

FOR CONTRACT NO.: 08-497504

INFORMATION HANDOUT

GEOTECHNICAL DESIGN REPORT FOR RETAINING WALL

ROUTE: 08-SBd-10-12.0/19.5

Memorandum*Flex your power!
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To: SERGIO E. AVILA
Office of Design E
District 8

Date: November 20, 2007
File: 08-497500
08-SBd-10-PM18.7

Attn: Dai Hoang

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 a Retaining Wall

As requested by your Office on August 20, 2007 and updated on November 13, 2007, our Office of Geotechnical Design – South 2 (OGDS2) has prepared this Geotechnical Design Report (GDR), which provides geotechnical information and foundation recommendations for a proposed retaining wall. It is our understanding that the proposed retaining wall will provide additional level ground for a proposed auxiliary lane along the westbound shoulder of the I-10 freeway between Riverside Avenue and Cedar Avenue in the City of Rialto.

Site Description

The wall will retain what appears to be a slope of native material next to an existing 8-foot deep, trapezoidal concrete lined channel. The height of the proposed retaining wall will be between 5 and 7 feet and will be approximately 1 mile in length. Typical Cross Sections provided by your Office include two types of proposed retaining walls, a Standard Type 1 and a Type 7 Retaining Wall on sheet XS14-010. This report will discuss our recommendations regarding both types of walls.

Subsurface Investigation

Our subsurface investigation for this project utilized a B-47 trailer mounted drill rig, which advanced 5 exploratory borings through the westbound paved shoulder as close to the proposed retaining wall Layout Line as possible. In-situ testing, including Standard Penetration Tests (SPT), were performed every 5 feet and extended to a depth of 20 ft. Blow counts from the SPT were recorded in the Log of Test Boring sheets (LOTBs). Bulk bag samples were collected from auger cuttings and were delivered to the Sacramento Laboratory for testing. The test results and LOTBs will be provided when complete.

Site Geology and Seismicity Information

The retaining wall is proposed to be constructed within 2400 feet of the Railto-Colton-Claremont (RCC) fault which is capable of a Maximum Credible Earthquake (MCE) of 6.75 and could produce up to 0.5 g Peak Rock Acceleration as shown on the California Seismic Hazard Map, 1996.

Subsurface Soil Information

The following geotechnical information is based on our investigation and knowledge of the area. The alluvial native material investigated at the site varied from surficial medium dense silty SAND to dense silty SAND with gravels beginning at approximately 5 feet below pavement surface and continuing to bottom of bore holes. Groundwater was not encountered during our investigation on October 10, 2007, although groundwater elevation may fluctuate.

Selection of Soil Strength and Design Parameters

Based on the Typical Cross Sections provided to this office, the bottom of the proposed retaining wall footing will be founded in original ground approximately 10 feet from our boring. The finished embankment above the retaining wall will slope up at 1:2 (V: H). In our analysis, it was assumed that the existing foundation material can provide the following soil parameters; 35° for the angle of internal friction, zero (0) cohesion and a moist unit weight of 125 lb/ft^3 . Our analysis assumed proper drainage facilities would be installed to insure no hydrostatic pressure building up behind the wall.

Wall Design and Analysis

Using the above soil parameters, and the footing dimensions for a Standard Type 1 and a Type 7 Retaining Wall, with design heights of 8 feet and Case 2 loading, the proposed compacted foundation material was determined to have an allowable bearing capacity of 10 ksf which provides a Factor of Safety (FOS) greater than 3.0. The FOS against sliding and overturning were both over 3.0 as well. These factors of safety satisfy Caltrans requirements.

Foundation Recommendations

Based on provided information and our analysis, we concur with the design of your proposed Standard Type 1 and Type 7 Retaining Walls in accordance with 2004 Standard Plans Sheet B3-1, and sheet XS14-010 Retaining Wall Type 7. This office recommends the scarification and compaction of the existing foundation material beneath the proposed footing footprint, to not less than 95% relative compaction, as stated in Section 19.5 of the Standard Specifications. The footing shall be embedded a sufficient depth to provide adequate bearing and footing protection as stated in section 4.4 Footings, of the Bridge Design Specifications.

Sergio E. Avila
November 20, 2007
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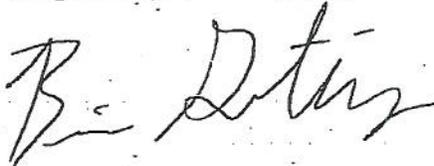
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Construction Considerations

From the preliminary cross sections and our site investigation, it appears a proposed temporary excavation cut of 1:1 (H: V) should remain stable during footing construction, although contractor shall be responsible for shoring design as deemed necessary. If temporary shoring is required, medium dense to very dense sands with gravels should be anticipated for driving shoring. Groundwater is not anticipated to be encountered during construction.

If you require further information, please contact Brian Gutierrez at (916) 227-1222 or Shawn Wei at (916) 227-5252.

Prepared by: Date:

 11-20/08

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



cc: AAbghari - GDS2
SWei - GDS2
Project File - South
R.E. Pending file