Company	Products Offered	Product Descriptions
All View System **www.allviewsystem.com** **787.786.9878**	**JoistLab v1.0a + Girders Module**	Windows-based software to analyze, design, and detail steel joists and joist girders, following SJI design specifications. First and only ready-to-use software with such capacities available in the market.
Canam Steel Corporation **www.canam.ws** **301.874.5141**	**Open Web Steel Joists—SJI**	Developed to provide structural support of floors and roofs of buildings. Economical and lightweight, with easy installation. Allow for passage of pipes, ducts, and conduits. Specific load design ability per job requirements.
	Joist Girders	Open web steel trusses used as primary framing members. Designed to allow for a growing need for longer span primary members, with more efficient steel usage.
	Joists Longer than SJI Specifications	Extend allowable clear span of open web joists permitting freedom of floor plan design. Spans in excess of 230' are achievable with special design and field bolted splices.
	Complex and Specially Shaped Joists	Area of expertise of Canam fabrication and engineering teams. Included are bowstring, barrel, scissor, and serpentine shapes and many more designed with structural integrity for an aesthetically pleasing project.
New Columbia Joist Company **A subsidiary of Bouras Industries, Inc.** **www.njb-united.com** **800.631.1215**	**K Series Short Span, Open Web Steel Joists**	A complete line of Steel Joist Institute-specified short span joists from 8" deep up to 30" deep is offered with standard gray shop primer. Special coatings are available upon request.
	LH/DLH Series Long Span, Open Web Steel Joists	Steel Joist Institute-specified long span and deep long span joists are produced up to lengths of 150' (field spliced). Standard gray shop primer and a variety of special coatings are available.
	Open Web Steel Joist Girders	Full series of Steel Joist Institute-specified steel joist girders are offered with standard gray shop primer and available special coatings.
	Special Profile LH, DLH and Joist Girder Series Open Web Joists	A wide range of special joists types are available, including gable, bowstring, curved (top chord curved and parallel "rainbow" curved), square ended, and top chord pitched profiles. Standard primer and a variety of "finished" coatings can be applied to any of these joist profiles.
Nucor Vulcraft Group **www.vulcraft.com** **435.734.9433 Brigham City, UT** **607.529.9000 Chemung, NY** **843.662.0381 Florence, SC** **256.845.2460 Fort Payne, AL** **936.687.4665 Grapeland, TX** **402.644.8500 Norfolk, NE** **260.337.1800 St. Joe, IN**	**Steel Joist Products**	Nucor Vulcraft Group is the nation's largest producer of steel joists, joist girders, and steel deck. Vulcraft also produces highly engineered products, such as composite floor joist. Vulcraft's seven facilities across the United States produce roughly 800,000 tons to 1 million tons of joist and deck each year. Vulcraft supplies products for a range of structures: from high-rise office buildings and large industrial complexes, to pump house buildings and schools. A variety of joist and joist-girder configurations are available for architectural consideration, including arched chord, bowstring, scissor, and single- and double-pitched designs. Vulcraft's engineers are experienced with customized applications. Vulcraft products, made from more than 90% recycled materials, have been essential elements in green buildings. They also support famous venues such as the Olympic Speed Skating Oval in Utah, home of "The Fastest Ice on Earth," and the second-largest skylight in the nation at the Opryland Hotel in Nashville, TN.
Quincy Joist Company **www.quincyjoist.com** **850.875.1075 Quincy, FL** **623.386.1900 Buckeye, AZ**	**Open Web Steel Joists, Long Spans, and Joist Girders**	Combination of state-of-the-art machinery and equipment and expert staff. Engineering department is capable of handling the most mundane to the most complex structures. QJC is committed to excellence in customer service, quality products, superior engineering, and on-time deliveries.
Socar, Incorporated **www.socarinc.com** **843.669.5183 Florence, SC** **419.596.3100 Continental, OH**	**Specialty Joists**	Bowstring joists, rainbow joists, gable joists, and piggyback joists.
	Steel Coating	Unpainted and painted. Standard gray, galvanized, and stainless steel.
Steel Joist Institute **www.steeljoist.org** **843.626.1995**	**75-Year Manual 1928-2003**	75-Year Manual with complete listing of live and dead load tables through 75 years, since 1928. Provides investigative procedures and time saving data when analyzing existing structures.
	Safe Erection of Open Web Steel Joists and Joist Girders—Video	32-minute video on safe erection of open web steel joists and joist girders. Includes pre-erection safety planning, proper handling, proper bridging for lateral stability during erection, and panelization.
	Technical Digest #3—Ponding	Technical Digest #3 on selection of steel joists for flat roofs to resist loads from accumulated water and the structural behavior of steel joists under these conditions.
	Technical Digest #11—Design of Joist Girder Frames	Technical Digest #11 on structural design using the joist girder/rigid frame concept to create a more economical structure.

