SECTION 05 40 00

COLD-FORMED METAL FRAMING

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\*\* NOTE TO SPECIFIER \*\* Steel Stud Manufacturer's Association (SSMA); steel framing.
This section is based on the products of the Steel Stud Manufacturer's Association, who's members cover all US Territories. The SSMA's headquarters is located at:
201 N. Maple Grove Rd. Suite 100
Boise, ID 83704
Phone: 208-229-7660
Email: info@ssma.com
Web: www.ssma.com
[Click Here] for additional information.
This master specification section is intended for use in the preparation of a project specification section covering cold-formed steel exterior wall studs, joists, and trusses, field installed or shop fabricated and field erected. Studs may be either axially-load bearing or non-axially load bearing. Studs for interior partition framing are specified in Section 09 24 13 - Adobe Finish.
This specification is sponsored by the Steel Stud Manufacturers Association (SSMA) who's members are listed under Part 2 - Products.
Mission: SSMA's mission is to pro-actively represent member firms engaged in the manufacture, marketing and sale of cold-formed steel framing members, as a unified voice to the residential and light commercial construction industry serviced by its products, which includes contractors, distributors, design professionals, code officials and standards organizations.
Product Certification: SSMA offers the Code Compliance Certification Program as a means for member manufacturers to certify that structural and non-structural cold-formed steel framing they produce complies with all current code requirements. Certification is independently evaluated.
Sustainability: SSMA has developed a Technical Note - Credits for Cold-Formed Steel Framing Manufacturers, for use on projects evaluated under LEED 2.2. Although the wording and examples in the Technical Note do not specifically apply to other versions of LEED or other rating systems, the principles, recycling rates, and other data are still accurate and applicable, and may be quoted/used for requirements beyond LEED 2.2.
Publications: SSMA's technical library currently features SSMA's 2012/2015 International Building Code (IBC) version of their Product Technical Guide as well as ESR-3064P, which complies with the 2012 andIBC and 2013 California and Florida Building Codes for both structural and nonstructural products.

1. GENERAL
	1. SECTION INCLUDES

\*\* NOTE TO SPECIFIER \*\* Edit the following paragraphs to include only those items specified in this section.

* + 1. Load-bearing steel stud exterior and interior wall framing.
		2. Non-load-bearing steel stud exterior and interior wall framing.
		3. Steel soffit framing.
		4. Steel floor joist framing.
		5. Steel ceiling joist framing.
		6. Steel stud truss framing.
	1. RELATED SECTIONS

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

* + 1. Division 01: Administrative, procedural, and temporary work requirements.
	1. REFERENCES

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

* + 1. American Iron and Steel Institute (AISI):
			1. Specification for the Design of Cold-Formed Steel Structural Members.
			2. AISI S210 - North American Standard for Cold-Formed Steel Framing - Floor and Roof System Design.
			3. AISI S211 - North American Standard for Cold-Formed Steel Framing - Wall Stud Design.
			4. AISI S212 - North American Standard for Cold-Formed Steel Framing - Header Design.
			5. AISI S213 - North American Standard for Cold-Formed Steel Framing - Lateral Design.
		2. American Society of Civil Engineers (ASCE):
			1. ASCE 7 - Minimum Design Loads for Buildings and Other Structures.
		3. American Welding Society (AWS):
			1. AWS D1.3/D1.3M - Structural Welding Code - Sheet Steel.
		4. ASTM International (ASTM):
			1. A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy Coated (Galvannealed) by the Hot-Dip Process..
			2. A780 - Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings.
			3. A1003/A1003M - Standard Specification for Steel Sheet, Carbon, Metallic- and Nonmetallic-Coated for Cold-Formed Framing Members.
			4. C955 - Standard Specification for Load-Bearing (Transverse and Axial) Steel Studs, Runners (Tracks), and Bracing or Bridging for Screw Application of Gypsum Board and Metal Plaster Bases.
			5. C1007 - Standard Specification for Installation of Load Bearing (Transverse and Axial) Steel Studs and Related Accessories.
			6. C1513 - Standard Specification for Steel Tapping Screws for Cold-Formed Steel Framing Connections.
		5. Steel Stud Manufacturer's Association (SSMA):
			1. Member Directory.
		6. Society for Protective Coatings (SSPC):
			1. Painting Manual.
	1. SUBMITTALS

\*\* NOTE TO SPECIFIER \*\* Limiting submittals to only those actually required helps to minimize liability arising from the review of submittals. Minimize submittals on smaller, less complex projects.

