SECTION 05400

COLD-FORMED METAL FRAMING

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\*\* NOTE TO SPECIFIER \*\* Mill Steel Framing; light gauge steel framing components.  
This section is based on the products of Mill Steel Framing, which is located at:  
2905 Lucerne Dr. S.E.  
Grand Rapids, MI 49546  
Toll Free Tel: 877-369-4252  
Email: [request info (techservices@millsteelframing.com)](https://admin.arcat.com/users.pl?action=UserEmail&company=Mill+Steel+Framing&coid=43703&rep=&fax=&message=RE:%20Spec%20Question%20(05400ssp):%20%20&mf=)  
Web: <https://www.millsteel.com/framing>   
 [ [Click Here](https://www.arcat.com/arcatcos/cos43/arc43703.html) ] for additional information.  
  
The Mill Steel Framing team is expert in servicing our customers with their metal framing needs. Over the past decade, we have dedicated ourselves to building strong, solid relationships through excellent service, quality products, and reliable delivery. Combine that with Mill Steel's infrastructure, vast industry expertise, and 55+ years of proven success, and you've got yourself an enhanced team with one sole focus: Being a partner you can trust.  
  
Aligned with Mill Steel Company - an industry-leading steel supplier, who we are is better than ever. Mill Steel Framing manufactures structural and drywall c-studs and track for use in both load and non-load bearing applications in the commercial and residential markets. Saving you time and money through our commitment to supply framing components that meet specifications: every time.

1. GENERAL
   1. SECTION INCLUDES

\*\* NOTE TO SPECIFIER \*\* Delete items below not required for project.

* + 1. Structural metal framing:
       1. Cold-formed metal framing for walls.
       2. Cold-formed metal framing for floors.
       3. Bridging, bracing, clips and accessories.
  1. RELATED SECTIONS

\*\* NOTE TO SPECIFIER \*\* Delete any sections below not relevant to this project; add others as required.

* + 1. Section 06160 - Sheathing.
    2. Section 07200 - Thermal Protection.
    3. Section 09100 - Metal Support Assemblies.
    4. Section 09260 - Gypsum Board Assemblies.
  1. REFERENCES

\*\* NOTE TO SPECIFIER \*\* Delete references from the list below that are not actually required by the text of the edited section.

* + 1. ASTM International (ASTM):
       1. ASTM A 1003 - Standard Specification for Steel Sheet, Carbon, Metallic- and Nonmetallic-Coated for Cold-Formed Framing Members.
       2. ASTM C 955 - Standard Specification for Load-Bearing (Transverse and Axial) Steel Studs, Runners (Tracks), and Bracing or Bridging for Screw Application of Gypsum Panel Products and Metal Plaster Bases.
       3. ASTM C 1007 - Standard Specification for Installation of Load Bearing (Transverse and Axial) Steel Studs and Related Accessories.
    2. American Iron and Steel Institute (AISI) - Standard for Cold-Formed Steel Framing General Provisions.
    3. American Iron and Steel Institute (AISI) - North American Specification for the Design of Cold-Formed Steel Structural Members.
    4. American Welding Society (AWS) D.1.3 - Structural Welding Code - Sheet Steel.
  1. SUBMITTALS
     1. Submit under provisions of Section 01300.
     2. Product Data: Manufacturer's data sheets on each product to be used, including:
        1. Manufacturer's certification of product compliance with codes and standards.
        2. Preparation instructions and recommendations.
        3. Storage and handling requirements and recommendations.
        4. Installation methods.

\*\* NOTE TO SPECIFIER \*\* Delete if not required.

* + 1. Structural Calculations: Submit structural calculations prepared by manufacturer for approval. Submittal shall be sealed by a professional engineer registered in the state of the project.
       1. Description of design criteria.
       2. Engineering analysis depicting stress and deflection (stiffness) requirements for each framing application.
       3. Selection of framing components, accessories and welded connection requirements.
       4. Verification of attachments to structure and adjacent framing components.
       5. Engineer shall have a minimum of 5 years' experience with projects of similar scope.
    2. Shop Drawings:
       1. Submit shop drawings prepared by the cold-formed metal framing manufacturer showing plans, sections, elevations, layouts, profiles and product component locations, including anchorage, bracing, fasteners, accessories and finishes.
       2. Show connection details with screw types and locations, weld lengths and locations, and other fastener requirements.
       3. Where prefabricated or pre-finished panels are to be provided, provided drawings depicting panel configurations, dimensions and locations.
       4. Shop Drawings shall be signed and sealed by a registered PE (professional cold-formed specialty engineer) registered in the state of the project.