Company	Products Offered	Product Descriptions
SMI Joists **www.smijoist.com** **800.308.9925**	**Long-Span Steel Joists, Deep Long-Span Steel Joists, and Joist Girders**	SMI Joist division produces long-span steel joists, deep long-span steel joists, and joist girders with coast-to-coast production facilities and nationwide service. SMI's goal is to deliver products that exceed customers' expectations on time, every time. An in-house joist test lab demonstrates SMI's commitment to improved production practices through research and development projects. SMI Joist's customers use technical centers for engineering, detailing, and construction solutions—what SMI calls value engineering. SMI Joist is part of the CMC Steel Group of Commercial Metals Company (NYSE:CMC) headquartered in Irving, TX. Since 1915, CMC has been recycling and manufacturing all types of metals, from aluminum to zinc.
Valley Joist, Inc. **www.valleyjoist.com** **800.633.2258**	**K Series, LH, and DLH Joists and Joist Girders**	Valley Joist is a manufacturer of steel joists (K Series, LH, DLH and joist girders) and steel deck (roof deck, composite deck, and form deck). Valley Joist also fabricates a wide range of non-standard joists and joist girders including bow strings, rainbow joists, single pitch, double pitched, scissor joists, and gable joists. Valley offers customers one-stop shopping and provides quick service. Valley offers full customer service, beginning with a computerized detailing department. Complete AutoCAD placement drawings are produced for each customer's building. Valley's fleet of trailers and modern tractors deliver products the morning construction begins. Valley Joist has delivered buildings as far north as Alaska, as far south as Puerto Rico, and as far west as the Marshall Islands.

Product Case Study

Nucor Vulcraft Group—The Prairie School

By Cliff Glickman

The Prairie School in Racine, WI hosts students from pre-kindergarten to pre-college. Built in 1965, the school needed to expand its field house to keep up with its growing needs.

In November of 2003, construction was initiated for a 68,000 sq. ft addition that included a new locker room, fitness and weight training areas, a field house, and a track. The primary framing system consisted of a braced, compound-curved steel frame supporting long span barrel vaulted steel joists at the roof with precast plank supported on a steel frame and load bearing masonry walls at the floor. The structure was supported on conventional spread footings. The building featured large areas of clerestory glazing and curvilinear form.

The school's leaders wanted the roof to match the existing building. But the depth of the joists required—22'—was nearly twice the industry's upper limit for most projects. That's when Nucor's Vulcraft team in Norfolk, NE got to work.

"From a production perspective, I can tell you that this project was probably the greatest challenge that I have been involved with in the 27 years I have been at Vulcraft," said Jim Jensen, production supervisor for Vulcraft Nebraska.

"I've never worked with such large joists in my career, particularly curved ones," said Peter Jundt, project manager for general contractor Bukacek Construction.

Steel joists by Nucor Vulcraft Group.

Because of the depth and the length of the joists, Vulcraft couldn't use its regular rigging area to assemble them, so the company built additional stands and other assembly equipment.

The shape of the joists made the project more challenging still. There was more arc in the joists than a typical arched project. And because the joists were arched, the Vulcraft workers did not have a flat surface to square off of or to use as a starting point to reference all other set-up dimensions. To create a starting point, the team decided to use columns in the joist plant itself for reference. A string line between columns became the reference point. Draftsmen tilted the joists to make room for them to fit in the bay. The team moved the center of each joist 50' to the right of center to provide the necessary room.

The welders on the rigging table were not long enough to get to the end of the joist, so joist maintenance rovers made extra long welding leads. The columns were 30' apart, which greatly increased the distance between reference points, which in turn increased the chance for errors in set-up.

"We came up with the idea of a tension rod at the seat of the joist," said Vulcraft district sales manager Dennis Bloomquist. "This enabled us to fabricate a shallower joist and also gave us more head room."

Matching the scale of the joists, the gusset plates on the ends were also huge. They had to be lifted with a crane and had holes for large turnbuckles to fit through on the job site. The holes between gusset plates and the overall length were critical. The team managed to produce all five chords in one day.

"The team at Vulcraft did an outstanding job in getting [these joists] drawn up and built, but the real test was going to be in the setting. And when everything went in place as if it had grown there, we were all smiles!" Jundt said. ★

Cliff Glickman is a senior counselor for Eric Mower and Associates.