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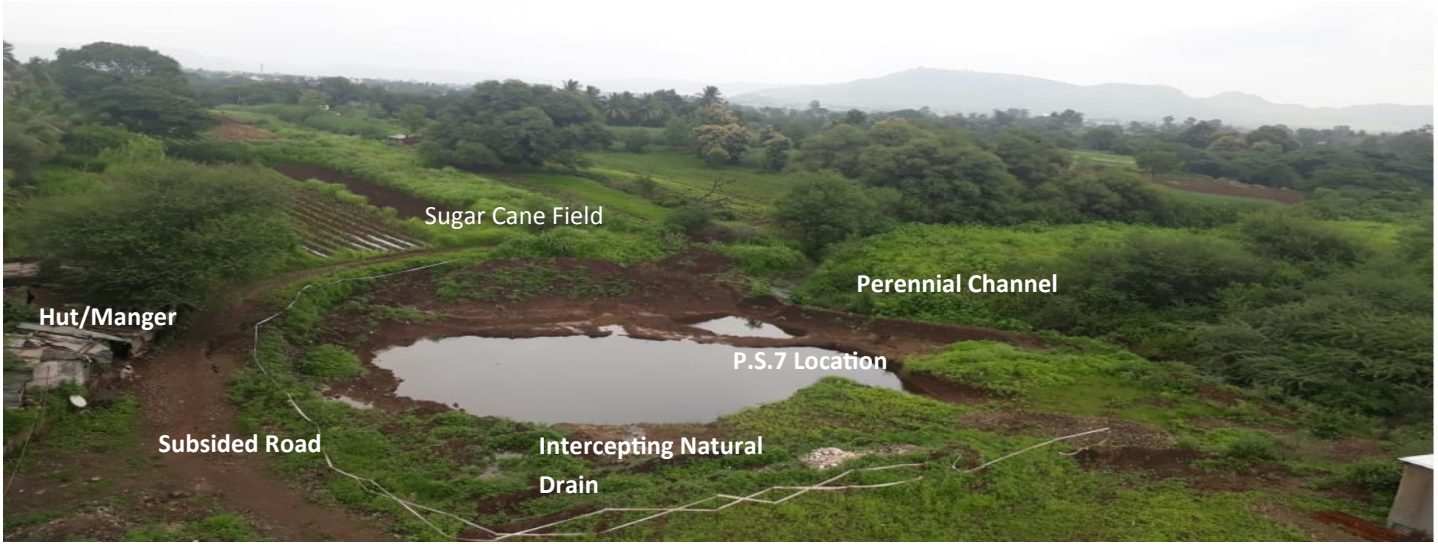
DESIGN OF STABLE EXCAVATION METHODOLOGY AT KARAD, MAHARASHTRA

TEJAS CONSTRUCTIONS AND INFRASTRUCTURE PVT.LTD.



CASE REFERENCE: 340/CS/2018-2019/Maharashtra

BRIEF:

For the 12.5 MLD STP at Karad, there is need to construct raw sewage sump and pump house. The raw sewage sump and pump house is founded at a depth of about 12.5m below GL. The subsurface stratification as per geotechnical investigation report is indicative of difficulty in excavation especially up to depth of excavation. The site P.S.7 is located in a low lying area and the slope of surrounding areas are towards location. The cut slope is found to be unstable in static loading condition in the existing cut slope configuration. Natural drains are intercepting the location and close vicinity of sugarcane fields and existing residential structures are the challenges faced on site. The slope stability for stable excavation along with recommendation of remedial mitigation measures in the project site is thus provided.

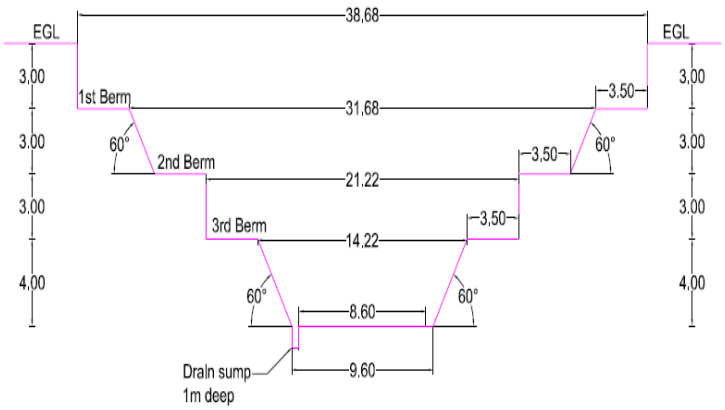
Duration: July, 2018 – April, 2019

Owner: Karad Nagar Parishad

Location: Karad, Maharashtra.

