SECTION 05 21 00

STEEL JOISTS

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\*\* NOTE TO SPECIFIER \*\* New Millennium Building Systems; joists and girders products.
This section is based on the products of New Millennium Building Systems, which is located at:
1690 Broadway St.
Bldg. 19, Ste. 160
Fort Wayne, IN 46802
Phone: 260-321-8080
Fax: 260-868-6002
Website: [www.newmill.com](http://www.newmill.com)
Email: info@newmill.com
New Millennium engineers and manufactures standard steel joists, architecturally unique "special profile" steel joists, and steel decking. The company is a nationwide leader in BIM-based steel joist design and BIM process management. New Millennium has also introduced the Flex-Joist Tension-Controlled Open Web Steel Joist design approach for increased steel joist strength, reliability, and ductility. Among the benefits of the new approach is enhanced building safety, providing an early warning in the event of a roof overload condition.
This specification includes New Millennium standard steel joist products and bar joists are designed and manufactured nationwide at our six plant locations in accordance with the specifications of the Steel Joist Institute.

1. GENERAL
	1. SECTION INCLUDES

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

* + 1. Open Web Steel Joists and Joist Girders.
	1. RELATED SECTIONS

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

* + 1. Section 03 63 00 - Epoxy Grouting.
		2. Section 05 12 13 - Architecturally-Exposed Structural Steel Framing.
		3. Section 05 31 13 - Steel Floor Decking.
		4. Section 05 31 00 - Steel Decking.
		5. Section 05 50 00 - Metal Fabrications.
		6. Section 06 11 16 - Mechanically Graded Lumber.
		7. Section 07 81 00 - Applied Fireproofing.
		8. Section 09 90 00 - Painting and Coating.
	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 Institute of Steel Construction (AISC):
			1. AISC 303 - Code of Standard Practice for Steel Buildings and Bridges.
		2. American Welding Society (AWS):
			1. AWS D1.1 - Structural Welding Code - Steel.
		3. ASTM International (ASTM):
			1. ASTM A36/A36M - Standard Specification for Carbon Structural Steel.
			2. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
			3. ASTM A307 - Standard Specification for Carbon Steel Bolts and Studs, 60 000 PSI Tensile Strength.
			4. ASTM A563 - Standard Specification for Carbon and Alloy Steel Nuts.
			5. ASTM B695 - Standard Specification for Coatings of Zinc Mechanically Deposited on Iron and Steel.
			6. ASTM F436 - Standard Specification for Hardened Steel Washers.
			7. ASTM F568M - Standard Specification for Carbon and Alloy Steel Externally Threaded Metric Fasteners.
		4. Steel Joist Institute (SJI):
			1. Standard Specifications, Load Tables and Weight Tables for Steel Joists and Joist Girders.
			2. SJI - Code of Standard Practice.
	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. Preparation instructions and recommendations.
			2. Storage and handling requirements and recommendations.
			3. Installation methods.
		3. Shop Drawings: Show steel joists and joist girders and related work, showing sizes, details of fabrication and construction, locations of hardware, anchors, bridging and accessories, and erection and installation details.
		4. Welders' Certificates: Submit manufacturer's certificates, certifying welders employed on the Work, verifying AWS qualification within previous 12 months.
		5. Certification: Submit evidence of SJI membership and that joists and joist girders have been designed in accordance with SJI requirements.

\*\* NOTE TO SPECIFIER \*\* Delete the following paragraphs if LEED is not applicable.

* + 1. LEED Submittals: Provide documentation of how the requirements of Credit will be met:
			1. Product Data for Credit MR 4.1 and MR 4.2: For products having recycled content, documentation including percentages by weight of post-consumer and pre-consumer recycled content.
				1. Include statement indicating costs for each product having recycled content.
			2. Product Data for Credit MR 5.1 and Credit MR 5.2: Submit data, including location and distance from Project of material manufacturer and point of extraction, harvest, or recovery for main raw material.
				1. Include statement indicating cost for each regional material and the fraction by weight that is considered regional.
		2. Manufacturer's Certificates: Certify products meet or exceed specified requirements.
	1. QUALITY ASSURANCE
		1. Manufacturer Qualifications: Member of the Steel Joist Institute who regularly produces steel joists of the K, LH, or DLH Series, or joist girders conforming to SJI's Specifications and Load Tables and whose designs have been checked and accepted by the Steel Joist Institute.
		2. Design connections under direct supervision of Professional Engineer experienced in design of this Work and licensed at Project location.
		3. Perform Work in accordance with SJI, Standard Specification, Code of Standard Practice, Load Tables, and Weight Tables, including headers and other supplementary framing.
	2. DELIVERY, STORAGE, AND HANDLING
		1. Store products in manufacturer's unopened packaging until ready for installation.
		2. Deliver, store and handle as recommended by the SJI Specifications and Code of Standard Practice.
	3. 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: New Millennium Building Systems, which is located at:1690 Broadway St.
		, Bldg. 19, Ste. 160Fort Wayne, IN 46802Tel: 260-321-8080Fax: 260-868-6002Email: [request info (info@newmill.com)](https://arcat.com/rfi?action=email&company=New%252BMillennium%252BBuilding%252BSystems&message=RE%253A%2520Spec%2520Question%2520(05210mil)%253A%2520&coid=35565&spec=05210mil&rep=&fax=260-868-6002);Web: <https://www.newmill.com>

\*\* 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 the provisions of Section 01 60 00 - Product Requirements.