* 1. Include the following for submission of shop drawings, product data, and samples for the Architect's review.
		1. Submit under provisions of Section 01 30 00 - Administrative Requirements.
		2. Product Data:
			1. Product Data: Framing components, sizes, materials, finishes, and accessories.
			2. Manufacturer's data sheets on each product to be used.
			3. Preparation instructions and recommendations.
			4. Storage and handling requirements and recommendations.
			5. Typical installation methods.

\*\* NOTE TO SPECIFIER \*\* Delete if not applicable to product type.

* + 1. Verification Samples: Two representative units of each type, size, pattern and color.
		2. Shop Drawings: Framing layout, components, connections, fastenings, and pertinent details.

\*\* NOTE TO SPECIFIER \*\* Include the following for submission of quality control submittals. These submittals are intended for the Owner's record purposes and are not intended to be reviewed by the Architect.

* + 1. Quality Control Submittals:
			1. Certificates of Compliance: Certificate from Professional Structural Engineer responsible for system design that system was designed in accordance with Contract Document requirements, applicable Building Code, and generally accepted engineering practices.
			2. Welder Certifications: As required by AWS D1.3/D1.3M.

\*\* NOTE TO SPECIFIER \*\* Include the following for submission of sustainable design submittals.

* + 1. Sustainable Design Submittals:
			1. Recycled Content.
			2. Regional Materials.
	1. QUALITY ASSURANCE
		1. Manufacturer Qualifications: Current member of SSMA.

\*\* NOTE TO SPECIFIER \*\* The following paragraph specifies a minimum level of experience required of the parties performing the work of this section. Retain if required, and edit to suit project requirements.

* + 1. Installer Qualifications: Minimum \_\_\_\_ years documented experience in work of this Section.
		2. Welder Qualifications: AWS D1.3/D1.3M.
		3. Source Limitations: Provide each type of product from a single manufacturing source to ensure uniformity.

\*\* NOTE TO SPECIFIER \*\* Include mock-up if the project size or quality warrant the expense. The following is one example of how a mock-up on might be specified. When deciding on the extent of the mock-up, consider all the major different types of work on the project.

* + 1. Mock-Up: Construct a mock-up with actual materials in sufficient time for Architect's review and to not delay construction progress. Locate mock-up as acceptable to Architect and provide temporary foundations and support.
			1. Intent of mock-up is to demonstrate quality of workmanship and visual appearance.
			2. If mock-up is not acceptable, rebuild mock-up until satisfactory results are achieved.
			3. Retain mock-up during construction as a standard for comparison with completed work.
			4. Do not alter or remove mock-up until work is completed or removal is authorized.
	1. PRE-INSTALLATION CONFERENCE
		1. Convene a conference approximately two weeks before scheduled commencement of the Work. Attendees shall include Architect, Contractor and trades involved. Agenda shall include schedule, responsibilities, critical path items and approvals.
	2. DELIVERY, STORAGE, AND HANDLING
		1. Store and handle in strict compliance with manufacturer's written instructions and recommendations.
		2. Protect from damage due to weather, excessive temperature, and construction operations.
	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. WARRANTY
		1. Manufacturer's standard limited warranty unless indicated otherwise.
1. PRODUCTS
	1. MANUFACTURERS
		1. Acceptable Manufacturers Association: The Steel Stud Manufacturer's Association, who's members cover all US Territories. The SSMA's headquarters is located at: 201 N. Maple Grove Rd. Suite 100; Boise, ID 83704; Phone: 208-229-7660; Email: info@ssma.com; Web: www.ssma.com.