\*\* NOTE TO SPECIFIER \*\* Delete if not required.

* + 1. Sustainable Design Submittals:
       1. LEED v4 Submittals:
          1. MR Credit: Building Product Disclosure and Optimization - Environmental Product Declarations: Provide Type III EPDs from manufacturers that have third-party verified environmental impact data.
          2. MR Credit: Building Product Disclosure and Optimization - Sourcing of Raw Materials: Provide recycled content of products showing the percentage of postconsumer and/or preconsumer recycled content by weight and its associated cost.
          3. MR Credit: Building Product Disclosure and Optimization - Material Ingredients: Provide Health Product Declarations (HPDs) from manufacturers with full disclosure of known hazards in compliance with the Health Product Declaration Open Standard.
          4. MR Credit: Construction and Demolition Waste Management: Include a statement indicating percentage of materials diverted from disposal in landfills and incinerators, and where recyclable resources are directed back to the manufacturing process.
       2. LEED 2009 Submittals:
          1. Product Data for Credit MR 4.1 and Credit MR 4.2 as applicable: For products having recycled content, documentation indicating percentages by weight of postconsumer and pre-consumer recycled content. Include statement indicating cost for each product having recycled content.
          2. Product Data for Credit MR 2.1 and Credit MR 2.2 as applicable: For products diverted from disposal in landfills and incinerators, and where recycled resources are directed back to the manufacturing process. Include a statement indicating percentage of materials diverted and recycled and the costs associated with each.
          3. Product Data for Credit MR 5: For products where product manufacturing is within a 500-mile radius of the jobsite and the point of extraction of the raw materials. Include a statement indicating the location and distances for the manufacturing plant and the point of extraction of raw materials in relation to the jobsite location.
  1. QUALITY ASSURANCE
     1. Contractor shall provide effective, full time quality control over all fabrication and erection complying with the pertinent codes and regulations of government agencies having jurisdiction.
     2. Installer Qualifications: Installer experienced in performing work of this section who has specialized in installation of work similar to that required for this project.
     3. Welding Standards: Comply with applicable provisions AWS D1.1 "Structural Welding Code - Steel" and AWS D1.3 "Structural Welding Code-Sheet Steel."
     4. Qualify welding processes and welding operators in accordance with AWS "Standard Qualification Procedure."
  2. PRE-INSTALLATION MEETINGS
     1. Convene minimum two weeks prior to starting work of this section.
  3. DELIVERY, STORAGE, AND HANDLING
     1. Deliver and store products in manufacturer's unopened packaging bearing the brand name and manufacturer's identification until ready for installation.
     2. Handling: Handle materials to avoid damage.
  4. PROJECT CONDITIONS
     1. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's recommended limits.
  5. SEQUENCING
     1. Ensure that products of this section are supplied to affected trades in time to prevent interruption of construction progress.

1. PRODUCTS
   1. MANUFACTURERS
      1. Acceptable Manufacturer: Mill Steel Framing, which is located at: 2905 Lucerne Dr. S.E.; Grand Rapids, MI 49546; Toll Free Tel: 877-369-4252; Email: [request info (techservices@millsteelframing.com)](https://admin.arcat.com/users.pl?action=UserEmail&company=Mill+Steel+Framing&coid=43703&rep=&fax=&message=RE:%20Spec%20Question%20(05400ssp):%20%20&mf=); Web: <https://www.millsteel.com/framing>

\*\* NOTE TO SPECIFIER \*\* Delete one of the following two paragraphs; coordinate with requirements of Division 1 section on product options and substitutions.

* + 1. Substitutions: Not permitted.
    2. Requests for substitutions will be considered in accordance with provisions of Section 01600.
  1. STRUCTURAL STUDS
     1. Design Requirements:
        1. Design steel in accordance with American Iron and Steel Institute Publication "Specification for the Design of Cold-Formed Steel Structural Members", except as otherwise detailed or required.
        2. Design Loads: As indicated on the Structural Drawings.
        3. Design framing systems to withstand design loads without deflections greater than the following:

\*\* NOTE TO SPECIFIER \*\* Delete items below not required for project.

