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Central California Bridge Column Shear Strengthening

Three separate Caltrans-owned bridge overpasses in Central California were found to have columns deficient in shear capacity. Caltrans, having experience in wrapping bridge columns with fiber reinforced polymer (FRP) since the late 1980s, proposed an FRP solution. Fibrwrap Construction first performed concrete repair to all locations with spalled and unsound concrete. Fyfe Company's carbonÃ¢â‚¬â„¢Âcomposite Tyfo® SCHÃ¢â‚¬â„¢Â41 system was then applied to the rectangular columns to provide the full shear confinement required.

Because the shear deficiency extended the full height of the columns, excavation down to the footings was required. Once this process was complete, scaffolding was set up to allow access to the full height for the FRP wrap. The columns were then painted with a UV finish coat that best matched the color of the existing structure and provided protection from the strong California sun.

The FRP option ended up being more time- and cost-efficient than the standard concrete/steel jacketing technique. For this reason, Caltrans continues to utilize FRP as a structural strengthening rehabilitative method on their bridges.