Simplified Full-Depth Precast Concrete Deck Panel Systems; NCHRP Project 12-96

Description

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Abstract :

Full-depth precast concrete deck panels have been widely used in accelerated bridge construction (ABC) in various forms and sizes. As a prefabricated component,current panel design has played a major role in meeting the objectives of ABC by expediting construction, improving quality and durability, improving public and worker safety, and reducing road user impact. Typically, deck panels are connected to the supporting beams by shear connectors in formed openings in panels (i.e., shear pocket) to achieve a composite action between beams and precast concrete deck panels on a bridge. Because these deck panel systems are connected for their full length to the supporting beams, the design is similar to traditional cast-in-place decks. However, constructability poses some challenges. One of the disadvantages of the current system is poor bond between the grout and the panel-soffit. Another disadvantage is the work associated with grouting/concreting the numerous shear pockets and the longitudinal beam haunches. Specifically, the leveling, sealing, forming, grouting, and concreting can be time consuming and require access from above and below the deck. This access requirement may create adverse traffic impacts. A new system that can overcome these constructability challenges by reducing the number of or eliminating the shear pockets would provide additional benefits to this construction technique.

The objective of this research is to develop recommended guidelines and proposed AASHTO LRFD Specification language for the design, fabrication, and construction of transverse full-depth precast concrete deck panel systems that simplify the connection between the deck panel and beam. As a minimum, the proposed systems should consider constructability, inspection during construction, reducing the impact of construction on traffic, and future deck replacement.

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Subject : Deck Panels
Group : Decks
Category : Completed Projects

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