

# Brute Strength and Beauty: No Longer At Odds

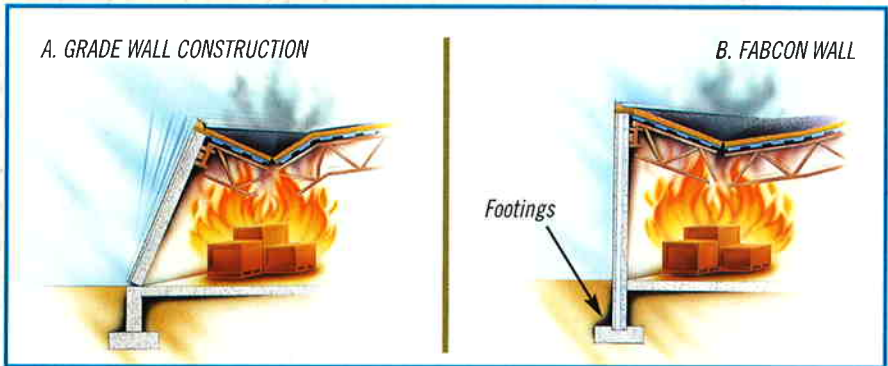
*New wall panel combines the inherent durability of concrete with new aesthetic features*

**T**he cost of commercial buildings is already high, but when building owners face premature replacement costs and high maintenance expenses, costs can easily spiral out of control. There is good news, however, in durable building materials. New advancements in precast manufacturing are making the long-term financial picture of concrete buildings look brighter than ever.

## Built to Last

It's no secret that the structural performances of building materials are far from equal. Follow the path of a tornado through a community of stick-construction homes, farms and a trailer park, and you see firsthand that some structures fare better than others. Natural disasters, such as hurricanes, tornadoes, hail or fire are the most common elements leading to premature facility replacement. In fact, the total cost of fire damage in the U.S. has been estimated at more than \$37 billion each year. Some loss may be unavoidable, but durable building materials can help mitigate the disaster effects.

Durability depends on the ability of a structure to withstand extreme loads. In the case of



Unlike grade wall construction (A), Fabcon panels remain firmly anchored to the foundation beneath the ground (B) and won't break apart under the weight of a roof failure during a fire.

concrete, durability is often reflected by flexural strength, or the ability to resist bending. Measured by loading un-reinforced panels, flexural strength is expressed as "Modulus of Rupture" (MR) in psi. The results of such tests provide designers and constructors with improved methods to predict and assess the resistance of buildings and structures to wind and seismic loads.

The American Concrete Institute (ACI) standard recommends a concrete strength of 5,000 psi for walls. Fabcon significantly exceeds this recommendation with strengths of 8,000 - 11,000 psi. This benefit is fully

realized in flexural load tests in which both ends of a 24-foot precast concrete wall panel are supported and weight is placed in the middle of the span until it sags and breaks. Fabcon panels are tested at more than 30,000 pounds, exhibiting high flexural strength and resistance to cracking.

Concrete construction is, in general, exceptionally strong. It gains most of its strength in the first 28 days, but it continues to gain strength over the life of a building. Because structures have a tendency to degrade over time, rather than improve, concrete is an interesting anomaly. Hydration causes the compounds in cement to elongate. As the compounds lengthen, they intertwine and create an impermeable surface.

This is also the reason concrete walls require minimal maintenance. This is especially welcome due to the price-sensitive nature of the construction market and the increasing costs of facility repair. An occasional, high-pressure wash-down is all that is needed to maintain a concrete finish, and re-caulking about every 15 years helps eliminate fissions that may appear over time.



Following an F3 tornado, Busk Brothers' precast building, utilizing Fabcon's VersaCore™ panels, sustained only minor cosmetic damage. Adjacent buildings, such as the one on the left, were severely damaged or destroyed.



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