

COLUMBIA SQUARE STRUCTURAL STRENGTHENING

Los Angeles, California

OVERVIEW

Columbia Square is undergoing a complete renovation which will feature a 22-story residential tower with 200 apartments, 33,000 square feet of retail space, 3 renovated historic structures, 2 new office buildings totaling more than 330,000 square feet of space and 4½ levels of underground parking (more than the city requires). Due to all of these renovations, several joists, beams and walls in the structure required additional flexure and shear capacity. Fyfe Company was contacted to design a fiber-wrap composite system to provide the strengthening required for the deficient structural members.

The Tyfo® SCH-41 system (unidirectional carbon composite) was selected to provide additional shear and flexural reinforcement to the structural members as required by the engineer-of-record. The beams and joists received the Tyfo® SCH-41 system for both flexural and shear upgrade. The walls received not only the Tyfo® SCH-41 system for both flexure and shear, but also required the use of the Tyfo® SCH composite anchors to develop tension capacity of the fiberwrap into the slabs. After the application of the fiberwrap, the joists and beams received a UL-rated system to provide up to four hours of fire protection in addition to a Class 1 flame and smoke system by using the Tyfo® CFP system.

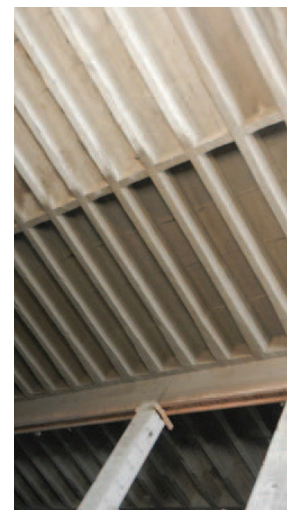
All members were strengthened to the demands specified in a timely manner and with minimal increase in size and thickness. Ultimately, the Tyfo® Fibrwrap® system was able to provide a cost-efficient and innovative solution compared to conventional construction methods.



Proposed renovations at Columbia Square



Tyfo® SCH-41 system



Areas for Tyfo® application