* + - * 1. Exterior Walls: Lateral deflection of: L/240.
        2. Exterior Walls: Lateral deflection of: L/360.
        3. Exterior Walls: Lateral deflection of: L/600.
        4. Interior Load-Bearing Walls: Lateral deflection of: L/240.
        5. Interior Load-Bearing Walls: Lateral deflection of: L/360.
        6. Interior Load-Bearing Walls: Lateral deflection of: L/600.
      1. Design framing systems to provide for movement of framing members without damage or overstressing, sheathing failure, connection failure, undue strain on fasteners and anchors, or other detrimental effects when subject to a maximum ambient temperature change (range) of 120 degrees F (67 degrees C).
      2. Design framing system to accommodate deflection of primary building structure and construction tolerances.
      3. Design exterior non-load-bearing curtain wall framing to accommodate lateral deflection without regard to contribution of sheathing materials.
    1. Materials:
       1. Cold-Formed Steel Sheet: Complying with ASTM A 1003/A 1003M; unless indicated otherwise.

\*\* NOTE TO SPECIFIER \*\* Select G60 coating weight for typical structural applications. Select G 90 coating weight where additional protective coating is required for the project. Note that G 90 is a special order and may result in additional cost and extended delivery times and should be specified in severely corrosive environments.

* + - 1. Galvanized Coating: G60 coating weight minimum, complying with ASTM C 955.
         1. Where required or scheduled: G90 coating weight minimum, complying with ASTM C 955.

\*\* NOTE TO SPECIFIER \*\* Structural wall studs and track for use in load bearing applications. ASTM compliant studs and track are available in 12 to 20 gauge thickness, web sizes 2 1/2 inches to 12 inches (64 mm to 305 mm) and flange sizes from 1-3/8 inches to 3 inches (35 mm to 76 mm). Select the designation and criteria information based upon the shape and size stud required for the project. If more than one, identify the application or location where used on the drawings. Delete size if not required.

* + 1. Structural Studs: Cold-formed galvanized steel C-studs as manufactured by Mill Streel Framing.

\*\* NOTE TO SPECIFIER \*\* 1-3/8 inches (35 mm) flange width available on 8 inches web depth and less only. Delete size not required.

* + - 1. Size: 1-3/8 inch (35 mm) flange width, 3/8 inch (9.5 mm) returns, and web depth as indicated on drawing.
      2. Size: 1-5/8 inch (41 mm) flange width, 1/2 inch (12.7 mm) returns, and web depth as indicated on drawings.
      3. Size: 2 inches (51 mm) flange width, 5/8 inch (15.9 mm) returns, and web depth as indicated on drawings.
      4. Size: 2-1/2 inch (64 mm) flange width, 5/8 inch (15.9 mm) returns, and web depth as indicated on drawings.
      5. Size: 3 inch (76 mm) flange width, 5/8 inch (15.9 mm) returns, and web depth as indicated on drawings.
      6. Sizes: As indicated on drawings.

\*\* NOTE TO SPECIFIER \*\* Select required web depth. If more than one size is required, identify the location where each product will be used on the Contract Drawings. Delete web depth if not required. 2.50 inches (64 mm) web depth available with 1-5/8 inches (41 mm) flange depth only.

* + - 1. Web Depth: 2-1/2 inches (64 mm) 250 depth.
      2. Web Depth: 3-5/8 inches (92 mm) 362 depth.
      3. Web Depth: 4 inches (102 mm) 400 depth.
      4. Web Depth: 6 inches (152.4 mm) 600 depth.
      5. Web Depth: 8 inches (203 mm) 800 depth.
      6. Web Depth: 10 inches (254 mm) 1000 depth.
      7. Web Depth: 12 inches (305 mm) 1200 depth.
      8. Web Depth: As indicated on drawings.

\*\* NOTE TO SPECIFIER \*\* Delete all but one of the following three sub-paragraphs based on the requirements of the design. Both yield strengths available for all profiles. Use the third paragraph if the design engineer will choose the yield strength.

