SECTION 052100

STEEL JOIST FRAMING

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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. Section Includes:
         1. Open web steel joists, with extended ends, and extended bottom chords.
         2. Bridging and bridging anchors.
         3. Headers and loose bearing plates.
      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 Sections:
         1. Section 051200 - Structural Steel Framing: Building structural frame.
   2. REFERENCES
      1. American Society for Testing and Materials (ASTM):
         1. ASTM A 36 - Specification for Carbon Structural Steel.
         2. ASTM A 307 - Specification for Carbon Steel Bolts and Studs, 60,000 psi Tensile.
         3. ASTM A 325 - Specification for Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength.
      2. American Welding Society (AWS):
         1. AWS D1.1 - Structural Welding Code.
      3. Steel Joist Institute (SJI):
         1. SJI - Standard Specifications Load Tables and Weight Tables for Steel Joists and Joist Girders.
      4. Steel Structures Painting Council (SSPC):
         1. SSPC SP 2 - Hand Tool Cleaning.
         2. SSPC Paint 15 - Steel Joist Shop Paint.
   3. SUBMITTALS
      1. Section 013300 – Submittal Procedures: Procedures for submittals.
         1. Shop Drawings:
            1. Indicate joist types using standard SJI designations, spacing, location, bridging, anchorages, and special conditions.
            2. Indicate welded field connections using standard AWS welding symbols.
            3. Indicate paint primer type, accessories, and installation details.
            4. Joist setting plans.
         2. Assurance/Control Submittals:
            1. 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:

Welding inspection.

Bolted connection inspection.

* + - * 1. Certificate: Manufacturer certificate, signed and sealed by a registered structural engineer, certifying that joists are designed in accordance to and comply with SJI specifications and are certified by SJI.
  1. QUALITY ASSURANCE
     1. Perform Work in accordance with SJI, Load Tables and Weight Tables.
     2. Qualifications:
        1. Fabricator: Company specializing in performing Work of this Section with minimum 5 years documented experience.
        2. Erector: Company specializing in performing Work of this Section with minimum 5 years documented experience, certified by AISC Quality Certification Program.
        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 recertification of welders is required, provide without additional cost to United States Postal Service.
  2. DELIVERY, STORAGE, AND HANDLING
     1. Section 016000 - Product Requirements: Transport, handle, store, and protect products.
     2. Comply with recommendations of SJI Specifications.
     3. Protect from corrosion, deformation, and other damage.

1. PRODUCTS
   1. MATERIALS
      1. Open Web Joist Members: SJI Type K Open Web.
      2. Bridging: ASTM A 36.
      3. Welding Materials: AWS D1.1; type required for materials being welded.
         1. Open Web Steel Joists: Conform to SJI Specifications for Open Web Steel Joists and to SJI Technical Digest No. 8, Welding of Open Web Steel Joists.
         2. Longspan and Deep Longspan Steel Joists and Joist Girders: Conform to applicable Welding Electrodes section in SJI Specifications.
      4. Anchor Bolts, Nuts, and Washers: ASTM A 307 and ASTM A 325.
      5. Primer: SSPC 15, Type 1, red oxide.
      6. Accessories: Provide anchors and fasteners required for installation and attachment of joists and bridging.
      7. Structural Steel Building Framing: Specified in Section 051200.
   2. FABRICATION
      1. Design and fabricate joists, including headers and other supporting framing, in accordance with SJI Standard Specifications.
         1. Verify Drawing dimensions and field conditions before beginning fabrication.
         2. Provide for concentrated loads indicated on Drawings.
      2. Bottom Chord Extensions: Provide joist bottom chord extensions at columns, not framed in minimum two directions, with structural steel members. Connect to columns as indicated on Drawings.
      3. Extended Ends: Provide extended joist ends at locations indicated on Drawings. Comply with load tables and design loads indicated on Drawings.
      4. Bridging: Provide horizontal or diagonal type bridging for open web joists, including bridging anchors for ends of bridging lines ending at walls or beams.
      5. End Anchorage: Provide anchorages to connect joists to adjacent construction.
      6. Header Units: Provide header units to support tail joists at openings in roof system not framed with steel shapes.
   3. FINISH
      1. Prepare joist component surfaces in accordance with SSPC SP 2.
      2. Shop prime joists. Do not prime surfaces that will be field welded and in contact with concrete.
         1. Apply one shop coat of primer to joists and joist accessories to provide a continuous dry film thickness of 0.50 mils.
   4. SOURCE QUALITY CONTROL
      1. Inspection: Contracting Officer reserves the right to have Contracting Officer's Representative make a visual inspection of joists at fabricators' shop before shipment.
2. EXECUTION
   1. EXAMINATION
      1. Section 017300 - Execution: Verification of existing conditions before starting work.
      2. Verification of Conditions: Verify that field measurements, surfaces, substrates and conditions are as required, and ready to receive Work.
      3. 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.
      4. By beginning Work, Contractor accepts conditions and assumes responsibility for correcting unsuitable conditions encountered at no additional cost to the United States Postal Service.
   2. ERECTION
      1. Erect steel joists, joist girders, and bridging in accordance with SJI Standard Specifications and SJI Technical Digest No. 9 - Handling and Erection of Steel Joists and Girders.
      2. Do not start erection of joists until supporting Work is in place and connections made.
      3. Erect and bear joists on supports.
      4. Allow for erection loads. Provide temporary bracing to maintain joists safe, plumb, and in true alignment.
      5. Install bridging simultaneously with joist erection, before construction loads are applied. Connect ends of bridging lines at top and bottom chords terminating at walls or beams.
      6. After joist alignment and installation of framing, field weld joist seat to bearing member.
      7. Position and field weld joist chord extensions and wall attachments.
      8. Do not permit installation of roof decking until joists are braced, bridged, and secured or until completion of erection and installation of permanent bridging and bracing.
      9. Do not field cut or alter joists.
      10. After erection, prime welds, abrasions, and surfaces not shop primed, except surfaces to be in contact with concrete.
   3. CONSTRUCTION
      1. Interface with Other Work:
         1. Coordinate placement of anchorages in concrete and masonry construction for making connections to joists and joist girders, and for securing bearing plates.
         2. Furnish anchor bolts and other devices built into concrete and masonry construction to appropriate installer for installation.
      2. Site Tolerances:
         1. Minimum Variation From Plumb: 1/4 inch.
         2. Maximum Offset From True Alignment: 1/4 inch.
   4. FIELD QUALITY CONTROL
      1. Section 014000 - Quality Requirements: Field testing and inspection.
      2. Testing laboratory will inspect bolted connections and field welds.
         1. Bolted: Visually inspected.
         2. Welded: Visually inspected.

END OF SECTION

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