



**HRIDC**

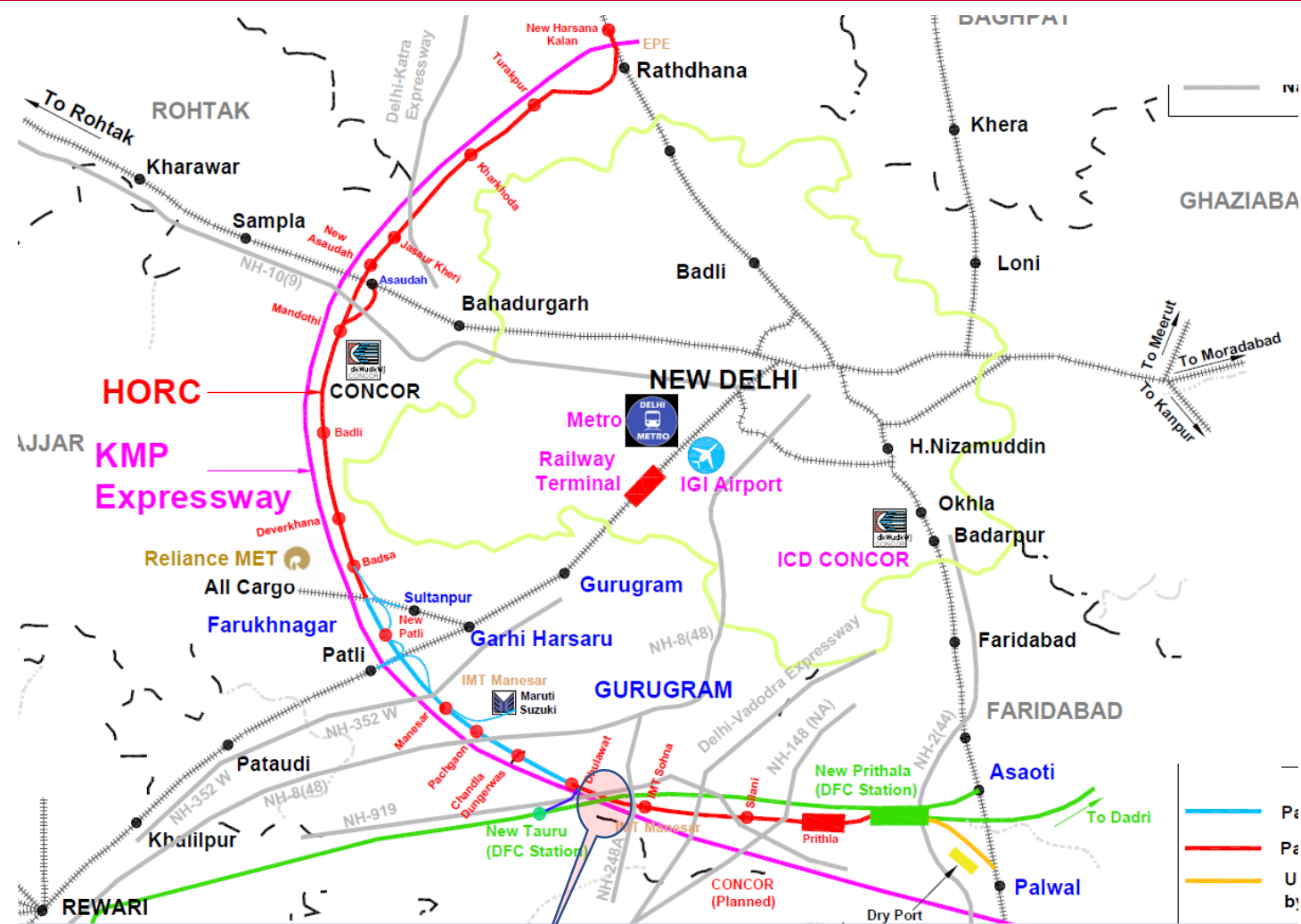
**Welcomes**

**Participants from Industry  
for Interactive Session on  
HORC Tunnel  
24.05.2022**



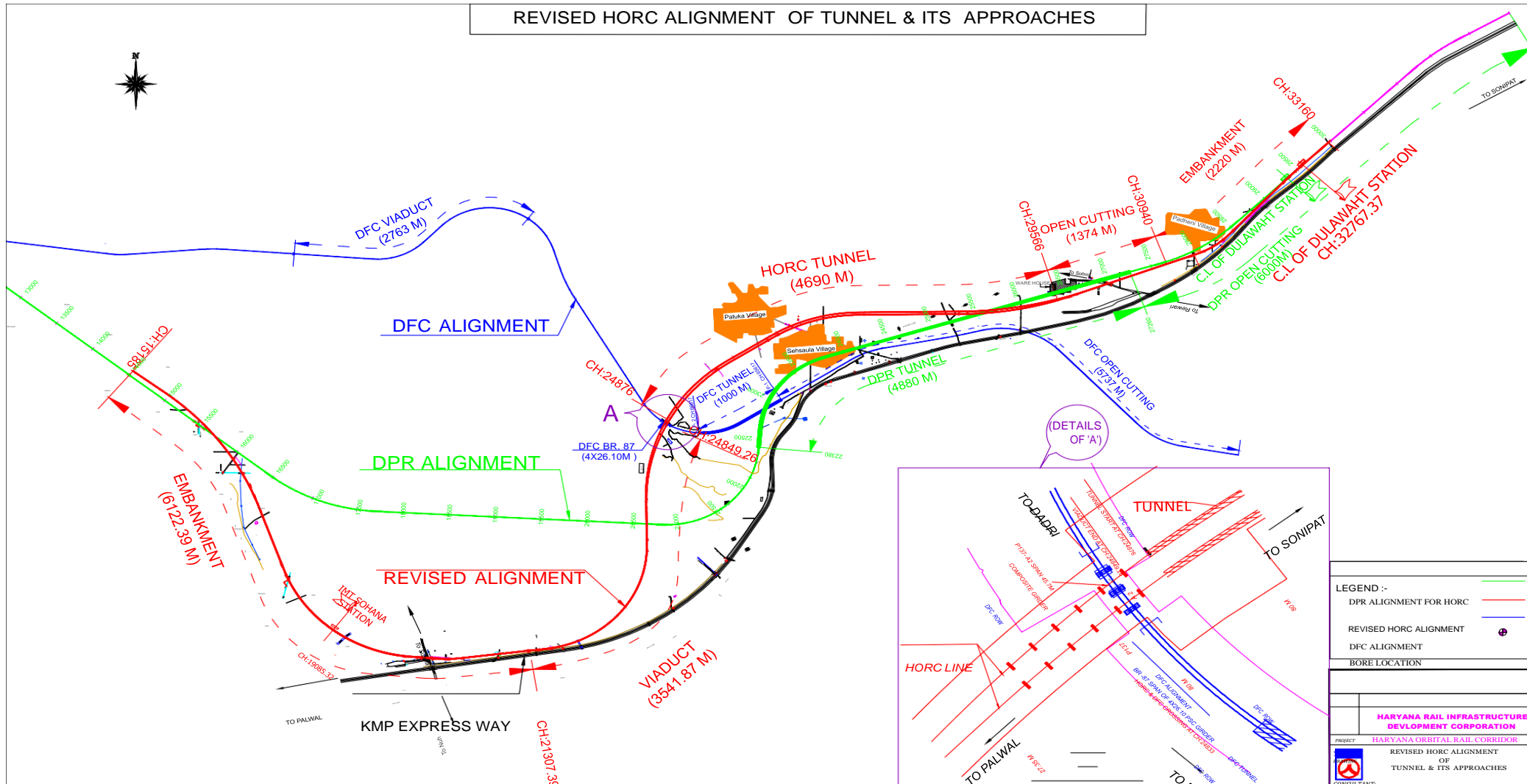
**Haryana Rail Infrastructure Development Corporation Ltd.**