\*\* NOTE TO SPECIFIER \*\* Edit the following General paragraphs as required and applicable to the project requirements. Delete the paragraphs that are not.

* 1. PRODUCTS
		1. Provide Steel Joists in conformance with SJI - Standard Specifications, Load Tables and Weight Tables for Steel Joists and Joist Girders.
		2. Open Web Joists Members: SJI Type

\*\* NOTE TO SPECIFIER \*\* Select the Type(s) required from the following paragraphs and delete those that are not applicable.

* + - 1. Open Web Steel Joists (K Series).
			2. Longspan Steel Joists (LH Series).
			3. Deep Longspan Steel Joists (DLH Series).
			4. Joist Girders.
			5. Composite Joist (CJ Series).
		1. Bridging: Provide bridging of material, size, and type required by SJI Standard Specifications for type of joist, chord size, spacing, and span.

\*\* NOTE TO SPECIFIER \*\* Select the following paragraph if ceilings are attached to bottom of joists. Delete if not applicable.

* + 1. Furnish ceiling extensions, where indicated on the Drawings, either extended bottom-chord elements or a separate extension unit to support ceiling construction load indicated on the Drawings. Extend ends to within 1 inch (25 mm) of finished wall surface unless otherwise indicated.
		2. Carbon-Steel Bolts and Threaded Fasteners: ASTM A 307, Grade A (ASTM F 568M, Property Class 4.6), carbon-steel, hex-head bolts, and threaded fasteners; carbon-steel nuts; and flat, unhardened steel washers.

\*\* NOTE TO SPECIFIER \*\* Select one of the following paragraphs and delete those not required.

* + - 1. Finish: Plain, uncoated.
			2. Finish: Hot-dip zinc coating, ASTMA153/A153M, Class C.
			3. Finish: Mechanically deposited zinc coating, ASTM B 695, Class 50.

\*\* NOTE TO SPECIFIER \*\* Select the following paragraph if permanent bolted connections of joist ends or splicing using high strength bolt is required.

* + 1. High-Strength Bolts, Nuts, and Washers: ASTM A 325, Type 1, heavy hex steel structural bolts; ASTM A 563 heavy hex carbon-steel nuts; and ASTM F 436 hardened carbon-steel washers.

\*\* NOTE TO SPECIFIER \*\* Select one of the following paragraphs and delete those not required.

* + - 1. Finish: Plain, uncoated.
			2. Finish: Hot-dip zinc coating, ASTMA153/A153M, Class C.
			3. Finish: Mechanically deposited zinc coating, ASTM B 695, Class 50.
		1. Furnish miscellaneous accessories including splice plates and bolts required by joist manufacturer to complete joist assembly.
		2. Welding Materials: AWS D1.1; type required for materials being welded.
	1. FINISH
		1. Steel joists and joist girders shall be properly cleaned and primed with one coat of manufacturer's standard shop primer in accordance with the SJI Standard Specifications.
1. EXECUTION
	1. EXAMINATION
		1. Do not install joists until supporting construction is in place.
		2. If supporting construction 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 in accordance with SJI Standard Specifications.
	3. INSTALLATION
		1. Install in accordance with SJI Standard Specifications.
		2. Erect steel joists and joist girders as indicated and in accordance with the reviewed and accepted submittals and the SJI Standard Specifications and Code of Standard Practice for the type of joists and joist girders indicated. Conform also with applicable requirements of AISC Specifications for Structural Steel Buildings - Allowable Stress Design and Plastic Design.
		3. Align and adjust joists and joist girders accurately before fastening. Tolerances shall conform with AISC Code of Standard Practice for Steel Buildings and Bridges. Fastening of splices of compression members shall be performed after the abutting surfaces have been brought into contact. Bearing surfaces and surfaces that will be in permanent contact shall be cleaned before the members are assembled. Splices will be permitted only where indicated.
		4. Set joists and joist girders accurately at the established lines and levels. Joists and joist girders shall be plumb and level (with indicated allowance for camber) before bolting is commenced. Temporary bracing shall be provided as required and shall be kept in position until completion of erection, anchorage, and bridging installation.
		5. Frame openings greater than 18 inches (450 mm) with supplementary framing.
		6. Do not permit erection of decking until joists are properly bridged and secured.
		7. Install horizontal bridging for top and bottom chords as indicated and in accordance with the SJI Standard Specifications and Code of Standard Practice.
		8. Do not field cut or alter structural members without approval of Architect/Engineer.
	4. FIELD QUALITY CONTROL
		1. Section 01 40 00 - Quality Requirements.
	5. TOUCH UP AND CLEANING
		1. After erection, spot prime and touch up all field bolts, field welds, and abrasions to the shop coat. Clean surfaces properly as required for primer adherence and as required to prevent corrosion. Use the same primer as was used for shop priming.
	6. PROTECTION
		1. Protect installed products until completion of project.

END OF SECTION