

## Rupin Interchange Bridges

Haifa, Israel

### Project Description

The Carmel Tunnel project will alleviate traffic congestion in central Haifa by allowing vehicles to bypass the central part of the city. The \$300 million project consists of two 5-km long tunnels through Mount Carmel, 5 conventional bridges, 6 segmental bridges, and 11 kilometers of roads which will link the tunnels to Israel's highway system.

### Owner

Build-operate-transfer (BOT) project financed by Carmelton Group, Ltd.

### Contractor

Ashtröm Engineering & Construction, Ltd. / Solel Boneh Ltd. (Joint Venture)

### Designer

ZZZ Engineering, McNary Bergeron & Associates

### Our Role

McNary Bergeron & Associates is partnered with Zachoot Engineering of Tel Aviv, Israel to design all of the segmental bridges as well as provide construction engineering services for the Rupin Interchange. These services include integrated segment shop drawings, construction analysis, step-by-step erection procedures, falsework design, and geometry control.

### Total Contract Value

\$300 million

### Timeline

February 2006 to 2010

### Construction Method and Specifications

#### Precast Segmental Bridges

1. Three precast bridges, each with a 45m main span and 32m end spans
2. Cast-in-place concrete piers support balanced cantilever erection of segments with ground-based cranes
3. 154 precast single cell box segments, each 10.5m wide and 2.2m deep

#### Cast-In-Place Segmental Bridges

4. Three cast-in-place bridges, each with six 26m to 74m spans
5. Constructed in balanced cantilever method with form travelers designed specifically for the project by NRS in Norway
6. 151 cast-in-place single cell box segments are each 4.8m long and 3.2m deep, with widths ranging from 8m up to 14m

