



The Top 10 Items Commonly Missing from Fenestration System Shop Drawings

Shop drawings, for glass and aluminum windows, curtain walls and skylights, must document and detail all requirements of design parameters, material ordering, fabrication and erection. Failure to properly document these requirements can result in numerous errors and project delays. In order to provide a reminder of key elements of successful shop drawings, members of the Glass Association of North America (GANA) Building Envelope Contractors Division developed the following list of the Top Ten items commonly missing from fenestration systems shop drawings:

10. **Dimension limits of movements for all moving joints and provisions for expansion and contraction.** Shop drawings should detail and dimension how the system will accommodate building live load deflections and column shortening.
9. **Relative layout of walls, beams, columns and slabs with dimensions noted.** Dimension all the tolerances required for installation or that can be accommodated by the system. This is critical for alignment of sealant substrates and anchorage substrates provided by adjacent construction.
8. **Perimeter sealant joint sizes, including tolerances and minimum/maximum joint sizes required.** Perimeter joint sizes and tolerances are critical details to ensure proper fabrication and installation.
7. **Location of anchorage points for the system and identification of the reaction loads imposed on the structure, including dead load and wind load reactions at each anchor location.** Proper design, fabrication and erection can not begin without detailed anchorage requirements. This is necessary for preparation of structural calculations. The location of the anchor points can sometimes be moved or adjusted for improved structural performance.
6. **Glass designated as fire break-out lites, location of decals used to identify glass, and decal design.** Shop drawings must provide detailed information about the building code requirements for the location of fire break-out lites and the means of identification.

5. **Building elevations showing the wind loads for each portion of the building including corners and wall areas adjacent to corners.** Elevations with designated wind loads will ensure proper evaluation of glass strength requirements and identification of areas of the building requiring additional glass strength to meet the design loads. These areas must be defined during preparation of structural calculations and therefore, should be shown on the shop drawings.
4. **Detailed requirements for insulation materials, firesafing materials, vapor retarder materials and the installation.** Proper documentation and coordination of these materials with the exterior façade materials is vital to ensure proper design and installation.
3. **Designation of the path for water drainage from the system.** Detailing must include the collection, control, containment and evacuation of secondary water infiltration from the glazing channel, the perimeter surrounding conditions, and perimeter sealant joints.
2. **Installation instructions for the project.** Immediately following the cover page of the shop drawings, installation instruction and details should be customized for the project, not just “standard details.” The instructions should include the perimeter framing joint conditions, and not just internal typical joinery conditions.

And, the number one item most commonly missing from fenestration system shop drawing is...

1. **Joinery details.** Shop drawings should provide joinery details showing which framing members run thru, and how joints are sealed. Sealant continuity notches should also be included to prevent water infiltration by capillary action in the metal to metal joint and internal seals should be detailed throughout the drawings.

For additional information on fenestration system shop drawings and successful project management, consult the Glass Association of North America (GANA) Building Envelope Contractors Division’s Project Managers Reference Manual. Find these and additional resources on the GANA website www.glasswebsite.com.

The Glass Association of North America (GANA) has produced this Glass Informational Bulletin solely to provide general information as to the important elements of fenestration system shop drawings. The Bulletin does not purport to state that any one particular system, process, or procedure should be used in all applications or even in any specific application. The user of this Bulletin has the responsibility to ensure the project specifications requirements are followed. GANA disclaims any responsibility for any specific results related to the use of this Bulletin, for any errors or omissions contained in the Bulletin, and for any liability for loss or damage of any kind arising out of the use of this Bulletin.

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