



Telling Industries, LLC



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This Manu-Spec® utilizes the Construction Specifications Institute (CSI) *Project Resource Manual* (PRM), including *MasterFormat™*, *SectionFormat™* and *PageFormat™*. A Manu-Spec is a manufacturer-specific proprietary product specification using the proprietary method of specifying applicable to project specifications and master guide specifications. Optional text is indicated by brackets [ ]; delete optional text in final copy of specification. Specifier Notes precede specification text; delete notes in final copy of specification. Trade/brand names with appropriate product model numbers, styles and types are used in Specifier Notes and in the specification text Article titled "Acceptable Material." Metric conversion, where used, is soft metric conversion.

This Manu-Spec specifies structural metal framing as distributed by Telling Industries, LLC. Revise Manu-Spec section number and title below to suit project requirements, specification practices and section content. Refer to CSI *MasterFormat* for other section numbers and titles.

## SECTION 05 40 00 COLD-FORMED METAL FRAMING

### PART 1 GENERAL

#### 1.1 SUMMARY

- A. Section Includes: This Section specifies structural metal framing.

**Specifier Note:** Revise paragraph below to suit project requirements. Add section numbers and titles per CSI MasterFormat and specifier's practice.

- B. Related Requirements:

**Specifier Note:** Include in this paragraph only those sections and documents that directly affect the work of this section. If a reader of this section could reasonably expect to find a product or component specified in this section, but it is actually specified elsewhere, then the related section number(s) should be listed in the subparagraph below. Do not include Division 00 documents or Division 01 sections as it is assumed all technical sections are related to Division 00 documents and Division 01 sections to some degree. Refer to other documents with caution as referencing them may cause them to be considered part of the Contract.

1. Section 09 22 00 - Supports for Plaster and Gypsum Board.

#### 1.2 REFERENCES

**Specifier Note:** Paragraph below may be omitted when specifying manufacturer's proprietary products and recommended installation. Retain References paragraph when specifying products and installation by an industry reference standard. List retained standard(s) referenced in this section alphabetically. Indicate issuing authority name, acronym, standard designation and title. Establish policy for indicating edition date of standard referenced. Contract Conditions Section 01 42 00 - References may establish the edition date of standards. This paragraph does not require compliance with standard(s). It is a listing of all references used in this section. Only include here standards that are referenced in the body of the specification in PARTS 1, 2 and/or 3. Do not include references to building codes at any level.

- A. Reference Standards:

1. American Iron and Steel Institute (AISI):
  - a. COSP Specification for the Design of Cold-Formed Steel Structural Members, Code of Standard Practice.
  - b. AISI S100 North American Specifications for the Design of Cold Formed Steel Structural Members.
  - c. AISI S200 North American Standard for Cold-Formed Steel Framing - General Provisions.
  - d. AISI S201 North American Standard for Cold-Formed Steel Framing - Product Data.
  - e. AISI S211 North American Standard for Cold-Formed Steel Framing - Wall Stud Design.
  - f. AISI S212 North American Standard for Cold-Formed Steel Framing - Header Design.
  - g. AISI S213 North American Standard for Cold-Formed Steel Framing - Lateral Design.
2. ASTM International (ASTM):
  - a. ASTM A36 Standard Specification for Carbon Structural Steel.
  - b. ASTM A123 Standard Specification for Zinc (Hot Dipped Galvanized) Coatings on Iron and Steel Products.
  - c. ASTM A1003 Standard Specification for Steel Sheet, Carbon, Metallic and Nonmetallic-Coated for Cold-Formed Framing Members.
  - d. ASTM C150 Standard Specifications for Portland Cement.
  - e. ASTM C404 Standard Specification for Aggregates for Masonry Grout.
  - f. ASTM C1007 Standard Specification for Installation of Load Bearing (Transverse and Axial) Steel Studs and Related Accessories
  - g. ASTM C1107 Standard Specification for Packaged Dry, Hydraulic Cement Grout (Nonshrink).
  - h. ASTM C1513 Standard Specification for Steel Tapping Screws for Cold-Formed Steel Framing Connections.
  - i. ASTM E488 Standard Test Methods for Strength of Anchors in Concrete Elements.
  - j. ASTM E1190 Standard Test Methods for Strength of Power Actuated Fasteners Installed in Structural Members.
3. American Welding Society (AWS):
  - a. AWS D.1.3 Structural Welding Code - Sheet Steel.
4. Military Specifications:
  - a. DOD-P-21035 Specification Galvanizing Repair Coating.
5. The Society for Protective Coatings (SSPC):
  - a. SSPC-Paint 20 - Zinc Rich Primers – Type I Inorganic And Type II Organic.

### 1.3 ADMINISTRATIVE REQUIREMENTS

- A. Coordination: Coordinate work of this Section with work of other trades for proper time and sequence to avoid construction delays. Comply with Section [01 31 00 - Project Management and Coordination].

**Specifier Note: Add additional text to specify unusual or detailed coordination requirements affecting the work results of this Section.**

1. [ ].
- B. Preinstallation Meetings: Conduct preinstallation meeting [one week] prior to commencing [work of this Section] [and] [on-site installations] to verify project requirements, substrate conditions and coordination with other building subtrades, and to review manufacturer's installation instructions and manufacturer's warranty requirements. Comply with Section [01 31 19 - Project Meetings].

**Specifier Note: Add additional text to describe requirements for meetings to coordinate products and techniques and to sequence related work for sensitive and complex items.**

1. [ ].
- C. Sequencing: Sequence work of this section in accordance with Section [01 12 16 - Work Sequence] [and] [manufacturer's written recommendations for sequencing construction operations].



