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ASSIGNMENT # 1

Geotechnical Report on Reconstruction of Road.

Abstract :~

This is the geotch report of reconstruction of Road, and the objective of these are to describe the process and stage of work.

The Report also indicates standard of skill, workship and reporting to be applied.

Introduction :~

This doument has been prepared to assist in the planning, coducting ant reporting of Skills, of Geotechinical invategation of Reconstructio Road.

objective and Scope :~

The objective for these guidelines are to,

→ describe the process of work.
→ indicate standard of skills and reporting.

The following things needs to be considered to assess the number, location and depth of test.

1) Expected sub-surface conditions
2) Required to minimize contractors and NHA

disk of changes during the construction program, due to variation in sub-surface condition.

STAGES OF INVESTIGATION:

1) Field Reconnaissance Survey:-

It is necessary for f.r.s to be conducted as the 1st stage of geotech- investigation. information on the following should be obtained,

- Legal and physical aspect of access to site.
- Availibility of any service or supplies of water, electricity and earthwork plant.
- Buried or overhead service.
- photograph of surface condition.
- Traffic control ~~required~~ requirement.

2) Desk Top Study:-

Every desk-top study should't contain following.

1. Desgin Drawing of previous structure.
2. previous investigation report. bore holes, penetrometer result etc.

3) Geological Map, Survey data and records.
4) Hydrological data.
5) Aerial photograph.
6) local knowledge and resources.

3) Site investigation:-

A comprehensive report on characteristic, Nature and variability of material should be carried out.

→ The investigation should include sampling of soil, logging of existing cut slope and excavation, field and laboratory testing.

4) Embankment fountation:-

The Embankment investigation consider the following issues.

→ The range of materials in embankment foundation and where appropriate the pawement subgrade.
→ Settement potential.

→ Stability
→ Hydrology, moisture regime & & drainage requirement.
→ Special construction requirement.

5) Cutting in Soil :-

The cutting investigation should contain the following issues.

→ The range of material in cutting and pavement subgrade
→ Slop stability and sub-grade strength.
→ Suitability of cut material for base cars and sub-base.

6) Salt/wet Areas :-

Where salt/wet soil are found, particularly in the vicinity of low embankment, or in shallow cutting, additional investigation, sampling and testing should be carried out.

→ The location and characteristic of any salt/wet area or spring should be recorded and Reported.

→ The treatment required to enable construction on these kind of roads across or through these areas should also be recommended.

7) Embankment Material :-

The Suitability of Material with the cutting should be assessed for embankment or pavement construction It should be made as to the use of selected fill material within one meter of pavement subgrade level.

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8) Road Reconstruction & widening:-

The investigation should include,

→ Bankelman Beam or Falling weigh Deflectometer (FWD) testing for assessing the structural adequency of existing pavement.

→ Sampling and testing of existing pavement material.

→ in-site test on the subgrade using Depth sand penetrometer or Dynamic cone penerometer.

→ Subgrade Sampling for Moisture content determination.

Ground water :-

Ground must be investigated to determine,

→ level of W.T.

→ occurence of a porched water table condition and its level.

→ The presences of Sub-Artesion conditions.

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Geotechnical Report:

The Report should provide sufficien information to allow tenders to prepare bids and to manage the principles disk on any subsequent contractual claims. The alignment, together with the location and result of all investigation, sampling and testing should be detailed in the Report.

The Report should identify the extent, nature and variability at all soil types and shall draw particular attention to the following matters.

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Q Write a note on Software, which are used in geotechnical Engineering.

Ans Following are the Software that are used in geotechnical Engineering.

→ 3D Deep :-

This Software is fully integrated with a design software package for automatic model generation.

It is a virtual reality Software for deep encavation.

→ ACCECALL :-

The program analyses the behavior of the rock slope under seismic condition. It evaluate the displacement of a rock block subject to dynamic forces, on the basis of a given accelerogram. The use of a calculation method base on given accelerogram.

→ ADoNIS :-

ADoNI is a free finite element software for Geu-Engineer. The goal of the ADoNIs development is to improve the modeling and computational simulation in geotechnical Engineering.

Allpile :-

Allpile is a windows-based analysis program, that handles virtually all types of piles, including steal pipes, H-piles, pre-cast concrete piles, Auger cast piles and many more.

ALP :-

The easy way to analyze soil ~~Stru~~ structure interaction of a laterally-loaded pile, when it comes to laterally-loaded pile design software.

ALP makes the things simple. This laterally loaded pile analysis software model.

Rock plane :-

Rock plane is a Software tool for the evaluation of localised instability rocky elements affated by seismic movement and/or by presence of water presure ~~with~~ with in inter surface fracture.

Axilt :

Program Axilt Anial-load-Transfer consisd of a main doutine and two Subroatines. the main routine feeds in the input data, calculate the effective overburden stress, and determins whether load is anial-down-directed, pull out, or if, uplift/down dragging.