

Expressway Construction - 1 Bridge

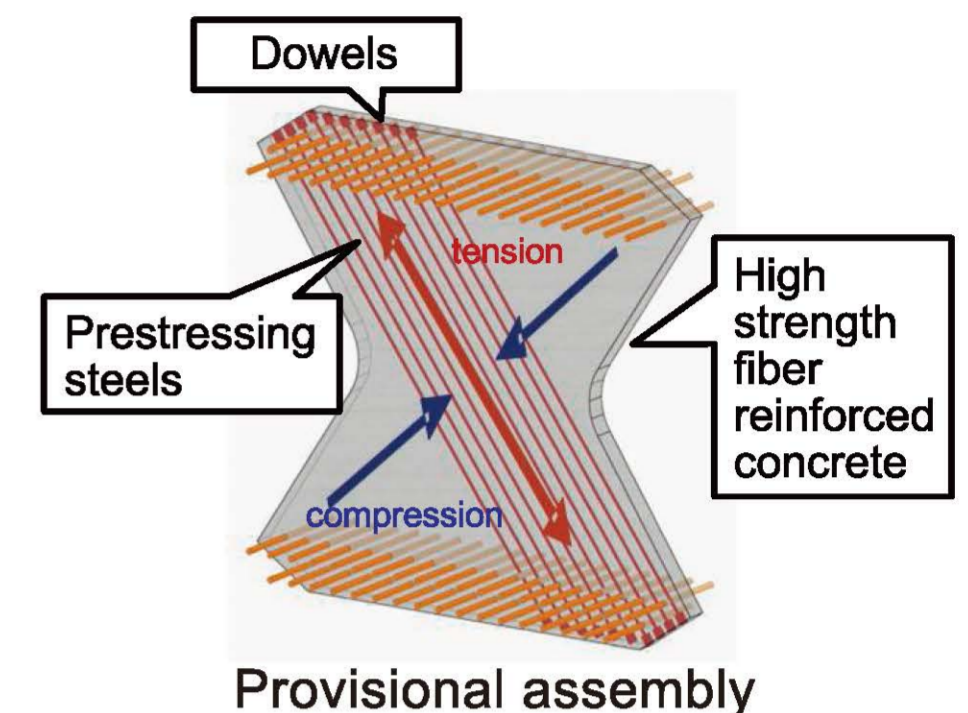
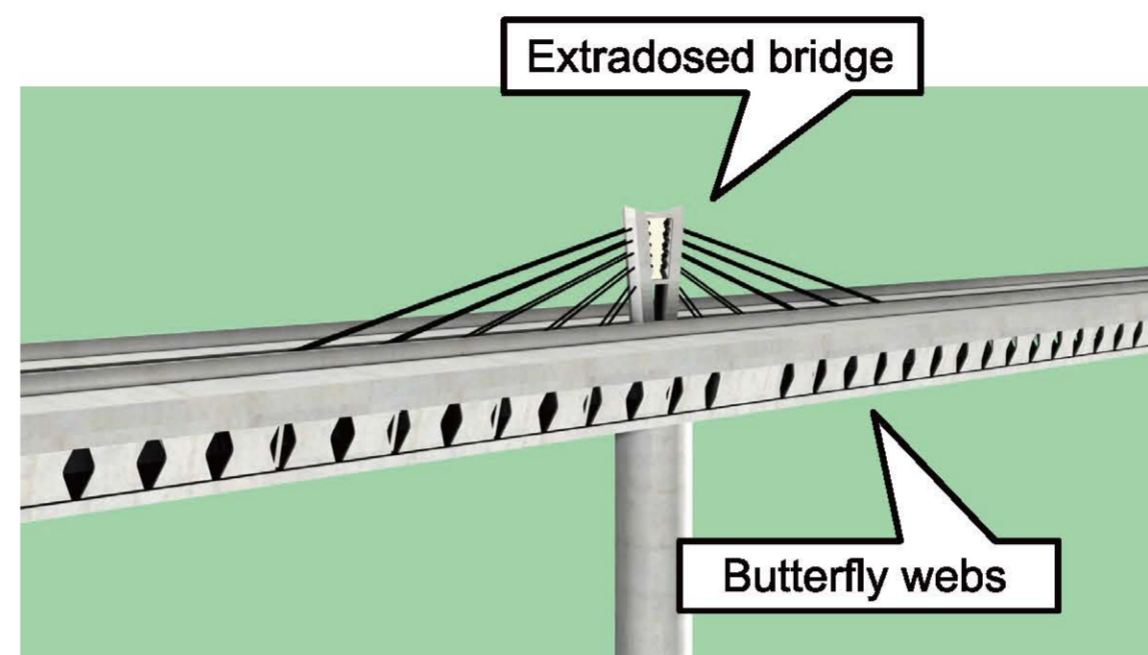
고속도로 건설 - 1 교량

New technologies have been developed in Japan for effective and efficient expressway construction.

