SECTION 09 22 00

NON-STRUCTURAL METAL FRAMING

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\*\* NOTE TO SPECIFIER \*\* Mill Steel Framing; non-structural 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(09100ssp):%20%20&mf=)
Web: <https://www.millsteel.com/framing>
 [ [Click Here](https://www.arcat.com/arcatcos/cos43/arc43703.html) ] for additional information.
Formerly known as Steel Structural Systems, the Steel Structural Products 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.
Now aligned with Mill Steel Company - an industry-leading steel supplier, who we are is better than ever. Steel Structural Products 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. Non-structural metal framing:
			1. Cold-formed metal framing for walls.
			2. Cold-formed metal framing for ceilings.
			3. Accessories.
	1. RELATED SECTIONS

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

* + 1. Section 05 40 00 - Cold-Formed Metal Framing.
		2. Section 09 21 16.33 - Gypsum Board Area Separation Wall 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 653 - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
			2. ASTM C 645 - Standard specification for non-structural steel framing members.
			3. ASTM C 754 - Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products.
		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.
		5. Gypsum Association (GA) 600 - Fire Resistance Design Manual.
	1. SUBMITTALS
		1. Submit under provisions of Section 01 30 00 - Administrative Requirements.
		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.
		3. 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.

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

* + 1. Fire-Test-Response Characteristics: For fire-resistance-rated assemblies that incorporate non-structural steel framing, provide materials and construction identical to those tested in assembly indicated according to ASTM E 119 by, and displaying a classification label from, an independent testing agency acceptable to authority having jurisdiction.
			1. Construct fire-resistance rated partitions in compliance with tested assembly requirements indicated on the Drawings.
			2. Rated assemblies to be substantiated from applicable testing using the proposed products, by Contractor.

\*\* NOTE TO SPECIFIER \*\* Retain paragraph below where framing is part of STC-rated assemblies. Indicate design designations of specific assemblies on Drawings.

* + 1. STC-Rated Assemblies: For STC-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E 90 and classified according to ASTM E 413 by an independent testing agency.
		2. Welding Standards: Comply with applicable provisions AWS D1.1 "Structural Welding Code - Steel" and AWS D1.3 "Structural Welding Code-Sheet Steel."
		3. Qualify welding processes and welding operators in accordance with AWS "Standard Qualification Procedure."
	1. PRE-INSTALLATION MEETINGS
		1. Convene minimum two weeks prior to starting work of this section.
	2. 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.
	3. 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.
	4. 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(09100ssp):%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 01 60 00 - Product Requirements.
	1. NON-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 shown or specified.
			2. Design loads: As indicated on the Architectural Drawings. 5 PSF minimum design lateral load is required for interior walls per the building code.
			3. Design framing systems to withstand design loads without deflections greater than the following:
				1. Interior Non-Load Bearing Walls: Lateral deflection of: L/120.
				2. Interior Non-Load Bearing Walls: Lateral deflection of: L/180.
				3. Interior Non-Load Bearing Walls: Lateral deflection of: L/240.
				4. Interior Non-Load Bearing Walls: Lateral deflection of: L/360.
			4. Design framing system to accommodate deflection of primary building structure and construction tolerances.
		2. Recycled Content of Steel Products: Post-consumer recycled content plus one-half of pre-consumer recycled content not less than 25 percent.
		3. Framing Members, General: Comply with ASTM C645 for conditions indicated.
			1. Steel Sheet Components: Comply with ASTM C645 requirements for metal unless otherwise indicated.
			2. Protective Coating: Comply with ASTM C645; roll-formed from hot-dipped galvanized steel, complying with ASTM A653/A653M G40 (Z120) or having a coating that provides equivalent corrosion resistance. A40 galvannealed products are not acceptable.
				1. Coatings shall demonstrate equivalent corrosion resistance with an evaluation report acceptable to the authority having jurisdiction.
				2. "EQ" (Equivalent Gauge Thickness) Steel Studs and Runners: Members that can show certified third party testing with gypsum board in accordance with ICC ES AC86 - 2010 (Approved May 2012) need not meet the minimum thickness limitation or minimum section properties set forth in ASTM C 645. The submission of an evaluation report is acceptable to show conformance to this requirement.