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**Specifier Note: Specify additional text as required to describe the particular sequence of events required to coordinate work that must be performed in sequence with, or at the same time as, work in another section.**

1. [ ].

D. Scheduling: Schedule work of this Section in accordance with Section [01 32 13 - Scheduling of Work].

**Specifier Note: Specify additional text to include requirements for coordinating work that requires unusual scheduling with work of other sections.**

1. [ ].

**Specifier Note: Article below includes submittal of relevant data to be furnished by Contractor before, during or after construction. Coordinate this article with Architect's and Contractor's duties and responsibilities in Contract Conditions and Section 01 33 00 - Submittal Procedures.**

#### 1.4 ACTION SUBMITTALS

A. General: Submit listed submittals in accordance with Contract Conditions and Section [01 33 00 - Submittal Procedures].

B. Product Data: Submit specified information as follows:

1. Manufacturer's product data, including manufacturer's technical data sheet.
2. Catalog pages illustrating products to be incorporated into project.
3. Material Safety Data Sheets (MSDS).

C. Shop Drawings: Indicate information on shop drawings as follows:

1. Submit shop drawings prepared by the manufacturer showing plans, sections, elevations, layouts, profiles and product component locations, including anchorage, bracing, fasteners, accessories and finishes.
  - a. Show connection details with screw types and locations, weld lengths and locations, and other fastener requirements.
  - b. Where prefabricated or prefinished panels are to be provided, depict panel configurations, dimensions and locations.

D. Delegated Design Submittals: Submit structural calculations as follows:

1. Structural calculations prepared by manufacturer for approval. Submittal shall be sealed by a professional engineer registered in the State in which the project is located.
2. Description of design criteria.
3. Engineering analysis depicting stress and deflection (stiffness) requirements for each framing application.
4. Selection of framing components, accessories and welded connection requirements.
5. Verification of attachments to structure and adjacent framing components.

#### 1.5 INFORMATION SUBMITTALS

**Specifier Note: Specify submittal of test reports or evaluation service reports intended to document required tests without repeating the test requirements specified in Division 01.**

A. General: Submit listed submittals in accordance with Contract Conditions and Section [01 33 00 - Submittal Procedures].

B. Test and Evaluation Reports:

1. Certified test reports showing compliance with specified performance characteristics and physical properties.

**Specifier Note: Specify submittals intended to document manufacturer installation, storage and other instructions.**

C. Manufacturer's Instructions: Submit manufacturer's storage and installation instructions.

D. Source Quality Control: Submit documentation verifying that components and materials specified in this Section are from single manufacturer.



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**Specifier Note: Coordinate with Field Quality Control in PART 3. When manufacturer's services are specified during construction operations to verify installation, include following paragraph for the submittal of instructions and reports. If no field inspections are required, delete the following paragraph.**

- E. Manufacturer's Reports: Manufacturer's field reports specified.
- F. Qualification Statements:
  1. Submit letter of verification for manufacturer's qualifications.
  2. Submit letter of verification for structural engineer's qualifications.
  3. Submit letter of verification for installer's qualifications.
  4. Submit letter of verification for welder's qualifications.

#### 1.6 QUALITY ASSURANCE

- A. Qualifications:
  1. Manufacturer:
    - a. Having [5] years of experience manufacturing components similar to or exceeding requirements of project.
    - b. Having sufficient capacity to produce and deliver required materials without causing delay in work.
  2. Structural Engineer:
    - a. Professional engineer registered in the state in which the project is located.
    - b. Having a minimum of five years of experience with projects of similar scope.
  3. Installer: Acceptable to the manufacturer, experienced in performing work of this section and specialized in installation of work similar to that required for this project.
  4. Welders: Certified by the AWS within the previous 12 months.

**Specifier Note: Retain the following paragraph when certification related to sustainability submittals is a project requirement.**

- B. Sustainability Standards Certification: Provide certification for [ ] materials certified by [certification organization's name] in accordance with [certification organizations standard].

**Specifier Note: If a mock-up is required, retain paragraph below.**

- C. Mock-up: Construct mock-up where [indicated] [directed] by [Owner] [Architect] [Consultant] in accordance with Section [01 43 00 - Quality Assurance].
  1. Mock-up Subject Matter Work: [ ].
  2. Dimensions and Process: Construct to [ ] ft using proposed procedures, colors, textures, finishes and quality of work.
  3. Purpose: To judge quality of work, substrate preparation, operation of equipment and material application.
  4. Locate where [directed] [indicated].
  5. Do not proceed with work prior to receipt of written acceptance of mock-up.
  6. When accepted, mock-up will demonstrate minimum standard of quality required for this work. [Approved mock-up may [not] remain part of finished work.] [Remove mock-up and dispose of materials when no longer required and when directed by [Owner] [Architect] [Consultant].
- D. Fire-resistive Rating: Where indicated on drawings, provide materials and construction identical to those assemblies whose fire resistance rating has been determined per ASTM E119 by a testing and inspecting organization acceptable to authorities having jurisdiction.
  1. Meet or exceed fire resistance requirements outlined under provisions of the GA-600 Fire Resistance Design Manual for wall and ceiling assemblies.

#### 1.7 DELIVERY, STORAGE & HANDLING

- A. Delivery and Acceptance Requirements:

1. Deliver material in accordance with Section [01 61 00 - Common Product Requirements] and in accordance with manufacturer's written instructions.
  2. Deliver materials in manufacturer's original packaging with identification labels intact and in sizes to suit project.
- B. Storage and Handling Requirements:
1. Store materials protected from exposure to harmful weather conditions and at temperature conditions per the recommendations of AISI COSP Section F3.
- C. Packaging Waste Management:

**Specifier Note: The disposal of packaging waste into landfill sites demonstrates an inefficient use of natural resources and consumes valuable landfill space. Specifying appropriate packaging and construction waste management and disposal procedures may contribute to points required for USGBC's LEED® construction project certification.**

**Specifier Note: Include the following subparagraphs to specify information that will provide direction to the Contractor for the disposal of construction waste materials using environmentally responsible methodology other than landfill resources.**

1. Separate waste materials for [reuse] [and] [recycling] in accordance with Section [01 74 19 - Construction Waste Management and Disposal].

