



Market:
DOT

Challenge:

Concrete columns and the crash walls of a bridge had begun to spall, exposing the reinforcing bars, and beginning to raise the concern of the structure's integrity.

Engineered Solution:

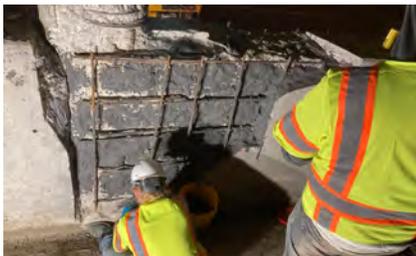
The project plan involved removing loose and spalled concrete sections of both the column and crash wall and replacing the deteriorated areas with new concrete. In addition to the concrete repairs, the columns were wrapped with a carbon fiber composite to provide concrete confinement. This additional step provided a cost-effective and long-term repair, adding extra strength and protection.

Scope:

Damaged sections were marked and jackhammers were used to remove the spalling sections. Sections of the crash wall had deteriorated sufficiently to expose the reinforcing bar. Tie wire was used to restore the rebar back into place. The surface was then media-blasted to remove any remaining loose debris. The concrete form was put up and the new concrete was applied. Once the concrete was set, grinders were used to rough up the surface to ensure the carbon fiber wrap would adhere correctly. Next, the carbon fiber wrap was applied. Finally, the fiber wrap was given a topcoat. The total repair resulted in reinforcing five crash walls and 30 columns.

Solution:

Replacing deteriorated concrete and installing carbon fiber wrap confinement provides a time-efficient economical solution compared to replacement while extending the service life of the bridge.



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