\*\* NOTE TO SPECIFIER \*\* The following list includes manufacturers that are known to produce one or more of the products specified in this section, and that have websites available to assist in product research. Careful consideration of product attributes in relationship to project requirements is required before including products in the paragraphs that follow. This list is not intended to include every available manufacturer.

* + 1. Acceptable Association Manufacturers:
			1. Consolidated Fabricators Corporation. ([www.confabbpd.com](http://www.confabbpd.com) )
			2. Custom Stud, Inc. ([www.customstud.com](http://www.customstud.com) )
			3. Frametek Steel Products. ([www.frameteksteel.com](http://www.frameteksteel.com) )
			4. Olmar Supply Inc. ([www.olmarsupply.com](http://www.olmarsupply.com) )
			5. SCAFCO Corporation. ([www.scafco.com](http://www.scafco.com) )
			6. Steel Construction Systems. ([www.steelconsystems.com](http://www.steelconsystems.com) )
			7. United Metal Products, Inc. ([www.unitedmetalproducts.info](http://www.unitedmetalproducts.info) )
			8. Novus Advanced Manufacturing (<https://novussteel.us>)

\*\* 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. PERFORMANCE REQUIREMENTS
		1. Calculate structural properties of framing members in accordance with AISI Specifications; AISI S210, AISI S211, AISI S212, and AISI S213.
		2. Design framing under direct supervision of a Professional Structural Engineer with experience in the work of this Section and licensed in State in which Project is located.
			1. Professional Structural Engineer: 2 years documented experience in work of this Section.
			2. Professional Structural Engineer: \_\_\_\_ years documented experience in work of this Section.
		3. Design exterior wall stud system and/or roof trusses to withstand:

\*\* NOTE TO SPECIFIER \*\* Delete load type options options not required.

* + - 1. Live and dead loads in accordance with Building Code.
			2. Wind pressure loads in accordance with Building Code.
			3. Wind pressure loads in accordance with ASCE 7.
			4. Wind pressure loads in accordance with \_\_\_\_.
			5. Movement Due to Temperature Variances:
				1. Ambient temperature range of 120 degrees F (49 degrees C).
				2. Ambient temperature range of \_\_\_\_ degrees F (\_\_\_\_ degrees C).
				3. Surface temperature range of 160 degrees F (71 degrees C).
				4. Surface temperature range of \_\_\_\_ degrees F (\_\_\_\_ degrees C).
			6. Maximum Deflection Under Loading: L/240 without sheathing materials.
			7. Maximum Deflection Under Loading: L/360 without sheathing materials.
			8. Maximum Deflection Under Loading: L/600 without sheathing materials.
			9. Maximum Deflection Under Loading: L/720 without sheathing materials.
			10. Maximum Deflection Under Loading: \_\_\_\_ without sheathing materials.
			11. Minimum Vertical Deflection of Structure: 1/2 inch (13 mm).
			12. Minimum Vertical Deflection of Structure: \_\_\_\_ inch (\_\_\_\_ mm).
		1. Design joist system to withstand:
			1. Live and dead loads in accordance with Building Code.
			2. Maximum Deflection Under Loading: L/120 without decking materials.
			3. Maximum Deflection Under Loading: L/240 without decking materials.
			4. Maximum Deflection Under Loading: L/360 without decking materials.
			5. Maximum Deflection Under Loading: L/480 without decking materials.
			6. Maximum Deflection Under Loading: \_\_\_\_ without decking materials.
		2. Design system to accommodate construction tolerances, deflection of building structural members, and clearances at openings.
	1. MATERIALS
		1. Framing Materials:
			1. ASTM A653/A653M or A1003/A1003M.
				1. Galvanized Sheet Steel: G60 coating class.
				2. Galvanized Sheet Steel: G90 coating class.
				3. Galvanized Sheet Steel: \_\_\_\_ coating class.
			2. Recycled Content: Minimum \_\_\_\_ percent.
				1. Minimum \_\_\_\_ percent classified as post-consumer.
			3. Minimum sheet steel Thickness: 0.033 inch (0.84 mm)
				1. Minimum sheet steel Thickness: 0.043 inch (1.09 mm)
				2. Minimum sheet steel Thickness: 0.054 inch (1.37 mm)
				3. Minimum sheet steel Thickness: 0.068 inch (1.72 mm)
				4. Minimum sheet steel Thickness: 0.097 inch (2.45 mm)
				5. Minimum sheet steel Thickness: \_\_\_\_ inch (\_\_\_\_ mm).
			4. Fabricate components to ASTM C955.
			5. Studs: SSMA stud profile, C-shaped, punched for utility access.
			6. Joists: SSMA stud profile, C-shaped, punched for utility access.
			7. Studs and Joists: SSMA stud profile, C-shaped, punched for utility access.
			8. Tracks:
				1. SSMA stud track profile, C-shaped, same gage and depth as studs, unpunched.