**Specifier Note: USGBC's LEED® certification includes credits for the diversion of construction waste from landfill. Diversion can be tracked either by weight or by volume, but must be consistent for all materials. Manufacturer may reclaim packaging and delivery materials for recycling.**

2. Remove packaging materials from site and dispose of at appropriate recycling facilities.
3. Collect and separate for disposal [paper] [plastic] [polystyrene] [corrugated cardboard] packaging material [in appropriate onsite bins] for recycling.
4. Fold metal and plastic banding; flatten and place in designated area for recycling.

**Specifier Note: Add additional subparagraphs to include pallets, crates, padding and other packing materials that are typically associated with the specified products.**

5. Remove:
  - a. Pallets from site [and return to supplier or manufacturer].
  - b. [\_\_\_\_\_].

## PART 2 PRODUCTS

**Specifier Note: Retain Article below for proprietary method specification. Add product attributes, performance characteristics, material standards and descriptions as applicable. Use of such phrases as "or equal," "or approved equal" or similar phrases may cause ambiguity in specifications. Such phrases require verification (procedural, legal and regulatory) and assignment of responsibility for determining "or equal" products.**

### 2.1 STRUCTURAL FRAMING

**Specifier Note: Include in the following paragraph manufacturer's name, address, phone number, fax number, email address and website URL.**

- A. Manufacturer: Telling Industries
1. Contact: 4420 Sherwin Rd., Willoughby, Ohio, 44094; Phone: 866-372-6384, 440-974-3370; Fax: 440-974-3408; Email: sales.corp@tellingindustries.com; Website: www.buildstrong.com.

**Specifier Note: Substitution procedures must appear either in the Contract Conditions or in Section 01 25 00 – Substitution Procedures. Do not include substitution procedures here.**



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2. Single Source Responsibility: Provide components and materials specified in this section from a single manufacturer.
3. Substitution Limitations:
  - a. Substitutions: [In accordance with [Contract Conditions] [Section 01 25 00 - Substitution Procedures]] [No substitutions permitted].

**Specifier Note: Include an overall description of the system, assembly, product or material. Include required properties or characteristics that do not obviously belong under other titles. Examples: Configuration, size and color.**

B. Description:

**Specifier Note: Paragraph below should list obligations for compliance with specific code requirements particular to this section. General statements to comply with a particular code are typically addressed in Contract Conditions and Section 01 41 00 - Regulatory Requirements. Avoid repetitive statements.**

1. Regulatory Requirements:
  - a. In accordance with Section [01 41 00 - Regulatory Requirements].
  - b. [\_\_\_\_\_].
2. Sustainability Characteristics:
  - a. [\_\_\_\_\_].
3. Compatibility:
  - a. Ensure components and materials are compatible with specified accessories and adjacent materials.

**Specifier Note: Performance characteristics are usually stated with some form of evaluation or verification. Performance usually, but not universally, applies to systems and assemblies. Performance criteria can include structural, safety, fire resistance, vapor retardancy, acoustical, thermal, operational capacity and durability.**

**Specifier Note: The term “Design Criteria” is used when describing the intended characteristics of a product for which the Contractor is assigned design responsibility.**

C. Performance Criteria:

1. Design system components per AISI S100. Provide for movement of components due to thermal variations without damage, failure, or excessive stress on components.
2. Compute structural properties per AISI S100.
3. Design exterior wall system for environmental loads as outlined in the AIS S100 latest edition to provide for movement of components without damage, failure of joint seals, undue stress on fasteners, or other detrimental effects when subject to seasonal or cyclic day/night temperature ranges.
4. Design system to accommodate construction tolerances, deflection of building structural members, and clearances of intended openings.
5. Maximum Allowable Deflection:
  - a. Gypsum Board: L/360 of span under total design loads.
  - b. Exterior Insulation Finish System: L/360 of span under total design loads.
  - c. Plaster or Stucco: L/360 of span under total design loads.
  - d. Brick Veneer: L/600 of span under total design loads.
6. Horizontal Assemblies:
  - a. Maximum Allowable Deflection: L/360 of span under total design loads.

D. Materials:

1. Steel Sheet: ASTM A1003.
  - a. Grade and Type: [ST33H (ST230H)] [ST50H (ST340H)] [As required by structural performance].
  - b. Metallic Coating: [G60 (Z180)] [A60 (ZF180)] [AZ50 (AZ150)] [GF30 (ZGF90)] [G90 (Z275)].

