How Far Can That Mullion Go? L/175? ¾" Maximum?

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The original source of these deflection limits is a bit hazy, but they came out of the glass industry. The 1/175 of span limit apparently evolved from a more conservative 1/225 of span limit. The 1/175 of span limit was used in the testing of glass to determine its strength. In the case of ASTM E-1300 it's used as a criterion both in the computer models that produce the design chart curves and in the testing done to verify the modeling.

The ¾ inch limit apparently came about as a limit on the deflection of members supporting the edges of insulating glass (IG) units to prevent failure of the edge seals. Further justifications for the ¾ inch limit included the discomfort of building occupants having to see large deflections of the framing members.

Architectural specifications and other standards simplified these limits to the minimum of 1/175 of the span of the framing member or ¾ inch maximum. While this limit was perfectly accurate for a single span member supporting a single light of glass, it sometimes resulted in overly conservative limits for longer span members supporting multiple lights of glass such as curtain wall mullions.

In 1996, the American Architectural Manufacturers Association (AAMA) published a Technical Information Report (TIR) titled "Maximum Allowable Deflection of Framing Systems for Building Cladding Components at Design Wind Loads" and more commonly referred to as "TIR A-11." This document suggests design deflection limits for a span "L" of L/175 for spans up to 13 feet 6 inches and L/240 + ¼ inch for longer spans up to about 40 feet.

It should also be noted that the limits suggested in TIR A-11 may need to be further restricted for such reasons as preventing the tearing of sealant, the supported cladding including brittle materials such as stone or brick, or to prevent disengagement of framing and trim. They are also applicable only to the deflection perpendicular to the plane of the glass caused by wind and similar loads. Other load cases such as blast loading may allow for larger deflections, and others such as dead load could require more restrictive limits.