超高耐久床版と鋼桁の接合部の構造的性能及び施工性の検証

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OBJECTIVE

Considering the recent increase in highway bridge deck replacement projects in Japan, an ultra-high durable slab, "Dura-Slab", had developed. A joint system between Dura-Slab and girders was proposed to avoid deck penetrating openings and additional reinforcement in the deck around the joint. Joints were proposed with steel shear studs, holed steel angles and steel bolts and structural and construction quality were studied experimentally. Factor of safety of joints against the design load was studied as well.

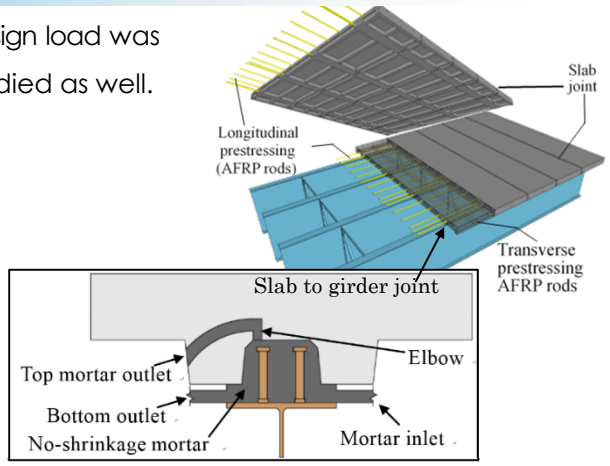

Fig. 1. Dura-Slab structure and the joint

SUMMARY

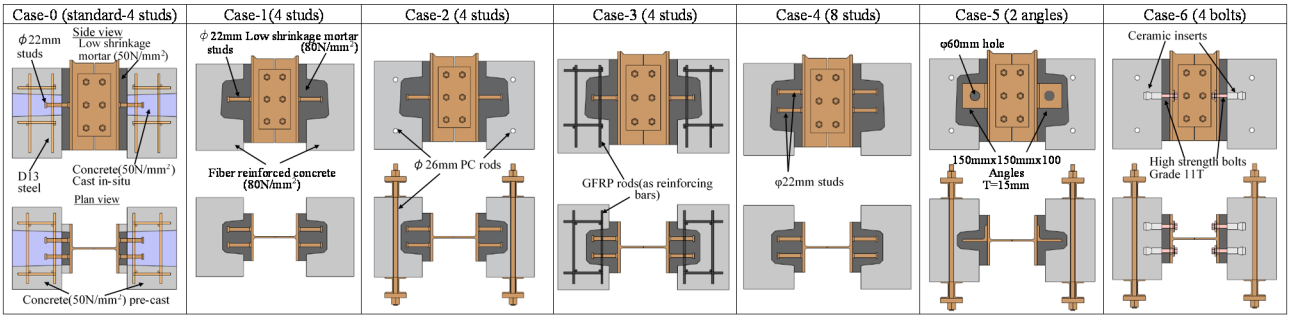

Fig. 2. Conventional (case-0) and proposed joint test specimens

Performance of proposed joints was investigated by conducting standard pushout tests. Seven test cases including a conventional joint and six new joint variations were experimented as shown in Fig. 2 Construction quality was investigated by cutting several specimens of Case-1, 4, 5 and observing the mortar injection quality.

RESULTS

The proposed joints except the bolted joint in Case-6 showed superior structural behavior than the conventional joint as shown in Fig. 3. The failure mode of the new joints was not governed by the concrete failure, hence the provision of additional reinforcement deemed unnecessary while the effect of transverse prestressing may not affect the joint load capacity. Construction quality was considered to be satisfactory according to the cutting results. Experimental load capacity of stud joints showed an ample factor of safety against calculated design loads.

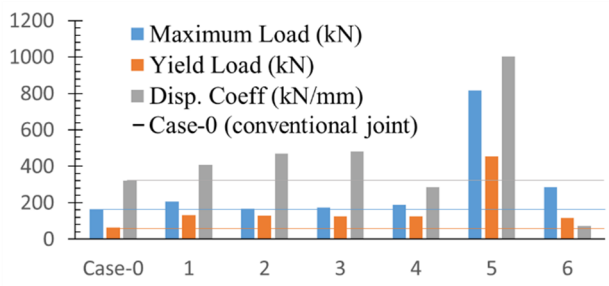

Fig. 3. Experimental results

Structural and Construction Verification of an Ultra-High Durable Deck Slab to Girder Joint

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Key Words : Durability, No shrinkage mortar, Dura-slab, Joint, Stud