* + - 1. Minimum Yield Strength: 33 ksi (227 MPa).
      2. Minimum Yield Strength: 50 ksi (345 MPa).
      3. Minimum Yield Strength: As required for design.

\*\* NOTE TO SPECIFIER \*\* Delete all but one metal thickness (gauge). If more than one is used, identify the application or location for each. 33 mil only available on 8 inches (203 mm) web width and less. Generally the greater the web depth the greater the mil and flange depths available. Refer to manufacturer's literature.

* + - 1. Design Thickness: 20 gauge, 33 mil (0.84 mm).
      2. Design Thickness: 18 gauge, 43 mil (1.09 mm).
      3. Design Thickness: 16 gauge, 54 mil (1.37 mm).
      4. Design Thickness: 14 gauge, 68 mil (1.72 mm).
      5. Design Thickness: 12 gauge, 97 mil (2.45 mm).
    1. Structural Runner Track: Cold formed galvanized steel sheet by Mill Streel Framing.

\*\* NOTE TO SPECIFIER \*\* Select the flange lengths required for the project. If more than one, identify the application or location where used on Drawings.

* + - 1. Flange Length: 1-1/4 inches (32 mm).
      2. Flange Length: 2 inches (51 mm).

\*\* NOTE TO SPECIFIER \*\* Select required web depth. If more than one size is required, identify the location where each product will be used on the Contract Drawings.

* + - 1. Web Depth: 2-1/2 inches (64mm) 250 depth.
      2. Web Depth: 3-5/8 inches (92mm) 362 depth.
      3. Web Depth: 4 inches (102mm) 400 depth.
      4. Web Depth: 6 inches (152.4mm) 600 depth.
      5. Web Depth: Track Web Size to match stud web size.

\*\* NOTE TO SPECIFIER \*\* Delete all but one of the following three sub-paragraphs based on the requirements of the design. Use the third paragraph if the design engineer will choose the yield strength.

* + - 1. Minimum Yield Strength: 33 ksi (227 MPa).
      2. Minimum Yield Strength: 50 ksi (345 MPa).
      3. Minimum Yield Strength: As required for design.

\*\* NOTE TO SPECIFIER \*\* Delete all but one metal thickness (gauge). If more than one is used, identify the application or location for each. Material thicknesses available for all profiles. The mil designation define the minimum allowable uncoated metal thickness and are 95% of the design thickness. The 5% variance in metal thickness is permitted by section A2.4 of the NASPEC.

* + - 1. Design Thickness: 20 gauge, 33 mil (0.84 mm).
      2. Design Thickness: 18 gauge, 43 mil (1.09 mm).
      3. Design Thickness: 16 gauge, 54 mil (1.37 mm).
      4. Design Thickness: 14 gauge, 68 mil (1.72 mm).
      5. Design Thickness: 12 gauge, 97 mil (2.45 mm).
    1. Framing Component Accessories: Provide the following accessories as required for a complete system.
       1. Flat strapping.
       2. Angles, plates, sheets.
       3. Custom brake-formed shapes.
    2. Fasteners: Self-drilling, self-tapping screws; Steel, complying with ASTM C 1513; Galvanized coating, plated or oil-phosphate coated complying with ASTM B 633 as needed for required corrosion resistance.
    3. Touch-Up Paint: Complying with ASTM A 780 - Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings. Zinc rich, containing 95-percent metallic zinc, ZRC 350 as manufactured by ZRC Worldwide, Marshfield, MA.
  1. ACCESSORlES
     1. Sheet steel accessories as manufactured by Mill Streel Framing.
     2. U Channel: Cold-formed galvanized steel.

\*\* NOTE TO SPECIFIER \*\* Select the designation and criteria information based upon the shape and size component required for the project. If more than one, identify the application or location where used or verify the designation is indicated on the drawings.

* + - 1. Designation and size as indicated on the drawings.
      2. Designation: galvanized, 16 gauge, 0.0538 inch (1.37 mm) steel thickness, 3/4 inches (19.1 mm) size.
      3. Designation: galvanized, 16 gauge, 0.0538 inch (1.37 mm) steel thickness, 1-1/2 inches (38 mm) size.
      4. Designation: galvanized, 16 gauge, 0.0538 inch (1.37 mm) steel thickness, 2 inches (51 mm) size.
    1. Metal Trims: Cold-formed galvanized steel corner angle.

