



1. Tall spans for curtain wall:

- a. Sometimes there is no support locations from the structure where you might expect (stair locations are some). If the structural engineer of record does not show a connection, coordination is required.
- b. Two-part open shapes do not perform as well as tube shape mullions and must be reinforce more.
- c. Lateral buckling of open shapes is an issue from the code – manufacturers sometimes advocate anti-buckling clips but have no testing to prove. Lateral bracing needs to be physical horizontal members according to code.
- d. Span heights may be more than the manufacturer stock lengths requiring ugly/expensive structural splice joints if not in spandrel.

2. Vertical structural movement joints – (horizontal joints between stories):

- a. 95% of contract documents reviewed require accommodation of vertical structural building movement.
- b. Accommodation of vertical structural movement (and thermal expansion) – manufacturers standard details only consider maximum $\frac{1}{4}$ " of vertical structural movement – This is not enough in 100% of the projects we have worked.
- c. Structural drawings rarely give the actual amount of building structural movement which must be accommodated.
- d. The code allowance for building structural movement is $L/360$ which for a typical 30' steel beam gives 1" of structural movement which is too much for stick-built standard curtain wall details. Unitized has horizontal joints to accommodate.

3. Sealant Joints at the head of curtain wall:

- a. These joints must be designed to accommodate building structural movement.
- b. Typical design formula requires about 2x the movement (i.e. max compression of about 50%)
- c. If the code allows the $L/360$ for building structural movement, $L/360$ give 1" movement for a typical 30' beam, then a 2" joint would be required – you can only allow it to compress 50% by joint manufacturer requirements.
- d. If these joints become excessive; typically, over $\frac{3}{4}$ " or 1", then custom manufactured T and F anchors may be required. Manufactured T and F anchors have very limited movement capacity inside the mullion.

4. Jamb mullions may require extra reinforcing:

- a. The weather sealant joint from the mullion to the structure requires design to accommodate wind deflection of the jamb mullion.
- b. If the jamb moves too much for a typ $\frac{1}{2}$ " joint, either reinforce mullion or increase width of joint or move to 100% movement sealant.



5. Movement joints at the head of storefront – Receptors:

- a. 95% of contract documents require accommodation of vertical structural building movement in SF specs.
- b. Architectural details are typically deficient showing shimmed head joints allowing for zero “0” structural movement.
- c. If storefronts are more than 15’-18’ long (horizontally), then it is likely they need to have receptors at the head.
- d. Receptors only accommodate about ½” maximum vertical structural movement – actual structural movement may be more, requiring a curtain wall system.

6. Corner Modeling – 3d structural modeling should be performed:

- a. Short return curtain wall and storefront sections may get pulled out by wind loads and require additional steel reinforcing to help with the joint between glazing systems and structure.
- b. Minimum bite requirements at corner mullions do require checking by specifications for in-plane movement created by wind load at corners. Maximum bite loss in plane is 1/4”

7. Sunshades:

- a. Significant snow and drift load may be required as loads for design.
- b. Pictures and studies have shown damage to insufficient storefront mullions.
- c. These loads must be modeled/accounted for in curtain wall and storefront designs.

8. Vertical Sunshades and Mullion extensions:

- a. Deep cap extensions (12” or more) will add in-plane wind loads to glazing systems.
- b. Manufactures have not designed their systems to accommodate lateral deflections in the plane of the glass pocket associated with in-plane wind loads.
- c. Contract specifications place a maximum lateral deflection of 1/8” in the plane of the glass – which may require significant reinforcing to achieve.

9. Insulated Glass Units – delegated design may be required:

- a. Some 088000 specs require delegated design submittal by PE
- b. SSG units should be designed and require different spacers and secondary structural sealant design to transfer loads through IGU.

10. Door Headers:

- a. Watch for long headers over entries which may require significant engineering to limit deflections and possible steel reinforcing to verticals framing the opening
- b. Automatic door manufacturers have specific requirements for minimizing deflection and movement if framing to curtain wall.

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