**Specifier Note: Retain framing types and member characteristics below to conform to project requirements.**

E. Load-bearing Wall Framing:

1. Steel Studs: C-shaped steel studs of web depths indicated, punched, with stiffened flanges and as follows:
  - a. Type: [Standard] [As indicated on the drawings].
  - b. Minimum Base Metal Thickness: [20 gauge, 0.0329 inch (0.84 mm)] [18 gauge, 0.0428 inch (1.09 mm)] [16 gauge, 0.0538 inch (1.37 mm)] [14 gauge, 0.0677 inch (1.72 mm)] [12 gauge, 0.0966 inch (2.45 mm)] [10 gauge, 0.1180 inch (2.997 mm)] [As indicated on the drawings].
  - c. Flange Width: [1 3/8 inches (35 mm)] [1 5/8 inches (41 mm)] [2 inches (51 mm)] [2 1/2 inches (63 mm)] [3 inches (76.2 mm)] [3 1/2 inch or 88.9 mm] [As indicated on the drawings].
  - d. Web Depth: [2 1/2 inch (64 mm) 250 depth] [3 1/2 inch (89 mm) 350 depth] [3 5/8 inch (92 mm) 362 depth] [4 inch (102 mm) 400 depth] [5 1/2 inch (140 mm) 550 depth] [6 inch (152.4 mm) 600 depth] [7 1/4 inch (184 mm) 725 depth] [8 inch (203 mm) 800 depth] [9 1/4 inch (235 mm) 925 depth] [10 inch (254 mm) 1000 depth] [11 1/2 inch (292 mm) 1150 depth] [12 inch (305 mm) 1200 depth] [13 1/2 inch (342.9 mm) 1350 depth] [14 inch (355.6 mm) 1400 depth] [16 inches 406.4 mm] [As indicated on the drawings].
  - e. Section Properties: As indicated on the drawings.
2. Steel Track: U-shaped steel track, of web depths indicated, unpunched, with straight flanges, and as follows:
  - a. Type: [Standard] [As indicated on the drawings].
  - b. Minimum Base Metal Thickness: [20 gauge, 0.0329 inch (0.84 mm)] [18 gauge, 0.0428 inch (1.09 mm)] [16 gauge, 0.0538 inch (1.37 mm)] [14 gauge, 0.0677 inch (1.72 mm)] [12 gauge, 0.0966 inch (2.45 mm)] [10 gauge, 0.1180 inch (2.997 mm)] [As indicated on the drawings].
  - c. Flange Width 1 1/4 inches, unless indicated otherwise.
  - d. Web Depth: [2 1/2 inch (64 mm) 250 depth] [3 1/2 inch (89 mm) 350 depth] [3 5/8 inch (92 mm) 362 depth] [4 inch (102 mm) 400 depth] [5 1/2 inch (140 mm) 550 depth] [6 inch (152.4 mm) 600 depth] [7 1/4 inch (184 mm) 725 depth] [8 inch (203 mm) 800 depth] [9 1/4 inch (235 mm) 925 depth] [10 inch (254 mm) 1000 depth] [11 1/2 inch (292 mm) 1150 depth] [12 inch (305 mm) 1200 depth] [13 1/2 inch (342.9 mm) 1350 depth] [14 inch (355.6 mm) 1400 depth] [16 inches (406.4 mm)] [Match stud web depth] [As indicated on the drawings].
3. Steel Box or Back-to-Back Headers: Manufacturer's standard C-shapes used to form header beams of web depths indicated, unpunched, with stiffened flanges and as follows:
  - a. Minimum Base Steel Thickness: [16 gauge, 0.0538 inch (1.37 mm)] [14 gauge, 0.0677 inch (1.72 mm)] [12 gauge 0.0966 inch (2.45 mm)] [10 gauge 0.1180 inches (2.997 mm)].
  - b. Flange Width: (1 3/8 inches (35 mm)] [1 5/8 inches (41 mm)] [2 inches (51 mm)] [2 1/2 inches (63 mm)] [3 1/2 inches (88.9 mm)].
  - c. Web Depth: As indicated on the drawings.
4. Opening Framing:
  - a. Basis-of-Design Product: Telling Industries, LLC; Titan Header RO System.
  - b. Allow for alternative valued engineered opening framing systems (Titan Header RO System) manufactured by Telling Industries, LLC.
  - c. Minimum Base-Steel Thickness: As required by design.
  - d. Minimum Flange Width: As required by design.
5. U-Channel Assembly: Manufacturer's standard length U-Channel for lateral bracing for exterior curtain wall framing, load-bearing walls or high interior partitions constructed of structural studs.
  - a. Basis-of-Design Product: Telling Industries, LLC; U-Channel.
  - b. U-Channel Size: 1 1/2 inches (38.1 mm).
  - c. U-Channel Minimum Base-Steel Thickness: 0.0538 inch (1.37 mm).

