



**THE PROCESS OF SPECIFYING JOISTS:
IT'S SIMPLE:
DEAD, LIVE AND SNOW LOADS, EFFORTS
AND DESIGN CRITERIA**

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SUMMARY

This article focuses on the specifications of joists in terms of dead, live and snow loads, efforts, design criteria and their simple nature.

THE PROCESS OF SPECIFYING JOISTS: IT'S SIMPLE

Open-web steel joist design is governed by CSA S16-01, under section 16. The joist manufacturer has to follow this specification when designing joists. However, the joist manufacturer depends on the information provided by the structural engineer. It is important for the structural engineer using joists for his project to know the necessary information to provide to the manufacturer's engineer in order for the joists to be designed properly.

Loads

The loads acting on a joist should be clearly identified on the structural drawings. Dead load and live load should be broken down and be specific for each different area of the building. Snow accumulation should be shown with diagrams where they apply. Wind gross uplift should be indicated with the help of a diagram instead of a general statement, if the uplift varies throughout the building. Any concentrated loads such as roof top units, sprinkler mains or cranes should be clearly identified on the plan view of the building, with their magnitude and location.

Forces

External forces to be resisted by joists need to be shown on plan views. Joists being part of moment frames should have their end moments broken down by load types. A schematic of how the end moments are transferred from the joists to the supporting structure should be shown on the engineer's drawings. Knee braces, kickers, wind posts or other pieces transferring loads to joists should be clearly identified on the drawings. The direction, magnitude and type of loads are essential information the joist designer will need to carry out a sound and economical design.

Design Criteria

Any special design criteria should be indicated and specified on the drawings. Maximum allowable deflections, minimum inertia and ULC fire rating are just a few examples of specifications that can greatly influence joist design.

Complete = Simple

As complex as a joist can be in its shape and geometry, loading and performance criteria, the process of specifying joists can remain simple if all information required to perform the design is shown.



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