\*\* NOTE TO SPECIFIER \*\* Select the designation and criteria information based upon the shape and size component required for the project. If more than one, identify the application or location where used on the drawing.

* + - 1. Size: 1.5 inches by 1.5 inches (38 mm by 38 mm).
      2. Size: 2 inches by 2 inches (51 mm by 51 mm).
      3. Size: 3 inches by 3 inches (76 mm by 76 mm).
      4. Size: 4 inches by 4 inches (102 mm by 102 mm).
      5. Size: 6 inches by 6 inches (152 mm by 152 mm).

\*\* NOTE TO SPECIFIER \*\* Select the designation and criteria information based upon the shape and size component required for the project. If more than one, identify the application or location where used on the drawings. 25 ga not available for 4 inches and 6 inches angle. 20 ga not available for 6 inches angle. Delete gage not required.

* + - 1. Gage: 25 ga (.0179 inch).
      2. Gage: 20 ga (.0298 inch).
      3. Gage: 18 ga (.0428 inch).
      4. Gage: 16 ga (.0538 inch).
      5. Gage: 14 ga (.0677 inch).

\*\* NOTE TO SPECIFIER \*\* Select the designation and criteria information based upon the shape and size component required for the project. If more than one, identify the application or location where used on the drawings. Generally larger coating thickness and greater steel yield strength on larger angles. Check with manufacturer for availability. Delete material not required.

* + - 1. Material: G40. Yield (Fy): 33 ksi.
      2. Material: G40. Yield (Fy): 50 ksi.
      3. Material: G60. Yield (Fy): 33 ksi.
      4. Material: G60. Yield (Fy): 50 ksi.
    1. Furring Channel: Cold-formed galvanized steel in conformance with AISI's North American Specifications for Design of Cold-Formed Steel Structural Members.

\*\* NOTE TO SPECIFIER \*\* Select the designation and criteria information based upon the shape and size component required for the project. If more than one, identify the application or location where used or verify the designation is indicated on the drawings.

* + - 1. Designation and size as indicated on the drawings.
      2. Designation: 25 gauge, 0.0179 inch (0.45 mm) sheet thickness, 7/8 inch (22 mm) height.
      3. Designation: 20 gauge, 0.0296 inch (0.75 mm) sheet thickness, 7/8 inch (22 mm) height.
      4. Designation: 18 gauge, 0.0428 inch (1.08 mm) sheet thickness, 7/8 inch (22 mm) height.
      5. Designation: 25 gauge, 0.0179 inch (0.45 mm) sheet thickness, 1-1/2 inches (38 mm) height.
      6. Designation: 20 gauge, 0.0296 inch (0.75 mm) sheet thickness, 1-1/2 inches (38 mm) height.
      7. Designation: 18 gauge, 0.0428 inch (1.08 mm) sheet thickness, 1-1/2 inches (38 mm) height.
    1. Metal Strap: Cold-formed galvanized steel.

\*\* NOTE TO SPECIFIER \*\* Select the designation and criteria information based upon the shape and size component required for the project. If more than one, identify the application or location where used on the drawing.

* + - 1. Size: 1-1/2 inches (38 mm).
      2. Size: 2 inches (51 mm).
      3. Size: 3 inches (76 mm).
      4. Size: 4 inches (102 mm).
      5. Size: 6 inches (152 mm).
      6. Size: 8 inches (203 mm).
      7. Size: 10 inches (254 mm).
      8. Size: 12 inches (305 mm).

\*\* NOTE TO SPECIFIER \*\* Select the designation and criteria information based upon the shape and size component required for the project. If more than one, identify the application or location where used on the drawings. 16 and 14 gage not available for 1.5 inches (38 mm) strap. Delete gage not required.

* + - 1. Gage: 20 ga (.0298 inch).
      2. Gage: 18 ga (.0428 inch).
      3. Gage: 16 ga (.0538 inch).
      4. Gage: 14 ga (.0677 inch).

\*\* NOTE TO SPECIFIER \*\* Select the designation and criteria information based upon the shape and size component required for the project. If more than one, identify the application or location where used on the drawings. Generally larger coating thickness and greater steel yield strength on larger angles. Check with manufacturer for availability. Delete material not required.

