

TECHNICAL OVERVIEW: STC RATINGS IN PRECAST DOUBLE T'S

Sound Transmission Class (STC) quantifies a partition's ability to block airborne sound, as defined by ASTM E413. Precast double T (TT) concrete elements are widely used in floors and roofs for their structural and acoustic advantages.

Double T Structure and Acoustic Properties

Double T members have two parallel webs and a wide flange, cast from dense concrete ($f'c \geq 5000$ psi). The element's mass is the primary factor in sound attenuation: thicker, denser concrete yields higher STC ratings.

Typical STC Ratings

- 8-inch stem, 2.5-inch flange: STC 45–50
- 12-inch stem, 3-inch flange: STC 50–55
- Assemblies with added concrete topping and acoustical ceiling: STC 55+

These values are based on lab tests (ASTM E90). Field performance may be lower due to joints, flanking, or penetrations.

Acoustic Detailing

Sound leakage often occurs at joints and penetrations. Using elastomeric sealants, continuous toppings, and acoustic ceiling systems under the slab improves the overall STC rating. For code compliance (e.g., IBC STC 50 minimum for dwelling separations), composite assemblies are recommended.

Conclusion

Precast double T's, properly detailed and installed, typically deliver STC ratings from 45 to 55, sufficient for most commercial needs. Higher ratings are achievable with additional acoustic treatments. Always confirm with lab data and consult manufacturers for project-specific values.

