

NORTHWEST DOORS SHEAR TRANSFER

Precast panel: wall-slab shear transfer

OVERVIEW

Northwest Doors purchased two adjoining buildings within the same commercial building complex that did not have direct access to one another. The buildings were divided by existing precasted tilt-up panels. To gain access between buildings, two 20-ft. by 21-ft. openings were formed. By creating these openings, panel to slab steel connections were lost, causing a deficiency in in-plane sliding shear capacity. The Tyfo® system was designed by Fyfe and approved by the engineer of record, Krahn Engineering Ltd., to strengthen the sliding shear capacity. In this instance, Tyfo® BC, a bi-directional glass fiber system (+/- 45° fiber orientation), was the most suitable material to address the situation.

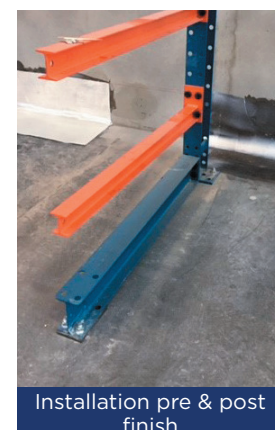
Compared to the alternate methods proposed, the composite reinforcing installed was able to provide a cost-effective and a lower profile solution by avoiding any demolition work that would be required before installing additional steel reinforcement at the joint connections. Fyfe has full scale structural testing that investigated the ultimate shear transfer capacity that the Tyfo® BC system can provide. Using the results of this testing and incorporating the CSA reduction factors, Fyfe Co. was able to achieve the design performance required by the owner. The key performance factor in the design comes from the fibers being oriented at a +/- 45° angle to resist the lateral loads in both directions.

It is important to note that the design of FRP shear transfer is a unique application in that it is not currently incorporated in any design code/guideline. Instead it is designed based on engineering ingenuity and backed by full-scale structural testing.

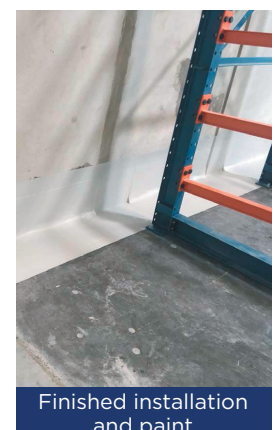


FRP installation at joint

Project Overview	
Project	Northwest Doors Shear Transfer
Location	Langley, British Columbia
Material Quantity	250 sq ft Tyfo® BC
Structural Members Reinforced:	Shear transfer from wall to slab
Unique Detailing:	JT joint transfer system
Owner	Northwest Doors
Contractor	Polycrete Restorations, Ltd.



Installation pre & post finish



Finished installation and paint



FRP installation with 2.5-inch radius