DELHI METRO RAIL CORPORATION – CC27

DELHI METRO RAIL CORPORATION LINE-8 (Janakpuri to Botanical Garden) PH-III

Shankar Vihar to Hauz Khas: Package-CC 27

DMRC Line 8 is 38.235km in length connecting Janakpuri to Botanical Garden. This route was aimed to decongest the existing traffic situation in Delhi. Package CC 27, 6.82km long, is a part of this line and extends between Shankar Vihar to HauzKhas.

Scope

Design and Technical support for construction of Tunnel from end of Underground ramp near Shankar Vihar Metro Station at CH 12361.44 to Hauz Khas Metro Station at CH 19181.14, connecting Shankar Vihar, Vasant Vihar, Munirka, R.K.Puram, IIT and Hauz Khas underground Metro Stations constructed by cut-n-cover method. The total length of twin bored tube tunnel is 10.044km with 5.8m finished diameter. The tunnels are intermittently connected by 22 cross passages constructed by NATM.

Challenges

- Working in brown field
- Restricted working area
- Sensitivity for settlement of ground and buildings, noise and pollution
- Site logistics

Amberg Services

- Work Planning,
- Execution support
- Geotechnical evaluation
- Detail design

of tunnel segment lining, cross passages, interface with station/ other package/ services.

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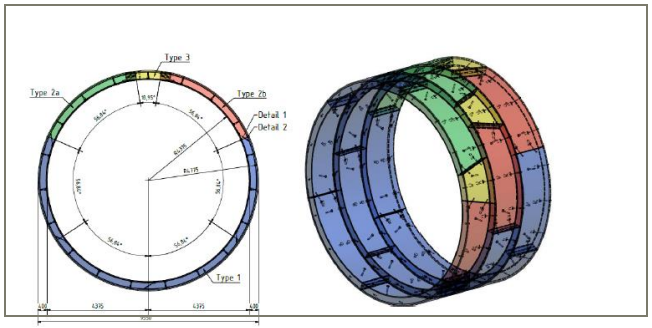

- Segment Lining

- Fixing of bolts in segmental lining

- Fixing of ribs in cross passage

AMBERG FACTS

Contracted value Amberg

- Total: 14,78587 SGD

Project Duration

- Design works May, 2013 – Jan, 2018

Project Details

Tunnels

- 2 single track tunnel tubes of total length approx. 10.044km
- Mix Cutter closed mode TBM of diameter 6.68m
- Segmental lining for rings of 5.7m and 5.8m dia, 275mm thick, each ring having 5+1 configuration
- Both tunnels connected through cross passages located less than 244m.
- Cross passages constructed by NATM method under mix soil condition
- Deepest rail level in Delhi Metro, 29m near Hauz Khas

Metro stations

- Technical solutions for Interface services with 5 cut-n-cover underground metro stations
- Each station had a launching shaft and a retrieval shaft as a part of station to facilitate TBM lowering and retrieval
- Inputs in site planning at proposed station location to carry out TBM operations

CLIENT FACTS

Overall costs

- Total cost – 1252.6 Cr

Overview Project

- Metro tunnel, length approx. 10.044km
- 2 single-track tunnel tubes
- 5 Underground Metro stations
- Ramp to elevated section

Geology

The geology is mainly composed of the following ground formations:

- sandy silty clay
- sandstone

PROJECT OFFICE

Mr. Sandeep Singh, Project Manager
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DDA Land, New Sarvapriya Apartments
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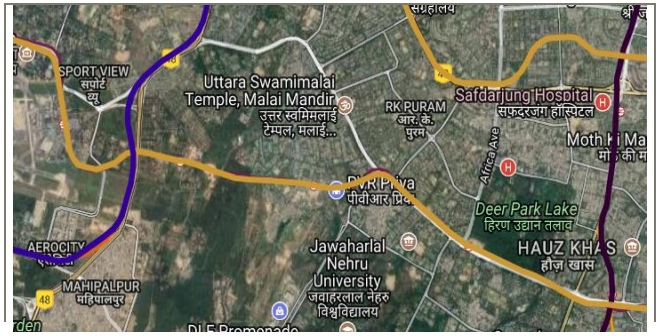
CHALLENGES



Package CC 27

Sensitive urban area

- Densely populated area
- Sensitivity for ground settlement, noise and pollution
- Located beneath arterial road
- Complex site logistics

ENGINEERING APPROACH

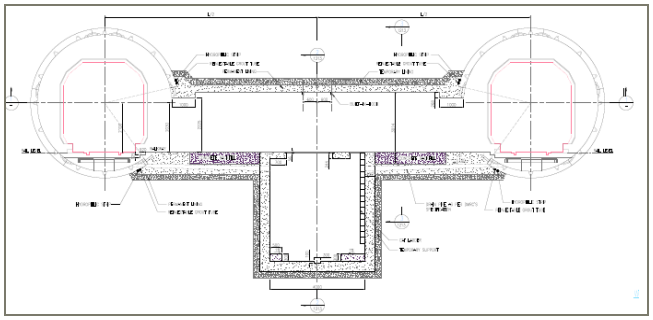
Sharp Manoeuvring Radius, 200m, for TBM

Complex work phasing

- TBM launching, retrieval and operations through a dense urban area
- Complexity in making arrangement for TBM Operation at site
- Logistics planning and its regular review to ensure uninterrupted TBM operations
- Safety requirements extremely high
- Continuous monitoring for settlement if any in the surrounding dwellings

Train Passing though finished tunnel

TECHNICAL SOLUTIONS



Cross Passage with Sump connecting the Tunnel tubes

Work schedule

- Working simultaneously at different sites
- Tight schedule for project completion
- Round the clock settlement monitoring
- Timely address to interface issues

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