Butterfly web bridge



Mukogawa Bridge (Kobe City)

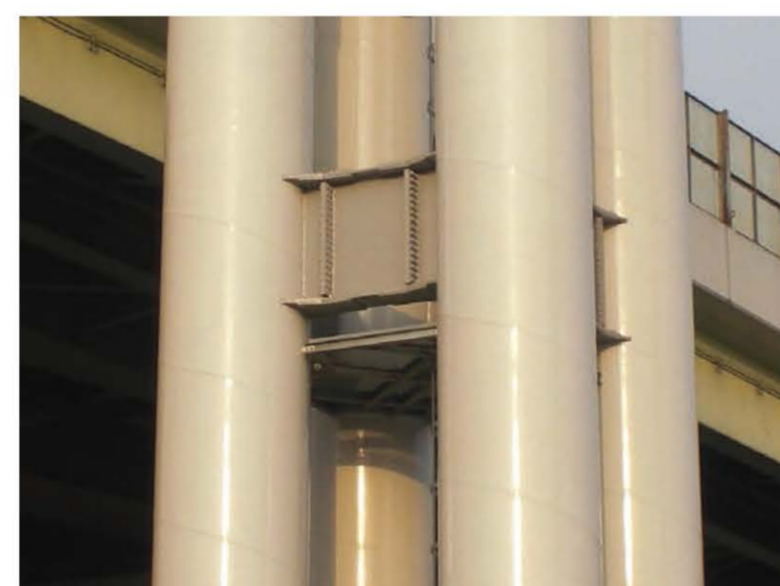


High-workability by avoiding the need to connect the panels which are installed separately from each other.
The main girder is about 10% lighter in weight than those with conventional concrete web.
Reduced work volume on site by the use of the high-quality, factory-fabricated precast panels.

Steel Pipe Integrated Pier



Ebie Junction (Osaka City)



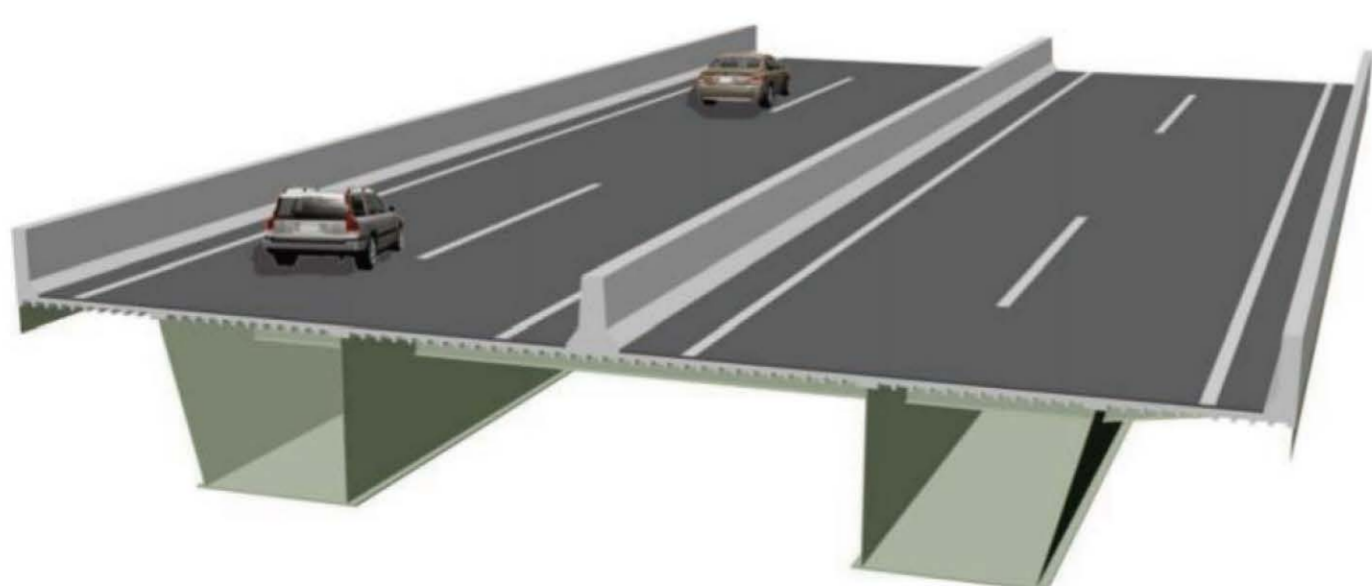
Ring for Shear



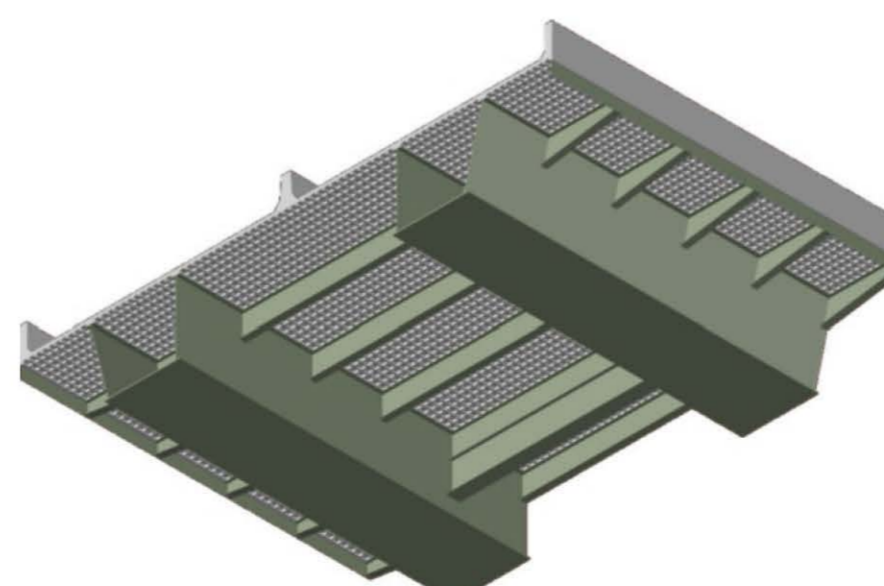
Provisional assembly

The pier is so structured that basic 4-steel-pipe assembly units are connected to each other, using hysteretic damping shear panel-integrated shear links, to form single pillars for this new type of pier. Integration of a shear panel with a hysteretic damping function has improved seismic performance. In addition, if a major earthquake damages only the shear panels, restoration is possible with their replacement alone, thereby also contributing to life-cycle cost saving. Moreover, ready-made spiral steel pipes were used in an attempt to reduce the initial cost.

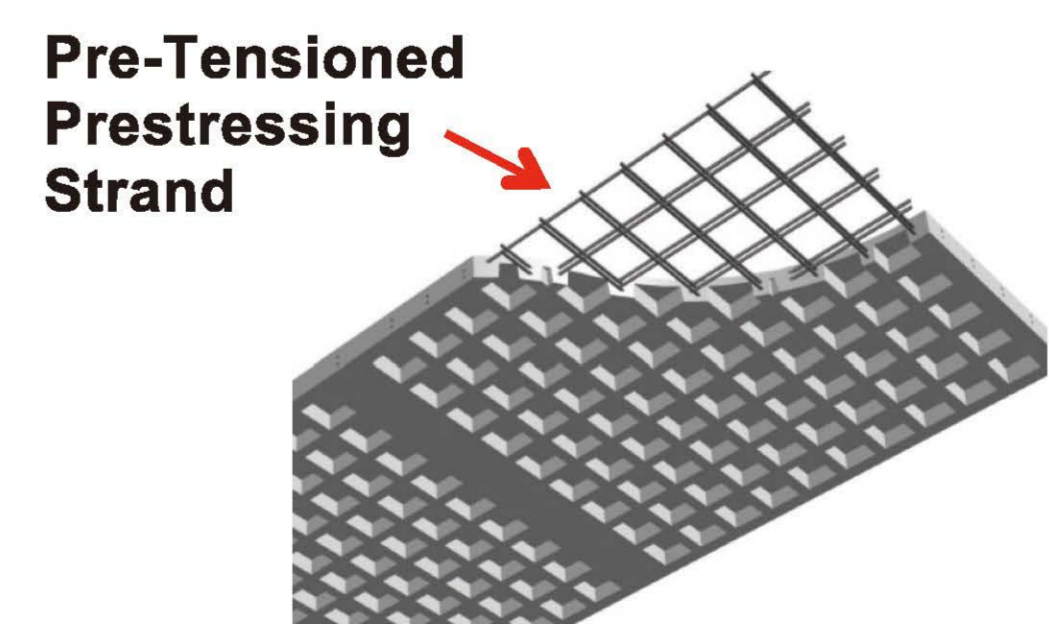
Weight Saving and Durability of UHPFRC Bridge Deck



Bridge with UHPFRC Deck



UHPFRC Bridge Deck (view from bottom)



UHPFRC Bridge Deck in Waffle Shape

Construction of the light weight bridge deck with high fatigue durability was accomplished by using ultra-high performance fiber reinforced concrete (UHPFRC). Considering its high durability, UHPFRC bridge deck can be applied to long span bridge (with reduced maintenance costs) and utilized for the replacement of existing slabs in the upcoming era of a massive renewal.

Key Points

- Weight is Nearly Equal to That of Orthotropic Steel Decks and Excellent in Fatigue Durability
- Manufacturing Costs Are Less Than or Equal to That of Orthotropic Steel Decks
- Rationalization of Construction and Reduction of Construction Period