* + - 1. Material: G40. Yield (Fy): 33 ksi.
      2. Material: G40. Yield (Fy): 50 ksi.
      3. Material: G60. Yield (Fy): 33 ksi.
      4. Material: G60. Yield (Fy): 50 ksi.
    1. Resilient Furring Channels: Steel sheet members designed to reduce sound transmissions.
       1. Product: RFC1 (25 ga).
       2. Description: 1/2 inch by 1.25 inches by 2 inches (13 mm by 32 mm by 51 mm).

\*\* NOTE TO SPECIFIER \*\* C-T Shaftwall Studs are used in the construction of shaftwalls and stairwalls. Select the designation and criteria information based upon the shape and size component required for the project. If more than one, identify the application or location where used or verify the designation is indicated on the drawings.

* + 1. CH Shaftwall Studs and J-Tabbed Track: Cold-formed galvanized steel, approved for the use intended based on a current Evaluation Report. Test Ref. WHI-495-TRL-0206/0225, issued August 4, 1995. CT Studs and J Track are same gauge. Based on deflection limits with adjustment to conform to a minimum safety factor of 1.5 for ultimate bending strength and end reaction.

\*\*NOTE TO SPECIFIER\*\* Delete size not required.

* + - 1. Size: 2-1/2 inches (64 mm).
      2. Size: 4 inches (102 mm).
      3. Size: 6 inches (152 mm).
      4. Sheet Thickness: 20 gauge.

\*\*NOTE TO SPECIFIER\*\* Delete deflection limitation not required.

* + - 1. Deflection Limitation: L/120.
      2. Deflection Limitation: L/180.
      3. Deflection Limitation: L/240.
      4. Deflection Limitation: L/360.

\*\* NOTE TO SPECIFIER \*\* Provides a positive attachment for overall strength and allows for vertical movement caused by normal head-of-wall and floor extension or compression. Select the designation and criteria information based upon the shape and size component required for the project. If more than one, identify the application or location where used or verify the designation and size is indicated on the drawings.

* + 1. Slotted Deflection Track: Cold-formed galvanized steel in conformance with AISI's Specifications for Design of Cold-Formed Steel Members.
       1. Designation and web size as indicated on the drawings.

\*\*NOTE TO SPECIFIER\*\* Delete thickness not required.

* + - 1. Minimum Delivered Thickness: 25 gauge, 0.0179 inch (0.45 mm).
      2. Minimum Delivered Thickness: 20 gauge, 0.0329 inch (0.84 mm).
      3. Minimum Delivered Thickness: 18 gauge, 0.0428 inch (1.09 mm).
      4. Minimum Delivered Thickness: 16 gauge, 0.0538 inch (1.37 mm).
      5. Minimum Delivered Thickness: 14 gauge, 0.0677 inch (1.72 mm).
      6. Standard leg 2-1/2 inches (64 mm).
      7. Standard Vertical Slot of 1-1/2 inches (38 mm) in leg.
      8. Minimum yield strength of 50 ksi in 14 gauge (1.72 mm) and minimum yield strength of 33 ksi in 16 gauge (1.37 mm) and lighter. G60 coating except G40 on 25 ga (0.45 mm).
    1. "Z" Furring Channel: Cold-formed galvanized steel.

\*\* NOTE TO SPECIFIER \*\* Select the designation and criteria information based upon the shape and size component required for the project. If more than one, identify the application or location where used on the drawing.

* + - 1. Size: 1 inch (25 mm).
      2. Size: 1.5 inches (38 mm).
      3. Size: 2 inches (51 mm).
      4. Size: 2.5 inches (64 mm).

\*\* NOTE TO SPECIFIER \*\* Select the designation and criteria information based upon the shape and size component required for the project. If more than one, identify the application or location where used on the drawings. 25 gage not available for 2.5 inches (64 mm) channel. Delete gage not required.

* + - 1. Gage: 20 ga (.0296 inch).
      2. Gage: 25 ga (.0179 inch).
      3. Material: G40. Yield (Fy): 33 ksi.

\*\* NOTE TO SPECIFIER \*\* Typically for panelized exterior structural metal framing. Delete if not required.