**Specifier Note: Retain framing types and member characteristics below to conform to project requirements.**

F. Exterior Non-load-bearing Wall Framing:

1. Steel Studs: C-shaped steel studs, of web depths indicated, punched, with stiffened flanges, and as follows:
  - a. Type: [Standard] [As indicated on the drawings].
  - b. Minimum Base Metal Thickness: [20 gauge, 0.0329 inch (0.84 mm)] [18 gauge, 0.0428 inch (1.09 mm)] [16 gauge, 0.0538 inch (1.37 mm)] [14 gauge, 0.0677 inch (1.72 mm)] [12 gauge, 0.0966 inch (2.45 mm)] [As indicated on the drawings] [10 gauge 0.1180 inches (2.997 mm)].
  - c. Flange Width: [1<sup>3</sup>/<sub>8</sub> inches (35 mm)] [1<sup>5</sup>/<sub>8</sub> inches (41 mm)] [2 inches (51 mm)] [2<sup>1</sup>/<sub>2</sub> inches (63 mm)] [3 inches (76 mm)] [3<sup>1</sup>/<sub>2</sub> inches (88.9 mm)] [As indicated on the drawings].
  - d. Web Depth: [2<sup>1</sup>/<sub>2</sub> inch (64 mm) 250 depth] [3<sup>1</sup>/<sub>2</sub> inch (89 mm) 350 depth] [3<sup>5</sup>/<sub>8</sub> inch (92 mm) 362 depth] [4 inch (102 mm) 400 depth] [5<sup>1</sup>/<sub>2</sub> inch (140 mm) 550 depth] [6 inch (152.4 mm) 600 depth] [7<sup>1</sup>/<sub>4</sub> inch (184 mm) 725 depth] [8 inch (203 mm) 800 depth] [9<sup>1</sup>/<sub>4</sub> inch (235 mm) 925 depth] [10 inch (254 mm) 1000 depth] [11<sup>1</sup>/<sub>2</sub> inch (292 mm) 1150 depth] [12 inch (305 mm) 1200 depth] [13<sup>1</sup>/<sub>2</sub> inch (342.9 mm) 1350 depth] [14 inch (355.6 mm) 1400 depth] [As indicated on the drawings].
  - e. Section Properties: As indicated on the drawings.
2. Steel Track: U-shaped steel track, of web depths indicated, unpunched, with straight flanges, and as follows:
  - a. Type: [Standard] [As indicated on the drawings].
  - b. Minimum Base Metal Thickness: [20 gauge, 0.0329 inch (0.84 mm)] [18 gauge, 0.0428 inch (1.09 mm)] [16 gauge, 0.0538 inch (1.37 mm)] [14 gauge, 0.0677 inch (1.72 mm)] [12 gauge, 0.0966 inch (2.45 mm)] [10 gauge 0.1180 inches (2.997 mm)] [As indicated on the drawings].
  - c. Flange Width 1<sup>1</sup>/<sub>4</sub> inches (31.8 mm), unless indicated otherwise.
  - d. Web Depth: [2<sup>1</sup>/<sub>2</sub> inch (64 mm) 250 depth] [3<sup>1</sup>/<sub>2</sub> inch (89 mm) 350 depth] [3<sup>5</sup>/<sub>8</sub> inch (92 mm) 362 depth] [4 inch (102 mm) 400 depth] [5<sup>1</sup>/<sub>2</sub> inch (140 mm) 550 depth] [6 inch (152.4 mm) 600 depth] [7<sup>1</sup>/<sub>4</sub> inch (184 mm) 725 depth] [8 inch (203 mm) 800 depth] [9<sup>1</sup>/<sub>4</sub> inch (235 mm) 925 depth] [10 inch (254 mm) 1000 depth] [11<sup>1</sup>/<sub>2</sub> inch (292 mm) 1150 depth] [12 inch (305 mm) 1200 depth] [13<sup>1</sup>/<sub>2</sub> inch (342.9 mm) 1350 depth] [14 inch (355.6 mm) 1400 depth] [16 inches (406.4 mm)] [Match stud web depth] [As indicated on the drawings].
3. Vertical Deflection Clips: Manufacturer's standard clips, capable of accommodating upward and downward vertical displacement of primary structure through positive mechanical attachment to stud web. Anticipated deflection of primary structural elements is indicated on the drawings.
4. Single Deflection Track: Single, deep-leg, U-shaped steel track; unpunched, with unstiffened flanges, of web depth to contain studs while allowing free vertical movement, with flanges designed to support horizontal and lateral loads and transfer them to the primary structure, and as follows:
  - a. Minimum Base Metal Thickness: [18 gauge, 0.0428 inch (1.09 mm)] [16 gauge, 0.0538 inch (1.37 mm)] [14 gauge, 0.0677 inch (1.72 mm)] [12 gauge, 0.0966 inch (2.45 mm)] [As indicated on the drawings].
  - b. Flange Width: [1<sup>1</sup>/<sub>2</sub> inches (38 mm) plus the design deflection for one-story structures] [1 inch (25 mm) plus twice the design deflection for other applications] [As indicated on the drawings].
5. Double Deflection Tracks: Manufacturer's double, deep-leg, U-shaped steel tracks, consisting of nested inner and outer tracks; unpunched, with unstiffened flanges.
  - a. Outer Track: Of web depth to allow free vertical movement of inner track, with flanges designed to support horizontal and lateral loads and transfer them to the primary structure, and as follows:
    - 1) Minimum Base Metal Thickness: [18 gauge, 0.0428 inch (1.09 mm)] [16 gauge, 0.0538 inch (1.37 mm)] [14 gauge, 0.0677 inch (1.72 mm)] [12 gauge, 0.0966 inch (2.45 mm)] [As indicated on the drawings].
    - 2) Flange Width: [1<sup>1</sup>/<sub>2</sub> inches (38 mm) plus the design deflection for 1-story structures] [1 inch (25 mm) plus twice the design deflection for other applications] [As indicated on the drawings].
  - b. Inner Track: Of web depth indicated, and as follows:
    - 1) Minimum Base Metal Thickness: [18 gauge, 0.0428 inch (1.09 mm)] [16 gauge, 0.0538 inch (1.37 mm)] [14 gauge, 0.0677 inch (1.72 mm)] [12 gauge, 0.0966 inch (2.45 mm)] [As indicated on the drawings].
    - 2) Flange Width: Equal to sum of outer deflection track flange width, plus 1 inch (25 mm).
6. Slotted Track: U-shaped track with 1<sup>1</sup>/<sub>2</sub> inch vertical slots spaced 1 inch along the legs to allow vertical deflection as follows:
  - a. Standard leg of 2<sup>1</sup>/<sub>2</sub> inches in leg.
  - b. Standard vertical slot of 1<sup>1</sup>/<sub>2</sub> inches in leg.



