit the Specifications Sections as appropriate for the project.*

*Text shown in brackets must be modified as needed for project specific requirements.* *See the “Using the USPS Guide Specifications” document in Folder C for more information.*

*The last date that USPS revised this standard specification section occurs in two places, at the end of this section and in the Table of Contents. If the date in this section matches the date in the Table of Contents, then you are using the latest version. Do not delete or revise the “last revised” date at the end of the section during the development of the Project Manual.*

*The footer in this section should be edited to replace the text, “USPS MPF SPECIFICATION” with the project name, and the blank date in the center should be replaced with the submission date, for interim design reviews, or the issue date of the completed Project Manual.*

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1. GENERAL
   1. SUMMARY
      1. This specification provides the technical requirements for an indoor secondary unit substation complete from the incoming line terminals to the outgoing feeder terminals. The contractor shall provide and install all components as specified herein and shown on related electrical drawings.
      2. 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.
      3. Related Section include the following:
         1. Section 019113 - General Commissioning Requirements.
         2. Section 260500 - Common Work Results for Electrical.
         3. Section 260800 - Commissioning of Electrical Systems.
         4. Section 261216 - Dry-Type Medium-Voltage Transformers
         5. Section 261313 - Medium Voltage Circuit Breaker Switchgear.
         6. Section 261317 - Medium-Voltage Interrupter Switchgear.
         7. Section 261414 - Infrared Viewing Panes (IR Windows)
         8. Section 262413 - Switchboards.
         9. Section 337173 - Electrical Utility Services.
   2. SUBMITTALS
      1. Submit shop drawings and product data for approval and final documentation in the quantities listed according to the Conditions of the Contract. All transmittals shall be identified by customer name, customer location and customer order number.
      2. Documents for Approval: One-line diagrams, dimensioned plans, sections and elevations showing minimum clearances, installed devices, major features, nameplate legends and bills of material.
      3. Final Documents: Record documentation to include those in 1.4B and wiring diagrams, single-line and three-line diagrams of switchgear bus and component connections, product data of accessories or parts not previously described in the drawings, list of recommended spare parts and instruction and installation manuals
      4. Product Data: Include features, characteristics and ratings of switches, fuses and other components, time-current characteristic curves for power fuses and any overcurrent devices.
      5. Shop Drawings: Detail equipment assemblies and indicate dimensions, weights, required clearances, method of field assembly, components and location and size of each field connection. Include the following:
         1. Enclosure type and details.
         2. Nameplate legends.
         3. Bus configuration with size and number of conductors in each bus run, including phase, neutral and ground conductors of main and branch buses.
         4. Current ratings of buses.
         5. Short-time and short-circuit ratings of switchgear assembly.
         6. Mimic bus diagram.
         7. Wiring Diagrams: Detail wiring for power, signal and control systems and differentiate between manufacturer-installed and field-installed wiring. Submit shop drawings and product data for approval and final documentation in the quantities listed according to the Conditions of the Contract. All transmittals shall be identified by customer name, customer location and customer order number.
   3. RELATED STANDARDS
      1. Comply with requirements of latest revisions of applicable industry standards, specifically including the following:
         1. ANSI/IEEE.
         2. NEMA.
         3. UL.
   4. QUALITY ASSURANCE
      1. Manufacturer Qualifications: Engage a firm with at least 10 years experience in manufacturing switchgear.
   5. DELIVERY, STORAGE AND HANDLING
      1. Deliver products in factory labeled packages. Store and handle in strict compliance with manufacturer’s instructions and recommendations. Protect from potential damage from weather and construction operations. Store so condensation will not form on or in switchgear and if necessary, apply temporary heat where required to obtain suitable service conditions.
2. PRODUCTS
   1. MANUFACTURERS
      1. Subject to compliance with project requirements, manufacturer’s offering Products which may be incorporated in the Work include the following:
         1. Eaton Corporation, Cutler-Hammer Products, Pittsburg, PA (800) 525-2000.
         2. General Electric Company (800) 626-2000.
         3. Siemens Energy and Automation, Alpharetta, GA (800) 964-4114.
         4. Square D Company, Palatine, IL (800) 392-8781.
         5. No substitutions permitted.
   2. GENERAL REQUIREMENTS
      1. Construction/Components:
         1. The unit substation shall consist of:
            1. Medium Voltage Interrupter Switch per Specification Section 261317
            2. Cast Coil Unit Substation Transformer per Specification Section 261216.
            3. Low Voltage Switchboard per Specification Section 262413.
   3. infrared viewing panes (ir windows)
      1. Infrared viewing panes (windows) shall be provided for the medium voltage interrupter switches, switchboard and transformers. Refer to specification sections 261414, 261317, 262413 and 261216, respectively.
3. EXECUTION
   1. INSTALLATION
      1. General: Electrical contractor to install metal-clad switchgear in accordance with manufacturer’s written instructions and the following specifications.
      2. Install and anchor switchgear in accordance with manufacturer’s instructions.
      3. Tighten bus joints, electrical connectors and terminals according to manufacturer's published torque-tightening values. Install equipment grounding conductors for switchgear with ground continuity to main electrical ground bus.
      4. Provide 4” high concrete housekeeping pad below unit substation.
   2. ADJUSTMENTS AND CLEANING
      1. Manufacturer's Field Services: Engage a factory-authorized service representative to inspect field-assembled components, installation and connection of switchgear; and to pretest and adjust switchgear components. Report results in writing.
      2. Set field-adjustable, protective-relay trip characteristics.
      3. Clean exposed surfaces using manufacturer recommended materials and methods. Touch-up damaged coating and finishes using non-abrasive materials and methods recommended by manufacturer. Eliminate all visible evidence of repair.
   3. TESTING
      1. Testing: After installing switchgear and after electrical circuitry has been energized, demonstrate product capability and compliance with requirements.
      2. Procedures: Perform inspections and tests specified below. Report values that do not meet manufacturer's written recommendations. Certify compliance with test parameters.
         1. Switchgear: Perform inspections and tests stated in NETA ATS, Section 7.1.
         2. Instrument Transformers: Perform inspections and tests stated in NETA ATS, Section 7.10.
         3. Metering and Instrumentation: Perform inspections and tests stated in NETA ATS, Section 7.11.
         4. Ground-Fault Systems: Perform inspections and tests stated in NETA ATS, Section 7.14.
         5. Battery Systems: Perform inspections and tests stated in NETA ATS, Section 7.18.
         6. Surge Arresters: Perform inspections and tests stated in NETA ATS, Section 7.19.
         7. Remove and replace malfunctioning units with new units and retest.
   4. WARRANTY
      1. Equipment manufacturer warrants that all goods supplied are free of non-conformities in workmanship and materials for [12 months] [18 months] from date of initial operation.
   5. STARTUP SERVICES
      1. Engage a factory-authorized service representative to perform startup service.
      2. Train Owner's maintenance personnel on procedures and schedules for energizing and de-energizing, troubleshooting, servicing and maintaining equipment and schedules.
      3. Verify that switchgear is installed and connected according to the Contract Documents.
      4. Verify that electrical control wiring installation complies with manufacturer's submittal by means of point-to-point continuity testing.
      5. Complete installation and startup checks according to manufacturer's written instructions.

END OF SECTION

USPS MPF Specification Last Revised: 10/1/2022