

FOR CONTRACT NO.: 07-3X1804

INFORMATION HANDOUT

MATERIALS INFORMATION

**RECOMMENDATIONS FOR RECONSTRUCTION OF THE SLOPE AT THE PARK AND RIDE LOT
ADJACENT TO EASTBOUND HARBOR BOULEVARD OFF-RAMP DATED APRIL 28, 2011**

**ADDENDUM TO RECOMMENDATION FOR RECONSTRUCTION OF THE SLOPE AT THE PARK
AND RIDE LOT ADJACENT TO EASTBOUND HARBOR BOULEVARD OFF-RAMP DATED
SEPTEMBER 15, 2011**

ROUTE: 07-LA-47-0.8

Memorandum

*Flex your power!
Be energy efficient!*

To: MR. REFUGIO DOMINGUEZ
Office of Design D

Date: April 28, 2011
File: 07-LA-47-PM 0.86
07-3X1801
Slope Repair at Park and Ride

Attn: Mr. Arturo Lao

From: DEPARTMENT OF TRANSPORTATION
DIVISION OF ENGINEERING SERVICES
Geotechnical Services
Office of Geotechnical Design – South 1

Subject: Recommendations for Reconstruction of the Slope at the Park and Ride Lot Adjacent to Eastbound Harbor Boulevard Off-Ramp

Reference: “Storm Damage Site Assessment Report for 07-LA-47 PM 0.8, Slope at the Beacon Street Park and Ride Lot Adjacent to Eastbound Route 47 Harbor Boulevard Off-Ramp”, prepared by Office of Geotechnical Design South 1, dated April 20, 2010.

Based on District 7 Office of Design D’s request, dated March 15, 2011, Office of Geotechnical Design South 1 (OGDS1), Branch D reviewed the following documents provided by Office of Design D for subject slope (07-LA-47 PM 0.86) from geotechnical point of view:

1. Project Plan Sheet No. 1, last revised 7/2/2010
2. Layout L-1, last revised 7/2/2010
3. Construction Details C-1, undated
4. Damage Assessment Form (DAF), signed 10/11/2010, Sheet Nos. 1 through 3 of 3

OGDS1, Branch D representatives visited the site on April 18, 2011 to review the current condition of the subject slope. Based on OGDS1 site visit and above mentioned documents, we have the following comments:

- a.) Remedial measure to improve drainage condition on top of subject slope should be addressed by Office of Design D, as recommended in the above referenced “Storm Damage Site Assessment Report”, prepared by OGDS1, dated April 20, 2010.
- b.) “Bench Section” on Construction Details C-1, should include erosion control mat (such as MacMat) and hydro-seeding on top of proposed backfill material as recommended in the above referenced “Storm Damage Site Assessment Report”, prepared by OGDS1, dated April 20, 2010.

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- c.) During OGDS1 April 18, 2011 site visit a major galley was observed on subject slope surface between 210 ft and 270 feet from northwest side of the slope. This galley should be backfilled and repaired to prevent future erosion of the slope.
- d.) After slope surface is cleared from debris, OGDS1 representative need to be present at the site to determine length and spacing of the ground anchors for erosion control mat.

If you have any questions, please contact Kevin Lai at (213) 620-2344 or Shiva Karimi at (213) 620-2146.

Prepared by:

Date: 4/29/2011

Supervised by:

Date: 4/29/2011



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Office of Geotechnical Design – South 1

Subject: Addendum to Recommendations for Reconstruction of the Slope at the Park and Ride Lot Adjacent to Eastbound Harbor Boulevard Off-Ramp

This addendum provides information and details pertaining to the subject slope repair as following:

1. Clear and grub the slope face by removing existing slope wash material to expose coastal bluff materials.
2. Imported material of sandy clay and clayey sand with fine contents less than 60 percent can be used as backfill material.
3. In localized areas that slope wash is more than 5 feet thick, Geotechnical Engineer should be contacted for approval.
4. Exposed slope surface should be benched with bench heights not greater than 3 feet.
5. Sub-drains spaced not more than 15 feet vertically and with suitable outlets should be provided. Four inch diameter perforated PVC pipe incased in $\frac{3}{4}$ inch gravel wrapped in geotextile may be used.
6. Backfill the slope to the existing grade with imported sandy clay or clayey sand and compact to 95% per Caltrans D216 test method.
7. Place duff with compost or other suitable material to amend soil in the top 6 inches. Project Landscape Architect should be consulted for detailed recommendations.
8. Upon completion of grading, install anchors on a 6 by 6 feet grid. The anchors should consist of 1 inch diameter steel rods having a minimum tensile strength of 75000 psi. The anchors should be installed in 6 inches diameter holes drilled to a depth of 9 feet from the slope face at a 15 degree downward angle from the horizontal. The holes

should be grouted to the top per Caltrans standard specifications. The anchor heads should consist of 8 by 8 inches steel plates having a minimum thickness of ½ inch. The anchors shall be installed using the Caltrans procedure for soil nail installation. The grout used should have a minimum 3-day compressive strength of 1500 psi and a 21-day strength of 3000 psi. Test results of the proposed grout mix should be submitted to the engineer prior the start of the project. During the work, the contractor should perform at least one test for every 5 cubic yards of grout used. However, the minimum number of tests done for the project should be no less than 5. The installation of the mesh should be performed once the grout has developed at least its 3-day strength.

9. Place a rock mesh (similar to Rock Mesh B900P) on the slope without slacks and secure to the ground using anchors. The engineering properties of the mesh should meet the minimum specifications listed below.
 - i. If the mesh properties are different along different axes (biaxial), the mesh should be oriented to have the stronger axis in the direction of the slope dip. The mesh should be installed to have slight tensions in both directions. A single mesh should be used for the entire height of the slope, without splicing. The meshes could be spliced parallel to the slope dip direction per manufacturer's specifications.
 - ii. Tensile strength of steel used for the mesh shall be a minimum of 75,000 psi.
 - iii. Mesh shall be double coated with zinc and PVC per requirements of applicable ASTM requirements (A641/A641-M-03, Class III and A975-97). The design life of the PVC coating in an environment with exposure to UV light and abrasion shall not be less than 60 years.
 - iv. Maximum elongation shall be less than 12% as determined by ASTM 370 test method.
10. Upon completion of the construction work, the slope should be landscaped immediately to prevent erosion.
11. There is a possibility that the anchors of the above design encroach to the adjacent residential properties right of way. The project engineer should check the location of the right of way line to ensure that anchors would not encroach to the adjacent properties. If any encroachment is found, the geotechnical engineer should be contacted to make modifications to the design.

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Prepared by: Date: 9/15/2011

Supervised by: Date: 9/15/2011



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REFERENCES

- 1) "Storm Damage Site Assessment Report for 07-LA-47 PM 0.8, Slope at the Beacon Street Park and Ride Lot Adjacent to Eastbound Route 47 Harbor Boulevard Off-Ramp", prepared by Office of Geotechnical Design South 1, dated April 20, 2010.
- 2) "Recommendations for Reconstruction of the Slope at the Park and Ride Lot Adjacent to Eastbound Harbor Boulevard Off-Ramp", prepared by Office of Geotechnical Design South 1, dated April 28, 2011.