THE REALITIES OF GFRP

High strength? Not Really. GFRP boasts high tensile strength - but **only ~55% of it is usable in structural design due to code restriction.**

Doesn't corrode - but does degrade. Concrete's naturally high alkalinity **attacks GFRP.**

Weak in shear. GFRP is anisotropic - strong along glass fibers but weak across them. **Shear strength is poor compared to steel.**

So light it can float. GFRP is only ~25% the density of steel. GFRP bars can float in concrete, requiring more tying time to properly secure.

Extremely flexible. With **only ~30% of the stiffness of steel,** more GFRP material is required to achive the same deflection behavior as steel.

Brittle glass and glue. GFRP is a non-ductile composite of glass fibers in resin. When it fails, it **shatters suddenly** without warning.

Fire drill! At about 500°F, GFRP undergoes **rapid deterioration** while steel carries load beyond 1,000°F.

Longer lap splice than steel. GFRP bond in concrete is inferior to steel bond, requiring longer development and lap splice length.

THE TRUTH? GFRP is not equal to steel.

wirereinforcementinstitute.org