* 1. FABRlCATlON
     1. General: Framing components may be pre-assembled into panels prior to erecting.
        1. Fabricate panels square, with components attached in a manner so as to prevent racking or distortion.
        2. Cut all framing components squarely for attachment to perpendicular members, or as required for an angular fit against abutting members. Hold members positively in place until properly fastened.
        3. Provide insulation as specified elsewhere in all double jamb studs and double header members, which will not be accessible to the insulation contractor.
     2. Axially Loaded Studs: Install axial loaded studs with full bearing against inside track web (1/8 inch (3.2 mm) maximum gap) prior to stud and track attachment. Splices in axially loaded studs are not permitted.
     3. Fasteners: Fasten components using self-tapping screws or welding.
     4. Welding: Welding is permitted on 18 gauge or heavier material only. Specify welding configuration and size on the Structural Calculation submittal. Qualify welding operators in accordance with Section 6.0 of AWS D.1.3. Touch up all welds with zinc-rich paint in compliance with ASTM A 780.

1. EXECUTION
   1. EXAMINATION
      1. Do not begin installation until substrates have been properly prepared.
      2. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.
   2. PREPARATION
      1. Clean surfaces thoroughly prior to installation.
      2. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

\*\* NOTE TO SPECIFIER \*\* Delete if not required.

* 1. STRUCTURAL FRAMING INSTALLATION
     1. General Erection Requirements:
        1. Install cold-formed framing in accordance with requirements of ASTM C 1007.

\*\* NOTE TO SPECIFIER \*\* Delete references to welding connections when framing components are lighter than 16 gauge.

* + - 1. Weld in compliance with AWS D.1.3.
      2. Install in compliance with applicable sections of the AISI's Standard for Cold-Formed Steel Framing General Provisions.
    1. Wall Systems:
       1. Erect framing and panels plumb, level and square in strict accordance with approved shop drawings.
       2. Handle and lift prefabricated panels in a manner so as not to cause distortion in any member.
       3. Anchor runner track securely to the supporting structure as shown on the erection drawings. Install concrete anchors only after full compressive strength has been achieved. Provide a sill sealer or gasket barrier between all concrete and steel connections.
       4. Butt all track joints. Securely anchor abutting pieces of track to a common structural element, or butt-weld or splice them together.
       5. Align and plumb studs, and securely attach to the flanges or webs of both upper and lower tracks except when vertical movement is specified.
       6. Install jack studs or cripples below window sills, above window and door heads, at freestanding stair rails and elsewhere to furnish support, securely attached to supporting members.
       7. Attach wall stud bridging in a manner to prevent stud rotation. Space bridging rows according to manufacturer's recommendations.
       8. Frame wall openings to include headers and supporting studs as shown in the drawings.
       9. Provide temporary bracing until erection is completed.
       10. Provide stud walls at locations indicated on plans as "shear walls" for frame stability and lateral load resistance.
       11. Where indicated in the drawings, provide for structural vertical movement using a vertical slide clip or other means in accordance with manufacturer's recommendations.
    2. Steel Joists:
       1. Locate joists directly over bearing studs within 3/4 inch (19 mm) or provide a suitable load distribution member at the top track.
       2. Provide web stiffeners at reaction points where indicated in drawings.
       3. Provide joist bridging as shown in drawings.
       4. Provide end blocking where joist ends are not otherwise restrained from rotation.

\*\* NOTE TO SPECIFIER \*\* Include the following article when a project is located in seismic resistance or high wind exposure category zones as defined by the authority having code jurisdiction; thereby requiring Special Inspections for the structural system. Coordinate this provision with any Special Inspections requirements stipulated in Section 01400 - Quality Requirements. The inspection is conducted by the Owner's Special Inspector (IBC 2000 chapter 17 and BOCA 96 chapter 17) but must be scheduled by the Contractor.

* + 1. Field Quality Control:
       1. Inspection: Periodic special inspections are required by local code authorities.
          1. Owner will hire and pay inspection agency.
          2. Submit schedule showing when the following activities will be performed and resubmit schedule when timing changes.
          3. Notify inspection agency not less than 3 days before the start of any of the following activities.
          4. Inspections are required during welding operations, screw attachment, bolting, anchoring and other fastening of components within the force resisting structural system, including struts, braces, and hold-downs.
  1. PROTECTION
     1. Protect installed products until completion of project.
     2. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION