SECTION 054000

COLD-FORMED METAL 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. Load-bearing and metal stud wall and partition framing, with anchorage and bracing.
      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.
   2. REFERENCES
      1. American Iron and Steel Institute (AISI)
         1. Specification for the Design of Cold-Formed Steel Structural Members.
         2. Cold-Formed Steel Design Manual (Latest).
      2. American National Standards Institute (ANSI).
         1. ANSI A58.1 - Roof, Wind and Snow Loads.
      3. American Society for Testing and Materials (ASTM):
         1. ASTM A653 - Standard Specification for Steel Sheet, Zinc-coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
         2. ASTM A1101- Hot-Rolled Carbon Steel Sheet & Strip, Carbon Hot-Rolled Structural Quality.
         3. ASTM A1008- Standard Specification for Structural Steel Sheet, Carbon, Cold-Rolled.
         4. ASTM C955 - Standard Specification for Load Bearing Steel Studs, Runners (Track), Bracing, and Bridging for Screw Application of Gypsum Panel Products.
      4. American Welding Society (AWS):
         1. AWS D1.1 - Structural Welding Code and D1.3 - Specifications for Welding Sheet Steel in Structures.
         2. AWS - Standard Qualification Procedure.
      5. Federal Specification.
         1. FS TT-P-636C - Rust-Inhibitive Paint.
      6. Metal Lath/Steel Framing Association (ML/SFA) - Lightweight Steel Framing Systems Manual, Latest Edition.
   3. SYSTEM DESCRIPTION
      1. Design Requirements: The supplier shall design and/or verify the size and strength of all light gauge cold-formed Metal Framing members and connections in accordance with the ML/SFA Lightweight Steel Framing Systems Manual.
         1. Design shall use the superimposed design loads specified in the Design Criteria section of the Structural General Notes in the Contract Drawings.
         2. Design shall be based upon information shown on the drawings and specified herein.
         3. Additional Design Criteria - ANSI A58.1 or:
            1. Load-bearing live loads:

Load-bearing partitions:

Lateral pressures: 5 psf

Non-load-bearing partitions:

Lateral pressures: 5 psf

Exterior curtain walls:

Wind loads based on wind speeds of [ ] MPH.

4) Maximum allowable deflection with brick veneer:

Calculated on 18 ga. stud capacity alone: 1/600.

* + - 1. Design shall conform to: AISI Specification for the Design of Cold-Formed Steel Structural Members. Wall bridging shall be designed to provide resistance to minor axis bending and rota­tion of wall studs. Designated selected exterior and/or interior walls shall be designed to provide frame stability and lateral load resistance. All connections (member to member, and member to structure) shall be designed and detailed.
      2. Qualification of Field Welding: Qualify welding process and welding operators in accordance with AWS Standard Qualification Procedure.
      3. Design non-axial load-bearing framing to accommodate 1/2 inch vertical deflection.
  1. SUBMITTALS
     1. Section 013300 - Submittal Procedures: Procedures for submittals.
        1. All shop drawings and calculations must bear the seal and signature of an engineer registered in the jurisdiction where project is being constructed.
        2. Product Data:
           1. Manufacturers' literature containing product and installation specifications and details.
        3. Shop Drawings:
           1. Documents illustrating materials, shop coatings, steel thickness, details of fabrication and erection, details of attachment, spacing of fasteners, required accessories and critical installation procedures.
        4. Calculations:
           1. Engineering calculations or data verifying the framing assembly's ability to meet or exceed design requirements as stated here-in and required by local codes, prepared under the supervision of a Professional Engineer.
        5. 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:

Testing/Inspection reports conducted on shop and field-bolted and welded connections. Include data on type(s) of tests conducted and test results. Note inspection findings.

