4191
c.2

TRANSPORTATION MATERIALS
& RESEARCH LIBRARY

70-36

70-36

ClibPDF - www.fastio.com

4191
C.1

State of California
Department of Public Works
Division of Highways
Materials and Research Department

April 8, 1970

06-Tul-190
Lab Auth 2264

LIBRARY COPY
Materials & Research Dept.

Mr. L. S. Van Voorhis
Acting District Engineer
Division of Highways
Fresno, California

Attention: Mr. Roy Johnson

Dear Sir:

Submitted for your consideration is:

REPORT

of

GEOLOGIC INVESTIGATION

from

FRAZIER VALLEY ROAD

to

0.25 W. SEQUOIA NATIONAL FOREST BOUNDARY

on

ROAD 06-TUL-190, PM 27.4/33.8

Study made by ..... Foundation Section
Under general direction of ..... Travis Smith
Work supervised by ..... M. L. McCauley
C. L. Love
Report prepared by ..... D. D. Smith

Very truly yours,

JOHN L. BEATON
Materials and Research Engineer

By Travis Smith
Travis Smith
Assistant Materials and
Research Engineer - Foundation

Attach.
cc:WR Green:RF Johnson:GA Hill
DG Pengilly:Res.Engr.File
Dist. Design Dept.-2
Dist. Const. Dept.

ClibPDF - www.fastio.com

Introduction

A request was made of this department to conduct a geologic investigation along Road 06-Tul-190 during a telephone conversation on March 20, 1970, between Mr. Roy Johnson of District 06 and Mr. Colin Love of this department. This communication was confirmed by a memorandum of the same date.

The purpose of the investigation was to provide cut and fill slope recommendations for right of way requirements, grading factors, excavation characteristics, and the locations of any anticipated ground water problems.

Aerial photographs from flight A.S.C. 7001-42, as well as plans having a scale of 1" = 50' were provided by the District for field use. Final grade had not been established at the time of this study, therefore cut and fill heights are based on estimates. Stationing of the proposed realignment and widening project was not shown on the plans provided. Specific areas discussed within the text of this report are referenced to flight points located on the existing roadway.

General Geology

The area studied is chiefly composed of undifferentiated Mesozoic granitic rocks, ranging in composition from granite to granodiorite. Deep, differential weathering is characteristic of most of the project west of Springville. Outcrops and existing cuts consist primarily of decomposed to well weathered granite with local large boulders of moderately fresh rock. Blasting will be required to handle the large boulders during construction whereas the majority of the material will be easily ripped. Minor intrusions of younger, coarse grained, relatively fresh dike rock were evident in several areas, but should present no excavation problems.

From Springville eastward, massive outcrops of relatively fresh granite become more numerous. This material will require blasting when excavated. Thin flood plain deposits of silt, sand and gravel are common along this portion of the alignment which follows the Middle Fork of the Tule River from Springville to the west Sequoia National Forest Boundary. Terrace deposits located along the banks of the river have been quarried in the past and could possibly serve as a source of road building material.

Recommendations

It is our opinion that a seismic study of this area would not add sufficient information over that provided by this geological study and a limited drilling program to merit its expense and the time involved. The project is largely a widening of the existing roadway with a few minor curve corrections. The

ClibPDF - www.fastio.com

magnitude of the cuts and fills are, with one exception, under 15 ft. Materials exposed in the existing cuts should not vary greatly with those encountered during excavation of the proposed cuts.

A small unlined irrigation channel called "The Pleasant Valley Ditch" traverses the slopes above the alignment from the vicinity of Flight Point 29.25 to its source on the Tule River midway between Flt. Pts. 30.22 and 30.33. Seepage downslope from the ditch to the existing roadway is common in many areas. In those areas not covered in the attached table where widening of the existing low fills is anticipated a small ditch can be constructed to intercept the water and prevent saturation of the subbase and base materials of the highway.

The attached table summarizes the recommendations for design of the larger cuts and treatment of near surface groundwater conditions within proposed fill foundations. A 1½:1 fill slope design is recommended throughout the project.

ClibPDF - www.fastio.com

RECOMMENDATIONS FOR DESIGN

Flight Point	Cut Slope	Grading Factor	Material	Additional Comments
28.98-29.30	3/4:1	.9-.95	Decomposed granite with a few large hard granitic boulders	Cut height approximately 25 ft. Decomposed granite easily ripped. Large granitic boulders will require blasting.
29.39	3/4:1	.95-1.0	Moderately weathered to decomposed granite	Cut height approximately 10 ft. Easy to moderately difficult ripping.
29.54-29.61	3/4:1	.90	Decomposed Granite	Cut height approximately 5 ft. Easily ripped to grade.
29.73	3/4:1	.90	Decomposed granite with scattered hard granitic boulders	Easy ripping in decomposed granite, with some blasting of larger granitic boulders. Relocation of the Pleasant Valley Ditch on left should present no construction problems.
29.86-29.96	3/4:1	.90	Decomposed Granite	Easily ripped. Some seepage at grade from Pleasant Valley Ditch. Construction of interceptor ditch slightly below proposed grade would prevent saturation of roadway.
29.96-30.32			Decomposed granite with thin soil cover in low areas	Widening of existing fill. Consider ditch on left similar to existing, to intercept seepage of water.
30.22-30.42			Thin soil cover with small boulders over decomposed granite	10-12 ft. fill. Augering of fill foundation recommended to determine soil and water conditions for possible underdrain installation.

ClibPDF - www.fastio.com

Flight Point	Cut Slope	Grading Factor	Material	Additional Comments
31.05			Soil over decomposed granite	Widening of existing fill. Use interceptor ditch at base of fill on left or strip soil & vegetation & place permeable blanket beneath fill to conduct reservoir seepage to culvert.
31.10-31.26			Soil & decomposed granite with local hard massive granitic outcrops	20-ft fill. Augering recommended to determine soil & ground water conditions for underdrain installation.
31.31	3/4:1	.90	Decomposed granite	Easy ripping to grade.
31.37-31.62			Soil & decomposed granite over hard massive granite	20-24 ft fill. Augering recommended to determine soil & ground water conditions for underdrain to replace existing ditch & handle surface runoff.
32.04-32.13			Decomposed & well weathered granitics	20-22 ft fill. Strip soil and vegetation, place permeable blanket to handle hillside seepage.
32.13	3/4:1	.90	Decomposed granite	Easy ripping of 5-8 ft. cut on left.
32.13-32.17			Decomposed granite	15-ft side hill fill. Conduct surface runoff around gulley to be occupied by proposed fill.
32.40-32.59	3/4:1	.95-1.0	Decomposed to relatively fresh massive granite	8-10 ft cut. Grassy saddle-like area may contain small perched water zone overlying massive bedrock. Some blasting required.

ClibPDF - www.fastio.com

Flight Point	Cut Slope	Grading Factor	Material	Additional Comments
33.06-33.55			Thin cover of silt and sand over hard jointed granitic bedrock	30-ft fill. The proposed realignment of this section would probably require extensive rock slope protection installation to protect the fill during flood stages of the Tule River. An alignment generally following the existing road is recommended.

ClibPDF - www.fastio.com