

# Tunnel Portal Design

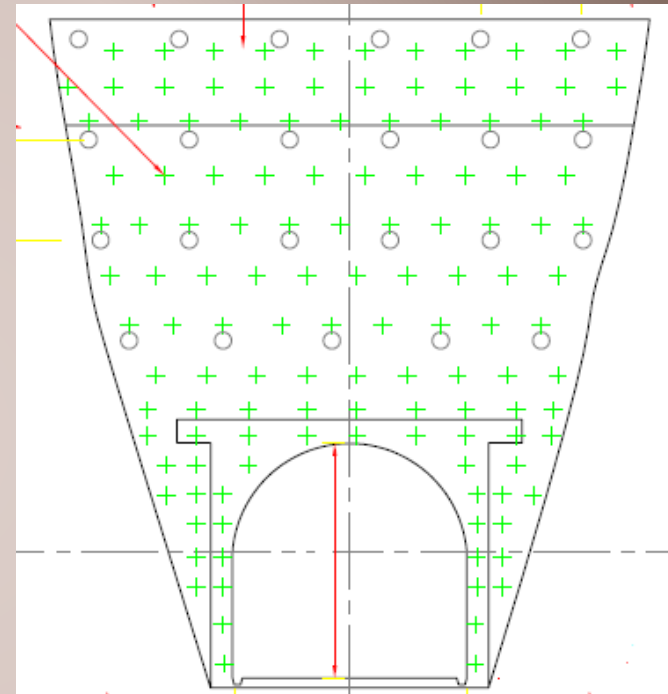
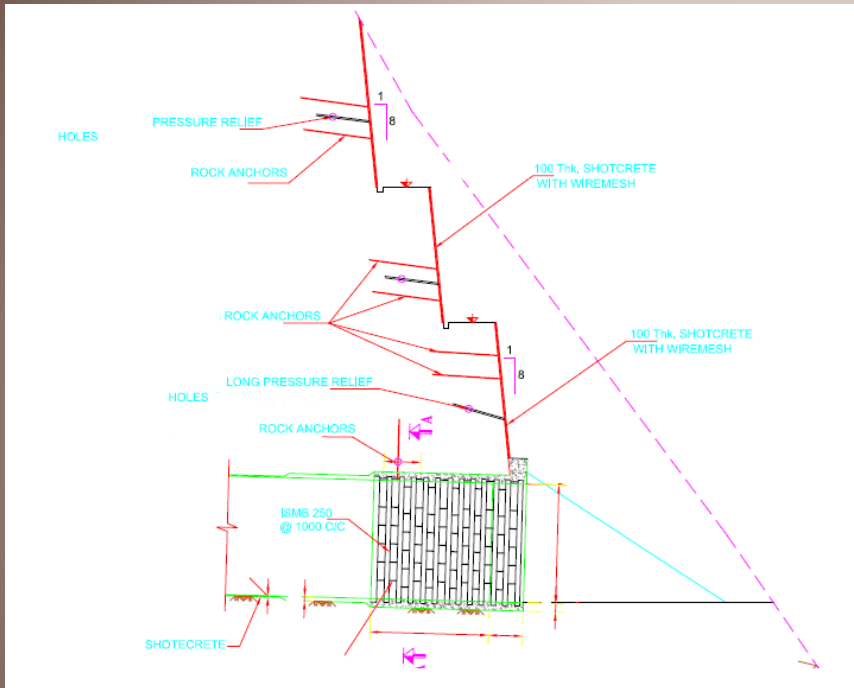
What is tunnel Portal?

Tunnel Portal is tunnel entrance.



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# Preparation of Tunnel Portal

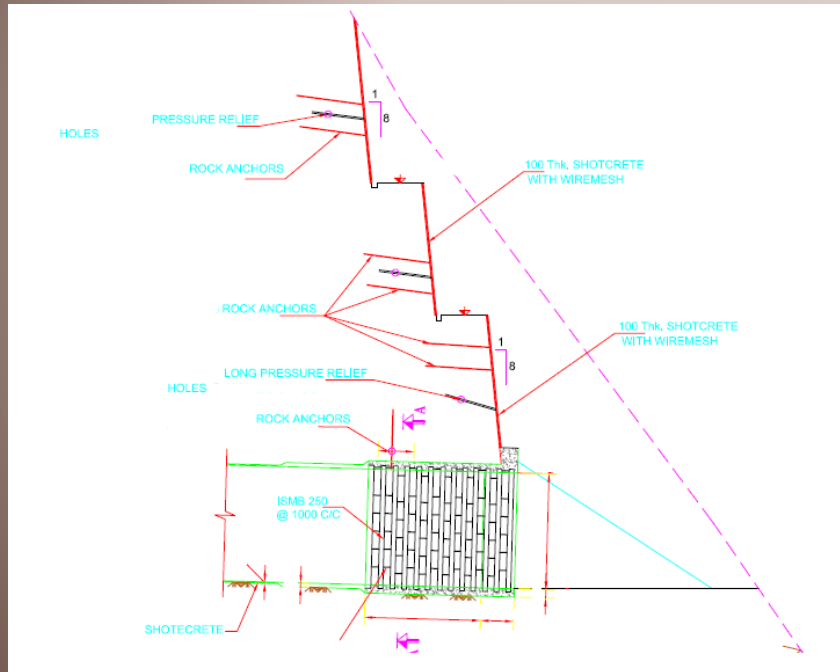


The slope stabilization of the entire area needs to be done to provide the vertical face for portal. Tunnel portal is excavated through vertical face and usually provided till the tunnel gets the cover of  $2D$ , where  $D$  = Tunnel Diameter. Portal is usually been supported with steel ribs and shotcrete.