* + - * 1. Certificates: Manufacturer's certificate that Products meet or exceed specified requirements.
        2. Qualification Documentation: Submit documentation of experience indicating compliance with specified qualification requirements.
  1. QUALITY ASSURANCE
     1. 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.
     2. Pre-Installation Meetings:
        1. Convene a pre-installation meeting one week prior to commencing Work of this Section. Notify the Architect and Contracting Officer of the meeting date and time at least 7 days prior.
        2. Require attendance of parties directly affecting Work of this Section.
        3. Review conditions of operations, procedures and coordination with related Work.
        4. Agenda:
           1. Tour, inspect, and discuss conditions of installation of other work including door and window frames and mechanical and electrical work.
           2. Review areas of potential interference and conflicts, and coordinate layout and support provisions for interfacing work.
           3. Review required submittals, both completed and yet to be completed.
           4. Review Drawings.
           5. Review and finalize construction schedule related to cold formed metal framing installation and verify availability of materials, personnel, equipment, and facilities needed to make progress and avoid delays.
           6. Review required inspections, testing, certifying, and material usage accounting procedures.
           7. Review weather and forecasted weather conditions, and procedures for coping with unfavorable conditions.
           8. Review safety precautions relating to operations.
  2. DELIVERY, STORAGE, AND HANDLING
     1. Section 016000 - Product Requirements: Transport, handle, store, and protect Products.
     2. Protect metal framing units from rusting and damage. Deliver to project site in manufacturer's unopened containers or bundles, fully identified with name, brand, type and grade. Store off ground in a dry ventilated space or protect with suitable waterproof coverings and protect against mechanical damage to units. Store materials on a flat plane. Any damaged materials shall be removed from the site.

1. PRODUCTS

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**NOTE TO SPECIFIER**

Verify manufacturer information, Product numbers, and availability at time of Project Manual preparation for Project.

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* 1. MATERIALS
     1. All studs and/or joists and accessories shall be of the type, size, gauge and spacing shown on the plans or as required by manufacturer design, if called for. Studs, runners (track), bracing, and bridging shall be manufactured per ASTM Specification C-955.
     2. All painted studs, joists and accessories shall be formed from steel that conforms to the requirements of ASTM A570 or A611, as set forth in Section 1.2 of the AISI Specification for the Design of Cold-Formed Steel Structural Members (latest edition).
     3. All galvanized studs, joists and accessories shall be formed from steel that conforms to the requirements of ASTM A653, as set forth in Section 1.2 of the AISI Specification for Design of Cold-Formed Steel Structural Members (latest edition).
     4. All painted studs, joists and accessories shall be prime-painted with a rust-inhibitive paint, FS TT-P-636C.
     5. All galvanized studs, joists and accessories shall have a minimum G-60 coating.
     6. All section properties shall be calculated in accordance with the AISI Specification for the Design of Cold-Formed Steel Structural Members (latest edition).
     7. Framing Accessories:
        1. Subject to compliance with project requirements, manufacturers offering Products which may be incorporated in the Work include the following:
           1. B&D Industries, LLC, Albany, NY (800) 924-4807.
           2. Deitrich, Pittsburgh, PA (800) 873-2443.
           3. The Steel Network, Incorporated., Raleigh, NC (888) 474-4876.
        2. Section 016000 - Product Requirements: Product options and substitutions. Substitutions: Permitted.
        3. Interior or Exterior non-axial-load-bearing Wall Head Condition Deflection Accessories:
           1. Deitrich: Double-Deep-Leg Track.
           2. The Steel Network:
           3. VertiClip SLD (interior), SL (exterior).
        4. Exterior non-axial-load-bearing Wall Slab Bypass Deflection Accessories:
           1. B&D: Quick Clip.
           2. The Steel Network: VertiClip SLB or SLS Series.
  2. FABRICATION
     1. General: Framing components may be prefabricated prior to erection. Fabricate components plumb, square, true to line and braced against racking with joints welded. Perform lifting of prefabricated components in a manner to prevent damage or distortion.
     2. Fastenings: Attach similar components by welding. Attach dissimilar components by bolting, or screw fasteners, as standard with manufacturer.
     3. Cutting of steel framing members may be accomplished with a saw or shear. Torch cutting of load carrying members is not permitted.
     4. Wire tying of framing components is not permitted.

