



## PROJECT DOSSIER

# ONE ZA'ABEEL ICD HEADQUARTERS



## PROJECT OVERVIEW

Project	One Za'abeel Mixed Use Development
Location	Dubai, UAE
Client	Investment corporation of Dubai
Contractor	APCC Piling and Contracting L.L.C
Consultants	W.S.P
Duration	November 2015 till date

One Za'abeel Mixed-use Development comprises of two towers (Tower A and Tower B) either side of an elevated Government of Dubai Roads and Transport Authority (RTA) bridge that passes through the centre of the plot. Tower A is a 305 m structure with 66 levels residential, commercial and hotel areas and Tower B is a 240 m structure dedicated to residential apartments.

The common podium at base has four levels. The two towers are linked together by a sky bridge "The Link" that cantilevers 70 meters beyond the tallest tower. The development also comprises the construction of two pedestrian bridges between the site- DWTC and Zaa'beel Park.

The six level basement car parking required excavation to depths ranging from 23.8 m to 25 m depth below ground level. Additionally, the basements are proposed to be connected by two tunnels located underneath the existing elevated road that bisects the two towers. According to the concept design drawings, the tunnels links the basements at B1 level, requiring excavations to 7.0 m below existing ground level.



## Monitoring solution

Looking at the criticality of safety monitoring of the Al Saa'da Bridge, automatic online monitoring was decided. Both at the bridge and piers, geotechnical and geodetic instruments were installed with advance automatic dataloggers to monitor effects of construction of the high rise building.

The monitoring work was divided into three sections

1. Bridge monitoring
2. Pier monitoring
3. Ground/Shoring wall monitoring

### Turnkey services

Encardio-rite got sub-contract for the complete monitoring works that included:

- Supply and Installation of geotechnical and geodetic instruments
- Online monitoring of critical parameters and areas
- Manual monitoring of geotechnical instruments
- Automatic as well as manual Surveying
- Daily & weekly reporting with evaluation & interpretations
- Pre-construction condition monitoring of Al Saa'da Bridge

Monitoring reports were also submitted combined for geotechnical and geodetic monitoring data on daily and weekly basis. Monitoring reports included interpretations of variations observed in instrument data with respect to the construction progress in the respective area.



## INSTRUMENT USED

### Excavation works and ground monitoring

- **Inclinometer:** To monitor lateral movement and deflection of soil between construction area & piers and deformation of earth works and shoring wall
- **Standpipe Piezometer:** To monitor water level/drawdown during construction
- **Prism target:** To monitor movement of shoring wall

### Existing bridge and pier monitoring

- **Strain Gage:** To monitor strains and stresses in via-duct
- **Prism target:** To monitor displacement of bridge and piers
- **Temperature sensor:** To record temperature variation

Installation of strain gages in the existing bridge was very critical, as installation was done inside bridge viaduct following the 'confined space safety norms'.

**Online monitoring** was done for geotechnical sensors that were critical using advanced automatic dataloggers and data acquisition systems.

Prism targets installed on Piers were monitored using 3 numbers of **automatic total stations** and complex control boxes with 20 min monitoring frequency.

All the monitored data (automatic and manual) was available online through our **web based data management system** to the Contractor, Client as well as the Consultant on their desktops.

## ENCARDIO-RITE ELECTRONICS PVT. LTD.