- c. Minimum Base Metal Thickness: [20 gauge, 0.0329 inch (0.84 mm)] [18 gauge, 0.0428 inch (1.09 mm)] [16 gauge, 0.0538 inch (1.37 mm)] [As indicated on the drawings].
  - d. Web Depth: [2½ inch (64 mm) 250 depth] [3⅝ inch (92 mm) 362 depth] [4 inch (102 mm) 400 depth] [6 inch (152.4 mm) 600 depth] [8 inch (203 mm) 800 depth] [As indicated on the drawings].
  - e. Drift Clips: Manufacturer's standard bypass or head clips, capable of isolating wall stud from upward and downward vertical displacement and lateral drift of primary structure.
7. Headers and Jambs: Manufacturer's proprietary shape used to form header beams and jambs, columns or posts of web depths indicated, unpunched, with stiffened flanges and as follows:
- a. Basis-of-Design Product: Telling Industries, LLC; [Titan Header RO].
  - b. Minimum Base Steel Thickness: [16 gauge, 0.0538 inch (1.37 mm)] [14 gauge, 0.0677 inch (1.72 mm)] [12 gauge, 0.0966 inch (2.45 mm)].
  - c. Flange Width: (1⅜ inches (35 mm)) [1⅝ inches (41 mm)] [2 inches (51 mm)] [2½ inches (63 mm)] [3 inches (76 mm)]
  - d. Web Depth: As indicated on drawings

**Specifier Note: Retain framing types and member characteristics below to conform to project requirements.**

G. Floor Joist Framing:

- 1. Steel Joists: Cold-formed steel joists, of web depths indicated, as follows:
  - a. Type: [Standard] [As indicated on the drawings].
  - b. Minimum Base Metal Thickness: [20 gauge, 0.0329 inch (0.84 mm)] [18 gauge, 0.0428 inch (1.09 mm)] [16 gauge, 0.0538 inch (1.37 mm)] [14 gauge, 0.0677 inch (1.72 mm)] [12 gauge, 0.0966 inch (2.45 mm)] [10 gauge 0.1180 inches (2.997 mm)] [As indicated on the drawings].
  - c. Minimum Flange Width: [1⅝ inches (41 mm)] [2 inches (51 mm)] [2½ inches (63 mm)] [3 inches (76 mm)] [3½ inches (88.9 mm)] [As indicated on the drawings].
  - d. Minimum Joist Depth: [9 inch (203 mm)] [9¼ inch (235 mm)] [10 inch (254 mm)] [11¼ inch (286 mm)] [12 inch (305 mm)] [14 inch (355.6 mm)] [As indicated on the drawings].
  - e. Section Properties: As indicated on the drawings.
- 2. Steel Joist Track: Cold-formed steel joist track, of web depths indicated, unpunched, with unstiffened flanges, and as follows:
  - a. Type: [Standard] [As indicated on the drawings].
  - b. Minimum Base Metal Thickness: [20 gauge, 0.0329 inch (0.84 mm)] [18 gauge, 0.0428 inch (1.09 mm)] [16 gauge, 0.0538 inch (1.37 mm)] [14 gauge, 0.0677 inch (1.72 mm)] [12 gauge, 0.0966 inch (2.45 mm)] [10 gauge 0.1180 inch (2.997 mm)] [Match steel joists] [As indicated on the drawings].
  - c. Flange Width 1¼ inches, minimum.

**Specifier Note: Retain framing types and member characteristics below to conform to project requirements.**

H. Roof Trusses: Cold-formed steel trusses, of web depths and truss types indicated, punched, with stiffened flanges.

- 1. Type: As indicated on the drawings.
- 2. Minimum Base Metal Thickness: [20 gauge, 0.0329 inch (0.84 mm)] [18 gauge, 0.0428 inch (1.09 mm)] [16 gauge, 0.0538 inch (1.37 mm)] [14 gauge, 0.0677 inch (1.72 mm)] [12 gauge, 0.0966 inch (2.45 mm)] [10 gauge 0.1180 inch (2.997 mm)] [Match steel joists] [As indicated on the drawings].
- 3. Minimum Flange Width: [1⅝ inches (41 mm)] [2 inches (51 mm)] [2½ inches (63 mm)] [3 inches (76 mm)] [3½ inches (88.9mm)] [As indicated on the drawings].
- 4. Section Properties: As indicated on the drawings.

**Specifier Note: Retain framing types and member characteristics below to conform to project requirements.**

I. Roof Rafter Framing:

- 1. Steel Rafters: Cold-formed steel joists used as rafters, of web depths indicated, as follows:
  - a. Type: [Standard] [As indicated on the drawings].

- b. Minimum Base Metal Thickness: [20 gauge, 0.0329 inch (0.84 mm)] [18 gauge, 0.0428 inch (1.09 mm)] [16 gauge, 0.0538 inch (1.37 mm)] [14 gauge, 0.0677 inch (1.72 mm)] [12 gauge, 0.0966 inch (2.45 mm)] [10 gauge 0.1180 inches (2.997mm)] [Match steel joists] [As indicated on the drawings].
- c. Minimum Flange Width: [1<sup>5</sup>/<sub>8</sub> inches (41 mm)] [2 inches (51 mm)] [2<sup>1</sup>/<sub>2</sub> inches (63 mm)] [3 inches (76 mm)] [3<sup>1</sup>/<sub>2</sub> inches (88.9 mm)] [As indicated on the drawings].
- d. Section Properties: As indicated on the drawings.

**Specifier Note: Retain framing types and member characteristics below to conform to project requirements.**

J. Ceiling Joist Framing:

- 1. Steel Ceiling Joists: Cold-formed steel joists of web depths indicated, as follows:
  - a. Type: [Standard] [As indicated on the drawings].
  - b. Minimum Base Metal Thickness: [20 gauge, 0.0329 inch (0.84 mm)] [18 gauge, 0.0428 inch (1.09 mm)] [16 gauge, 0.0538 inch (1.37 mm)] [14 gauge, 0.0677 inch (1.72 mm)] [12 gauge, 0.0966 inch (2.45 mm)] [10 gauge 0.1180 inch (2.997mm)] [Match steel joists] [As indicated on the drawings].
  - c. Minimum Flange Width: [1<sup>5</sup>/<sub>8</sub> inches (41 mm)] [2 inches (51 mm)] [2<sup>1</sup>/<sub>2</sub> inches (63 mm)] [3 inches (76 mm)] [3<sup>1</sup>/<sub>2</sub> inches (88.9 mm)] [As indicated on the drawings].
  - d. Minimum Joist Depth: [9 inch (203 mm)] [9<sup>1</sup>/<sub>4</sub> inch (235 mm)] [10 inch (254 mm)] [11<sup>1</sup>/<sub>4</sub> inch (286 mm)] [12 inch (305 mm)] [14 inch (355.6 mm)] [As indicated on the drawings].
  - e. Section Properties: As indicated on the drawings.

