FOR CONTRACT NO.: 11-282404

INFORMATION HANDOUT

MATERIALS INFORMATION

Geotechnical Design Report for Percolation Tests dated 7/2/12

State of California

Business, Transportation and Housing Agency

Memorandum

Flex your power!
Be energy efficient!

To: Kenneth Johansson - 11
Design

Date: July 2, 2012
File: 11-SD-94-PM 2.2–9.5
1100000314
Chollas Creek BMP

From: **DEPARTMENT OF TRANSPORTATION**
DIVISION OF ENGINEERING SERVICES
Geotechnical Services MS 5
Office of Geotechnical Design – South 2, Branch C

Subject: Geotechnical Design Report for Percolation Tests

Introduction

Per your request dated April 10, 2012, this Office is providing test results for 6 percolation tests conducted near the intersection of SR-94 and I-15 in San Diego County, California. It is our understanding that the percolation test results were requested in order to design proposed Best Management Practices (BMPs) as part of Chollas Creek Watershed Project related to the SR-94 widening project. The Project Report for the Chollas Creek Watershed Project proposes implementation of 7 infiltration trenches with modified modular filler material as the approved BMP treatment throughout the watershed. The proposed BMP infiltration trenches are located underground and have an in-line by-pass system which is designed for soils with very slow infiltration rates. The subsurface information provided in this report is based on the existing Referenced data and our subsurface investigation conducted between May 14 and May 17, 2012

References

1) "As Built Log of Test Borings (LOTB) for the Southwest Connector Overcrossing (widen) Route 15/94 Separation, BR. 57-0350F " California Department of Transportation, Engineering Geology Branch, October 7, 1994.

2) "Preliminary Geologic Maps," California Department of Conservation, Office of California Geological Survey, 2007.

3) "District Preliminary Geotechnical Report for the Widening of State Route 94 from the SR-94/I-5 separation to 0.2 miles west of 47th Street. OGDS-2 April 21, 2010. 11-28700

Geology

The Chollas Creek Watershed Project site lies within the San Diego Embayment section of the Peninsular Ranges Geomorphic Province of California. The San Diego Embayment consists of thick sequences of marine and non-marine sediments. The References above identifies the project area as underlain Clayey Silts, Silty fine Sands, Silty Sandstones and Sandy Siltstones. During our subsurface percolation testing and groundwater investigation of May 2012, the soils

encountered included Clays, Silts and fine Sands to a depth of 22 feet below existing grade of SR 94 and I-15

Topography & Drainage

The area is characterized by low relief mesa like topography with flat lying marine terraces incised by narrow steep canyons and arroyos. The average elevation of the project is approximately 70-feet above Mean Sea Level (MSL). The SR- 94 widening project crosses what is referred to as the Coronado Hydrologic Unit and is locally drained by Chollas Creek (Delfacto 1977). Infiltration of rainfall within the project area is considered slow, resulting in significant surface runoff. The majority of runoff from within the proposed project limits is directed to Chollas Creek.

Groundwater

Reference #1 indicates groundwater was not encountered down to an elevation of 35 feet. Groundwater was not encountered during our May, 2012 subsurface investigation which extended a minimum of 10 feet below each percolation test pit elevation.

Test Method

Percolation Tests were designed by California Test method (CT) 749 (1986) for 12-inch diameter test holes. Typically 3 test pits are required for each location, although because of the homogeneity of the site soils, and the closeness and number of locations, only one percolation test pit was requested to be tested for each location. Test pits were excavated by power auger, shovel and hand auger. The testing pit dimensions were approximately 8" wide by 18" deep. Test pits were filled with water and allowed to "pre-soak" overnight or for a minimum of 12 hours. Percolation testing in all of the 6 test pits proceeded for 4 hours each. Test data was then corrected for an 8-inch diameter bore hole, 4-inch diameter perforated pipe and pea gravel backfill. The percolation test results for the 6 test pits are provided in Table 1 below.

Test Results

The averaged percolation test rate for the area was approximately 667 minutes per inch, this average can be considdered conservative and actual perc rates may be slightly faster. The slow percolation rates would suggest our percolation tests were conducted in the slow draining Sandstones or Siltstones as described in the References. Site GB #2 was not accessible and not tested during our investigation. The test result from GB #7 was not included in the average because the test there may have been affected by the Caltrans irrigation sprinklers which were irrigating the area during the test, which may have caused the percolation rates there to be much slower than the other sites. It is my professional judgment that the average percolation rate of 667 minutes per inch can be used to design the 7 proposed BMS including the one proposed at GB #7 and GB #2.

Table 1
Percolation Test Results

BMP Name & Route	Location Line, Station and Offset	Ground elevation ft.	Soil encountered	Percolation testing elevation	Percolation rate Minutes/inch
GB #2 SR-94	"MZ1" 173+71 218.0 Rt.	124	No test	No test	No test
GB #4 SR-94	"94R1" 189+89 131.0 Rt.	75	Clayey Silt	64.0	735
GB #6 SR-94	"94R1" 208+80 80.0 Lt.	73	Sandy Silt	65.0	668
GB #7 SR-94	"94R1" 211+60 92.0 Lt.	75	Sandy Silt	64.0	2450
GB #8 I-15	"11SD15A2" 117+04 98.0 Lt.	62	Silty Sand	56.0	534
GB #11 I-15	"11SD15A2" 100+05 224.0 Lt.	73	Sandy Silt	61.0	735
GB #12 I-15	"11SD15A2" 88+65 151.0 Lt.	60	Silty Sand	53.7	666

Construction Considerations

From our site investigation, it appears a 5 foot vertical temporary excavation cut of 1:1 (H: V) should remain stable during basin construction, although contractor shall be responsible for shoring design as deemed necessary. Groundwater is not anticipated to be encountered during construction of the basins.

If you have any questions or comments, please call Brian Gutierrez at (916) 227-1222

Prepared by: Date:

7/2/2012

BRIAN GUTIERREZ, P.E.
Office of Geotechnical Design–South 2
Branch C

REGISTERED PROFESSIONAL ENGINEER
BRIAN A. GUTIERREZ
No. 66258
Exp. 06/14
CIVIL
STATE OF CALIFORNIA

cc A. Abghari – GDS2
S. Wei – GD
GS Corporate