\*\* NOTE TO SPECIFIER \*\* Include the following where deflection of overhead structure is anticipated. Delete the following track options not required.

* + - * 1. Top Track: Deflection type, deep leg track with slotted screw holes.

Allowable overhead structure movement without framing damage:

Plus or minus 1/2 inch (13 mm).

Plus or minus \_\_\_\_ inch (\_\_\_\_ mm).

* + - * 1. Top and Bottom Track: 1-1/4 inch (32 mm) high legs.
				2. Top and Bottom Track: \_\_\_\_ inch (\_\_\_\_ mm) high legs.
				3. Bottom Track: 1-1/4 inch (32 mm) high legs.
				4. Bottom Track: \_\_\_\_ inch (\_\_\_\_ mm) high legs.
				5. Rim Track: Provide closure for ends of joists.
	1. ACCESSORIES
		1. Bracing, Furring, Bridging and Web Stiffeners: Formed sheet steel, thickness determined by performance requirements specified.
		2. Plates, Gussets, Clips: Formed sheet steel, thickness determined by performance requirements specified.
		3. Fasteners: ASTM C1513; self-drilling, self-tapping screws.
		4. Touch Up Paint: SSPC Paint 20, Type I or II.
		5. Welding Electrodes: AWS D1.3/D1.3M; type required for materials being welded.
	2. FABRICATION
		1. Prefabrication of Framing Components:
			1. Using templates.
		2. Field Fabrication: Prohibited except for minor alterations to accommodate site conditions.
		3. Cut members square and with tight fit to adjacent framing.
		4. Component Assembly Methods:
			1. Screw connection.
			2. Welding. Welding to conform to AWS D1.3/D1.3M.
			3. Clinching.
		5. Fabricate straight, level, and true, without warp or rack.
		6. Fabrication Tolerances: In accordance with ASTM C955.
1. EXECUTION
	1. INSTALLATION - GENERAL
		1. Install framing components in accordance with ASTM C1007, manufacturer's instructions, and approved Shop Drawings.
		2. Welding: In accordance with AWS D1.3/D1.3M.
		3. Make provisions for erection stresses. Provide temporary alignment and bracing.

\*\* NOTE TO SPECIFIER \*\* Include the following for axial load-bearing wall construction. Delete article if not required.

* 1. INSTALLATION - AXIALLY LOADED STUD FRAMING
		1. Place top and bottom tracks in straight lines with ends butted.

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

* + - 1. Fasten tracks at maximum 12 inches (305 mm) on center.
			2. Fasten tracks at maximum \_\_\_\_ inches on center.
			3. Fasten tracks as indicated on the Drawings.
		1. Stud Spacing: As indicated on the Drawings

\*\* NOTE TO SPECIFIER \*\* 2 inches is a maximum distance from abutting walls and at each side of openings. Delete option not required.