Role of Genstru: Consultant to Tejas Constructions and Infrastructure Pvt. Ltd.

Aerial View of Site



Proposed Staged Excavation Profile

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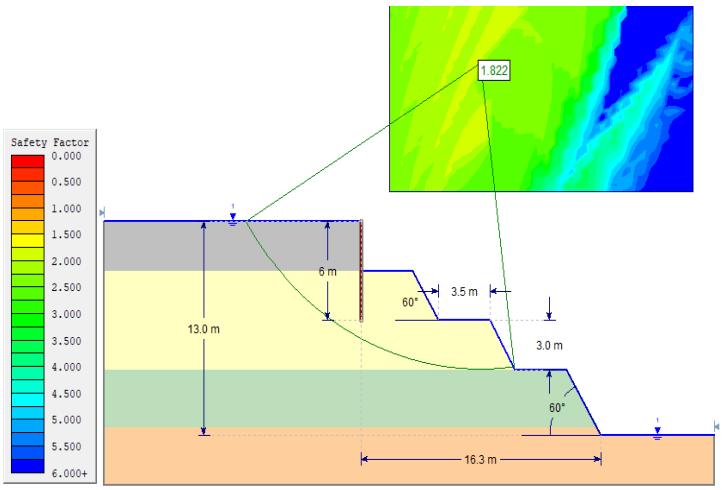
MAIN DELIVERABLES:

a) Reviewing project details including site visits, drawings, GI reports, etc.

2) Slope stability analysis for stable excavation profiling.

3) Recommendation for feasible and economical alternatives for staged excavation.

4) Design, drawing and quantity estimation for most appropriate alternative



Slope Stability Analysis for Staged Excavation with Shoring System

PROJECT HIGHLIGHTS:

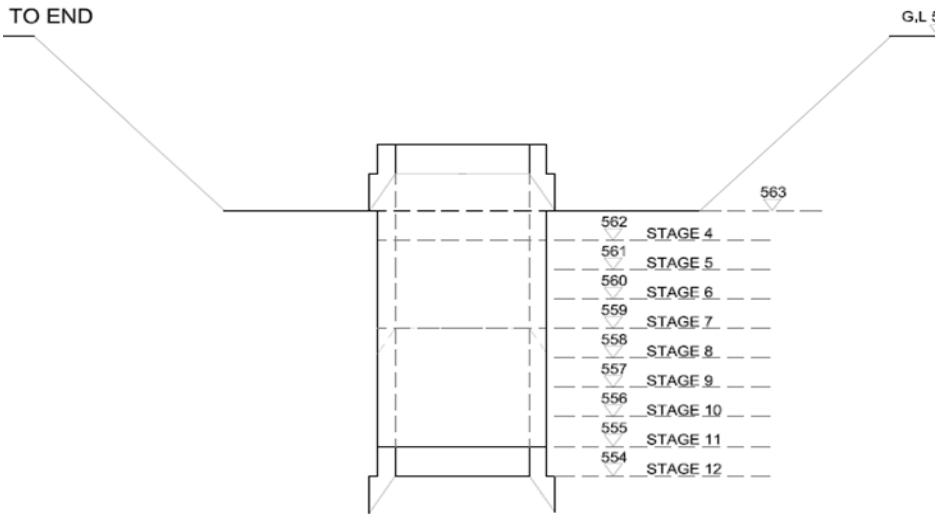
One borehole about 14m deep was drilled at site location. Based on field and laboratory investigation, the strata predominantly comprises of clay with intermediate to high plasticity upto about 12 m followed by weak completely to highly weathered BASALT. The ground water table is at shallower depth about 0.8m from ground level. The global stability analysis has been carried by Limit equilibrium method (Bishop Simplified Method). Staged excavation with integrated approach of retention system and well sinking approach are designed and implemented. The staged excavation approach is as below:

⇒ Stage 1: Excavation to designed depth with retention system

⇒ Stage 2: Preparing base by placing and compacting soil

⇒ Stage 3: Positioning of well curb and cutting edge

⇒ Stage 4 to END : Sinking to founding level



Staged Excavation Methodology with Well Sinking Approach