

Project Brief

Pillsbury Towers Joist Strengthening



Minneapolis, MN, USA
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The 38th and 39th floors of Pillsbury Tower required strengthening for additional loads associated with new high-density filing systems. Conventional materials were originally specified for the strengthening of the floor system. The conventional strengthening method required the pouring of concrete and assembling of steel that posed feasibility challenges.

The consultant identified joists that required additional shear and positive/negative flexural strengthening due to the new loads. The strengthening had to take place in the occupied space on the 37th floor during nights and weekends.

Up to five layers of Tyfo® SCH-41S unidirectional carbon composite was applied to the existing joists for positive moment flexural enhancement. Required shear strengthening was provided by Tyfo® SEH-51A unidirectional glass composite installed over the flexural SCH-41S carbon and anchored with Tyfo® FibrAnchors™ at the top of the beam face. Negative moment requirements were provided by 24" wide Tyfo® SCH-41S carbon laminates set into recessed areas on the top of the slab over the main beams. The recesses were then filled to provide a smooth surface and protection to the installed carbon composite system. To pull permits with the building department the Tyfo® FC/F fire coating system was applied on the underside of the floor to all surfaces with composite applied. This provided the UBC non-combustible materials requirement for this Type 1 building.

The installation of the value engineered composite system was completed in approximately half of the time allotted for the conventional retrofit. The cost was reduced by approximately 40%. The composite strengthening alternative was cost-effective and installed quickly, reducing the impact on the tenants and owner.

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