# Tunnel Portal Design

## Slope Stabilization of Tunnel Portal (Entrance)



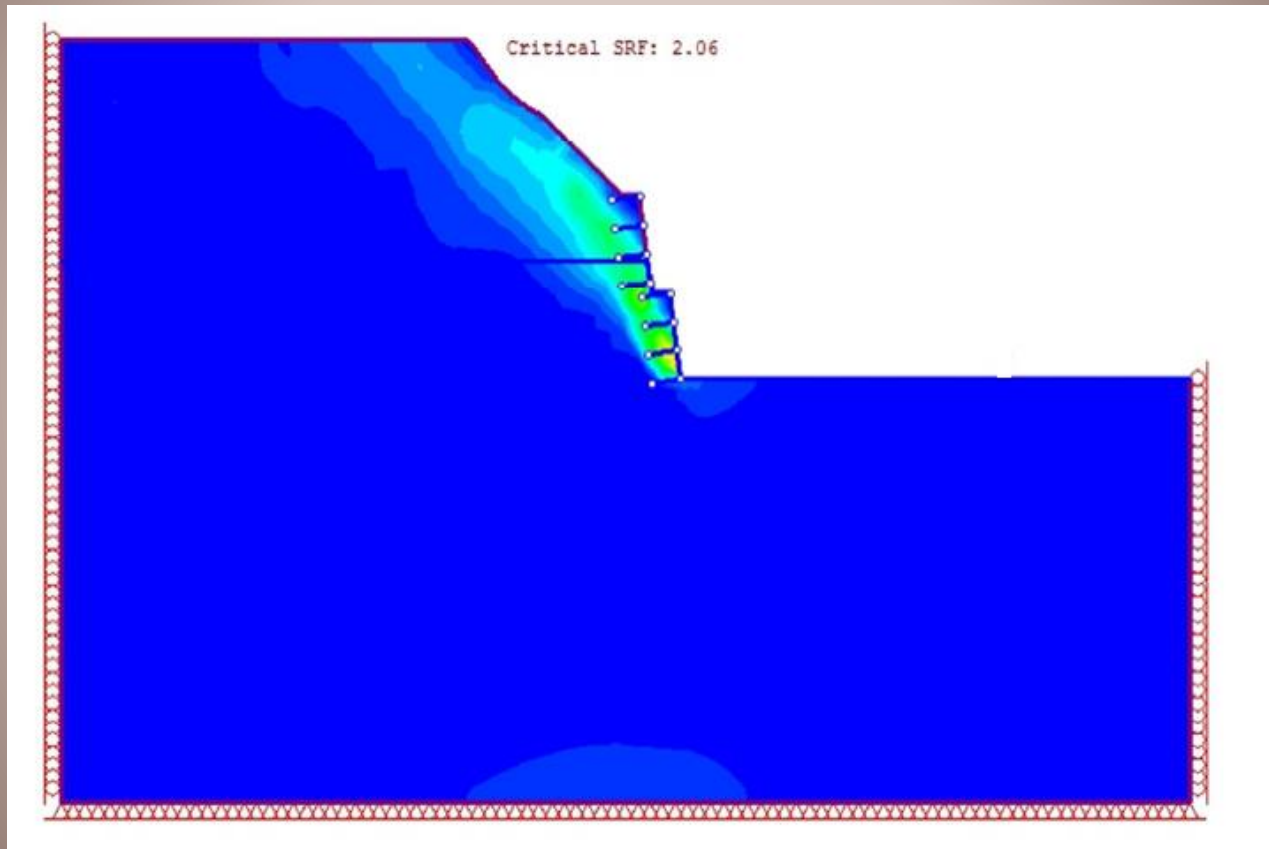
From the available Borehole data and seismic refraction we come to know about the geology of the area and accordingly the rock and soil profile of the slope is determined.

Now the slopes are design using Limit equilibrium or FEM software.

SWEDGE analysis is done to analyse Wedge failures in good to very good rock due to Joint sets



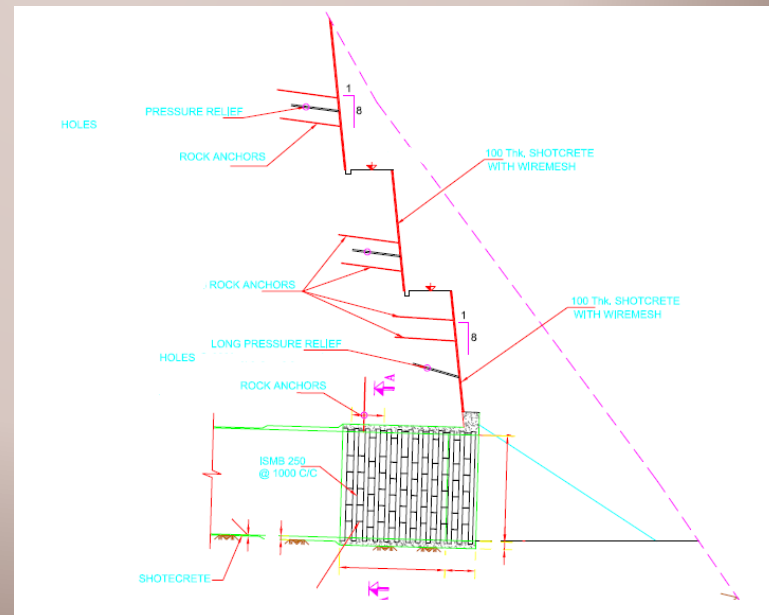
# Slope Stability of Portal Area



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# Portal Support Design

- Portal Support area mainly consists of Steel Ribs, Shotcrete.
- Road load taken by Portal Support system is usually density of rock x overburden height.



Thank you



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