

# Expansion Joint Considerations for Buildings

4. If the building will have fixed column bases, decrease the allowable length by 13%.

5. If the building will have substantially greater stiffness against lateral displacement at one end of the plan dimension, decrease the allowable length by 25%.

When more than one of these design considerations prevails in a building, the percentage factor to be applied should be the algebraic sum of the adjustment factors of all applicable conditions.

Buildings with a large horizontal dimension will require expansion joints. There are no exact requirements that state when expansion joints should be used, but the best practices use Figure 1 as the guide on the maximum allowable spacing between joints. Because there is a cost associated with each expansion joint, the general preference is to use fewer joints with a larger spacing between joints rather than more joints with a smaller spacing.

ENR 7 B d lays out a thorough procedure on how to determine the design temperature change. Unless more specific site information is available, most engineers assume a range of 50° to 70° F for continuously heated and air-conditioned buildings. Using that assumption, most steel, rectangular, framed construction buildings with symmetrical stiffness can tolerate 600 ft between expansion joints. This may be reduced based on thermal exposure data and irregular geometric configurations.

#### Where to Locate Expansion Joints

Several locations should be considered when placing an expansion joint. Locations where differential movement is likely are prime locations, such as at the connection between a building addition and the original construction, or where different materials come together. For example, if steel decking and precast plank abut each other, this is an excellent location for placing expansion joints.

### Additional Information

- ▶ [www.nap.edu](http://www.nap.edu) [www.aisc.org](http://www.aisc.org)
- ▶ [www.steeltools.org](http://www.steeltools.org)
- ▶ See De G [www.aisc.org](http://www.aisc.org), I [www.aisc.org](http://www.aisc.org) B [www.aisc.org](http://www.aisc.org) R [www.aisc.org](http://www.aisc.org)  
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