* + - 1. Space studs at 2 inches (51 mm) from abutting walls and each side of openings.
			2. Space studs at \_\_\_\_ inches from abutting walls and each side of openings.
		1. Connect studs to top and bottom tracks.
		2. Construct corners using minimum of three studs.
		3. Do not splice studs.
		4. Erect, brace, and reinforce stud framing to develop strength to achieve design requirements.
		5. Install headers above openings and intermediate studs above and below openings to align with wall stud spacing.
		6. Install framing between studs for attachment of mechanical and electrical items, and to prevent stud rotation.
		7. Diagonally brace walls at location indicated for shear construction.

\*\* NOTE TO SPECIFIER \*\* Include the following for non-axial load bearing wall construction where allowance for top track deflection is required. Delete article if not required.

* 1. INSTALLATION - NON-AXIALLY LOADED STUD FRAMING
		1. Place top and bottom tracks in straight lines with ends butted.

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

* + - 1. Fasten tracks as indicated on drawings.
			2. Fasten tracks at maximum 12 inches (305 mm) on center.
			3. Fasten tracks at maximum \_\_\_\_ inches (\_\_\_\_ mm) on center.
		1. Place Studs at Spacing Indicated:

\*\* NOTE TO SPECIFIER \*\* 2 inches is a maximum distance from abutting walls and at each side of openings. Delete option not required.

* + - 1. Place studs 2 inches (51 mm) from abutting walls and at each side of openings.
			2. Place studs \_\_\_\_ inches (\_\_\_\_ mm) from abutting walls and at each side of openings.
		1. Install deflection compensating top track at framing extending to underside of structure.
		2. Connect studs to top and bottom tracks.
		3. Construct corners using minimum of three studs.
		4. Do not splice studs.
		5. Erect, brace, and reinforce stud framing to develop strength to achieve design requirements.
		6. Install headers above openings and intermediate studs above and below openings to align with wall stud spacing.
		7. Install framing between studs for attachment of mechanical and electrical items, and to prevent stud rotation.
		8. Laterally brace walls at locations indicated.

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

* 1. INSTALLATION - JOISTS
		1. Place joists at spacings indicated on the Drawings.

\*\* NOTE TO SPECIFIER \*\* 2 inches is a maximum distance from abutting walls Delete option not required.

* + - 1. Place 2 inches (51 mm) from abutting walls.
			2. Place \_\_\_\_ inches (\_\_\_\_) from abutting walls.
			3. Connect members to supports using fastener method.
		1. Set members parallel and level; install lateral bracing and bridging where indicated.
		2. Locate joists directly over bearing studs or provide load distribution member.
		3. Provide additional joists under parallel partitions when partition length exceeds one-half of joist span and around openings that interrupt one or more joists.
		4. Do not splice joists.
		5. Provide web stiffeners at reaction points and points of concentrated loads.
		6. Provide end blocking where joist ends are not otherwise restrained from rotation.

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

* 1. INSTALLATION - TRUSSES
		1. Place trusses at spacings indicated.
		2. Make provisions for erection stresses. Provide temporary alignment and bracing.
		3. Set trusses parallel and level; install lateral bracing and bridging as required.
	2. INSTALLATION TOLERANCES
		1. In accordance with ASTM C1007.
	3. FIELD QUALITY CONTROL
		1. Testing and Inspection Services: Inspect and test shop and field welds in accordance with AWS D1.3/D1.3M.
	4. ADJUSTING
		1. Clean and touch up galvanized coatings at welded and abraded surfaces in accordance with:

\*\* NOTE TO SPECIFIER \*\* Delete ASTM A780 options not required. A2 is the most common method.

* + - 1. ASTM A780, Annex A1. Repair Using Zinc-Based Alloys requires heating the surface to 600 degrees F and using repair sticks that melt on contact.
			2. ASTM A780, Annex A2. Repair Using Paints Containing Zinc Dust.
			3. ASTM A780, Annex A3. Repair Using Sprayed Zinc aka. Metallizing, requires blast cleaning of affected areas and special application equipment.

END OF SECTION