1. 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. INSTALLATION AND STUDWALLS
      1. Manufacturer's Instructions: Install metal framing systems in accordance with manufacturer's printed or written instructions and recommendations, unless otherwise indicated.
      2. Stud Walls:
         1. Runner Tracks: Install continuous tracks sized to match studs. Align tracks accurately to layout at base and tops of studs. Secure tracks as recommended by stud manufacturer for type of construction involved, except do not exceed 24 inches on center spacing for nail or power- driven fasteners, or 16 inches on center for other types of attachment. Provide fasteners at corners and ends of tracks.
         2. Position studs plumb in runners and space no greater than 16 inches and not more than 2 inches from abutting walls and at each side of openings. Connect studs to upper and lower tracks using self-drilling, screws or welding in accordance with Manufacturer's recommendations such that the connection meets or exceeds the design loads required at that connection.
         3. Brace all studs at mid-height for added strength, stiffness, and fire-stopping.
         4. Construct corners using minimum of three studs. Double studs at door, window, and sidelight jambs. Install intermediate studs above and below openings to match wall stud spacing.
         5. Provide deflection allowance below supported horizontal building framing in ceiling or head track for non-load-bearing framing in a method recommended by stud manufacturer.
            1. Where walls and partitions must close out against the deck for smoke and fire separation provide a top track rigidly attached to vertical studs but free to move vertically in a 14 gauge break-formed deep leg track rigidly attached to deck with slack to accommodate structural live load deflections noted on drawings; or head condition vertical slide clips in coordination with alignment track (20 gage at exterior walls, 25 gage at interior walls).
            2. Where wall or partition studs pass by the structural deck provide vertical slide clips welded or screw attached to the structural support but do not attach rigidly to studs.
   3. INSTALLATION: PRE-FABRICATED AND PANELIZED CONSTRUCTION
      1. Panels shall be designed to resist construction and handling loads as well as service loads.
   4. INSTALLATION: NON-PANELIZED (STICK-BUILT) MEMBERS
      1. Align track accurately at supporting structure and fasten to structure as shown on shop drawings.
      2. Track intersections shall butt evenly.
      3. Studs shall be plumbed, aligned, and securely attached to flanges or webs of upper and lower tracks. Axially loaded studs shall be seated squarely in both top and bottom tracks.
   5. INSTALLATION: JOISTS
      1. Joist shall be located directly over bearing studs or a load distribution member shall be provided to transfer loads.
      2. Provide web stiffeners where necessary at reaction points, and at points of concentrated loads, as shown on the shop drawings.
      3. Bridging, either strap or solid, shall be provided as shown on the shop drawings.
      4. Provide additional joists under parallel partitions where the partition length exceeds 1/2 of the joist span.
      5. Provide additional joists around all floor/roof openings which are larger than the joist spacing and as noted on the shop drawings.
      6. End blocking shall be provided where joist ends are not otherwise restrained from rotation.
   6. FASTENINGS AND ATTACHMENTS
      1. Anchorage of the tracks to the structure shall be with methods designed for the specific application of sheet to that surface. Size, penetration, type and spacing shall be determined by design.
      2. Welds shall conform to the requirements of AWS D1.1, AWS D1.3, and AISI Manual Section 4.2. Welds may be butt, fillet, spot, or groove type, the appropriateness of which shall be determined by, and within the design calculations. All welds shall be touched-up using zinc rich paint to galvanized members, and paint similar to that used by the manufacturer for painted members.
      3. Steel drill screws shall be of the minimum diameter indicated by the design of that particular attachment detail. Penetration through joined materials shall not be less than 3 exposed threads.
      4. Wire tying in structural applications is not permitted.
   7. CONSTRUCTION
      1. Site Tolerances:
         1. Vertical alignment (plumbness) of studs shall be within 1/960th (1/8 inch in 10.0 inches) of the span.
         2. Horizontal alignment (levelness) of walls shall be within 1/960th (1/8 inch in 10.0 inches) of their respective lengths.
         3. Spacing of studs shall not be more than +1/8 inch from the designed spacing providing that the cumulative error does not exceed the requirements of the finishing materials.
         4. Squareness - Prefabricated panels shall not be more than 1/8 inch out of square within the length of that panel.
   8. FIELD QUALITY CONTROL
      1. Section 014000 - Quality Requirements: Field testing and inspection.
         1. Inspect all work in order to assure strict conformance to the shop drawings at all phases of construction.
         2. All members shall be checked for proper alignment, bearing, completeness of attachments, proper placement, reinforcement, etc.
         3. All attachments shall be checked for conformance with the shop drawings. All welds shall be touched-up as specified herein.
         4. General Inspection of structure shall be completed prior to applying loads to those members.
         5. Inspections where and as required by local codes shall be controlled inspections.

END OF SECTION

USPS MPF Specification Last Revised: 10/1/2022