



PROJECT DOSSIER

SHEIKH ZAYED STREET TUNNEL



PROJECT OVERVIEW

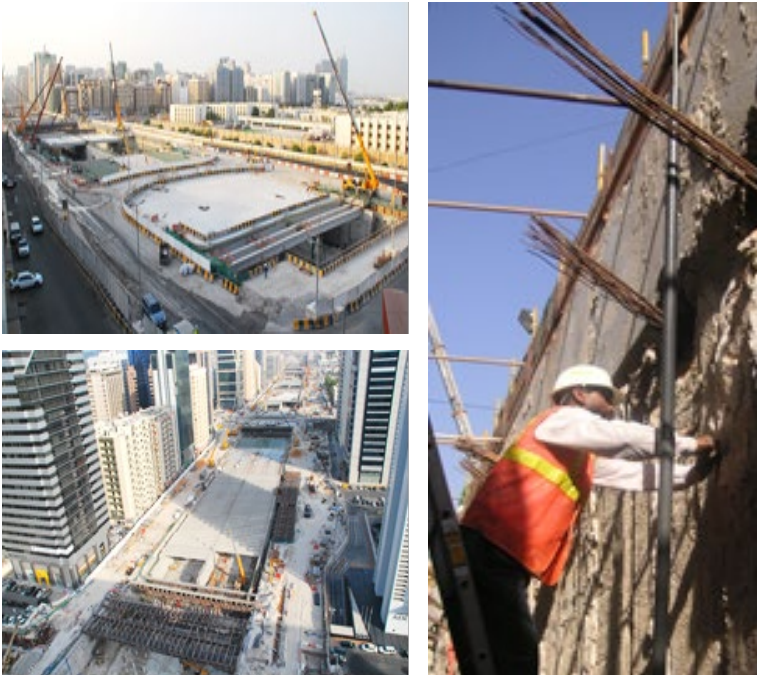
Project	Upgrading Al Salam Street (Sheikh Zayed) – Eastern Corniche Road (Contract 1)
Location	Abu Dhabi, UAE
Client	Department of Municipalities & Agriculture (DMA)
Contractor	Samsung - Saif Bin Darwish JV
Consultants	Parsons International
Duration	2009 - 2011

Al Salam Street Tunnel Project, later renamed as Sheikh Zayed, is one of the biggest urban road systems in the world. Purpose of the project was to facilitate an uninterrupted green drive on Al Salam Street, or the eastern ring road, without any traffic signals. The 3.6km tunnel, the longest tunnel in the Middle East was opened in December 2012. The tunnel has four lanes in each direction and reduces the travel time from Sheikh Zayed Bridge to Mina Street to 20 minutes. The tunnel is equipped with several

latest facilities for effective operation of the tunnel.

The project consisted of a closed box tunnel along with open sections and access ramps at ends. The scheme extended to Corniche Road and to the Mina Road located in a dense urban environment. It required tailored engineering solutions that would minimize impact to residents, businesses and motorists during construction which went 15 m deep underground. Hence instrumentation played an important role in safeguarding the construction as well the surrounding properties and included monitoring at following areas

- Tunnels
- Struts in cut and cover constructions
- Diaphragm walls, Pile foundations
- Adjoining buildings, structures and pavements



Monitoring solution

Encardio-rite Geosystems LCC, UAE was awarded I&M sub-contract for complete monitoring instrumentation and surveying solutions for the project.

Turnkey services

- Pre-construction and post-construction building condition survey
- Supply of geotechnical and geodetic instruments
- Installation of geotechnical instruments including the drilling and grouting works for subsurface instruments and survey targets
- Monitoring of installed instruments as per required frequencies
- Optical Surveying-precise leveling & 3D deformation monitoring
- Processing of data with daily, weekly and monthly reports along with evaluation & interpretation of data
- Calibration of dataloggers and sensors.

- **Crack meter:** Installed on major cracks found on the buildings within the ZOI(during pre-construction survey) to record and monitor any variation in the existing cracks due to construction works

Experienced and proficient I&M team of Encardio-rite Geosystems WLL, UAE provided services for almost 3 years. Monitoring reports included interpretations of variations observed in instrument data, mentioning the factors likely to affect their behavior e.g. construction, dewatering, third party activities etc. were provided to the contractor on a regular basis.



INSTRUMENT USED

- **Inclinometer:** To monitor lateral movement in ground around the excavation
- **Casagrande piezometer:** To monitor ground water level within the excavation area
- **VW Piezometer:** To monitor ground water pressure outside the excavation area
- **Borehole extensometer:** Installed with packers anchors (in soil) to monitor sub-surface settlements around the excavation area
- **Anchor load cells:** Were installed to monitor load at the anchors
- **Strut load cells:** Compression load cells were installed at the struts to monitor the load on them.
- **Surface settlement points:** Installed in soil and pavements to monitor surface settlement around excavation works
- **Tilt meters:** Tilt plates were installed on a number of buildings within the ZOI of construction site. Precision portable tilt meter was used to monitor tilt.
- **Building settlement points:** Installed on buildings within the ZOI to monitor settlement
- **Prism targets:** Mini-prism targets were installed on buildings within the ZOI to monitor 3D deformations

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