# HORC Alignment



**Tunnel Location**

# Revised HORC Alignment of Tunnel & Approaches

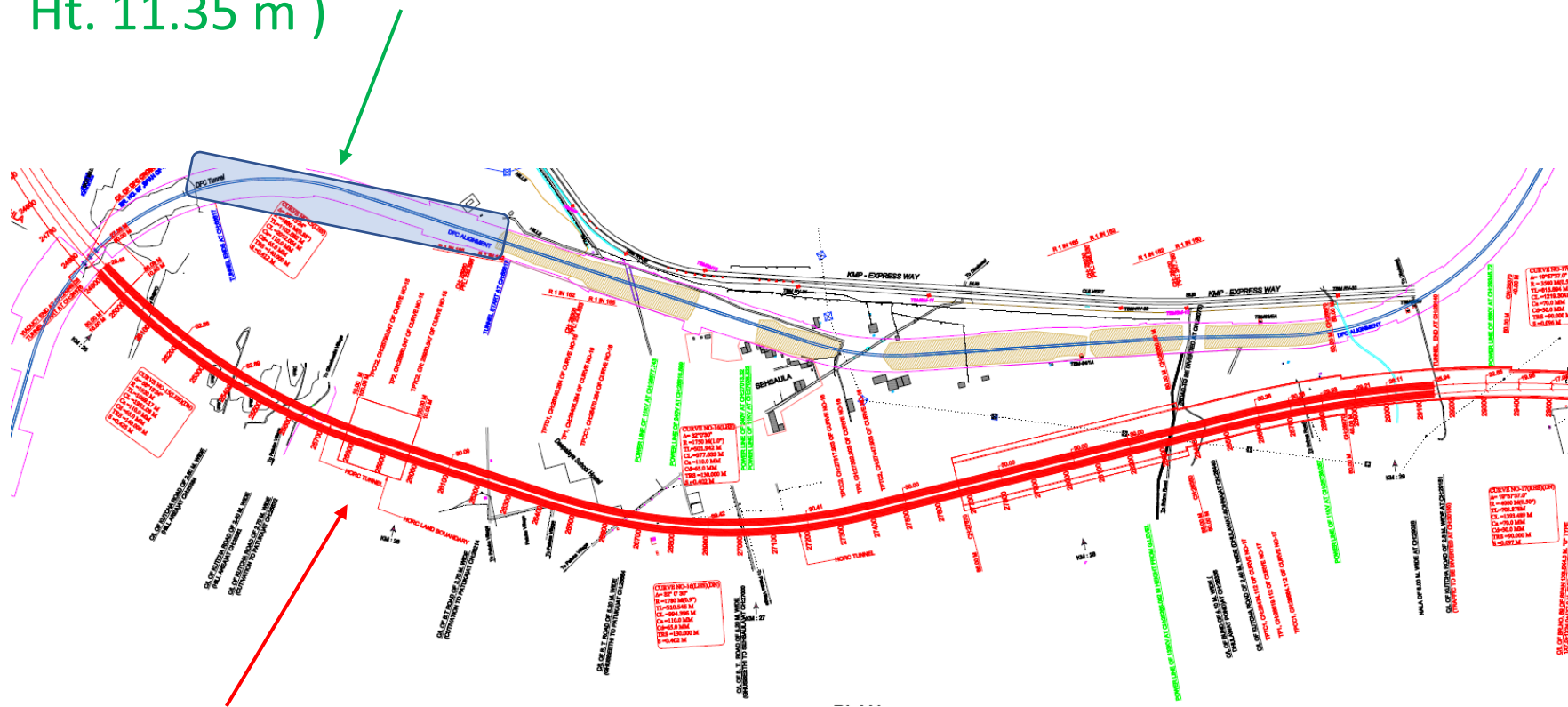


PLAN OF HORC & DFC X-ING

# Existing DFC Tunnel & planned HORC tunnel

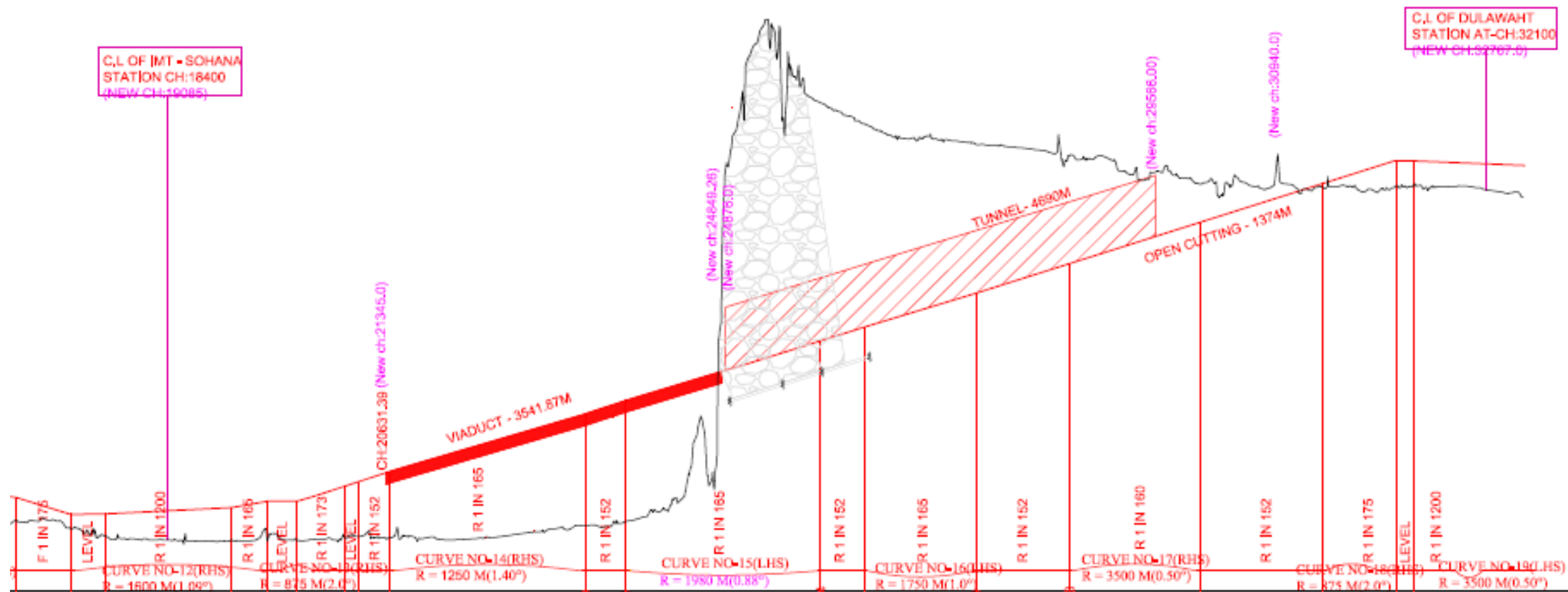


Existing 1 km long DFC Tunnel in rock using NATM (Dia. 14.95 m, Ht. 11.35 m )

