



# TECHNICAL BULLETIN 131

## Subject: Perimeter Edge-of-Slab Fire Barriers used with Expansion Joints

This technical bulletin explains the differences between life-safety fire-rating solutions for a building structure.

Edge-of-slab fire stopping products, also known as perimeter joint barriers, are used to prevent the spread of fire through the gap between the perimeter edges of floor slabs and the cladding or curtainwall envelopes on building facades. Movement joint fire barriers, also known as expansion joint fire barriers, are used in building expansion joints designed for thermal and often-times seismic building movements. There are key differences between the two:

**MOVEMENT CRITERIA** - though industry standard test criteria allow for testing of movement ranges, perimeter barriers rarely have the same expansion and contraction requirements. Most perimeter barriers on the market are limited to 10-15% opening or closing from their nominal, or installed, position. This is due to the accepted fact that the gaps between edge-of-slabs and curtainwalls do not experience any significant degree of cyclic movement. By contrast, movement joint fire barriers are typically tested and rated for a minimum of 50% movement up to a maximum of 100% movement.

### EXAMPLE:

*Assume that a 3" (80mm) building expansion requires thermal or seismic movement of +/-50% movement. This would dictate that a fire barrier be tested and rated for a minimum joint gap size of 1.5" (40mm) and a maximum joint gap size of 4.5" (114mm). The total movement required is known as the movement range.*

*A movement joint barrier tested and listed for +/-50% movement for a 3" (80mm) gap would meet the example requirement above. A perimeter barrier tested for the same 3" (80mm) gap but only having +/-15% movement would by definition only be rated to a minimum joint gap of 2.67" (68mm) and a maximum joint gap of 3.6" (92mm).*

*In the unlikely event a perimeter barrier was tested and listed for +/-25% movement, it would only be rated for a minimum gap of 2.36" (60mm) and a maximum gap of 4" (100mm). Even the assumption of +/-25% movement for a perimeter barrier would still fail to meet the example movement requirement.*

*It should be noted that a barrier that can be rated at two different gap openings is far different than a barrier that was cycled to two different gap openings and still passed the endurance test. Marketing literature should be studied closely, and any ambiguities explained in writing by the manufacturer when comparing movement ratings between the two types of barriers being discussed in this brief.*

**ENDURANCE RATINGS** - both perimeter and movement joint fire barriers are tested for an hourly endurance rating. Most movement joint barriers are tested for 2, 3 or 4-hour endurance ratings. Some perimeter joint barriers carry ratings of only 30 minutes up to 77 minutes. If a floor assembly is designed for two hours, then any barrier within that assembly must carry an equal endurance rating. Specifiers should check marketing materials carefully when considering whether to use a perimeter barrier in a movement joint application.

**TRANSITIONS** - if perimeter joint barriers were used in horizontal interior movement joint applications, any vertical joint fire barriers would be transitioning into dissimilar materials and technology. The non-rated intersection would be a breach of life-safety continuity. The horizontal to vertical transition should use identical movement technology.

- See summary on page 2 -

## SUMMARY

1. Perimeter fire barriers are designed for edge of slab conditions. Movement joint fire barriers are designed for joint gaps within the slabs.
2. Perimeter barriers generally have significantly less movement ranges than movement joint barriers.
3. Perimeter fire barriers may have significantly less hourly endurance ratings that do not meet the project specifications.
4. For structures that require horizontal and vertical fire barriers, the use of a perimeter fire barrier in a horizontal movement joint gap will preclude a rated transition to the vertical fire barrier used in walls.
5. The use of a properly tested and rated barrier designed for the application is a life-safety issue. The misapplication of a product, whether for convenience or for cost, poses a risk to the public. Authorities Having Jurisdiction deserve a “best practice” solution from Specifiers and Designers responsible for choosing them.