

# Reducing Joist Costs

**T**he Steel Joist Institute offers the following advice to help engineers economically specify steel joists and joist girders:

**Joist Camber**—Steel Joists are furnished with standard camber as described in the Steel Joist Institute specification for K, LH/DLH and Joist Girders. SJI camber tables are developed using a fixed radius with the chord segment equal to the joist span. When job conditions require other than the standard amount of camber, the specifying professional must so advise the joist supplier through proper instructions on the contract drawings. Special cambers usually incur an additional manufacturing cost. The specifying professional should be aware that camber is not related to actual “dead-load” deflection.

**Joist Bearing Lengths**—Due consideration must be made with respect to providing proper bearing length for joists. If the joists are butted over a beam, consideration must be given to selecting a beam with sufficient flange width to accommodate the minimum bearing required by SJI: minimum bearing on steel for K series joists is 2 ½ inches, and 4 inches for LH series joists.

**Joist Connections**—The specifying professional must provide the connection design for the joist or Joist Girder seat when other than the SJI minimum end anchorage is required.

**Special Loading Conditions**—When special loadings are required and KCS joists are not feasible the specifying professional must provide a complete load diagram showing the location and magnitude for all loads.

**Roof-Top Units (RTU)**—Detailing and fabricating time can be wasted through delays incurred due to obtaining exact location and weight for roof top units. Having this information available when the project is awarded saves time and money for all parties involved. Incomplete or missing information for special loading conditions may result in delays in obtaining a timely joist delivery. When RTU information is not available the specifying professional shall, if applicable, select a KCS joist, and specify field-applied struts to accommodate point loads.

**Double-Pitched Joist**—Nominal or design depth for standard double-pitched top chord joists is the depth at the center. Nominal or design depth for special non-symmetrical double-pitched top chord joists is the high point (or ridge) of the top chord. A building section or joist diagram should be provided when special top chord pitch or a special end depth is required.

**Roof Ponding**—When joists are used in a roof system, the roof should be provided with adequate drainage or slope to prevent the accumulation of rainwater. If this is not the case the specifying professional must perform a ponding investigation. Please refer to the Institute’s *Technical Digest #3 – Structural Design of Steel Joist Roofs to Resist Ponding Loads*.

**Joist Girder Loading**—When joist girders cannot be designated in the normal xxGxxNxxK format due to unequal panel point loading or unequal panel point spacing the specifying professional shall furnish a diagram. End reactions for joists with special loads must be calculated by the specifying professional and indicated at the proper location on the joist girder diagram.

**Floor Joists**—When applicable steel joist/concrete floor slabs should be checked for vibration by the specifying professional. Reference Steel Joist Institute *Technical Digest #5 – Vibration of Steel Joist-Concrete Slab Floors*. A computer program is also available through the Institute to assist the specifying professional in calculating vibration data.

For more information on joists, contact the Steel Joist Institute—phone 843/626-1995; fax 843/626-5565; [www.steeljoist.org](http://www.steeljoist.org).