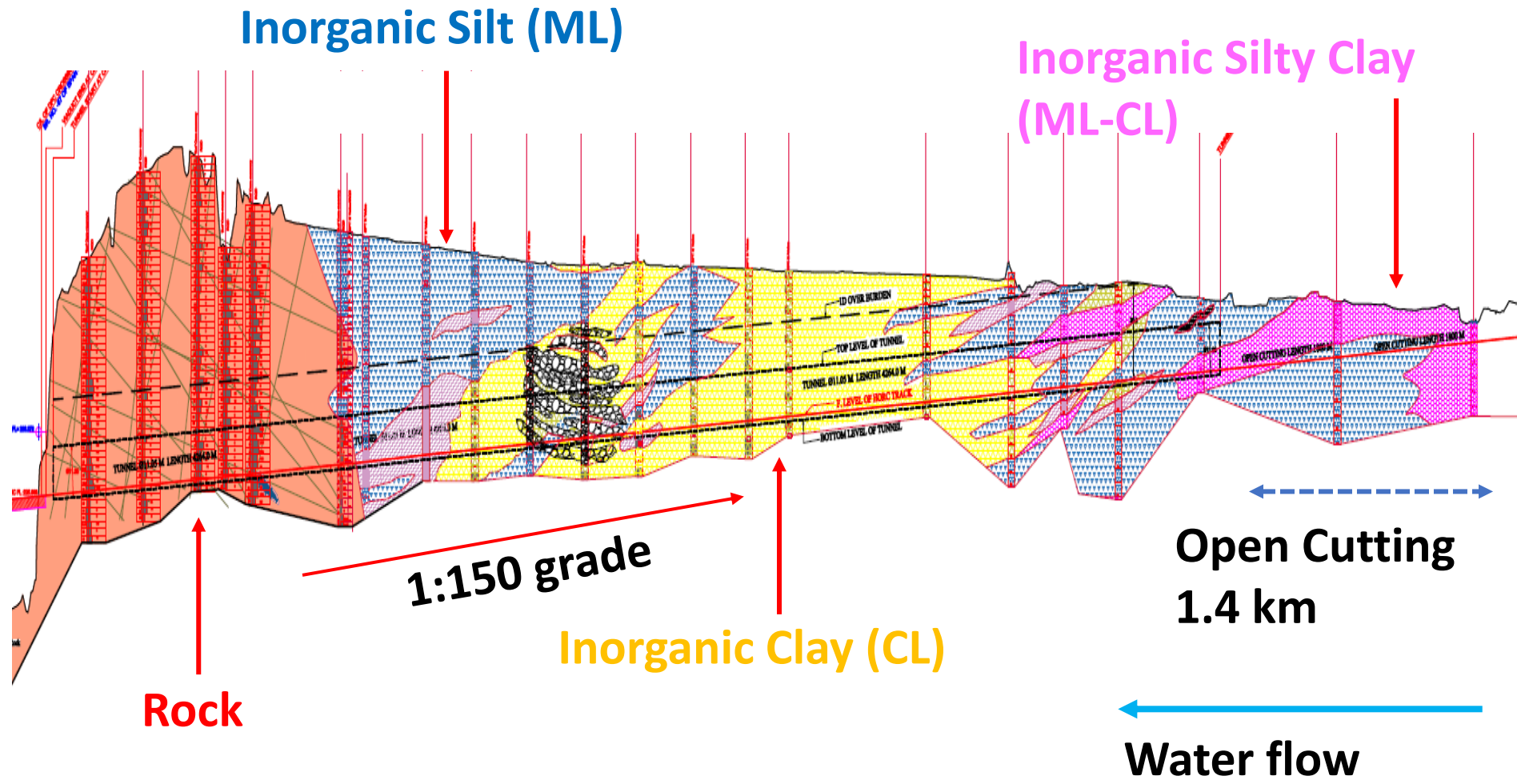


Planned HORC Tunnel: 1 km in rock & 3.69 km in soil

# Index Section



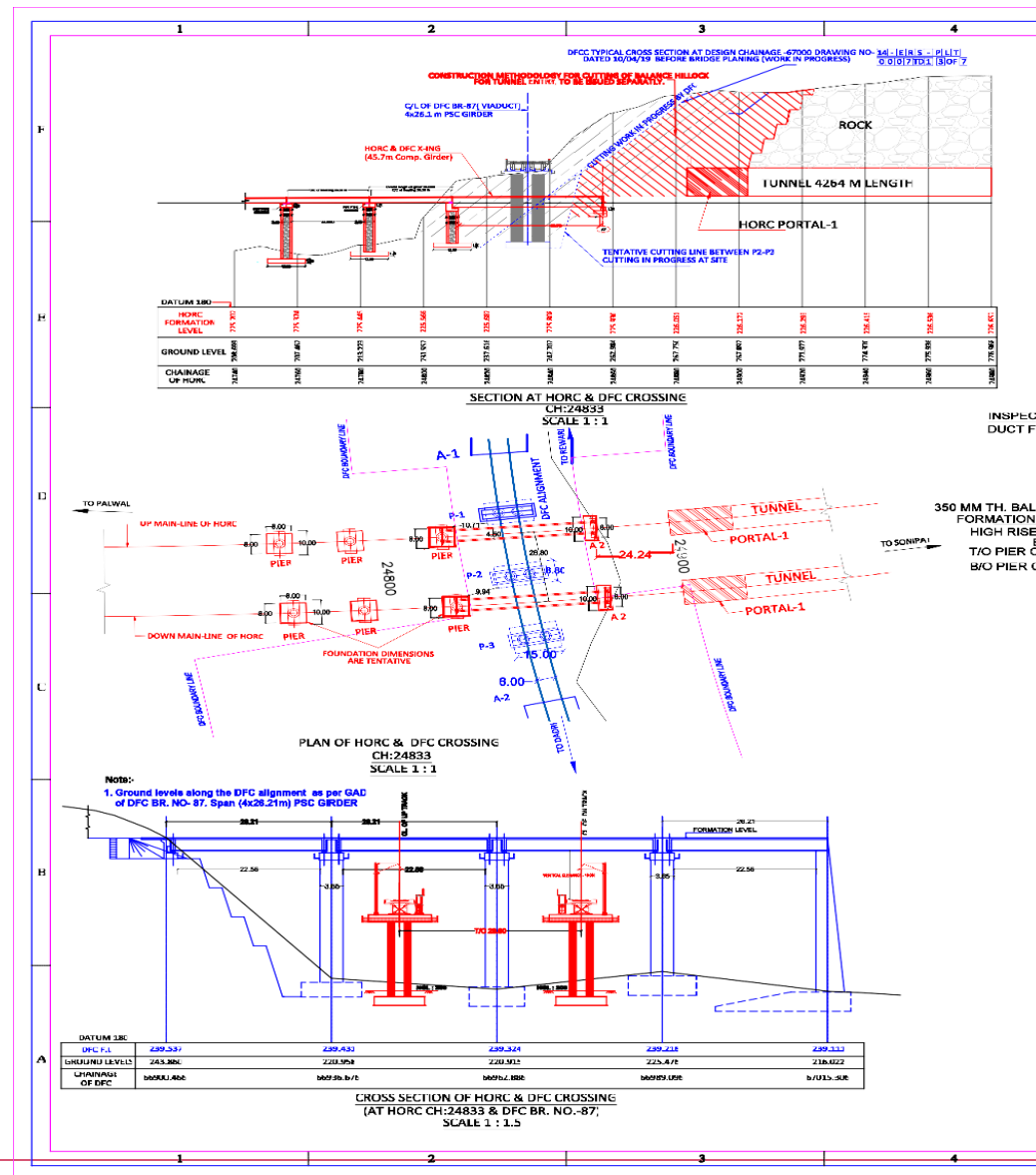
# Lithological Profile of tunnel alignment



# Tunnel Location



# DFC Crossing Drawing





# Tunnel Location – Rock Strata



# Tunnel Location – Rock Strata



# Tunnel Location – Soil Strata



# Trial Excavation in soil portion

26.04.2022



23.05.2022



# Tunnel alignment Drone run



1. Configuration- twin tube tunnel with cross passage @ 500m.
2. Length of the tunnel -4.69 km (1km in rock & 3.69km in soil).
3. Maximum over burden over tunnel -60m.
4. Open cutting -1374m just after the tunnel.
5. Grade of tunnel -1:150.
6. Ground water table -not met upto a depth of 10m below the tunnel.

