

Curtain wall performance

Meeting the building team's design and fire code requirements for Sapphire Towers was only the beginning. Because of the large amount of fire-rated glazing used for the building's envelope, the system also had to meet additional performance requirements that are generally required for curtain wall applications.

Starline needed to demonstrate that the system would not leak and that it was structurally sound to meet inter-story drift requirements. To accomplish this, Starline and Safti First enlisted an independent test lab to subject the fire-rated assembly in to the following test procedures:

- Air infiltration testing per ASTM E 283-04.
- Water penetration resistance testing per ASTM E 547.
- Repeat water penetration resistance testing per ASTM E 331.
- Wind load deflection testing per ASTM 330.
- Structural load testing per ASTM E 330.
- Forced entry testing per ASTM F 588.

In addition, the fire-rated system also had to meet energy performance and sound attenuation requirements, because large amounts of glazing means an abundance of natural light in addition to the potential to have large amounts of heat and noise.

Safti First supplied samples of the fire-rated assembly to Intertek Group PLC, London, where it was tested for thermal transmittance, U-value and solar heat gain. The results were presented to the National Fenestration Rating Council, Greenbelt, Md., that granted NFRC labels for this project with the following results:

- U-value: 0.40
- SHGC: 0.34

For noise abatement, the system had to meet a 38 Sound Transmission Class rating up to the 12th floor, and a 35 STC rating from the 14th floor to the 33rd floor. SuperLite II-XL 45 minute inherently has a 40 STC rating, and with the addition of the low-E glass and ¼-inch Versulex Blue on the outboard lite the system would be able to meet and exceed the STC requirements for this project.