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Geotechnical Investigation and Monitoring of Underground Excavation of Tunnel-2 in Srisailam Left Bank Canal Tunnel Project (AMRP), Nalgonda District, Telangana, India

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Abstract

Construction stage geotechnical investigation for tunnels within rocks includes detailed engineering geological mapping of excavated strata and its subsequent rock mass classification for the purpose of selection and installation of suitable supports. Monitoring of ground deformations during excavation of rock tunnels serves as the principal means of verifying the design of tunnel supports and stability of the excavation. Geology of the area comprises of Archean gneissic complex with basic intrusives overlain unconformably by the Srisailam Quartzites. The contact of basic intrusives with granite reaches was expected to be fractured and sheared and identified as adverse geological conditions and may warrant instrumental monitoring. In this work, the underground excavation of Srisailam Left Bank Canal (SLBC) Tunnel2, excavated in the Archean gneisses and granites was mapped by face mapping and 3D geological logging on 1:250 scale during construction stage, for the entire length of 7121Mresulting in identification of Chainages 2776M, 3200M and 4170M for field monitoring. Field instrumentation comprising of MPBX/SPBX, Load cells were installed at the adverse locations. The ground deformations were found to have attained stability with the installation of primary supports comprising shotcrete 50MM thick and pattern rock bolts 4M long full grouted for Rock Mass Class III (Fair Rock), shotcrete 100MM thick and pattern rock bolts)/ Steel Ribs with back fill concrete for Rock Mass Class IV and V(Poor Rock and Very Poor Rock).

Keywords: Geological Investigation, Rock Mass Classification, Excavation Monitoring, Ground Deformation, Tunnels, Nalgonda District

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