7. Degree of curve-  $1^\circ$ .

8. Distance between twin tubes 2D centre to centre – 20.02m

9. Rock Properties –

- E-45 GPa, UCS- 60 MPa, Tensile strength – 18 MPa
- Grain size\* – 0.25mm, Quartz – 80-90%, RMR\* – 33, RQD\* – 9,

10. Soil Properties – C-0.08 to 0.37MPa,  $\phi$  – 8-27°, N – 19 to 91.

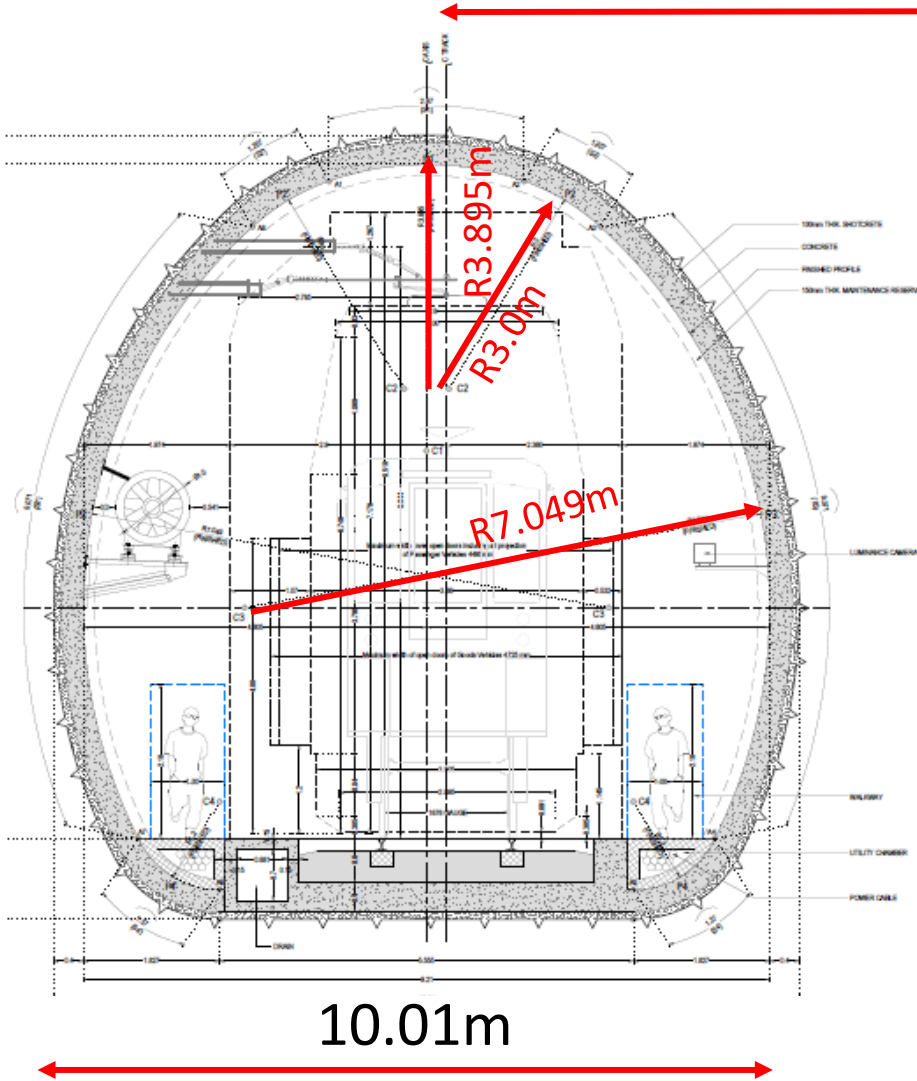
\* - Average

# NATM X-SECTION (ROCK)



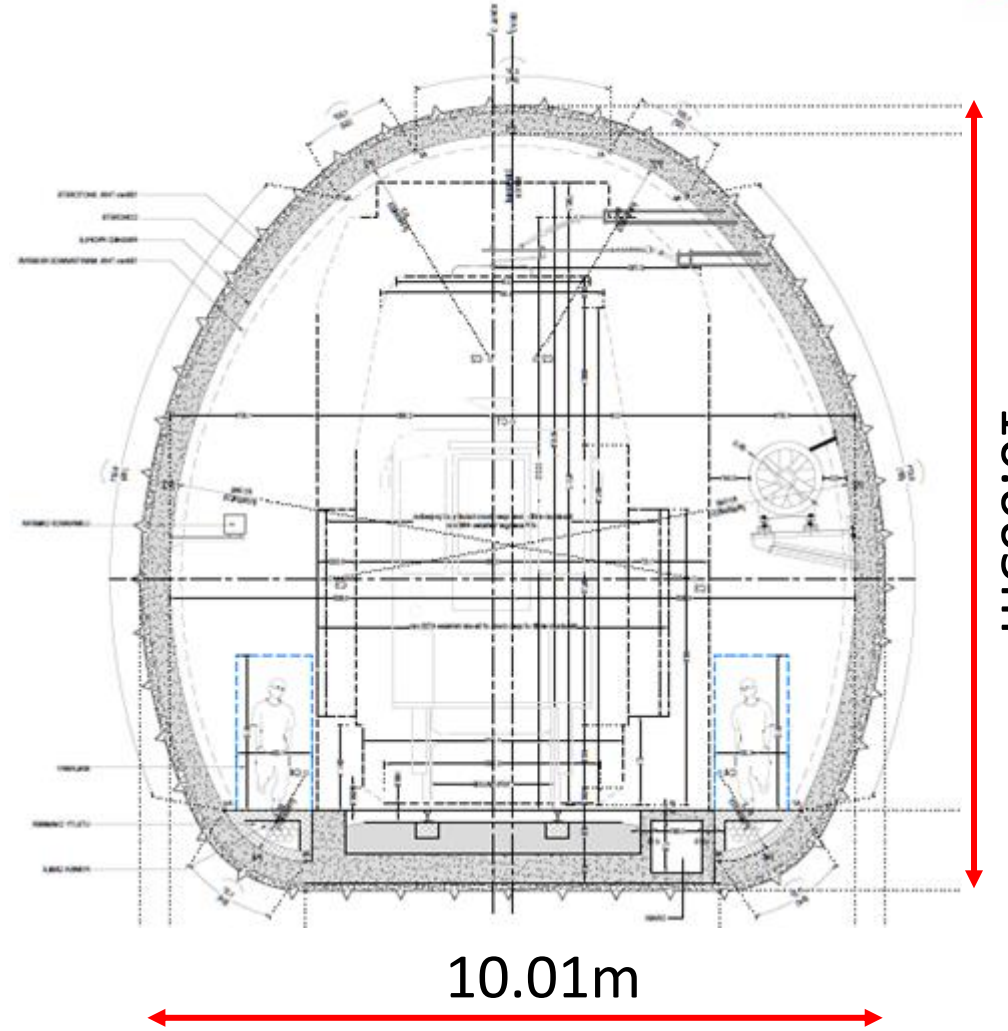
20.02m

10.665m



10.01m

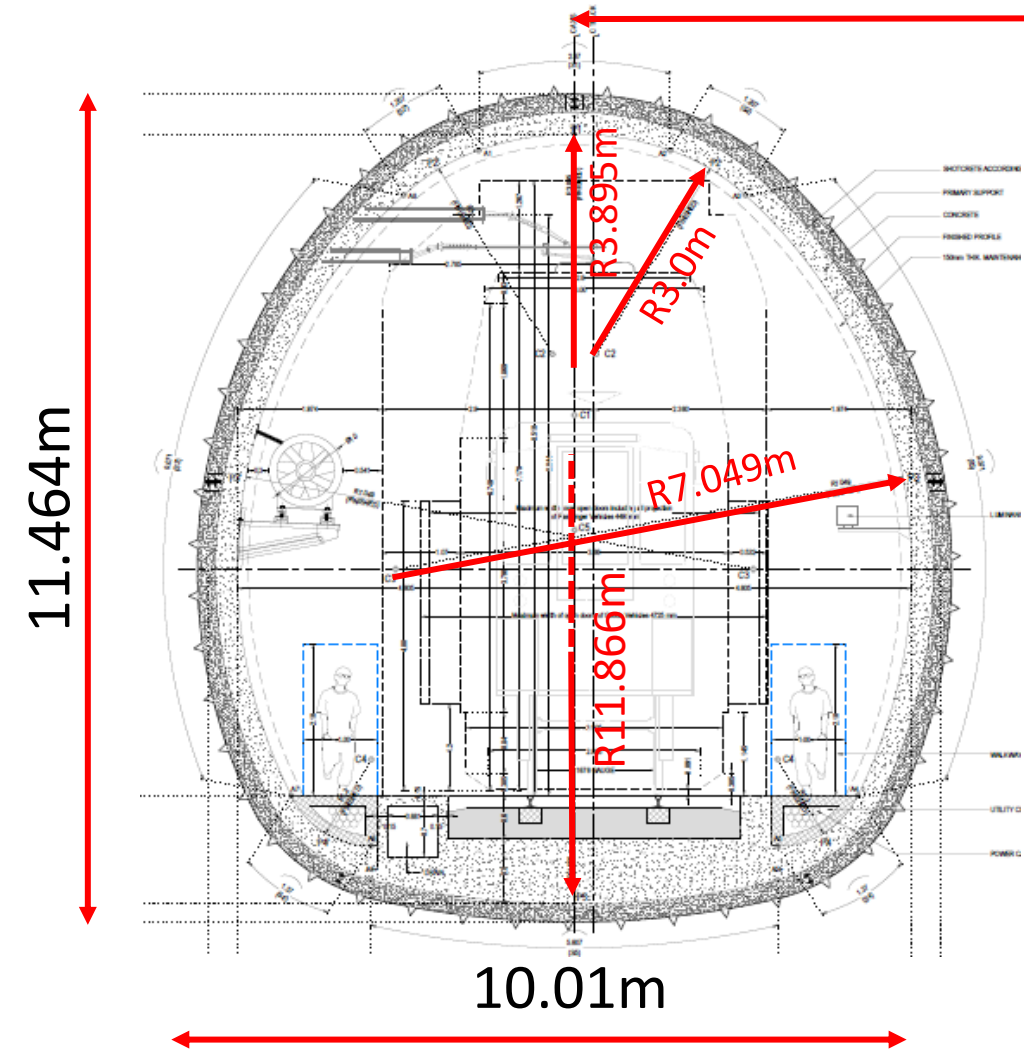
10.665m



10.01m

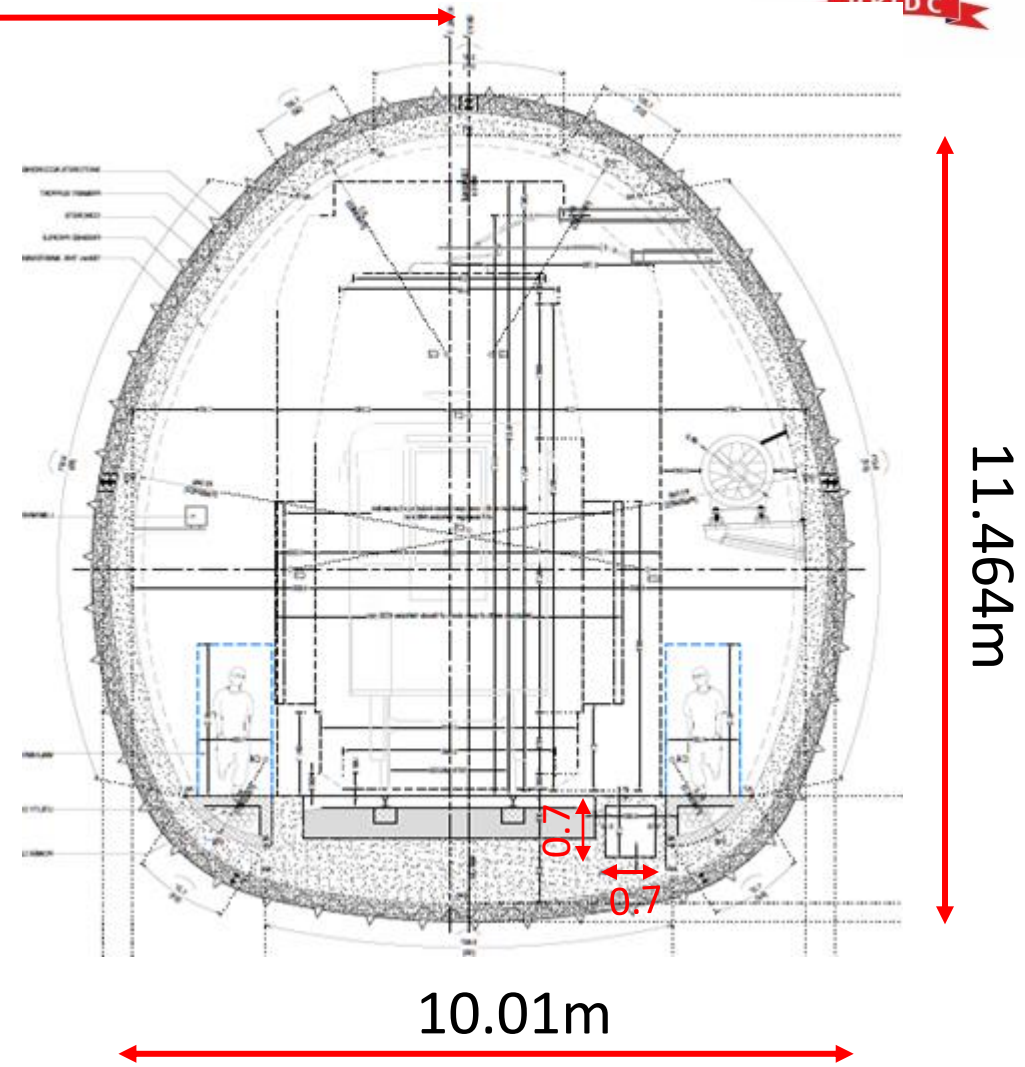


# NATM X-SECTION (SOIL)



20.02m

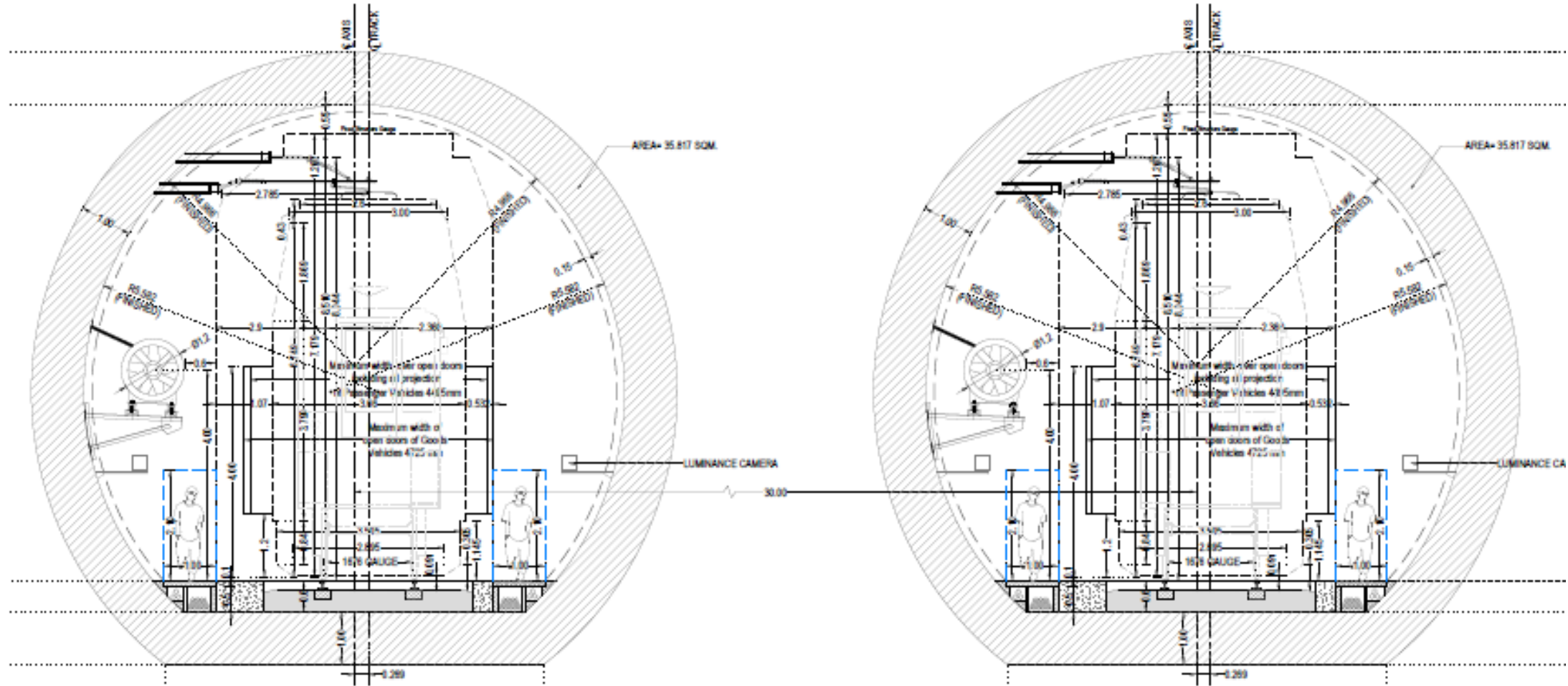
- Cross section
- Cross passage
- Ventilation
- Rigid V/S Conventional OHE
- Drainage