## 2.2 ACCESSORIES

**Specifier Note: Retain accessories below to conform to project requirements.**

A. Framing Connectors:

- 1. Type: Steel-framing accessories fabricated from steel sheet, ASTM A1003/A1003M, Structural Grade, Type H, metallic coated, of same grade and coating weight used for framing members.
- 2. Provide accessories of manufacturer's standard thickness and configuration, unless otherwise indicated, as follows:
- 3. Web stiffeners.
- 4. Solid blocking.
- 5. Utility angles.
- 6. Joist hangers.
- 7. Gusset plates.
- 8. Rigid clips.
- 9. Breakaway clips.

B. Anchors, Clips and Fasteners

- 1. Steel Shapes and Clips: ASTM A36/A36M and zinc coated by hot-dip process according to ASTM A123/A123M.
- 2. Cold-formed Steel Connections: ASTM A653/A653M, zinc coated by hot-dip process according to ASTM A123/A123M.
- 3. Expansion Anchors: Fabricated from corrosion-resistant materials, with capability to sustain, without failure, a load equal to 5 times design load, as determined by testing per ASTM E488.
- 4. Powder-actuated Anchors: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with capability to sustain, without failure, a load equal to 10 times design load, as determined by testing per ASTM E1190 and as indicated on the drawings.
- 5. Mechanical Fasteners: ASTM C1513, corrosion-resistant-coated, self-drilling, self-tapping steel drill screws.
- 6. Welding Electrodes: Comply with AWS standards.
- 7. Galvanizing Repair Paint: SSPC-Paint 20 or DOD-P-21035.
- 8. Cement Grout: Portland cement, ASTM C150, Type I; and clean, natural sand, ASTM C404. Mix at ratio of 1 part cement to 2<sup>1</sup>/<sub>2</sub> parts sand by volume, with minimum water required for placement and hydration.

9. Nonmetallic, Nonshrink Grout: Premixed noncorrosive, nonstaining grout containing selected silica sands, Portland cement, shrinkage-compensating agents, and plasticizing and water-reducing agents, complying with ASTM C1107, with fluid consistency and 30-minute working time.
10. Shims: Load bearing, high-density multimonomer plastic, nonleaching.
11. Sealer Gaskets: Closed-cell neoprene foam, 1/4 inch (6.4 mm) thick, selected from manufacturer's standard widths to match width of bottom track or rim track members.

### 2.3 FABRICATION

- A. Fabricate cold-formed metal framing and accessories plumb, square, and true to line, and with connections securely fastened, according to referenced AISI specifications and standards, manufacturer's written instructions and requirements in this Section.
  1. Fabricate framing assemblies using jigs or templates.
  2. Cut framing members by sawing or shearing; do not torch cut.
  3. Fasten cold-formed metal framing members by welds, screw fasteners, clinch fasteners or rivets as standard with fabricator. Do not wire-tie framing members.
    - a. Comply with AWS D1.3 requirements and procedures for welding, appearance and quality of welds, and methods used in correcting welding work.
    - b. Locate mechanical fasteners and install according to Shop Drawings, with screw penetrating joined members by not less than three exposed screw threads.
    - c. Fasten other materials to cold-formed metal framing by welding, bolting, or screw fastening, according to Shop Drawings.
- B. Reinforce, stiffen, and brace framing assemblies to withstand handling, delivery, and erection stresses. Lift fabricated assemblies to prevent damage or permanent distortion.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Verification of Conditions: Verify that conditions of substrates previously installed under other sections or contracts are acceptable for product installation in accordance with manufacturer's instructions prior to wall framing installation.
  1. Inform [Owner] [Architect] [Consultant] of unacceptable conditions immediately upon discovery.
  2. Proceed with installation only after unacceptable conditions have been remedied [and after receipt of written approval from [Owner] [Architect] [Consultant]].
  3. [\_\_\_\_\_].

**Specifier Note: Specify actions required to prepare the surface, area or site for incorporation of the section's primary products. Describe requirements for exposure or removal of existing assemblies, components, products or materials.**

### 3.2 PREPARATION

**Specifier Note: Specify preparatory work required prior to installation/application/erection of primary products.**

- A. Ensure structure or substrate is adequate to support wall framing.
- B. Surface Preparation: Prepare surface in accordance with manufacturer's written recommendations and coordinate with Section [01 71 00 - Examination and Preparation].
  1. [\_\_\_\_\_].

**Specifier Note: Specify preparatory work, such as selective removal of existing work, required prior to execution of new work. Specify requirements for exposure or removal of existing assemblies, components, products or materials.**

- C. Demolition/Removal:
  1. [\_\_\_\_\_].

### 3.3 ERECTION

#### A. General:

1. Coordinate erection of framing with Section [01 73 16 - Erection].
2. Erect in accordance with ASTM C1007 and manufacturer's installation instructions.
3. Field Welding: Per AWS D1.3, and the following:
  - a. Stud-to-Track Connections: 1/2 inch (13 mm) fillet weld, full length of inside flange dimension, inside each flange of stud onto track web.
  - b. Other Connections: Flat, plug, butt or seam.
  - c. Minimum Steel Thickness for Welded Connections: 18 gauge.
  - d. Field Fastening: Minimum of 2 self-tapping metal screws per connection, unless otherwise indicated.