\*\* NOTE TO SPECIFIER \*\* ProSTUD® and ProTRAK® Drywall Framing System sets a new industry benchmark for high performance. ProSTUD and ProTRAK are available in 15 to 33 mil thicknesses with web sizes 1 5/8" to 6" to meet all of your drywall framing needs.

* + 1. Steel Studs: ASTM C645.
			1. Notice Of Compliance Certification (SFIA):
				1. for Structural, Nonstructural, and Nonstructural Proprietary Cold-Formed Framing Products (ProSTUD - 15, 19, 22, 30, and 33 mils) by the Steel Framing Industry Association.
			2. Non-Structural Studs: Cold-formed galvanized steel C-studs, ProSTUD as manufactured by Steel Structural Products, LLC:
				1. Flange Size: 1-1/4 inches (32 mm).
				2. Stiffening Lip: 1/4 inch (6.4 mm).

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

* + - * 1. Web Depth: 1-5/8 inches (41 mm).
				2. Web Depth: 2-1/2 inches (64 mm).
				3. Web Depth: 3-1/2 inches (89 mm).
				4. Web Depth: 3-5/8 inches (92 mm).
				5. Web Depth: 4 inches (102 mm).
				6. Web Depth: 5-1/2 inches (140 mm).
				7. Web Depth: 6 inches (152 mm).

\*\*NOTE TO SPECIFIER\*\* Typical stud equivalent for 20 and 25 gauge. Delete description not required.

* + - * 1. Member Description: ProSTUD 15 mil (25 ga equivalent drywall stud) 50 ksi. Minimum Base-Steel Thickness: 0.0150 inches (0.3810 mm). Minimum Design Thickness: 0.0158 inches (0.4013 mm).
				2. Member Description: ProSTUD 19 mil (20 ga equivalent drywall stud) 65 ksi. Minimum Base-Steel Thickness: 0.019 inches (0.4826 mm). Minimum Design Thickness: 0.020 inches (0.508 mm).

\*\*NOTE TO SPECIFIER\*\* 33 ksi stud construction. Delete description not required.

* + - * 1. Member Description: ProSTUD 30 mil. 33 ksi. Design Thickness: 0.0312 inches (0.792 mm).
				2. Member Description: ProSTUD 33 mil. 33 ksi. Design Thickness: 0.0346 inches (0.879 mm).
		1. Non-Structural Track: Cold-formed galvanized steel runner tracks, ProTRAK as manufactured by Steel Structural Products, LLC:
			1. Drywall track, in conformance with ASTM C 645 for conditions indicated below:
				1. Flange Size: 1-1/4 inches (32 mm).
				2. Web Depth: Track web to match stud web size.
				3. Minimum Base-Steel Thickness: Track thickness to match wall stud thickness or as designed.
	1. ACCESSORlES
		1. Sheet steel accessories as manufactured by Steel Structural Products, LLC
		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.
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.
	3. NON-STRUCTURAL FRAMING INSTALLATION
		1. Install cold-formed framing in accordance with requirements of ASTM C 754.

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

* + 1. Framing Installation:
			1. Erect framing and panels plumb, level and square in strict accordance with approved drawings.
			2. Handle and lift prefabricated panels in a manner to not cause distortion in any member.
			3. Anchor runner track securely to the supporting structure. Install concrete anchors only after full compressive strength has been achieved.
			4. Butt all track joints. Securely anchor abutting pieces of track to a common structural element, or splice them together.
			5. Align and plumb studs, and securely attach to the flanges or webs of both upper and lower tracks.
			6. Attach wall stud bridging when required in a manner to prevent stud rotation. Space bridging rows according to manufacturer's recommendations.
			7. Provided temporary bracing until erection is completed.
			8. Where indicated in the drawings, provide for structural vertical movement using means in accordance with manufacturer's recommendations.
			9. Cut all framing components square for attachment to perpendicular members or as required for an angular fit against abutting members.
	1. PROTECTION
		1. Protect installed products until completion of project.
		2. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION