



Bridges

Reference Details:

Owner South Bay Expressway,
San Diego, CA, USA +++

Contractor Otay River
Constructors, a joint venture of
Washington Group Intl. and
Fluor, USA +++

Engineer
International Bridge
Technologies (IBT), USA +++

Precaster Pomeroy Corporation,
CA, USA

DSI Unit DSI USA, BU Post-
Tensioning, Long Beach, CA,
USA

DSI Scope Supply of 1600 t
DYWIDAG Post-Tensioning
Tendons, 5,000 -12,19 &
27x0.6" MA Anchorages and
4x0.6" FA Anchorages, supply of
DYWIDAG Threadbars Ø36 mm
and 46 mm; rental of equipment;
field installation and technical
services



DYWIDAG Post-Tensioning Systems secure bridge across the Otay River in San Diego County

Expressway bridge across the Otay River, Chula Vista, San Diego County, CA, USA

The first plans for the South Bay Expressway in the southeast of San Diego date back to the year 1959. Since then, what was once the small settlement of Chula Vista located in the southeast of San Diego Bay has developed into the second largest city in the San Diego region with more than 200,000 inhabitants. The new South Bay Expressway (SR125) now offers a fast north-south connection between highway SR-905, at the Mexican border, and highway SR- 54 in Spring Valley. Due to the scarcity of public funds, the South Bay Expressway is the first project in California to be built on the basis of a public private partnership (PPP). From an engineer's point of view, the most challenging section of this 16 km long toll expressway is the four-lane bridge across the Otay River. The South Bay Expressway operator decided on a precast segmental concrete bridge design in order to complete the construction project in the shortest amount of time possible and in the most economical manner. The 1,012 m long bridge consists of dual, precast segmental box girder

structures. The bridge deck, which rests on a total of 11 pairs of piers, rises 60 m above the valley at its highest point. The end spans are 53.5 m long and the intermediate spans are 90.5 m long. The box sections are joined at the deck and at pier caps to form the 47.7 m wide roadway. Subsequently, the CIP pier caps were post-tensioned transversely with 8 Type 27x0.6" MA and 4x0.6" FA DYWIDAG Post-Tensioning Tendons each. About 640 precast concrete segments were produced at Pomeroy Corp., a precast concrete products plant in Perris, California, about 150 km away from the jobsite. The deck overhang of the precast segments was post-tensioned with Type 4x0.6" FA, DYWIDAG Post-Tensioning Tendons and subsequently shipped by flat bed truck to the construction site. Each of the approximately 80 t, 10 m wide and 4 m high precast concrete segments are lifted in place by means of a gantry truss and tempo - rarely post-tensioned with 36 and 46 mm Ø DYWIDAG Threadbars before final longitudinal post-tensioning of each precast segment with Type 12x0.6" and 19x0.6" MA, DYWIDAG Post-Tensioning Tendons. DSI USA supplied the entire post-tensioning material from its nearby Long Beach factory to close this gap in San Diego's expressway network. Following completion of the Otay River Bridge as well as other numerous CIP post-tensioned concrete box-girder structures supplied and installed by DSI for the contractor, the South-Bay Expressway was opened to traffic in spring 2007.