#### B. Wall Systems:

1. Handle and lift prefabricated panels in a manner so as not to cause distortion in any member.
2. Anchor runner track securely to the supporting structure as shown on 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.
3. Butt all track joints. Securely anchor abutting pieces of track to a common structural element, or butt-weld or splice together.
4. Align and plumb studs, and securely attach to flanges or webs of both upper and lower tracks, except when vertical movement is specified.
5. 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.
6. Attach wall stud bridging in a manner to prevent stud rotation. Space bridging rows according to manufacturer's recommendations.
7. Frame wall openings to include headers and supporting studs as shown in the drawings.
8. Place studs at maximum 16 inches on center, not more than 2 inches from abutting walls, and at each side of openings. Connect studs to tracks using mechanical fastener method.
9. Construct corners using a minimum of 3 studs. Use double studs, one of which is full length unless indicated otherwise, at wall openings, doors and window jambs.
10. Coordinate placement of insulation in multiple stud spaces made inaccessible after erection.
11. Attach cross studs or furring channels to studs for attachment of fixtures anchored to walls.
12. Install framing between studs for attachment of mechanical and electrical items, and to prevent stud rotation.
13. Touch-up field welds and damaged galvanized and primed surfaces with primer.
14. Provide bridging (horizontal stiffeners) at 4 feet 0 inches on center maximum vertical spacing for exterior and load bearing metal stud walls.

#### C. Steel Joists:

1. Locate joist end bearing directly over load bearing studs or provide load-distributing member to top of stud 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.
5. Place joists at maximum 12 inches on center and not more than 2 inches from abutting walls. Connect joists to supports using mechanical fastener method.
6. Touch-up field welds and damaged galvanized surfaces with primer.

**Specifier Note: Specify how existing work is to be repaired, restored and cleaned.**

### 3.4 REPAIR/RESTORATION

#### A. Coordinate [repair] [restoration] of [systems] [components] [products] in accordance with Section [01 73 13 - Application].

1. [\_\_\_\_\_].

### 3.5 FIELD QUALITY CONTROL

**Specifier Note: Specify requirements for quality control and related quality assurance for onsite activities and installed materials, manufactured units, equipment, components and accessories.**

- A. Field Tests, Inspection: Coordinate field test with Section [01 45 00 - Quality Control].
- B. Inspection requirements are indicated on the drawings.
- C. If tests indicate Work does not meet specified requirements, remove Work, replace with new material and retest at no cost to Owner.
- D. Visually inspect 100 percent of welds for specified length, size, and continuity per AWS D1.3 for metal less than 1/8 inch thickness for Work designed as a structural element.

**Specifier Note: Specify requirements if manufacturers are to provide field quality control with onsite personnel for instruction or supervision of product installation, application, erection or construction. Manufacturer's field reports are included under PART 1, Submittals.**

- E. Manufacturer Services:

**Specifier Note: Use the following subparagraphs only when manufacturer's field services are provided and are required to verify the quality of the installed components. Establish the number and duration of periodic site visits required by the manufacturer and specify below. Consult manufacturer for services required. Delete if field services are not required.**

1. Coordinate manufacturer's services with Section [01 45 00 - Quality Control]. Have manufacturer review work involved in handling, installation/application, protection and cleaning of product[s], and submit written reports in acceptable format to verify compliance of work with Contract.
2. Manufacturer's Field Services: Provide manufacturer's field services consisting of product use recommendations and periodic site visits for product installation inspection in accordance with manufacturer's instructions.
3. Schedule site visits to review work at stages listed:
  - a. After delivery and storage of products, and when preparatory work on which work of this Section depends is complete, but before installation begins.
  - b. [Twice] during progress of work at [25%] and [60%] completion.
  - c. Upon completion of work, after cleaning is performed.
4. Obtain reports within [three] days of review and submit immediately to [Owner] [Architect] [Consultant].

### 3.6 LEANING

- A. Perform cleanup in accordance with Section [01 74 00 - Cleaning and Waste Management] and Section [01 74 13 - Progress Cleaning].
- B. Upon completion, remove surplus materials, rubbish, tools and equipment in accordance with Section [01 74 23 - Final Cleaning].

**Specifier Note: Specify special measures needed to minimize waste, collect recyclable waste and dispose of or recycle field-generated construction waste created during demolition, construction or final cleaning.**

- C. Waste Management:
  1. Coordinate recycling of waste materials with Section [01 74 19 - Construction Waste Management and Disposal].
  2. Collect recyclable waste and dispose of or recycle field generated construction waste created during demolition, construction or final cleaning.
  3. Remove recycling containers and bins from site.
  4. [ ].



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**Specifier Note:** Specify protection methods completed after installation, but prior to acceptance by the owner. Protection of surrounding areas and surfaces during application or installation is included under PART 3, Preparation. Include only statements unique to this Section.

**Specifier Note:** Coordinate the following Article with Section 01 76 00 - Protecting Installed Construction.

### 3.7 PROTECTION

- A. Protect installed product from damage during construction in accordance with Section [01 76 00].
- B. Repair damage to adjacent materials caused by framing installation.
- C. [ ].

**Specifier Note:** Specify attachments such as schedules, tables, illustrations or forms in this location if they are not incorporated directly within the specification text.

### 3.8 ATTACHMENTS

**Specifier Note:** Schedules are sometimes included in the specifications rather than on the drawings. Include schedules that indicate item/element/product/equipment, location and other coordinating data.

- A. Schedules:
  - 1. [ ].

**END OF SECTION**