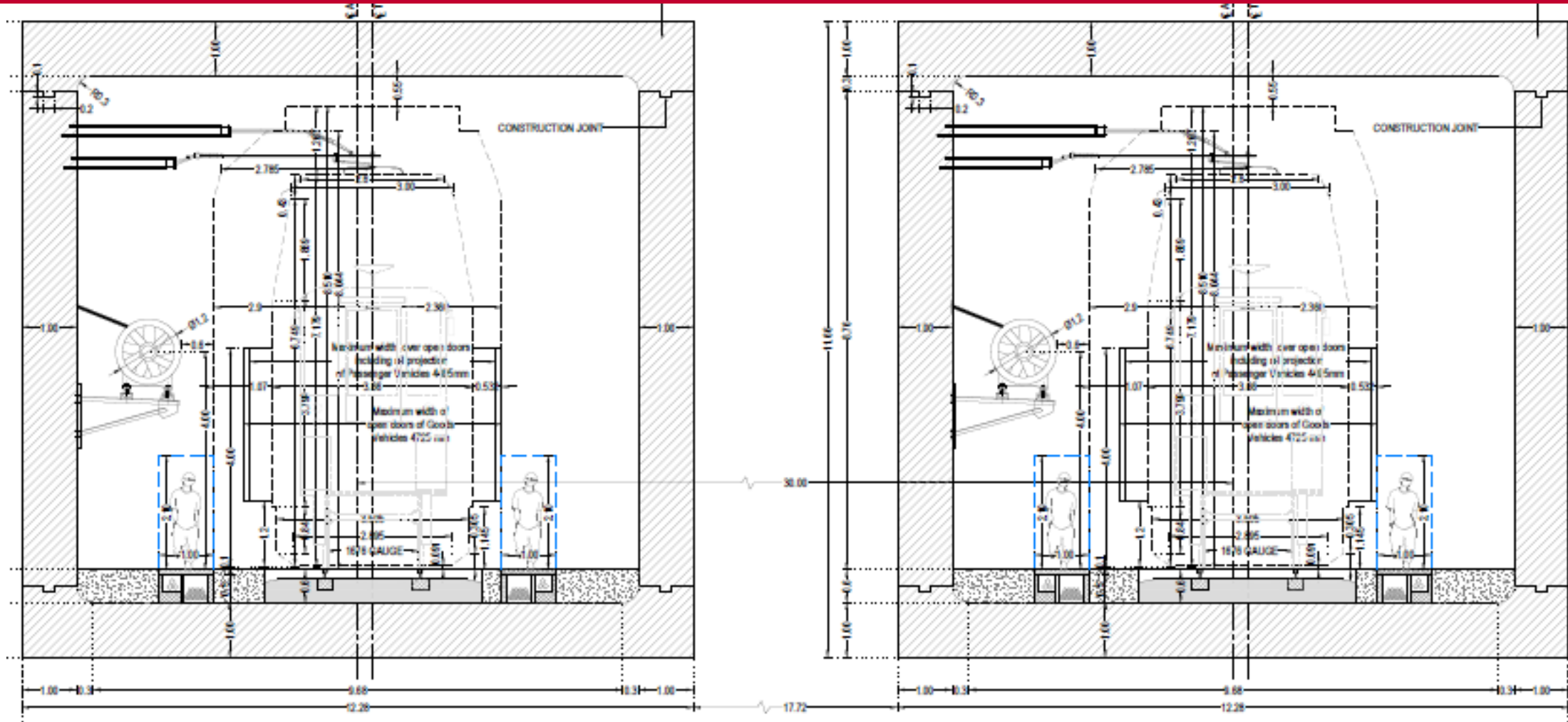
11.464m

10.01m

# Option-1 for Cut & Cover Cross-section



# Option-2 for Cut & Cover Cross-section



Choice of cross section and Use of precast technology for C&C?

1. Vertical cliff of about 80 m to be crossed.
2. HORC viaduct crossing underneath DFC viaduct, hence Controlled Blasting needed at Portal-1 location.
3. Space constraint between DFC alignment and Portal-1.
4. Major portion of the tunnel to be constructed in soil portion.
5. Tunnel to cater for high rise OHE & double stack container movement.
6. Water from 1374 m long open cutting will be carried through the tunnel.

## **7. Methodology for completion of tunnel in 30 months**

Thank you